

WESTERN AUSTRALIAN

YEAR BOOK

1980

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Verticordia ovalifolia Meisn.

There are fifty-four known species of *Verticordia*. The common name 'Feather Flowers' is derived from the deeply incised feather-like divisions of the calyx lobes.

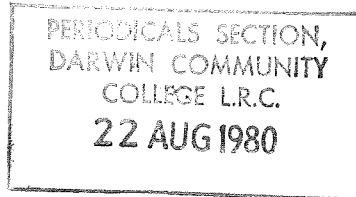


WESTERN AUSTRALIAN YEAR BOOK

No. 18 - 1980

W. M. BARTLETT

DEPUTY COMMONWEALTH STATISTICIAN AND GOVERNMENT STATISTICIAN



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PREFACE

This is the eighteenth issue of the present series of the *Western Australian Year Book*. The old series, originally published for the year 1886 and discontinued in 1905, developed from the Blue Books of the Colonial Office, London, which contained the earlier statistical records of Western Australia.

The Year Book provides a general description of Western Australia and includes authoritative information on almost every aspect of life in the State. Together with chapters on social and economic progress, the Year Book includes information on government, geography and climate, vegetation and fauna. Considerable use is made of statistical tables to supplement the descriptive text and, where appropriate, maps are also included for illustrative purposes. Each chapter contains the latest information available at the time of manuscript preparation.

Because of the time required for editing and printing the Year Book, later data on a particular topic will often be available in mimeographed publications or on request to the appropriate section of this Office. More detailed statistics on matters treated generally in the Year Book are available in the several publications comprising *Statistics of Western Australia*. The reader is referred to the complete list of publications of the Western Australian Office which is provided at the back of this Book.

The reader's attention is drawn to the information service and library facilities provided by this Office, where all the publications of the Australian Bureau of Statistics are available for reference. Businessmen, manufacturers, primary producers, government authorities, students and the public generally are invited to make full use of these services.

I express my appreciation to the many government officials and others for their part in the preparation of material for the Year Book. Special thanks are due to the Editor of Publications (Miss E. Binns, B.A.), other officers of the Bureau and the Government Printer and his staff for their role in the Year Book project.

March 1980

W. M. BARTLETT
Deputy Commonwealth Statistician
and
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The following symbols mean:

- n.a. not available
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Citation of Acts

Acts of the Parliament of Western Australia are cited in italics throughout. The dates indicate the year of original enactment and the year of latest amendment.

Acts of the Parliament of the Commonwealth of Australia are cited in italics with the year of original enactment in roman type; all subsequent amendments are inferred.

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CHAPTER I—DISCOVERY, COLONISATION AND EARLY SETTLEMENT

DISCOVERY (1)

Terra Australis Incognita, or *Magellanica*, the unknown Southern Continent, or Great Southern Land of ancient geographers and explorers, is said to have been first discovered by the Portuguese between the years 1511 and 1529, when some vessels belonging to that nation, engaged in the exploration of the Indian Seas, driven out of their course by currents or stress of weather, accidentally drifted on to the Australian coast. The authenticity of this account is, however, doubted.

In 1567 Alvaro de Mendana sailed from Callao, in Peru, in search of the Continent believed to exist in the Southern Seas, but the only result of the expedition was the discovery of the Solomon Islands.

In 1595 Mendana again left Peru in charge of an expedition equipped for the purpose of colonising the Solomon Islands, previously discovered, and chanced on the Marquesas and Santa Cruz Islands. He died on one of the latter, the expedition returning to Peru.

The spirit of enterprise displayed by the Portuguese served, however, to encourage the Dutch East India Company, with their already established factories in Java and other parts of the Indian Archipelago, to researches in the direction of Australia. Their first object was New Guinea, where it was rumoured that gold was found. Frederick de Houtman, Governor of Amboyna (in the Moluccas), organised an expedition in 1605. Under his instructions the Dutch yacht 'Duyfken' (*Little Dove*), Commander Willem Jansz, supercargo Jan Lodewijkszoon Rosingeyn, sailed from Bantam on 18 November of that year, whence, after receiving further instructions from Jan Willemsz Verschoor, the company's President, she sailed to explore the island of New Guinea. During March in the following year she coasted along that portion of *Terra Australis* lying in the Gulf of Carpentaria to the south-west of Cape York, as far as Cape 'Keer Weer', or 'Turn Back', her commander mistaking it for the west side of New Guinea, and thus, unconsciously, making the first authenticated discovery of the long sought-for Southern Continent. These seem to be all the particulars available as to the results of this expedition, and even they are doubtful, as the journal of Captain Jansz unfortunately appears to have been lost.(2)

On 21 December 1605, Pedro Fernandez de Quiros, who had been pilot under Mendana and Luiz Vaz de Torres, left Callao with three Spanish vessels in search of the supposed *Tierra Austral*, and amongst others discovered one of the islands now called the New Hebrides, to which, supposing it to be the object of their search, they gave the name of *Australia del Espiritu Santo*. Torres, in the 'Almirante', on 11 June 1606, found himself separated from de Quiros and, ascertaining that the newly discovered land was only an island, continued his search westward, passing, also unconsciously, in sight of the sought-for continent, through the Straits that now bear his name.

In 1611 certain ships going from the Netherlands to India, after doubling the Cape, followed another route than that usually adopted: they ran on an eastern course, in about 36° southern latitude, for a considerable time, and then tried to navigate to Java on a northerly course. The commander, the subsequent Governor General Hendrik Brouwer, wrote to the Directors of the East India Company concerning 'this fairway' in highly

(1) Reprinted, with minor editing, from the *Western Australian Official Year Book*, 1905 (Old Series). See also footnote to page 13.

(2) Dr W. G. C. Byvanck, the Chief Librarian of the Royal Library at The Hague, who kindly furnished authentic information with regard to the early Dutch voyages to Western Australia, quotes De Jonge, 'Rise of the Dutch Dominion in East India', iii., 42-4, and Lants, also P. A. Leupe, 'Voyages of the Dutch to New Holland' (in his 'Treatise on the Naval Exploits of the Dutch'). Professor Dr J. E. Heeres, of Leiden, in an abstract of valuable notes kindly made available for publication in the Year Book, gives a similar account.

laudatory terms, as preferable to the usual course by Madagascar, which offered many dangers and objections. The new route was thenceforth prescribed to the Company's ships. As early as 1618 and 1620 the Company urged upon the Governor General of India the importance of following up the discoveries in the region of 'The Southland'. Jan Pieterszoon Coen, who was then directing the affairs of the Company in India, gave instructions, on 29 September 1622, for the ships 'Haring' (*Herring*) and 'Hazewind' (*Greyhound*) to sail, 'destined for the further discovery of the Southland'. The commanders were 'specially to inquire what minerals, such as gold, silver, tin, iron, lead, and copper, what precious stones, pearls, vegetables, animals, and fruit these lands' produced; and the countries discovered were 'to be taken possession of'. Jan Carstensz was to be in command. The ships, however, for some reason did not sail on their ordained expedition. The enterprise of the Company probably found its boldest expression in that eminent navigator, Van Diemen; but in his time the Directors of the Company began to slacken in their zeal for exploration, finding the expenses too great; and gradually the idea of further colonial expansion was abandoned, thus leaving Australia to be colonised by others. At the close of the 17th century Nicolaas Corneliszoon Witsen, Burgomaster of Amsterdam and General Director of the East India Company, with a special view to the enlargement of geographical knowledge, took a diligent part in the preparations for the voyage of skipper de Vlaming. A few years later he bitterly complained of the indifference of many of his countrymen in those days, who did not 'care about curious learning from India', but 'money only'. As Professor Heeres says: 'The times of Van Diemen had failed to return; the spirit by which he was imbued no longer presided over the debates on colonial matters.'⁽³⁾

In 1616 Dirk Hartogs (Hartochsz), in command of the Dutch vessel 'Eendragt', or 'Eendracht' (*Concord*), supercargo Cornelis Buysero, outward bound from Holland to the Indies, entered Shark Bay, and gave his name to the island upon the western side of the Bay. The name 'Dor Eylandt', or 'Dorre Eylandt' (*Barren Island*) was then, or subsequently, given to the largest island at the entrance of the Bay. A tin plate nailed to a post erected at the north end of Dirk Hartogs Island remained for many years a memento of his visit. His countryman, Willem de Vlaming, who visited the island in 1697, relates that he found the plate on 4 February of that year and, taking it away with him, entrusted it to the Governor General at Batavia, who forwarded it to the Board of Seventeen Directors of the Dutch East India Company in Holland, the President of which was, at that time, Burgomaster Nicolaas Witsen. Vlaming gave a rendering of the inscription, which, translated from the Dutch, runs as follows:

'ANNO 1616, the 25th of October.—Arrived here the ship "Eendracht", of Amsterdam; the first merchant Gillis Miebaais of Liege. Dirck Hartogs, of Amsterdam, Captain. 27th Do.—Sailed for Bantam.'

On the lower part, cut with a knife, were to be read in Dutch the words:

'The Under Merchant Jan Steyn, Upper Steersman, Pieter Ledoecker of Bil. A° 1616.'

Such, at least, was the wording of the duplicate plate which he caused to be substituted for the one removed.⁽⁴⁾ The original plate of Dirk Hartogs was discovered in 1902 by Mr J. F. L. De Balbian Verster, in the 'Rijks-Museum' (State Museum) at Amsterdam, and it was then seen that the latter part of the inscription thereon reads as follows:

'The Under Merchant Jan Stins, Upper Steersman, Pieter Dockes of Bil. A° 1616.'

Vlaming's inscription was seen by Captain Hamelin, of the French exploring vessel 'Naturaliste', in 1801; but the plate had disappeared in January 1822, when King caused a careful search to be made for it. This disappearance can be accounted for by a statement made by de Freycinet to the effect that he had removed it and deposited it for safe keeping in the Museum of the French Institute, which fact is referred to in the minutes of the Society, dated 23 March 1821. In spite, however, of this statement, a careful search subsequently at the turn of the century made by the Secretary⁽⁵⁾ of the Institute failed to discover its

⁽³⁾ 'The Part borne by the Dutch in the Discovery of Australia, 1606-1765', by Professor J. E. Heeres, LL.D.

⁽⁴⁾ Dr Byvanck refers to Major's 'Introduction' to 'Early Voyages to *Terra Australis*', p. 32.

⁽⁵⁾ Dr Alfred Grandidier, who has kindly revised the portions of this historical abstract, referring to the French voyages.

whereabouts. [The plate was located by chance in 1940 and is now held by the Fremantle Branch of The Western Australian Museum—Ed.]

Dirk Hartogs examined the coastline between south latitude 26°30' and 23°, and called the intervening country 'Eendracht's Land'.

On 11 May 1618, the ship 'Zeewolf' (*Seawolf*), from the Netherlands to India, supercargo Pieter Dirkszoon, skipper Haevik Claesoon Van Hillegom, sighted land in southern latitude 21°20', about 'a thousand miles' (German sea miles) east of Africa.

In July of the same year a Dutch vessel called 'Mauritius', supercargo Willem Jansz, skipper Lenaert Jacobsz, touched near North West Cape, and discovered the 'Willemsrivier' (probably the Ashburton), in lat. 21°45' south.

In 1619 a fleet of eleven vessels, under the command of Frederik de Houtman, in the ship 'Dordrecht', discovered, on 29 July of that year, a reef lying off this coast, to which the name of 'Frederik Houtman's Abrolhos' was given.⁽⁶⁾ It consists of a cluster of rocky islets and outlying reefs about forty-five miles to the west and north-west of Champion Bay. The term Abrolhos is a contraction of the Portuguese words 'abri vossos olhos', meaning in English 'Open your eyes', and was applied by the Portuguese to outlying coastal dangers. On board one of the ships of Houtman's fleet, the 'Amsterdam', was Jacob D'edel, the first merchant (supercargo), and it was after him that the district between Shark Bay and Champion Bay was named 'Edel's Land'.

In 1622 the Dutch vessel 'Leeuwin' (*Lioness*) rounded the Cape at the south-west corner of the continent which now bears her name, and examined the shore as far as what subsequently became known as King George III Sound; this portion of the continent being subsequently known as Leeuwin's or Lyon's Land.

On 5 July 1622, a boat arrived at Batavia with ten men, forming part of the crew of an English ship named the 'Trial', and on 8 July her pinnace arrived with thirty-six men. They stated that they had lost and abandoned their ship with ninety-seven men and the cargo on certain rocks situated in latitude 20°10' south, in the longitude of the western extremity of Java. These rocks were near a number of broken islands lying very far apart. They said that they had met with this accident through following the course of the Dutch ships. The yacht 'Hazewind' was selected to discover those lands, but never started. It is probable that the shipwrecked English sailors were considerably out in their statement as to the longitude of the 'Trial' or 'Tryal' rocks, which have since been located on the south-western part of the Monte Bello Reef, extending three or four miles north and south, the central and largest rock lying north, distant 5¼ miles, from the north extreme of Barrow Island.

On 22 July 1622, the Dutch ship 'tWapen van Hoorn' (*The Arms of Hoorn*), having sailed from the Texel on 22 December 1621, arrived at Batavia, and reported that she had been in extreme peril near Eendrachtsland.

On 21 July 1623, the Dutch ship 'Leyden', skipper Klaas Hermansz, sighted Eendrachtsland. This same ship, under the command of Daniel Janssen Cock, sighted 'The Southland' on 28 April 1626.

On 16 November 1623, the yacht 'Tortelduyff' (*Turtledove*) sailed from the Texel and, during her voyage to Batavia, where she arrived on 21 June 1624, probably discovered and named the Turtledove Shoal.

In January of the same year, 1623, an expedition under Jan Carstensz, from Amboyna, in the vessels 'Pera' and 'Arnhem', discovered Arnhem Land (Aarnems land). The skipper of the 'Arnhem', Dirck Melisz, having been killed in an attack by natives, the second mate of the 'Pera', Willem Joosten Van Coolsterdt, was appointed as his successor. 'In this discovery were found everywhere shallow water and barren coasts; islands altogether thinly populated by divers cruel, poor, and brutal natives, and of very little use to the company.' This exploration was, in April 1636, continued by Gerrit Thomaszoon Pool, who was also murdered by natives at the same spot, and Pieter Pieterszoon, in the yachts 'Klyn Amsterdam' and 'Wezel'.

⁽⁶⁾ Dr Byvanck refers to Major's 'Introduction', p. 86, and the strictures on the passage given by P. A. Leupe, 'Treatise on the Naval Exploits of the Dutch', vol. xxvii. 1, sec. 2, p. 32.

On 16 January 1627, according to De Hondt, or 26 January to Thevenot's chart, the 'Gulde Zeepaerd' (*Golden Sea Horse*), skipper Francois Thyssen, having on board Pieter Nuyts, afterwards Ambassador to the Court of Japan, and subsequently Governor of Formosa, sighted the south coast of 'The Great South Land' near the present Cape Leeuwin, and made a close examination of the southern coastline for 1,000 miles, to Nuyts' Reef. Nuyts gave the name of Nuyts Land to the country lying round what is now known as the Great Australian Bight. It was on this voyage also that the islands St Francois and St Peter in Nuyts Archipelago, off the coast of South Australia, were named.

On 22 July 1627, the Governor General of Dutch India, Jan Pieterszoon Coen, sailed from Table Bay with the ships 'Galias', 'Utrecht' and 'Texel'. The 'Galias', having broken her rudder in a gale on the night of 10 August, parted company from the other ships, and on 5 September was nearly wrecked on the coast of Eendrachtsland.

On 17 September of the same year the ship 'tWapen Van Hoorn', supercargo J. Van Roosenbergh, sighted Eendrachtsland, near Dirk Hartogs Roadstead. Fresh observations were made during each of these voyages, and the coast consequently became more accurately defined on the map.

In 1628 an expedition was equipped in Holland, bound for the East Indies. It had originally been intended that the fleet should consist of eleven vessels, but three of them, being ready to sail before the others, left Texel on 28 October, under the command of Commodore Francis Pelsart. The 'Batavia', Pelsart's ship, driven out of her course during a severe storm, was separated from the other two and having lost her reckoning, struck, on the night of 4 June 1629, on one of the islands of Houtman's Abrolhos, becoming a total wreck. The greater part of the crew and passengers, however, safely reached the shore. After vainly searching for water on the adjacent islands and the mainland opposite, Pelsart, with eight men, eventually made his way in one of the vessel's boats to Batavia, where he arrived on 5 July; here he obtained the use of a frigate called the 'Sardam', in which he returned to rescue the remainder of the castaways. On his arrival he found that during his absence a portion of the crew, under the supercargo, Jerome Cornelis, had mutinied and massacred the greater number of the passengers, intending to seize any vessel that might chance to come near the islands, and then turn pirates. Pelsart, being forewarned of this intention by some of those who had escaped from the mutineers to another island, easily captured the ringleaders, who were promptly tried and as quickly executed, two of their number being marooned on the mainland near Champion Bay. On 28 October 1629, the chief part of the silver treasure having been recovered from the wrecked vessel, the 'Sardam', with the survivors on board, sailed for Batavia. Pelsart's Journal mentions the so-called 'Jacob Remessens', 'Remens', or 'Rommer' River, in latitude 22°17'. As the modern maps show no river of any size at that point, it may perhaps be surmised that Exmouth Gulf was mistaken for the mouth of a river. It is evident that the name 'Jacob Remessens Rivier' had been given in or before 1628.

In the same year, 1628, Captain Gerrit Fredericsz de Wit, of the homeward bound 'Vianen', ran aground off the land which is now comprised in the North-West and Kimberley Districts, and sailing along the coast for about fifty miles, gave his name to that part of Australia.

In 1629 the west coast of Australia was touched at by Dutch vessels in the neighbourhood of Dirk Hartogs Roadstead.

In 1632 the Trials were passed by Dutch ships on the outward voyage, but no fresh information of importance was gained.

In 1635, on 25 May, the ship 'Amsterdam', under Commander Wollebrand Geleynszoon de Jongh, and skipper Pieter Dirksz, sighted the 'Southland' in the neighbourhood of Shark Bay.

In 1644 Abel Janszoon Tasman, the celebrated Dutch explorer, and Franz Jacobszoon Visscher, with the yachts 'Limmen', 'Zeemeeuw' (*Sea-mew*) and 'De Brak' (*The Hound*) during a second expedition in these seas, examined the country which was afterwards called Tasman Land, to that bordering on the extreme north-western coast line of the continent, from Arnhem Land, or what is now the Northern Territory, to Exmouth Gulf,

in latitude 22°S. in this State. This comprised the country previously discovered, and named by de Wit, as well as part of Eendracht's Land—namely, the present districts of Kimberley and the North-West. Tasman appears to have landed in Carnot Bay and also in what was subsequently called Roebuck Bay, and on some of the islands in Dampier's Archipelago. He gave the name of *Nova Hollandia* or *New Holland* to the western half of the continent of Australia. The name New Holland was applied by the Dutch only to the parts of the continent lying westward of a meridian line, passing through Arnhem Land on the north and near the isles of St Francis and St Peter to the south. All that to the eastward, including the shores of the Gulf of Carpentaria, still remained as *Terra Australis*. This appears from a chart published by Thevenot in 1663, which, he says, 'was originally taken from that done in inlaid work upon the pavement of the new Stadt-House at Amsterdam'.

In the present State of Western Australia are included all the lands on the south, west, and north-west coasts then known to the Dutch as 'The Great Known South Land', as distinguished from 'The Unknown Land', which comprised the remainder of the continent.

An exploratory voyage to the west coast of New Holland was made in 1648 by the ship 'Leeuwerik' (*Lark*), commanded by Jan Janszoon Zeeuw.

In 1656, on 28 April, the 'De Vergulde Draeck' (*The Gilt Dragon*), commanded by Pieter Albertsz, which had left Texel on 4 October 1655, was wrecked at night on a reef on the west coast in latitude 30°40', and 118 lives were lost. Leaving sixty-eight of the survivors of the wreck behind on the mainland to protect, if possible, the treasure (78,600 guilders) and merchandise, which comprised the cargo of the vessel, one of the ship's boats made for Batavia, which it duly reached; and the vessels 'Witte Valck' (*White Falcon*) and 'Goede Hoop' (*Good Hope*) were at once despatched to the rescue of the castaways and the property, unfortunately, however, without success.

In 1657 a further search made by the 'Vinck' (*Finch*), while on a voyage from the Cape to Batavia, also proved fruitless.

In 1658, on 1 January, the vessels 'Waekende Boey' (*The Watch Buoy*), commanded by Samuel Volckertszoon, and the 'Emeloort', Captain Aucke Pieterszoon Jonck, left Batavia on a similar errand, which was equally abortive. Improved charts of the west coast of Australia were, however, the result of this expedition. During the search, one of the boats of the 'Waekende Boey', being accidentally separated from her during bad weather, was thought by those on board to have been lost, and was consequently abandoned; part of its crew, however, after almost incredible sufferings from exposure, hunger, and thirst, managed to reach Java in safety.

In the same year the ship 'Elburg', commanded by Jacob Pieterzoon Peereboom, brought in further reports about the south-west coast, or 'Land van de Leeuwin', where she had been at anchor 'in latitude 33°14' south under a projecting point', probably in Geographe Bay, and where some of her crew had been ashore.

In February 1678, the ship 'De Vliegende Zwaan' (*The Flying Swan*), commanded by Jan Van der Wall, coasted the north-west of Australia on her voyage from Ternate to Batavia.

In 1688, on 5 January, the first Englishman landed on the coast of Western Australia, in the person of William Dampier, who, by the publication of further authentic information regarding 'New Holland', supplemented the accounts of Tasman's discoveries made in 1642-3, which had already been made known, in 1671 in the diary kept by the surgeon of Tasman's vessel, and subsequently in Tasman's own notes in 1674. Dampier appears to have left Brazil as supercargo in a small vessel called the 'Cygnet', commanded by a friend of his named Swan, and intended for the trade with South America; the crew, however, mutinied and became buccaneers, and eventually Captain Swan and about forty of those who remained faithful to him were abandoned to their fate on one of the Philippine Islands. Dampier remained in the vessel which, after her extended voyage, appears to have required overhauling. Their occupation rendering an unfrequented spot desirable for the purpose, the buccaneers steered for the coast of New Holland, and on 4 January

1688, anchored in a bay in the north-western corner of King Sound, in the present West Kimberley District, now known as Cygnet Bay, where they beached the vessel and executed the necessary repairs. During their stay here (and they did not leave until 12 March) Dampier, who does not seem to have found the society of the buccaneers or their mode of life congenial, made a careful exploration of the surrounding country. He succeeded in leaving the vessel at the Nicobar Islands, from which he reached Sumatra in a canoe, and eventually, after many adventures, arrived in England. It has been pointed out as a singular circumstance that Cygnet Bay, where the 'Cygnet' was beached in 1688, was the one spot out of the whole Western Australian coast subsequently selected by the W.A.S.N. Co.'s steamers for scraping and cleaning their bottoms; and it certainly seems strange, unless the place was previously known, that the 'Cygnet' should accidentally have hit upon the one place on the whole coast best suited for the purpose.

In 1696 Commander Willem de Vlaming, in a vessel called the 'Geelvinck' (*Yellow Bunting*), convoying two other vessels, the 'Nyptangh' (*Pincher*), commanded by Captain Gerrit Collaert, and 'Weseltje' (*Weazel*), under Commander Cornelis de Vlaming, son of the leader of the expedition, was ordered by the Dutch East India Company to carefully examine the western coast of New Holland for traces of a vessel named the 'Ridderschap Van Holland' (*Chamber of Knights of Holland*), which had left Holland for the Dutch colonies two years previously (1694) (?) and had never reached its destination. On the morning of Christmas Day, 1696, land was sighted, and on 29 December the ships anchored off the island of Rottnest, which the next day they explored, giving it the name 'Rottenest' from the abundance of rats' (wallabies) nests found upon it. On the morning of 5 January, Vlaming landed on the mainland, probably somewhere about what is now called Cottesloe Beach, with a party of eighty-six men, fully armed, and marching eastwards, came to what is described as 'a large basin of brackish water, which we afterwards found was a river'. On the banks of this they found a hut 'of a worse description than that of a Hottentot', also footprints and other evidences of the inhabitants, of whom, however, they were unable to catch a glimpse. On the following day the party divided into three, and went in different directions—one north, one south, and the third four miles further east. On 9 January the ships were brought in and anchored close off the mouth of the river, which Vlaming himself is said to have explored for a distance of fourteen or sixteen leagues. It is mentioned that he caught some smelts, while on the surface of the water were seen numerous black swans. Of this hitherto unknown prodigy, the fabulous black swan, Juvenal's '*Rara avis in terris nigroque simillima cygno*', Vlaming captured several specimens, three of which were taken alive to Batavia. The river was named by Vlaming the Swan River (*Swaenerevier*), and on 13 January, having, as it is reported, found 'neither good country nor seen anything worthy of note', the expedition proceeded slowly northwards, examining the shore carefully with the boats for traces of the lost ship, and occasionally landing and making short excursions inland. On 4 February Shark Bay was reached and carefully explored. The tin plate of Dirk Hartogs was discovered and, leaving a somewhat similar memorial of their own visit, the ships, on 12 February, proceeded as far as North West Cape, from which, on 21 February, they steered a direct course to Batavia. Burgomaster Nicolaas Witsen complained that Vlaming, being addicted to drink, did not make such a thorough exploration of the country as he was instructed to do.

In 1699 Dampier—who, since his arrival in England, had published accounts of his previous adventures and discoveries in New Holland—was sent by William III in the 'Roebuck', under an Admiralty Commission, to make further explorations on the north-west coast of that country, and to solve, if possible, the question as to whether it was a continent or, as was then generally supposed, only a succession of islands. On 1 August 1699, he entered and named Shark Bay and here he spent eight days in a fruitless search for water. Frequent further attempts for a like purpose, as he proceeded slowly northward up the coast, were also of no avail, and only once was water obtained in a sufficient quantity to replenish his supply. So greatly disgusted was he with the extreme sterility and waterless aspect of the coastal country—he never appears to have explored any distance inland—that he abandoned the object of his mission and proceeded straight to New Guinea. His

(?) Leupe, p. 360.

unfavourable comments on the barren appearance of the land and its wretched poverty-stricken inhabitants—whom he described as ‘the miserablest people in the world’—militated strongly against further investigation being made, and from that time to 1770—when Cook, landing at Botany Bay, discovered and took possession of the more fertile regions of the eastern coast—Australian exploration, so far at all events as England was concerned, appears to have been neglected. During this voyage Dampier discovered and roughly charted the Dampier Archipelago, and added much to the knowledge of the habits and customs of the Aborigines and the natural history of the country. He described the kangaroo as ‘a strange creature like a racoon, which used only its hind legs, and, instead of walking, advanced by great bounds or leaps, of twelve or fifteen feet at a time’.

In March 1705, a small Dutch exploring squadron of three vessels, the ‘Vossenbosch’ (*Foxwood*) under Maarten Van Delft, ‘De Wayer’ (*The Fan*) under Andries Rooseboom of Hamburg, and ‘Nieuw Holland’ under Pieter Hendrikszoon of Hamburg, left Timor to explore the north-western coast of New Holland, and an improved chart of Tasman’s explorations was made.

In 1711 a Dutch vessel named the ‘Zuytdorp’ (*The South Village*) is said to have been wrecked on the Abrolhos Islands.

In 1727, on 9 June, a Dutch vessel, commanded by Jan Steyns, supercargo, Jan Nebbens, the ‘Zeewyck’, so named after a small fishing village in Holland, was wrecked on a reef off the Houtman Abrolhos, near the island to which, in 1840, Captain Stokes gave the name of Gun Island, from the fact of his finding a small brass three-pounder gun on it, with other relics of the wrecked vessel. Leaving the island on 26 March 1728, the remainder of the crew of the ‘Zeewyck’, eighty-two in all, taking with them ten chests of treasure valued at 315,836 florins, reached Batavia in safety, on 21 April, in a small boat built out of fragments of the wreck. A boat previously despatched in charge of the upper steersman, Pieter Langeweg, with a crew of eleven, was never heard of again. Numerous relics of the wreck have since been discovered, including pieces of ordnance, cannon balls, clay pipes, broken gin bottles, tumblers, wine glasses, iron lamps, snuff-box, etc. and several silver and copper coins bearing date 1720 and 1722.

Later in the eighteenth century, *inter alia* in 1755 and 1765, the west coast of Australia was again visited by Dutch ships, but the information gained by these visits is unimportant.

On 18 March 1772, Captain de St Alouarn, in the flute ‘Le Gros Ventre’, anchored off Cape Leeuwin. After him the St Alouarn Islands were named by d’Entrecasteaux, in December 1792.

In 1791, on 1 April, Captain George Vancouver, who had previously served as a midshipman under Cook, left Falmouth in H.M.S. ‘Discovery’, accompanied by Captain Broughton, in H.M.S. ‘Chatham’, on his way to north-west America. On 26 September he arrived at Lyon’s Land, off Chatham Island, situated close to the mainland off Point Nuyts, about one hundred miles south-east from Cape Leeuwin. Making a careful survey of the coast as he proceeded eastward, on the night of 28 September he anchored in a sound, to which he gave the name of King George the Third Sound. Landing on 29 September, the birthday of the then Princess Royal, after whom the inner harbour was named, he formally took possession of the country from the land seen north-westward of Cape Chatham, so far as he might explore its coasts. Here he remained until 11 October, being especially minute in his survey and examination of its outer harbour, and the adjacent country. Before leaving he deposited on Point Possession a bottle containing a parchment record of his visit, and a similar one on Seal Island. Continuing his voyage, adverse weather greatly interfered with his exploration of the coast which, at Termination Island, he eventually quitted for America. Archibald Menzies was naturalist to the expedition.

In 1792 a French expedition of two vessels, one ‘La Recherche’, commanded by Antoine Raymond Joseph de Bruni Chevalier d’Entrecasteaux, and the other called ‘L’Esperance’, Captain Huon de Kermadec, appeared on the south-western coast, looking for traces of Count Jean Francois La Perouse who, early in 1788, had left Sydney with the vessels ‘Boussole’ and ‘Astrolabe’, the latter commanded by Captain de Lange, and whose fate remained a mystery for nearly forty years, until 1825, when Captain Peter Dillon, of H.M.S. ‘Research’, discovered remnants of the wrecks on Vanikoro, or Matli-

koro, an island to the north-west of the New Hebrides, being the southernmost of the Santa Cruz group. D'Entrecasteaux died on board his ship 'La Recherche' on 20 July 1793. Monsieur Labillardiere was naturalist to the expedition.

In 1800, on 27 August, Chr. Dixon, ship 'Elligood', was in Oyster Harbour, King George Sound. He probably removed Vancouver's bottle and record memorandum from Seal Island.

In 1801, on 18 July, Captain Matthew Flinders left Spithead in the 'Investigator', the old 'Xenophon', a sloop of 334 tons. He reached, on 6 November, what he denominated Cape Leeuwin, as being the south-western and most projecting 'part of Leeuwin's Land', and commencing from there to King George III Sound, where he arrived on 9 December, he explored the intermediate coast, charted Princess Royal Harbour, established friendly relations with the Aboriginal inhabitants, and subsequently carefully examined the whole of the southern coast of the continent as far as Bass Straits. On board the 'Investigator' was Robert Brown, the well-known naturalist; also William Westall, the famous painter; whilst John Franklin, who afterwards became Governor of Van Diemen's Land, and finally ended his career as the celebrated, but unfortunate, Arctic explorer, was one of her junior lieutenants. Flinders' search for Vancouver's record bottles was unsuccessful, but he discovered on the east side of Oyster Harbour a garden and a piece of sheet copper inscribed 'August 27, 1800. Chr. Dixon—ship Elligood'. He also placed a record bottle on Seal Island. He left the Sound on the morning of 5 January 1802. Flinders readopted the original name of the continent *Terra Australis*, 'to include New South Wales, New Holland, and the adjacent isles, including that of Van Diemen'.

In the British Patent to the first governor of New South Wales a meridian nearly corresponding to the ancient line of separation between *New Holland* and *Terra Australis* was made the western limit of that colony, and was fixed at 135°E. longitude, 'from which the British Territory extends eastwards to the islands of the Pacific or Great Ocean: its northern limit is at Cape Yorke; and the extremity of the southern Van Diemen's Land is its opposite boundary'. In 1814, upon Captain Flinders' suggestion, the continent received its name of Australia, 'as being', as he said, 'more agreeable to the ear, and an assimilation to the names of the other great portions of the earth'.

In 1801-3 an exploration of the Western Australian coast was made by a French expedition of three vessels—the 'Geographe', commanded by Commodore Nicolas Baudin; the 'Naturaliste', by Captain Hamelin; and a small vessel of thirty tons, called the 'Casuarina', under Lieutenant Louis Claude Desaulses de Freycinet. After a brief preliminary visit they proceeded to Timor; then returning southward, they anchored off the mouth of the Swan River (Riviere des Cygnes) which, between 17 and 22 June 1801, they explored, probably to a short distance beyond the junction of the Helena River, intending to trace the source of the main stream. The leader, M. Heirisson (an *Enseigne de vaisseau*), was however, reluctantly obliged to abandon the latter object, owing to their provisions running short. The name of one of their party being Moreau, the name Moreau Inlet was given to the Canning River, and that of their leader to the Heirisson Islands, on which the present Perth Causeway is constructed, where they first caught sight of the black swans. They appear to have climbed Mount Eliza, and described the view obtained from there as particularly striking and beautiful. The change of soil about the present site of Guildford was noticed, and its fertility favourably commented upon. Eating, as previously Vlaming's men had also done, of the zamia nut, which they described as a fruit like a chestnut, some of them did not fail to experience the sickness which it subsequently causes. At the point where they abandoned their upstream journey, a distance, so it is stated, of about twenty leagues from its mouth, the river is described as being narrow, and only about seven or eight feet deep, the water being still salt. The vessels engaged on this expedition examined, so far as possible, the whole of the Western Australian coast, made a survey of Princess Royal Harbour, and took especially minute notes of the coast and land in the vicinity of the Swan River, and at Rottneest Island, where they landed, and of the salt lakes which they called *Etangs Douvailedaily*, whilst the species of wallaby they found there received the name of *peramele a long nez*. Further, they explored Shark Bay and also some of the islands about Admiralty Gulf. M. Leschenault, the celebrated

botanist, after whom the Leschenault Estuary, near Bunbury, and Cape Leschenault, near the Moore River, were called, was attached to this expedition, as was also M. Francois Peron, the zoologist, from whom Point Peron, south of Fremantle, received its name, whilst M. Bailly was the mineralogist. According to Captain King, 'Peron and Lesueur in Baudin's voyage extended their inquiries chiefly among the branches of zoological research; but in that expedition each department of Natural History had its separate collector, and the names of Leschenault, de la Tour, Riedle, Depuch, and Bailly will not be forgotten'.

In 1818, Louis de Freycinet, this time as captain of the 'Uranie', was again exploring off the western and north-western coasts. A minute geographical survey of Shark Bay, called by the French 'la baie des Chiens Marins', was this time completed by M. Duperrey. An account of this voyage is given by Gaudichaud, the botanist, in his 'Voyage Botanique autour du monde'.

In 1818-22, Lieutenant Phillip Parker King, in the first place in the colonial cutter 'Mermaid', eighty-four tons, and secondly in the brig 'Bathurst', 170 tons, both vessels having been specially purchased for the purpose in Sydney, carried out a careful survey of the greater part of the western coast from King George III Sound to Cambridge Gulf, and continuing along the northern coast. King's instructions from the Admiralty were to explore the yet undiscovered coast of New Holland and to complete, if possible, its circumnavigation, also to examine minutely all gulfs and openings in the northern coast for any river on that part likely to lead to an interior navigation of the continent. Mr Allan Cunningham was the botanical collector of the party, and one of the two masters' mates was Mr John Septimus Roe, afterwards the first Surveyor General of the Swan River Colony. King's charts and sailing directions still formed the basis of those in use a century later. He died a Rear Admiral in 1855.

In 1820, the 'San Antonio' (Captain Hemmans), an American trading brig, visited King George Sound, probably in search of water, sometime in the month of December.

In June 1825, the French vessels 'Thetis' and 'Esperance', commanded respectively by De Bougainville and du Camper, were cruising about the southern coast. As it was at that time strongly suspected that France, recognising the maritime strength derived from the possession of suitable colonies, desired to found a settlement in Australia, Lieutenant-General Sir Ralph Darling, then Governor of New South Wales, acting under instructions from the Earl of Bathurst, (to whom, however, in his despatch of 10 October 1826, he reported unfavourably on King George Sound and Shark Bay for settlement, offering the opinion that the French would find it difficult to maintain themselves on so barren a coast) sent Major Lockyer, of the 57th Regiment, with a detachment of the 39th Regiment, and a party of convicts, numbering all told about eighty, to found settlements at Western Port and the Sound. The expedition, consisting of H.M.S. 'Fly' (commanded by Captain F. A. Wetherall) and the Colonial Government brigs 'Amity' (commanded by Lieutenant Festing) and 'Dragon', sailed from Sydney on 9 November 1826. The 'Amity' reached King George Sound on 25 December and the proposed settlement was established.

The troops and convicts stationed at King George Sound were, however, about four years afterwards withdrawn by order of the Home Government and the settlement was annexed to that on the Swan River by proclamation dated 7 March 1831.

In 1826, Captain James Stirling, R.N., when commanding H.M. frigate 'Success', was ordered to New South Wales on a special service which the monsoon prevented him from at once undertaking. He pointed out to Governor Darling the advantages of Swan River for settlement, and was consequently authorised in the meantime to explore that part of Western Australia which King, on the ground that it had already been visited by the French, had omitted from his survey. On 17 January 1827, having on board Mr Charles Fraser, the Colonial Botanist of New South Wales, he sailed from Sydney with a view to make up the French survey deficiencies and to examine the country in the vicinity of the Swan River. The result of his mission was detailed in a report⁽⁸⁾ forwarded by Captain Stirling to His Excellency General Darling on 18 April 1827.

(8) The 'Narrative of Operations' from the report is shown in the *Appendix* of the 1974 Year Book.

Both Captain Stirling and Mr Fraser evidently were greatly impressed with the capabilities of the newly examined country, the latter making the following entry in his journal:

‘ In delivering my opinion on the whole of the lands seen on the banks of the Swan, I hesitate not in pronouncing it superior to any I have seen in New South Wales, Eastward of the Blue Mountains, not only in its local situation, but in the many existing advantages which it holds out to settlers, viz.:

- 1st. The evident superiority of the soil.
- 2nd. The facility with which settlers can bring their farms into a state of culture from the open state of the country, the trees not averaging more than ten to the acre.
- 3rd. The great advantage of fresh-water springs of the best quality, and consequent permanent humidity of the soil—two advantages not existing Eastward of the Blue Mountains.
- 4th. The advantage of water carriage to their own doors, and the non-existence of impediments to land carriage.’

The favourable report made by Captain Stirling, backed up by the glowing description given by Mr Fraser, induced General Darling to recommend the Home Government to at once establish a settlement.

To Captain James Stirling, who appears to have conveyed the recommendation in person to England, the charge of organising the expedition was entrusted by the English Government.

No commission was at that time issued to Captain Stirling as Lieutenant-Governor of Western Australia, who instead received a letter of appointment, bearing date 30 December 1828; the earliest commission issued to him was that appointing him to be Governor and Commander-in-Chief, which was dated 4 March 1831. The reason for the adoption of this course is explained in the despatch⁽⁹⁾ from Secretary Sir George Murray, addressed to him on the same date as the first letter of appointment, and instructing him as to the course to be followed in the formation of the then proposed settlement.

In 1829, on 2 May, Captain Chas. H. Fremantle, of H.M.S. ‘Challenger’, who, under instructions from the Admiralty, had been despatched from the Cape of Good Hope on 20 March of that year by Commodore Schomberg, of the Indian Squadron, for the purpose, anchored off the mouth of the Swan River and, hoisting the British flag on the south head, took formal possession in the name of His Majesty King George IV of ‘all that part of New Holland which is not included within the territory of New South Wales’.

Exactly one month later, on 2 June, the hired transport ‘Parmelia’, 443 tons, J. H. Luscombe, commander, arrived in Cockburn Sound, having on board Lieutenant-Governor Stirling, his family and other intended settlers, numbering in all seventy. Six days later, on 8 June, her consort H.M.S. ‘Sulphur’, arrived with a detachment (Light Company No. 2) of the 63rd Regiment, consisting of three subalterns, 1 staff officer, 2 sergeants, 3 corporals, 1 bugler and 46 men, under the command of Captain F. C. Irwin. Having left a party of about half its strength to protect the stores, settlers, etc. on Garden Island, the remainder of the force, on 17 June, disembarked, and encamped on the north bank of the Swan, subsequently named Rous Head, relieving the party of seamen and marines from the ‘Challenger’, which had been left to protect the British flag planted there by Captain Fremantle during the preceding month. With the landing of the immigrants from the ‘Parmelia’, the history of Western Australia, as a British Colony, begins.

An interesting account of the arrival of the first settlers was contained in a despatch sent by Captain Fremantle to the Admiralty, from Trincomalee, on 8 October 1829.⁽¹⁰⁾

The names which were originally given to the most prominent features on the western coast are still in most instances retained and serve to perpetuate the memory of many of the earliest explorers, their vessels, and the principal officers of their crews.

⁽⁹⁾ For despatch in full, see the *Western Australian Year Book*, 1902-04, (Old Series), p. 16. ⁽¹⁰⁾ For despatch in full, see *Appendix* of the 1976 Year Book.

COLONISATION AND EARLY SETTLEMENT (4)

Directly the intention of the Imperial Government to establish the Swan River Settlement became known, a proposal was, on 4 November 1828, made by a syndicate consisting of the following gentlemen—Mr Thomas Peel, Sir Francis Vincent, Bart., Mr Edward W. H. Schenley and Colonel T. Potter Macqueen, M.P., to send out and settle in the neighbourhood of the Swan River 10,000 of His Majesty's subjects from England, Ireland and Scotland and to find them in provisions and every other necessity usually allowed to emigrants; also to bring to the settlement 1,000 head of horned stock and to arrange for three small vessels to subsequently run between Sydney and Swan River, as occasion might require; the undertaking to be completed within four years. In payment of their expenses, estimated at £30 per head of the emigrants brought over, they expressed their willingness to take free grants of land, at a valuation of 1s 6d per acre, and they further promised to provide proper surveyors for the purpose of locating to every male not less than 200 acres of land from the quantity they were to receive. The object of the proposed settlement was stated in the following words:

'It is well known that the soil of Swan River, from its moist state, is better adapted to the cultivation of tobacco and cotton than any other part of Australia. Both of these articles are intended to be cultivated upon a large scale; as also sugar and flax, with various important articles of drugs for which the climate is peculiarly adapted to their growth.

The undersigned are satisfied, that should they succeed in sending home to the mother country that produce which at this moment the Government are indebted to powers which it would be their policy to suppress, were they in condition so to do, they will have forwarded not alone the views of His Majesty's Government, but effected a national good which neither time nor circumstances can erase from the annals of British history.

Their grazing operations will go very extensively into the rearing of horses for the East India Trade, with the most important establishment of large herds of cattle and swine, for the purpose of supplying His Majesty's or other shipping with salt provisions, as the proximity of salt mines, of the best description, holds out a great inducement towards its success.'

Owing to the delay which occurred in the Colonial Office in coming to a mutually satisfactory arrangement as regards the terms upon which the immense free grant of land asked for was to be made, three members of the syndicate withdrew from it, leaving only Mr Thomas Peel who, on 28 January 1829, again addressed the Colonial Office, stating that he was desirous of carrying on and completing the project by himself on the terms contained in a letter from the Colonial Office to the syndicate as originally composed, dated 6 December 1828, which read as follows:

'I am directed by Secretary Sir George Murray to acquaint you, in answer to your memorial dated the 14th of last month, that the terms upon which the free grants of land will be made in the proposed settlement of Western Australia are those contained in the paper, a copy of which I enclose. His Majesty's Government, however, are desirous that the experiment should not be made, in the first instance, upon a very large scale, on account of the extensive distress which would be occasioned by a failure in any of the objects expected from the undertakings; and they therefore consider it their duty to limit the grant which you request to a

(4) Reprinted, with minor editing, from the *Western Australian Official Year Book*, 1905 (Old Series). To preserve the historical nature of the text and maintain the verbatim reproduction of the excerpts of letters or reports quoted, references to imperial measures have been retained rather than insert the current metric equivalent. Similarly, monetary amounts appear in their original form in preference to existing decimal currency.

maximum of one million of acres. Half a million of these will be allotted to you as soon as possible after the arrival of the first vessel taken out by you, which may contain not less than four hundred persons of both sexes, in the proportions of not less than five female to six male settlers; and if you shall have covered this grant by investments, in accordance with the enclosed terms, before the expiration of the year 1840 the remaining half-million will be allotted to you by degrees, as fresh importations of settlers and capital shall be made, in accordance with the terms already mentioned. But in order that you may suffer no ultimate loss by any reasonable retardation of your investments, His Majesty's Government intend that the allowance of forty acres for every £3 invested shall not be reduced on your second half-million of acres, although your claim to such second half-million may not arise before the expiration of next year, which is the period limited to other settlers applying for free grants. But they will reserve your claim at the original rate of 1s 6d per acre until the expiration of the year 1840, after which time no part of your grant will be held binding upon which the whole required sum of 1s 6d per every acre shall not have been actually invested. A convenient allotment of land will be reserved for the town and harbour, for public buildings, and for the accommodation of future settlers; and a priority of choice to the extent of one hundred thousand acres will be allowed to Captain Stirling, whose surveys and reports of the coast have led to the formation of the settlement. The remaining land will be chosen by the settlers in the order of their arrival; those who arrive together drawing lots for the priority of choice.'

The enclosure was a copy of the old terms of settlement on the Swan River, worded as follows:

'Although it is the intention of His Majesty's Government to form a settlement on the western coast of Australia, the Government do not intend to incur any expense in conveying settlers, or in supplying them with necessaries after their arrival.

Such persons, however, as may be prepared to proceed to that country, at their own cost, before the end of the year 1829, in parties comprehending a proportion of not less than five female to six male settlers, will receive grants of land in fee simple (free of quit rent) proportioned to the capital which they may invest upon public or private objects in the Colony to the satisfaction of His Majesty's Government at home, certified by the Superintendent or officer administering the Colonial Government, at the rate of forty acres for every sum of £3 so invested, provided they give previous security; first, that all supplies sent to the Colony, whether of provisions, stores, or other articles which may be purchased by the capitalists there, or which shall have been sent out for the use of them or their parties on the requisition of the Secretary of State, if not paid for on delivery in the Colony, shall be paid for at home, each capitalist being to be held liable in his proportion, and, secondly, that in the event of the establishment being broken up by the Governor or Superintendent, all persons desirous of returning to the British Islands shall be conveyed to their own home at the expense of the capitalists by whom they may have been taken out. The passages of labouring persons, whether paid for by themselves or others, and whether they be male or female, provided the proportion of the sexes before mentioned be preserved, will be considered as an investment of capital, entitling the party by whom any such payment may have been made to an allowance of land at the rate of £15, that is, of two hundred acres of land for the passage of every such labouring person over and above any other investment of capital.

Any land thus granted which shall not have been brought into cultivation or otherwise improved or reclaimed from its wild state, to the satisfaction of Government, within twenty-one years from the date of the grant, shall, at the end of the twenty-one years, revert absolutely to the Crown.

All these conditions with respect to free grants of land, and all contracts of labouring persons and others, who shall have bound themselves for a stipulated term of service, will be strictly maintained.

It is not intended that any convicts, or other description of prisoners, be sent to this new settlement.

The government will be administered by Captain Stirling, of the Royal Navy, as Civil Superintendent of the Settlement; and a Bill, in the nature of a civil charter, will be submitted to Parliament in the commencement of its next session.' (Dated 5 December 1828.)

It is worthy of note that, when shortly after new regulations were drawn up, only ten years were allowed under these for bringing land into cultivation.

Invested capital, according to the regulations, was to comprise:

1. Stock of every description;
2. All implements of husbandry and other articles applicable to the purposes of the productive industry, or necessary for the establishment of the settler on the land where he is to be located;
3. The amount of any half-pay or pension received from Government.

Under the word 'persons', it was distinctly understood no children under ten years of age were to be included.

Selection licences were granted to settlers on proof of value of property imported, but the fee simple could not be obtained until proof was given that the sum of 1s 6d per acre had been expended in the cultivation of the land or in other solid improvements.

All land granted was to be within three years cultivated or otherwise improved, or reclaimed from its wild state, to a fair proportion of at least one-fourth, or the owners would be liable to the payment of 6d per acre into the public chest; and should the land, at the end of a further seven years, still remain in an unimproved state, it was then to revert absolutely to the Crown.

After the year 1830 fresh conditions were to be made as to the disposal of land.

The tempting offer made by the Home Government of grants of land, large and small, in proportion to the amount of property introduced, attracted many holders of capital, the consequence being that extensive tracts of the best land were granted to purely speculative persons.

As regards Mr Thomas Peel, it remains to be stated that he failed to carry out the greater portion of his contract, the very first emigrants whom he brought out giving him endless trouble by desertion and otherwise, so that years passed in litigation and vain efforts at settlement. Finally he made a formal application to the Governor, on 25 September 1834, for a grant of land of 250,000 acres on conditions of general improvement. In compliance with this request he was granted, on 25 November following, the fee simple of the land subsequently known as Cockburn Sound Location No. 16, 'in consideration of certain location duties performed to the satisfaction of Governor Stirling'.

The first vessels to sail for the Swan River Settlement were H.M.S. 'Sulphur', having on board a detachment of the 63rd regiment of Light Infantry, and the hired transport 'Parmelia', which carried the emigrants and the principal part of their belongings. Leaving England on 13 or 14 February, they arrived in the Colony on 8 June and 2 June 1829, respectively.

Closely following the 'Sulphur' and 'Parmelia', a number of vessels arrived, rapidly adding to the little band of settlers and introducing the livestock necessary for colonisation. [A list of these vessels with brief details of their cargoes and number of passengers carried was given in the *Appendix* of the 1975 Year Book—Ed.]

The following is a list of the passengers who embarked on board the 'Parmelia'.

Names	Designations	Ages of children	Names	Designations	Ages of children
Capt. Stirling, R.N. Mrs Ellen Stirling Andrew Stirling Frederick H. Stirling (a)	Lt Governor his wife their son their son	3 years	Mr James Drummond Mrs Sarah Drummond Thomas Drummond Jane Drummond James Drummond John Drummond Johnson Drummond Euphemia Drummond	Agriculturist his wife their son daughter son son son daughter	18 years 16 years 15 years 13 years 9 years 3 years
William Stirling George Mangles	his nephew Stock Superin- tendent	11 years	Elizabeth Gamble Mr Charles Simmons Mr Tully Daly (b) Mrs Jane Daly Jessie Jane Daly (b) Joseph T. Daly Henry John Daly Edward N. Daly Eliza Rose Daly Jas. Elliott	servant Surgeon Asst Surgeon his wife their daughter son son son daughter servants to Daly	8 years 6 years 4 years 2 years 2 months
George Eliot Thomas Blakey Sarah Blakey John Kelly Elizabeth Kelly Mr P. Brown Mrs Caroline Brown MacBride Brown Ann Brown Richard Evans Margaret McLeod Mary Ann Smith Mr James Morgan Mrs Rebecca Morgan Rebecca Morgan James Morgan Ann Shipsey Commander M. J. Currie, R.N. Mrs Jane Currie Frederick Ludlow Mildred Kitts Ludlow Jane Fruin Mr John S. Roe Mrs Matilda Roe Charles D. Wright Mr Henry C. Suther- land Mrs Ann Sutherland Mr W. Shilton	} servants to Lt Governor Col. Secretary his wife their son daughter servants to Brown Storekeeper his wife their daughter son Harbour Master his wife servants to Currie Surveyor his wife Asst Surveyor his wife Clerk to Col. Secretary	2 years 6 months 12 years 11 years	Mary Hoking William Hoking Mary Hoking Jno. Hoking Wm Hoking Mary Hoking Thos Hoking David Hoking Charles Hoking Thos Davis Catherine Davis Jno. Davis Charlotte Davis John Davis James C. Smith Sarah Smith H. W. Reveley (c) Amelia Reveley (c)	Cooper his wife Artificer his wife their son son daughter son son Smith his wife their son daughter his nephew Boatbuilder his wife civil engineer his wife	14 years 12 years 10 years 8 years 6 years 2 years 3 years 2 years 13 years

(a) Born at sea. (b) Drowned in Table Bay (Cape of Good Hope), on 25 April 1829. (c) Embarked at Cape Town.

Reporting on the progress of the Colony, in a despatch dated 20 January 1830, Sir James Stirling mentions that two townsites had been laid out, one to be named Perth and the other Fremantle; and that the country extending between the sea and the mountains fifty miles southward from Perth had been thrown open for location.

As regards the composition of the population of the early settlement, he complains that, whilst 'amongst the heads of families there is a great majority of highly respectable and independent persons, there is in the working class a great variety', some having been carefully selected, but the greater part being the outcasts of parishes recommended to their employers by parish officers and possessing habits of the loosest description, the natural consequence being great inconvenience to their masters and endless trouble to the authorities. He had, therefore, been obliged to appoint a magistracy and a body of constables to maintain order, since which drunkenness and similar evils had been less frequent.

Another source of trouble was that many of the settlers were persons entirely unprepared for the hardships inseparable from initial colonisation, whose consequent disappointment and discouragement had created and spread a feeling of depression and general despondency amongst their fellows. From this depression the active and stout-hearted were gradually recovering and there was no reason to take a gloomy view of the future;

but it would be necessary to contradict the reports of 'certain individuals who have seen only the sea beach, and have stated broadly that there is no good soil' to be found in the Colony.

The climate, it is said, was proving 'favourable to health in an uncommon degree'.

Amongst other items of interest, it is mentioned that a decent place of worship had been erected, owing principally to the energy of the Venerable Archdeacon Scott, a visitor to the Colony.

It was proposed to establish towns on the Murray River, on Cockburn Sound and on the Swan, at the site of the present town of Guildford.

Commenting on the stock and the prospects of the settlement in this direction, it is stated that 'the country as it is will certainly sustain a considerable number' of cattle, horses and sheep, 'as there is both food and water at the present season (January), the driest and worst of the year'. Attention is also drawn to the fact that the class of stock introduced was particularly good.

The rivers and coasts abounded in fish and offered facilities for fish-curing and the establishment of a whale fishery, as 'the coast is visited between the months of May and November by a multitude of whales'. The boat-building industry was being vigorously pursued and already forty boats had been built for transport purposes on the river. A statement in the report, which reads curiously at the present time, is that workmen had not been able to work between the hours of 10 a.m. and 3 p.m. during the months of December and January, on account of the heat.

The following interesting statistical information is added.

Since 1 June 1829, twenty-five ships had arrived and there were then 850 persons resident and 440 non-residents in the settlement. The value of the capital, etc. introduced, for which land was claimed, amounted to £41,550; land had already been allotted to the extent of 525,000 acres, the locations actually effected numbering thirty-nine; and, finally, there were in the settlement horned cattle to the number of 204, horses 57, sheep 1,096 and hogs 106.

In a further despatch of 18 October 1830, it is stated that 'the progress of the settlement, although not unopposed by many adverse circumstances, had been as rapid as could have been expected or desired', as 'a greater increase would have probably been disadvantageous to the welfare of the settlement whilst struggling in its infancy'. Unfortunately, 'although no doubt existed as to the salubrity of the climate and country, much sickness had been experienced and deaths in consequence had been very numerous'. These, however, are attributed to 'circumstances of a temporary nature attendant on the commencement of a colony'.

Exploration of the country and coast had been carried on as far as means available had admitted.

The natives in general had been harmless, except in two cases, one being in Perth, where, in May 1830, an affray occurred which led to the military being called out; whilst in the Murray district they had been so repeatedly troublesome—in one instance a young man having been murdered at the entrance of the Murray River—that a military guard had to be placed there.

Up to 31 December 1830, there had arrived in the Colony as nearly as can be reckoned, without counting the detachment of troops and their families in the 'Sulphur', 'Norfolk' and 'James Paterson', about 1,767 persons, with stock as follows: horses 101, cattle 583, sheep 7,981, pigs 66, goats 36 and a variety of poultry, including turkeys, ducks, geese, fowls and pigeons, and also a few dogs.

The value of the property introduced upon which land was claimed between 1 September 1829 and 30 June 1830, amounted to £73,260 8s 3½d, equal, at 1s 6d per acre, to 976,805 acres of freehold land, whilst miscellaneous property inapplicable to the improvement of land had been imported to the value of £21,021 2s 7d, making a total value of £94,281 10s 10½d.

To show how rapidly and prodigally all the best land was taken up, a late arrival wrote, on 12 November 1830, just five months after the first settlement of the Colony: 'The only land available for present purposes is on and near the banks of the rivers (*viz.*, the Swan and Canning). All this is now allotted on both sides of each river, almost to their source'; and, writing again on 8 December in the same year, he said 'All the lands up the Swan and Canning have been long since granted, but some of the grantees have left the Colony, and their lands may be resumed by the Government if not occupied at the expiration of the year.'

There being no made roads, and the bush tracks consisting solely of dry, heavy sand, water carriage was the one means of transport for produce and the only way to obtain land, in an accessible position, suitable for farming purposes, was for the recent arrival to take over a portion of a block already granted, guaranteeing to the owner to perform sufficient location duties on the part taken to secure the whole grant, when the remainder of the property in all probability was left permanently unimproved.

Many of the early arrivals were persons totally unqualified for a settler's life, especially as the pioneers of a new settlement.

Arriving also as they did during the most inclement season of the year, exposed to the elements and utterly unaccustomed to encounter the hardships and privations incident to their new life, in most cases totally ignorant of agriculture and unused to poverty and isolation, there is little wonder that the first reports which reached their friends in England were of a gloomy and discouraging description.

Numerous persons, indeed, left the Colony in disgust, but retained possession of the immense tracts of land granted to them; so that those who arrived afterwards were unable to obtain land in favourable localities and the population was in this way thinly scattered over a wide area, the best of the land being unprofitably locked up.

Gradually, also, it was discovered that the expectations entertained as to the fertility of the soil had been far too sanguine; food became scarce and pastoral and agricultural operations languished from want of capital to stock and till the lands. Sheep and cattle went blind or dropped dead in a mysterious way, from eating a (at that time unknown) poison plant and at last it became apparent that the infant settlement could only with great difficulty support itself independently of extraneous aid. On the top of all this came serious troubles with the natives—life was threatened, houses were robbed, crops rooted up and stock speared; and the abandonment of the Colony was at one time seriously contemplated.

But the settlers as a body struggled manfully on, maintaining (to quote Governor Stirling's despatch to Sir George Murray, G.C.B., the then Secretary of State for the Colonies), 'a cheerful confidence in the qualities of the country and a general belief in its future prosperity'.

A few years later, in a despatch of 29 August 1836, a suggestion is made that experiments on a limited scale should be encouraged in the northern parts of the Colony in the production of cotton and sugar, through the instrumentality of Bengalese or Chinese labour, the success of which, it is stated, would mean that 'Great Britain might render herself in a short time independent of the United States and other foreign slave-holding countries for her supply of cotton, the regular importation of which, at low prices, has become indispensably necessary to the daily support of a large portion of her population'.

With such an abundant extent of country applicable and available for the production of sugar, cotton and other inter-tropical products and possessing from its geographical position the advantage of being readily able to secure the class and mass of labour required, it is argued that, given only the transport facilities for obtaining the necessary supplies and labour, with the aid of skill, capital and the benefit of British protection, the sugar or cotton grower, if once successfully established, might defy competition even with those countries which still employed slave labour and, possibly, by thus rendering slavery unprofitable, eventually assist towards its extinction.

The condition of the Colony about that time is graphically described (Despatch No. 218 of 15 October 1837) in a statistical report forwarded to the Colonial Office, which

contained full particulars concerning its geography and other natural characteristics, a brief census of its population and much other useful and interesting information.

The discovery of copper ore by Captain King in the vicinity of Camden Bay is mentioned as being not unlikely to lead to other important mineralogical discoveries.

Governor Stirling's opinion of the capabilities of the soil, based upon personal observation and experience, is neither over sanguine nor yet wholly unfavourable and is perhaps best given in his own words:

'The surface of the country generally is covered with those substances which are technically called earths, in contradistinction to soils. Of the latter, as far at least as relates to those of a vegetable origin, a very small portion exists, and that only on moist grounds. The extreme drought of the climate and the summer conflagrations appear to prevent the growth of succulent plants, as well as any great accumulation of soil from decayed vegetation. But although the country is not remarkable for richness of soil, it is favourable in other respects to farming purposes. In its natural state there is scarcely any part which does not produce some description of plant, and its defects appear to be of that class which art, aided by climate, will be enabled hereafter to overcome Upon a general view of that portion of the territory which has fallen within my own knowledge, I am under the necessity of saying that a very large portion of its surface, extending probably to three-fifths of the whole, is poor and comparatively unprofitable, and unlikely to be cultivated, or to yield any return except in timber, until a dense population and low wages, aided by abundance of cattle, bring it into use.

The best districts at present known are those on the Avon, the Hotham, the Williams, Arthur, Beaufort, and South-East River, together with the portions of country adjacent to the Swan, the Murray, the Harvey, Brunswick, Preston, Capel, and Vasse.

It is to be remembered, however, that these remarks apply only to the very small part of this vast country which has been as yet explored, and that in the progress of settlement circumstances are continually arising to give value to lands, which, while wages are high and roads wanting, are not of the slightest value.'

He again calls attention to the possibilities of the northern parts of the Colony for sugar and cotton growing, but points out that 'Experiments in these branches of industry are, however, beyond the means of the numbers of the colonists at present', adding that he ventured to anticipate 'that the estimation of the Colony in the eyes of the public will be gradually enhanced the longer this peculiarity in its natural qualifications is considered and examined.'

The following are some of the more important particulars which are further contained in the report:

The number of town allotments granted in Perth to 30 June 1837 was 422; that of suburban allotments, 15; miles of fencing completed, 35, valued at £5,600; the number of houses built, about 350, valued at £30,000; the value of suburban improvements was estimated at £4,000, that of gardens at £2,000, of mills at £3,000 and of public works at £15,000. A similar valuation of Fremantle public and private property amounted to a total of £28,000. The aggregate of the corresponding amounts for Guildford, Albany, Augusta, Kelmscott, York, Peel Town, Busselton and Kings Town, together with Perth and Fremantle, was about £93,000. The population of Perth numbered 590, that of Fremantle 387, of Swan River District 524, of Canning River District 41, York 65, Plantagenet 170, Murray 17, Augusta 32 and Vasse 21; in addition to these there were the military who, with their womenfolk and children, numbered 185; the total population therefore numbered 2,032. Of the non-military population, 506 were married and 1,341 single. The total of 2,032 comprised 914 males over fourteen years of age, 368 males under fourteen years, 430 females over fourteen and 320 females under fourteen. The total population in 1832

had been 1,510 and the increase was mostly due to the excess of births over deaths. The deaths during the preceding twelve months had been at the rate of 1 in 200. Of the adult male population no less than 449 were engaged in agricultural pursuits. At the end of 1836 there had been about 1,380 acres under wheat, the total land in crop being about 2,100 acres. Sheep numbered 8,528, horned cattle 829, horses 216, pigs 819 and goats 1,286. The wheat produced during the year amounted to 22,104 bushels. The estimated value of improvements on rural grants was £75,000. The total number of acres granted to 30 June 1837 was 1,524,004. The exports during the year amounted to £6,720, of which £2,400 represented wool and £3,200 oil, mostly probably the product of the whale fishery. The total wealth of the Colony was estimated at £360,000, producing, with the labour of the community, after deducting its subsistence, a clear annual accumulation of capital to the extent of £72,000. The revenue of the Colony for the year was £4,586. As regards labour, the wages for general labourers were about 5s per day, but artificers earned from 8s to 10s. Labour was still scarce and, although the Colony was self-supporting and money seemed to be abundant, the apparent wheat-growing, wine-growing, and fruit-growing capabilities of the soil could not as yet be taken advantage of to any great extent, on account of the difficulty experienced in obtaining suitable workmen. That money was abundant was proved by the fact that a joint-stock bank which had been recently established, discounting bills at 12½ per cent per annum and allowing depositors an interest of 5 per cent, was principally working with deposits to the value of £4,000 and had so far only had occasion to call up £1,250 of its nominal capital of £10,000. The public expenditure for the year ended March 1837 had been £10,753, whilst the payments in connection with the troops, provisions, etc. amounted to £11,022. It was foreseen that considerable expenditure would be necessary in the near future, there being as yet practically no made roads. Perth and Fremantle town lots were then sold at the rate of £5 per acre. In 1832 the sale of rural Crown land had come into operation and in 1834 this had been made applicable to town allotments. During the first three years of the settlement, property in livestock, implements, provisions, apparel, furniture, etc. had been imported to the value of about £120,000. Since then, it was estimated, such importation had been increased by about £100,000, whilst the probable value of re-exported property was £20,000. The total outlay of the Crown to 31 March 1837, on behalf of the Swan River Settlement, had been £145,167. It was adduced as proof of a fairly satisfactory moral condition of the population that, during the eight years of the Colony's existence, not a single sentence of death had been required to be passed. As a further indication of progress it was mentioned that, in addition to the *Government Gazette*, two newspapers were in existence—one, the *Perth Gazette*, having already existed some years, whilst the other, the *Swan River Guardian*, had been established in 1836, 'as the friend of the people and the corrector of abuses'.

For a time the Colony continued to progress steadily, if slowly. Its development was once more, however, retarded by the discovery of the rich goldfields of Victoria, and again it seemed probable that it would be entirely deserted. Happily, however, for the Swan River Settlement, the goldfields of the eastern Colonies subsequently ceased to possess the extraordinary fascination they formerly did and Western Australia, at the turn of the century, with extensive goldfields of her own, her vast area of agricultural and pastoral lands, her timber, and numerous other undeveloped resources, offered an attractive prospect for the capitalist or the industrious and thrifty immigrant.⁽¹⁾

⁽¹⁾ See *List of Special Articles and Topics* for reference to additional information in earlier issues of the Year Book.

CHAPTER II—PHYSICAL FEATURES, CLIMATE, FLORA AND FAUNA

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CHAPTER II—PHYSICAL FEATURES, CLIMATE, FLORA AND FAUNA

Area and Coastline of Australia

The area of the States and Territories and the length of the coastline of Australia were determined in 1973 by the Division of National Mapping of the Department of National Resources by manually digitising these features from the 1:250,000 map series of Australia. Consequently, only features of measurable size at this scale were considered. About 60,000 points were digitised at an approximate spacing of 0.5 kilometres and these points were joined by chords as the basis for calculation of areas and coastline lengths by computer.

The approximate high water mark coastline was digitised and included all bays, ports and estuaries which are open to the sea. In these cases, the shoreline was assumed to be where the seaward boundary of the title of ownership would be. Rivers were considered along similar lines but the decisions were rather more subjective, the digitised line being across the river where it appeared to take its true form. In mangroves, the shoreline was assumed to be on the landward side.

Areas and lengths of coastline determined by the foregoing methods are given in the following table. The Division of National Mapping is also progressively revising areas of local government authorities but has not yet completed this work. For this reason, areas given for statistical divisions do not add to the total area shown for the State.

State or Territory	Present area	Percentage of total area	Length of coastline (a)
	sq km		kilometres
New South Wales	801,600	10.43	1,900
Victoria	227,600	2.96	1,800
Queensland	1,727,200	22.48	7,400
South Australia	984,000	12.81	3,700
Western Australia	2,525,500	32.87	12,500
Tasmania	67,800	0.88	3,200
Northern Territory....	1,346,200	17.52	6,200
Australian Capital Territory	2,400	0.03	(b)
AUSTRALIA	7,682,300	100.00	36,800

(a) These measurements are broadly on a 'direct' basis but, even so, they must be regarded as approximate only.

(b) Australian Capital Territory, Jervis Bay area included in New South Wales.

Part 1—Physical Features and Geology

Contributed by

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The development of any country depends on its natural resources and the industry of its people, and there can be few more important investigations for any country than those dealing with the productive capacity of its territory. Natural resources—be they power, mineral, or soil resources—are dependent entirely on the climate, physical features and geology. Looking at the pattern of development of Western Australia we see that for nearly seventy years after the foundation of the Swan River Colony in 1829 agricultural production barely kept pace with the requirements of the small population. The gold

discoveries in the 1890s, however, led to a period of rapid expansion and Western Australia became one of the major gold-producing areas of the world, and with this increase in mining production there was a corresponding expansion of the agricultural and pastoral industries. We are now experiencing an expansion of our secondary industries. Today, with the realisation of the base metal mineral potential of Western Australia—the proven deposits of iron ore, nickel, bauxite, black sands, oil and natural gas and the high probability of further discoveries—we are in another period of unprecedented development. Mineral discoveries of the past decade in Western Australia stimulated the mining industry not only in Western Australia but throughout the whole of Australia. The Western Australian mineral discoveries of the late 1960s were accompanied by a corresponding increase in our secondary industries and the opening up of formerly sparsely populated areas, particularly in the Pilbara. Western Australia has, to date, been deficient in power resources, but this deficiency will probably be remedied by the development of large natural gas reserves discovered near the southern margin of the North-West Shelf. In each of these phases of development we can see the dominating influence of the geological environment so that geology, from being relatively unknown and the Cinderella of the sciences, has now become known to all.

The nature of the rocks underlying any region is one of the major factors controlling topography, soil, and mineral resources. The latter is self-evident. The soil, on which we are so dependent, was formed by the weathering of the underlying rocks and many of its characters are due to the parent rock material. Much research has been carried out into trace element deficiencies in soils and the application of the new knowledge has produced astounding results as far as land utilisation is concerned. At first sight it would seem fantastic to think of the underlying rocks being in any way responsible for malnutrition of stock, but when it is demonstrated that the malnutrition is due to the lack of some minor element in the fodder which is due to its deficiency in the soil, a deficiency which, in its turn, is due to the absence or relative absence of such elements from the parent rocks from which the soil was derived, the significance of the geological environment becomes evident. Topography which is important in connection with land utilisation, water conservation, power (hydro-electric) resources, and in affecting climate, soil erosion, coastal erosion, transport routes, harbours, and so on is also dependent to a great extent on the nature and structure of the underlying rocks.

It is appropriate therefore that we should consider here the physical features and geology of Western Australia since they, together with the climate, are the primary controls of our soil, mineral, water and power resources, on which our existence and future development are entirely dependent.

PHYSICAL FEATURES

In the broadest way this State can be divided into two physical regions: (i) a tableland (the *Great Plateau*) in various stages of dissection occupying the whole of the interior of the State; (ii) a low-lying narrow strip (the *Coastal Plains*) running almost continuously along the coast from near Albany to Broome. A third physical region, the *Scarplands*, separating the Coastal Plains from the Great Plateau, may be distinguished. This, although only a narrow belt, is a significant one in the southern part of the State because of its importance in connection with the water conservation schemes on which the metropolitan area, the mining fields in the vicinity of Kalgoorlie, the intervening agricultural and pastoral districts, the irrigation areas on the coastal plains south of Perth, and more recently the wheat belt along the Great Southern Railway, are dependent.

The Great Plateau

The Great Plateau which occupies more than 90 per cent of the area of the State varies considerably in elevation. In its highest parts (in the north-west) it attains a height of approximately 1,200 metres above sea-level. The greater part is, however, below the 600-metre contour and its average elevation is of the order of 300 to 450 metres above sea-level. Although there is this considerable variation in level the changes are so gradual

that the plateau character of the country is not obscured and for the most part it may be regarded as having a vast, gently undulating surface. Occasional hills (monadnocks, which are remnants of a previous cycle of erosion) rise above the general surface of the plateau.

The Great Plateau may be conveniently subdivided into an area of exterior drainage (where there are definite rivers which flow to the sea), an area of interior drainage (where such water as flows passes into inland basins), and two areas of no surface drainage but which, if they had drainage, would belong to the exterior drainage system. The area of exterior drainage can be marked out by connecting the source of the streams which flow to the sea and if this is done it will be seen that the width of the exterior drainage belt varies considerably. Thus in the Kimberley and North-West Divisions some of the rivers are hundreds of kilometres long, but in the south-west part of the State many of them are comparatively short. The areas of no surface drainage are in the north of the North-West Division along the Eighty Mile Beach from the mouth of the De Grey River to the north of Broome, and on the Nullarbor Plain in the south-eastern corner of the State. The remainder of the country forms the interior drainage area.

In the area of exterior drainage the dominant feature of the extreme south-west and the northern part of the plateau is a reticulate pattern of rather deeply-incised watercourses. In the southern part of the State these deeply-incised watercourses where they pass from the plateau to the coastal plains are of great significance (as has already been mentioned) in connection with water supply schemes. Elsewhere in the State the marginal portion of the Plateau is drained by rivers that flow to the sea only at times of exceptional rainfall and, speaking in the most general way, have courses at right angles to the coast.

The area of interior drainage is arid and practically riverless. Small creeks run from the higher parts of the country but they either disappear on the extensive flats or reach the shallow basins which are termed salt or 'dry' lakes, the term 'dry' being used since these so-called lakes are free from water except after fairly heavy or long-continued rain. These 'lakes' are generally elongated, narrow, and often winding salt-encrusted flats arranged in long, more or less connected streams. After heavy rain they are covered with a thin layer of water and, after unusually heavy rain, water has been known to flow southwards from one to another of the 'lakes' of a string, except towards the western margin of the plateau where the drainage is to the west. It is evident that these elongated 'lakes' are the remnants of an old river system developed during a more humid period. The salt lakes are of some economic significance since, on the evaporation of the water, common salt and other substances such as gypsum are deposited on the floor of the lake. The gypsum, which crystallises earlier than the common salt, is generally blown from the damp surface of the dried-up lake and deposited as dunes of 'seed gypsum' on the leeward (eastern) side of the lake. These dunes are utilised, for example at Lake Seabrook north of Yellowdine, as a source of gypsum for plasters. Common salt, which separates later, forms a crust on the floor of the lake when it has been completely dried up and such salt deposits are exploited, for example at Lake Lefroy near Widgiemooltha. In a few of the Western Australian salt lakes, such as Lake Champion, significant deposits of alunitic clay (a potential source of potash) have been discovered. More important potash deposits occur in some coastal lakes, such as Lake MacLeod, north of Carnarvon.

Over a large portion of the interior drainage part of the Great Plateau there are extensive sand-plain soils overlying a hard laterite ('ironstone') layer, which is of the order of up to four and a half metres in thickness, below which lies an intensely weathered zone from which most of the nutrient elements so important for plant growth have been leached. These more recent geological formations will be discussed in the section of this Part dealing with geology, but we may note here the significance of this lateritic profile (sandy soils near the surface, 'ironstone' about a metre below, and completely kaolinised rocks still deeper) so far as soil fertility is concerned. This lateritic profile is the result of long-continued weathering processes which have resulted in almost complete leaching of the valuable nutrients and as a result soils developed in any part of this profile are generally very poor in character. It is only where erosion has cut through the lateritic profile and still

younger soils have been formed by weathering of the underlying rocks that the better soils are found. Recent studies of trace element deficiencies indicate, however, that much can be done with these 'light' soils by the addition of small quantities of suitable trace elements such as copper and molybdenum.

The areas of no surface drainage include the Eucla Division and portions of the Eastern Division of the State. This area is occupied largely by flat-bedded, nearly horizontal limestones of the Nullarbor Plain and the drainage here is sub-surface in character by subterranean streams through caverns in the limestone. The Nullarbor Plain is an extensive monotonously level plain standing about 180 metres above sea-level. The Western Australian part of the Nullarbor Plain is bordered to the south by a narrow coastal plain but further east, at the head of the Great Australian Bight, in South Australia, this coastal plain is absent and the southern edge of the Plain is truncated by cliffs which rise almost sheer for sixty to 120 metres above sea-level.

The hills of the Great Plateau are of two kinds, ridged and table-topped. In the southern half of the State the ridged hills, a few of which rise as much as 450 metres above their surroundings, are generally elongated in a NNW direction, reflecting in their trend the structure of the underlying rocks. The table-topped hills are seldom more than sixty metres above the general level. They are capped with a sub-horizontal layer of laterite ('ironstone') and bounded by low cliffs, in many places undercut, which are known in Western Australia as 'breakaways'. The table-topped hills are relics of erosion of a former laterite-covered peneplain (the *Darling Peneplain*) which was uplifted in Pliocene times to form the Darling Plateau and has subsequently been subjected to erosion under semi-arid conditions. The ridged hills on the other hand are elongated monadnocks which, being cored by resistant rocks such as jasper bars, withstood erosion and so rise above the general level of the remnants of the laterite-covered Darling Plateau.

The Great Plateau slopes down very gradually to the south and west. The downward slope to the south is interrupted by a narrow broken chain of rugged hills, the Stirling and Mount Barren Ranges which rise to heights of from 300 to 1,100 metres above sea-level. The western margin of the Plateau is, in the south, formed by the 'Darling Range' which, being merely the dissected margin of the Plateau, is much better called the *Darling Scarp*. This Darling Scarp is clearly defined between latitudes 31° 30' S and 33° 30' S, i.e. between Moora and Donnybrook, but it is difficult to recognise farther north or south. In the Kimberley Division the mountain ranges are the relics of erosion between the deeply-incised rivers and in this region the highlands of the Plateau terminate abruptly along a steep, deeply-indented coastline.

The Coastal Plains

Bordering the Great Plateau are the Coastal Plains which vary in width. The *Swan Coastal Plain* which extends from the neighbourhood of Perth to near Busselton averages about twenty-four kilometres in width and is divisible into the following belts: a narrow band of moving sand dunes along the coast; a zone, averaging five or six kilometres wide, of sandy limestone which rises in places to heights of thirty to sixty metres above sea-level; a zone five or six kilometres wide of loose sand fixed by vegetation; and, abutting against the Scarp which forms the western margin of the Plateau, a zone of clayey soils of about the same width. A strip of low plain extends along the coast at intervals as far north as King Sound and coastal plains of some width occur near Port Hedland and Exmouth Gulf. A narrow plain fronts the cliffs of the Great Australian Bight for some distance and also occurs in other places along the south coast.

The coastline of Western Australia, some 12,500 kilometres in length, is broken by capes between Wyndham and Broome, between Port Hedland and Shark Bay, and between Cape Naturaliste and Israelite Bay. The intervening parts are comparatively featureless.

It has only been possible here to briefly outline the principal physical features of Western Australia and for a fuller description of the physiography of this State the reader should consult J. T. Jutson's 'Physiography (Geomorphology) of Western Australia' (*Geol. Surv. West. Aust. Bull.* 95).

GEOLOGY

More than two-thirds of Western Australia is occupied by the ancient Australian Precambrian Shield which is composed of a complex of igneous, metamorphic and sedimentary rocks formed more than 600 million years ago. Most of our mineral deposits of economic importance, except coal, oil, natural gas and water and superficial deposits such as lateritic iron ore and bauxite deposits and black sand and other alluvial accumulations, occur in these Precambrian rocks. The remainder of the State is occupied by sedimentary basins in which Palaeozoic and later sediments are developed. It is in these younger sedimentary basins that artesian water, coal, oil and natural gas are likely to occur. Finally there are still younger superficial deposits—laterites, salt-lake deposits, shallow groundwater, and soils on which much of the economy of this country depends. It will be convenient therefore, in outlining the geology of the State, to consider it under the three main headings:

- (a) The Precambrian basement;
- (b) The sedimentary basins;
- (c) The superficial deposits.

The distribution of the solid rocks (omitting superficial deposits) is shown in the accompanying map.

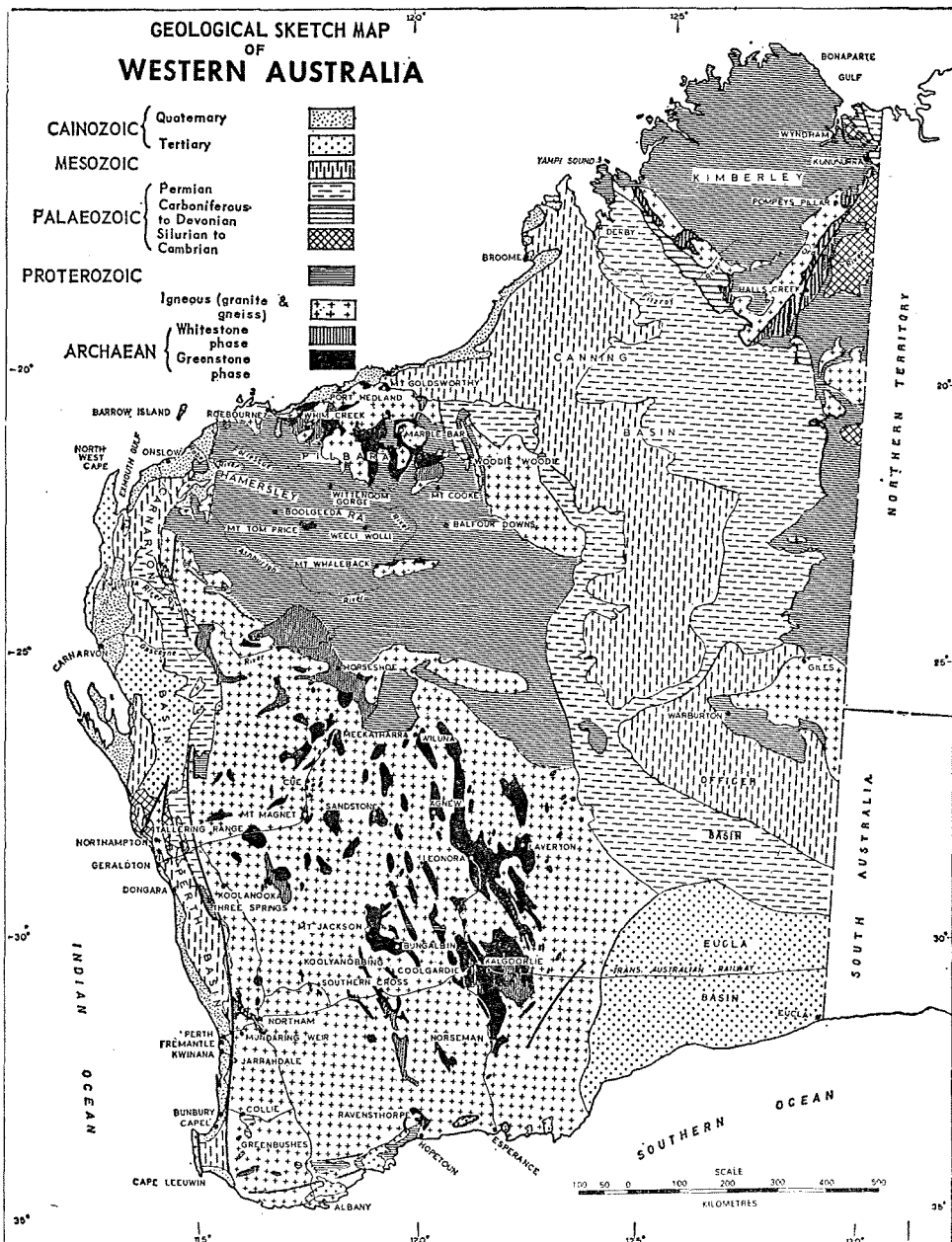
The Precambrian Basement

This includes the Archaean and Proterozoic rocks. The Archaean is a complex of crystalline igneous and metamorphic rocks, dominantly granites and gneisses with minor amounts of schistose metamorphosed acid and basic volcanics and sedimentary formations. In places, particularly in the North-West and Kimberley Divisions, this Archaean complex is overlain unconformably by sedimentary and volcanic rocks of Proterozoic age which generally do not exhibit the extensive metamorphism so characteristic of the older Archaean complex. The time-boundary between the younger Precambrian (Proterozoic) and older Precambrian (Archaean) is approximately 2,200 million years ago. Within the different areas occupied by the Precambrian rocks the same generalised sequence can be distinguished.

In the Kimberley the oldest rocks are metamorphosed igneous and sedimentary rocks intruded by granite and carrying in places auriferous and base metal ore deposits, and these are overlain by un-metamorphosed sediments with basic igneous intrusives. The Precambrian age of all these rocks is evidenced by the fact that in the East Kimberley they are overlain by sedimentary rocks containing fossils of Cambrian age. This is the only area in Western Australia where the Precambrian age of the rocks of this crystalline complex can definitely be proved on stratigraphical evidence alone. In the southern part of the State we find a similar sequence of crystalline schists with intrusive granites and by lithological correlation (which is not a very sound method) we assume that they are Precambrian although they cannot actually be traced through from the Kimberley. We do know that in the Carnarvon Basin these gneisses, schists and granites are older than the Devonian, which unconformably overlies them, and in the Perth Basin they are older than the Permian. During recent years the Precambrian age of these rocks has been confirmed by actual age determinations based on the decay of radioactive elements which occur in them. This work indicates that the bulk of the massive granitic intrusions of the southern part of the State and in the Pilbara crystallised from a molten state some 2,700 million years ago. Some, however, such as those in the vicinity of Albany and along the south coast, are much younger, being emplaced approximately 1,100 million years ago.

The Precambrian sequence in the North-West Division appears to be the most complete that is present in Western Australia and, from oldest to youngest, is as follows.

The *Warrawoona Group*, which consists mainly of greenstones and green schists which, prior to intense folding and metamorphism after their deposition, were submarine basaltic lavas and tuffs, with thin interbedded chemically deposited sedimentary rocks (chert, jaspilite and banded iron formations). Conformably overlying the basaltic volcanics is a sedimentary succession (the *Gorge Creek Group*) of banded iron formation



GEOLOGICAL MAP OF WESTERN AUSTRALIA

(from Clarke, Prider and Teichert, 'Elements of Geology for Western Australian Students', by courtesy of University of Western Australia Press)

and clastic sediments (sandstone, shale and conglomerate). The banded iron formation of this group is the parent material of important ore deposits such as those of Mount Goldsworthy. Clastic sedimentary rocks unconformably overlying the Warrawoona volcanics in the eastern Pilbara form the *Mosquito Creek Beds*. These are thought to probably correlate with the Gorge Creek Group further west. The sedimentary assemblage of the Gorge Creek Group is unconformably overlain by acid volcanics (part of the *Whim Creek Group*) which, at Whim Creek, are the host rocks of the copper-lead-zinc deposits. All of these rocks have been intruded by granitic igneous rocks, the older gneissic granitic rocks being formed about 3,100 million years ago, and the younger massive granites approximately 2,700 million years ago. The older volcanic and sedimentary successions carry auriferous ore-bodies, possibly genetically related to the younger intrusive granites. End-stage products of these younger granites are the very coarse-grained pegmatites which are important carriers of tantalum (in tantalite), beryllium (in beryl), lithium (in spodumene and lepidolite), and tin (in cassiterite). All of these rocks in the North-West Division—the Warrawoona and Mosquito Creek Successions and the granites intrusive into them—are therefore of Archaean age and have been called the *Pilbara System*. Still younger sedimentary rocks such as conglomerates, sandstones, shales and banded iron formations with interbedded basic igneous rocks, were deposited unconformably on the highly-folded, granite-intruded Pilbara System. This thick succession consists of a number of distinct groups. The three lower groups (the *Fortescue*, *Hamersley* and *Wyloo Groups*) are of Lower Proterozoic age as the youngest (the Wyloo Group) is intruded by granite aged approximately 1,700 million years. The two upper groups (the *Breshnahan* and *Bangemall Groups*) are of Middle and Upper Proterozoic age, respectively. Of these Proterozoic rocks the Hamersley Group is most important economically since most of the iron-ore deposits of the Hamersley and Ophthalmia Ranges occur within, or have been derived from, the thick jaspilites (banded iron formations) within this group. Except in occasional narrow belts marginal to the Archaean blocks, the Proterozoic rocks have not suffered the intense folding that affected the older rocks and consequently they are generally flat-dipping to horizontally bedded un-metamorphosed sediments. Such sediments cover very extensive areas in the North-West (see Geological Map of Western Australia on previous page) and they are similar in many respects to the flat-dipping Proterozoic sediments which cover the plateau country of the north Kimberley. The final episode in the Precambrian history of the North-West was the intrusion of dolerite dykes and sills into all of the earlier rocks.

Coming to the southern half of the State we find a similar sequence to that in the North-West. In the part of the Precambrian Shield extending south of latitude 26° S the oldest rocks that are recognised are the greenstones of the various gold-mining fields which occur in comparatively narrow belts elongated in a general NNW direction (see map on previous page). These greenstones, which are for the most part metamorphosed basaltic lavas, contain interbedded ultrabasic lavas and jaspilites and are overlain by metamorphosed sedimentary rocks (generally referred to as whitestones). This System of rocks is the *Kalgoorlie-Yilgarn System*. From the mining point of view it is most important since the auriferous ore deposits of the main mining fields are confined to it, as are the known nickel deposits. It also contains, in the jaspilites, important iron-ore deposits such as those of Koolyanobbing in the Yilgarn. After the formation of the Kalgoorlie-Yilgarn rocks they were intensely compressed into tightly closed folds with NNW-trending axes. During this period of intense earth-movement approximately 2,900 million years ago granite magma concordantly intruded these older rocks or alkaline solutions permeated them, converting them into granitic gneisses which occupy the bulk of the southern half of Western Australia. Subsequently, at about 2,700 million years ago, granite magma was again intruded as in the North-West, so the Kalgoorlie-Yilgarn System in the southern half (the Yilgarn Block) of the State appears to be the equivalent of the Pilbara System of the Pilbara Block. This completes the Archaean sequence. The Proterozoic is represented by a narrow strip of slightly altered, steeply-dipping sedimentary rocks along the Darling Scarp and flat-dipping sediments on top of the older crystalline rocks of the western part of the Yilgarn Block as at Watheroo, Yandanooka and the Billeranga Hills near Morawa.

Proterozoic igneous activity is represented by Early Proterozoic layered complexes and Late Proterozoic basic dykes. The former, aged 2,420 million years, take the form of basic-ultrabasic layered complexes, such as the large east-west dykes of the Norseman-Laverton greenstone belt which have some prospects for the occurrence of nickel and chrome deposits. The latter are dolerite dykes which, like those in the North-West, intruded all of the Precambrian rocks about 550 million years ago. They occur throughout the Precambrian Shield but are most abundant near its western margin where some are quarried and crushed for road metal.

The strip of country south of, and including, the Stirling Range, and extending in an east-north-easterly direction to the Fraser Range (east of Norseman) and thence in a north-easterly direction into Central Australia, differs from the previously described Yilgarn Block. In it the regional trend is east-west compared with the north-north-westerly trend of the Yilgarn Block. It consists of a belt of crystalline schists and gneisses (exposed along the south coast) intruded by granite (as at Albany and Esperance). These crystalline rocks are very similar to the granitic gneisses of the Yilgarn Block, but the massive granites were intruded much later—approximately 1,100 million years ago, compared with the 2,700 million years age of the late-Archaeon granite intrusives of the Yilgarn Block. These crystalline rocks are overlain unconformably by still younger low-grade metasedimentary phyllites and quartzites (originally mudstones and sandstones) comprising the *Stirling Range Beds*. Both the granite-intruded basement and the *Stirling Range Beds* are intruded by dolerite dykes, similar to those of the Yilgarn Block. Although the granites of this South Coast Province are much younger than those of the Yilgarn Block, it is thought that the *Stirling Range Beds* and the intrusive dolerite dykes are comparable with the Proterozoic sediments and dolerites of the Yilgarn Block.

There is a comparatively narrow strip of crystalline metamorphic rocks along the western margin of the Perth Basin and wrapping around the northern margin of the Yilgarn Block. The southern part extending from Cape Leeuwin to Cape Naturaliste is a belt about 20 kilometres wide of isoclinally folded gneisses, with a regional NW trend, which have a radiogenic age of 650 million years, while the part extending northerly from Geraldton through the Northampton Mineral Field consists of NW-striking metasedimentary granulites and gneisses containing segregation pegmatites aged about 1,000 million years and intruded by basic dykes comparable to the Late Proterozoic dykes of the main part of the Shield. Recent work by the Geological Survey of Western Australia indicates that metamorphic rocks along the northern margin of the Yilgarn Block are most probably metamorphosed Bangemall (*i.e.* Upper Proterozoic) sediments. It is evident, therefore, that the main Yilgarn Archaeon Block is almost completely ringed with metamorphosed Proterozoic rocks.

Putting together the information available throughout the State, we conclude that the oldest rocks found in Western Australia belong to the older part of the Archaeozoic Era. It is a great succession of rocks, generally much metamorphosed, which is called the Kalgoorlie-Yilgarn System in the southern part of the State and the Pilbara System in the north-west region. In the early part of Kalgoorlie-Yilgarn (Pilbaran) times there was much volcanic activity which took the form of eruptions of ultrabasic, basic and intermediate lavas, tuffs, and breccias. Many of the basic lavas, as judged from the pillow structures they contain, were submarine extrusions. These volcanic rocks were penetrated, shortly after their extrusion, by intrusions from the same magma; similar events must be occurring now in the interior of great volcanic masses like Etna or Hawaii. In later Kalgoorlie-Yilgarn times, the dominant process was sedimentation, so that the earlier volcanic rocks, with the minor associated bands of sediment, became overlain by a great thickness of sandy and clayey sediments. These sediments must have been derived from some land mass composed of rocks of pre-Kalgoorlie-Yilgarn (pre-Pilbaran) age but this, possibly the oldest of all rock assemblages, has apparently not yet been found in Australia or any other part of the World.

After the accumulation of these older Archaeon lavas and sediments came a period of intense earth-movement during which the rocks were, in most places, closely folded and regionally metamorphosed. The folding (about 2,900 million years ago) was accompanied

by widespread granitic intrusions, some of which consolidated into primary gneisses whereas others soaked into the pre-existing rocks, penetrating them along bedding planes, joints, and other fractures, and so forming hybrid granitic gneisses by granitisation.

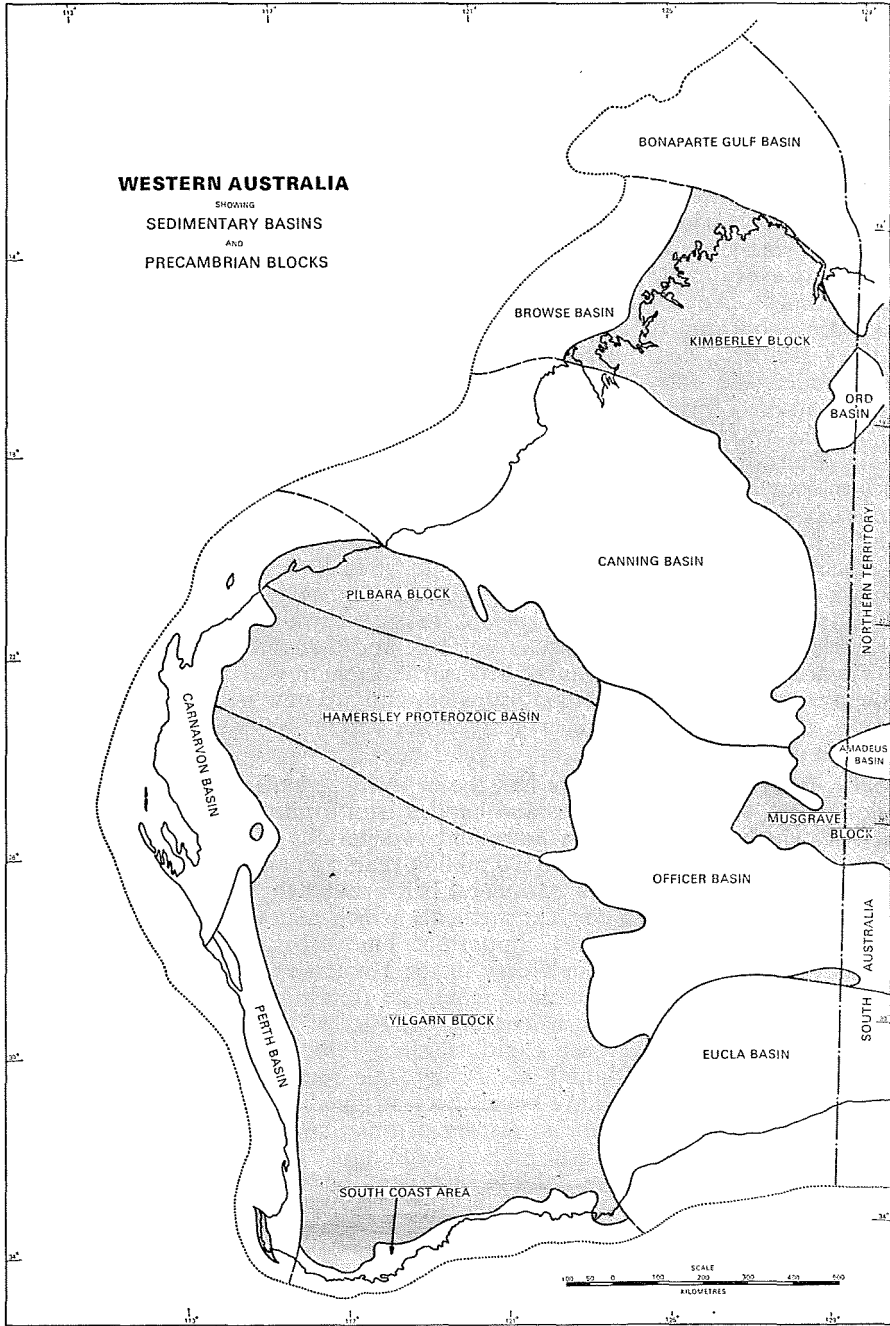
Where they were not affected by this First Granite Invasion, the volcanic rocks of the Kalgoorlie-Yilgarn and Pilbara Systems were regionally metamorphosed, in some places very strongly into dark-coloured schists, in others only very slightly. Similarly, the sedimentary rocks of the Kalgoorlie-Yilgarn and Pilbara Systems, where they have escaped granitisation, are in some places but slightly regionally metamorphosed, in others they are converted into various types of schist and quartzite.

All the Archaean rocks described above were invaded by the 'Younger' Granite, which, unlike the 'Older' Granite, formed well-defined intrusions many of which are stocks, though smaller offshoots from the same magma, in the form of 'porphyry dykes', occur at nearly every mining centre. These events occurred after the folding but before Proterozoic times. Any of the Archaean rocks in Western Australia may contain ore-bodies yielding gold and other minerals of economic value. It seems likely that many of these ore-deposits were formed at the time of the Second Granite Invasion which, from radioactive age determination studies, occurred about 2,700 million years ago. Important iron-ore deposits occur in the Archaean rocks at many localities, for example at Mount Goldsworthy in the Pilbara, Talling Peak in the Yalgoo Goldfield, and Koolyanobbing, Bungalbin and many other localities in the North Yilgarn. These are all banded ironstone deposits which are interbedded with the basaltic lavas and sedimentary rocks of early Archaean age. In many places there are important manganese deposits associated with these banded iron formations. A rich nickel deposit discovered in ultrabasic Archaean rocks at Kambalda near Kalgoorlie in 1966, has now become an important source of nickel. Base metal ore deposits, such as nickel, cobalt and chromium, are generally associated with ultrabasic igneous rocks. Ultrabasic rocks are intrusive into or interbedded with the older Archaean volcanic and metasedimentary rocks of the Kalgoorlie-Yilgarn System in the country between Norseman and Laverton, and important nickel deposits have been discovered, evaluated, and are now being exploited at localities such as Kambalda and Scotia near Kalgoorlie, Mount Windarra near Laverton and Mount Keith near Agnew.

Finally, in Proterozoic times we had the deposition, under shallow-water conditions, of conglomerates, sandstones, shales and banded iron formations, another period of volcanic activity yielding basaltic lava flows and two periods of granite intrusion (at 1,700 million years ago in the Pilbara and 1,100 million years ago along the south coast). Other than in a few narrow belts and a peripheral belt around the Yilgarn Block, these rocks have not suffered the intense earth movements which affected the older rocks, and so are practically un-metamorphosed. Important blue asbestos deposits in these rocks have been exploited at Wittenoom Gorge in the Hamersley Range of the West Pilbara. The asbestos deposits occur in banded ironstone formations which also contain large iron-ore deposits. The well-known iron-ore deposits of Cockatoo and Koolan Islands in Yampi Sound, which have been exploited since 1951, are meta-sedimentary deposits of Late Proterozoic age. Although the Proterozoic rocks cover extensive areas in the northern parts of the State they have largely been stripped off the southern half by erosion. The final episode in the Precambrian history of this State was the widespread intrusion of dolerite dykes approximately 550 million years ago. Small lead and copper deposits are closely associated with these dolerite intrusions in the Northampton Mining Field, where the discovery of a lead deposit at Geraldine in 1848 led, in 1852, to the first commercial metal mining operations in Western Australia.

The Sedimentary Basins

There are five major post-Proterozoic sedimentary basins in Western Australia and the adjoining continental shelf as shown in the accompanying map—the *Bonaparte Gulf Basin* in the north-east part of the Kimberley Division extending into the Northern Territory, the *Canning Basin* of the west Kimberley, the *Carnarvon Basin* of the north-west, the *Perth Basin* extending from lat. 29° S to lat. 33° S and the *Eucla Basin* occupied



POST-PROTEROZOIC SEDIMENTARY BASINS AND PRECAMBRIAN BLOCKS OF WESTERN AUSTRALIA
(PRECAMBRIAN AREAS STIPPLED)



Photography T. W. Binns

PLATE I – 'CHINA WALL'

The white quartz 'China Wall' is a vein intruded along a branch of the Halls Creek Fault believed to be one of the larger transcurrent faults in Australia.

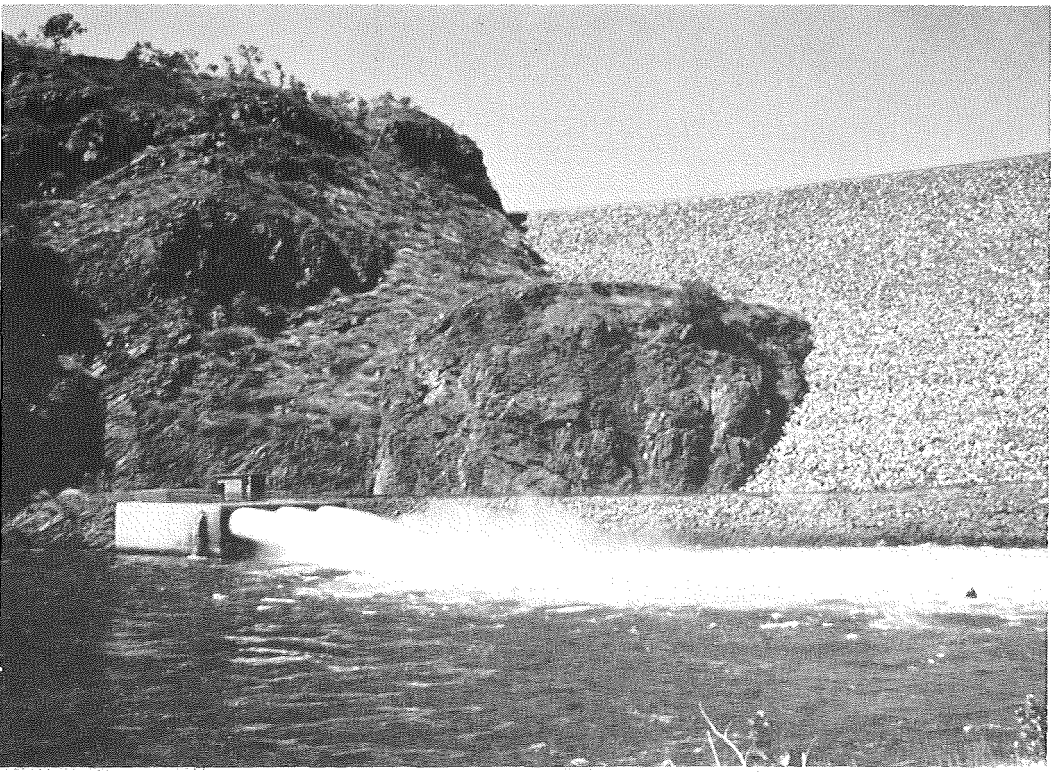


Photography T. W. Binns

PLATE 2 – STOCKPILING SALT FOR EXPORT. PORT HEDLAND

PLATE 3 – LAKE ARGYLE, ORD RIVER SCHEME

Photography T. W. Binns



by the Nullarbor Plain. All of these basins have offshore extensions as shown in the map on the previous page. Large areas of the Central Division are covered by sediments of the *Amadeus Basin* of Central Australia and the shallow *Officer Basin*. In addition to these major basins there are smaller basins such as that at Collie and scattered areas where sediments, which are dominantly lacustrine in nature, have been deposited. In these sedimentary areas we find sediments ranging from Lower Palaeozoic to Pleistocene in age. These sediments of Palaeozoic and later age are, as a rule, less disturbed than those of Precambrian times and many are abundantly fossiliferous. Therefore, there is a sure means of correlating formations even in widely separated places, and so our knowledge of the history of these sedimentary areas is more detailed than in the much altered, highly folded, un-fossiliferous Precambrian rocks of the basement.

Apart from the superficial deposits the economic significance of these basins is confined to their possibilities for the occurrence of artesian water, coal, oil and natural gas. A prime requisite for the occurrence of artesian and sub-artesian water is the occurrence of interbedded strata of varying porosity and permeability. These conditions are met in a number of the sedimentary basins in Western Australia and the development of the pastoral industry in the arid or semi-arid parts of these basins has been largely dependent on the occurrence of artesian water. In the metropolitan area, artesian bores are an important source of water supplies, although these deep, pressure-water bores have become, of recent years, of secondary importance to the shallow groundwater of the Wanneroo and Jandakot Mounds (see Section *Perth's Underground Water* at the end of this Part). Coal deposits are also confined to areas of sedimentary rocks and occur in the Permian rocks of two of the minor basins, namely the *Collie* and the *Irwin River Basins*, and in the Lower Jurassic sediments of the Perth Basin (at Eneabba, where a seam thirty metres thick has been found at a depth of 1,800 metres in a borehole sunk in search for oil, and is indicated in shallow shot-holes in the Hill River area). Up to 1966 the coal deposits of the lacustrine Permian beds of the Collie Basin constituted the only power source in Western Australia, since oil of commercial significance had only then been proved and the gently undulating topography combined with low rainfall make the hydro-electric resources insignificant. So far as oil is concerned the first occurrence of flow oil in Australia was encountered in Rough Range Bore No. 1, in the Carnarvon Basin, late in 1953. This discovery of flow oil resulted in an increase in the rate of geological exploration of all the major sedimentary basins. The results of extensive geological mapping, geophysical surveys and exploratory drilling for oil have to date been rather disappointing. However, a commercial field was proved at Barrow Island off the north-west coast in 1966. Other oil occurrences have been located at various localities in the Perth Basin, e.g. in the vicinity of Dongara and this indicates the presence of suitable source material and conditions for oil formation and preservation. Moreover, oil search drilling operations have located some widely-spaced important finds of natural gas at Dongara and Gingin in the Perth Basin, and North Rankin and Goodwyn in the offshore part of the southern Canning Basin. The Dongara gasfield is now being exploited for the metropolitan area of Perth and the industrial areas further south. The possibilities of locating other commercial oilfields and gasfields in the Carnarvon, Canning and Perth Basins are by no means exhausted and the search is being actively continued both on land and offshore in the continental shelf area. Intensive feasibility studies concerned with the exploitation of the offshore gasfields of the North-West Shelf are at present under way.

A detailed description of the sedimentary formations of different ages, from the Cambrian to the Recent, in the various sedimentary basins has been set down in 'The Stratigraphy of Western Australia' (*Journal Geological Society of Australia*, volume 4, part 2, pp. 1-161, 1958) and 'The Geology of Western Australia' (*Geol. Surv. West. Aust.* Mem. No. 2, 1975). It is proposed here merely to indicate the main features of the various basins.

The *Bonaparte Gulf Basin*, in the east Kimberley, extends into the Northern Territory and offshore below the Timor Sea. As already mentioned, this and the nearby Ord Basin are the only basins in Western Australia where rocks of proved Cambrian age are exposed. On Western Australian territory the Cambrian rocks extend as a narrow belt

along the interstate border between lat. 16° 15' S and lat. 18° 30' S, reaching westward from the border for twenty-four to 120 kilometres. The Cambrian consists of basalts at the base of the sequence, overlain by Middle Cambrian fossiliferous limestones, shales and sandstones. There is a small development of sandstones which are considered to be of Lower Ordovician age, following which there is a big time gap and the next youngest formations are sandstones and limestones of Upper Devonian and Lower Carboniferous age. Upper Carboniferous and Lower Permian formations are absent, the next marine transgression being in the Middle Permian when a thick sequence of conglomerates, sandstones, and limestones was deposited. The only other sedimentary rocks in this basin are freshwater sediments (siltstones, marls and cherts containing freshwater fossils) of late Tertiary age.

The *Canning Basin* (formerly named the Desert Artesian Basin), in the west Kimberley, extends from the coast between Derby and the De Grey River in a south-easterly direction almost to the 128° meridian. The north-east or Fitzroy part of this basin consists of a comparatively narrow and shallow section (the Lennard Shelf) flanking the Precambrian land mass to the north, and a deep trough (the Fitzroy Trough) estimated, from aeromagnetic geophysical surveys, to contain a thickness of the order of 6,000 metres of sedimentary strata ranging in age from Ordovician to Triassic. It was in this area that bores seeking oil were first drilled in Western Australia, following the discovery in 1919 of traces of oil in a water bore on Gogo Station. The larger Canning Desert portion, the South Canning Basin, is covered by a relatively thin Mesozoic and Permian sequence, but geophysical work followed by some deep drilling has indicated that there are deep depressions in this area, the deepest of which is the Kidson Sub-basin, which has a basement approximately 6,000 metres below the surface.

The oldest Palaeozoic sediments in the Fitzroy portion of the basin are richly fossiliferous limestones of Ordovician age outcropping near Price's Creek. These are overlain by Devonian reef limestones, sandstones and conglomerates, followed by Carboniferous sandy limestones. These in turn are followed by a thick Permian sequence of sandstones (of marine glacial origin deposited from floating ice), fossiliferous calcareous shales and limestones, and Upper Permian fossiliferous ferruginous siltstones and sandstones. All of these formations dip gently in a general south-westerly direction towards the centre of the basin but these regional dips are interrupted by local folding. Shale and sandstone beds of Triassic age occur in the Fitzroy Trough section of the basin. The youngest rocks in this area are igneous extrusive lava flows and intrusive sheets, dykes, and volcanic necks which have been found intruding all rocks of the sequence from the Precambrian granitic basement to the youngest sediments (Triassic) present. These igneous rocks, from direct geological evidence, are of post-Triassic age, and radioactive age determinations made in 1959 indicate that they were intruded 180 million years ago (*i.e.* in Jurassic times). This is one of the two areas in the whole of Western Australia where post-Cambrian igneous activity is known. It is interesting to note the occurrence of a small lead deposit in Devonian limestone at Narlarla in the Napier Range. This is the *only* primary metallic ore deposit of post-Proterozoic age known in Western Australia and it may be genetically related to the Jurassic igneous activity or may have been deposited from sea water by organisms during Devonian times. In 1978, diamonds were found in kimberlitic plugs probably related to these Jurassic igneous rocks, and evaluation of these deposits is now taking place to determine their commercial viability.

In the Canning Desert section of the basin the Palaeozoic rocks are not well exposed and the greater part of this portion of the basin (where not obscured by superficial unconsolidated sands) is occupied by Mesozoic sediments ranging in age from Lower Jurassic to Lower Cretaceous. The deep depressions in the floor of the South Canning Basin are filled with Palaeozoic sediments as proved by the first deep oil test well (Kidson No. 1) which was abandoned at 4,431 metres in Lower Ordovician limestone. There is no evidence in the entire basin of any marine transgression after Lower Cretaceous times.

The basin extends some 320 kilometres offshore to the coral islands of the Rowley Shoals where some wells have been sunk in the search for oil. Drilling in search of oil and gas was commenced in 1967 with Ashmore Reef Well, but there were no discoveries in the

first ten wells drilled until 1971, when Scott Reef No. 1, approximately 400 kilometres north-west of Derby proved to be a major gas/condensate discovery. Subsequently, up to the present, there have been a number of major gas/condensate/oil strikes, mainly in the south-western end of the offshore Canning Basin north of the producing oil field of Barrow Island. The existence of commercial natural gas fields has now been proved, and exploratory work is continuing, directed towards discovery of further gasfields and oilfields.

The *Browse Basin*, a wholly offshore basin, is situated offshore from the North Kimberley Precambrian Block. It contains a thick sequence of Carboniferous to Tertiary sediments, but the geology is not well known as deep water has inhibited exploration to date.

The *Carnarvon Basin* (formerly called the North-West Artesian Basin) has been the most intensively studied of the major sedimentary basins in Western Australia. It extends along the west coast from Onslow near the mouth of the Ashburton River as far south as the mouth of the Murchison River, the maximum width of the basin being 200 kilometres at the latitude of Carnarvon. In this basin the eastern portion up to eighty kilometres wide is occupied by a thick sequence of marine Palaeozoic sedimentary rocks ranging in age from Middle Devonian to Upper middle Permian, all of which have a westerly regional dip. This Palaeozoic sequence which consists of fossiliferous Devonian limestones and sandstones, Carboniferous limestones and Permian marine glacial beds, limestones, sandstones, and shales, is almost entirely marine in origin. In the Carnarvon Basin we have the only wholly marine Permian sequence in Australia, and without doubt *one of the thickest marine Permian sequences in the world.*

No rocks of Silurian age were known from the western half of the Australian continent until 1957 when a bore sunk by West Australian Petroleum Pty. Ltd. at Dirk Hartog Island in Shark Bay encountered limestones of Silurian age underlain by sandstones which are now correlated with the reddish sandstones which outcrop in the lower reaches of the Murchison River.

To the west the Permian rocks are unconformably overlain by Cretaceous sandstones, shales, marls and limestones attaining a total thickness of 600 metres. It is the basal formation, the *Birdrong Sandstone*, of the Cretaceous sequence that is the oil sand encountered in Rough Range Bore No. 1. Another Cretaceous formation, the Windalia Formation, is one of the important oil reservoirs of the Barrow Island Oilfield. The Cretaceous rocks outcrop in a north-south belt averaging eighty kilometres wide between the Palaeozoic and Precambrian rocks on the east and the Tertiary limestones to the west. The only other Mesozoic formation exposed at the surface in this basin is a Jurassic sandstone eight metres thick. However, a deep well (Cape Range No. 2) drilled in search of oil at Exmouth Gulf, after passing through the base of the Cretaceous at 1,130 metres, entered the Lower Jurassic which extended to the depth of 4,624 metres at which the bore was discontinued, thus proving a thickness of at least 3,494 metres of Lower Jurassic strata in this area. It is apparent that there is a marked thickening of the Mesozoic formations from east to west in this area. The westernmost belt of the Carnarvon Basin is occupied by Tertiary strata, mainly limestones, which are well exposed in the Rough and Cape Ranges of the Exmouth Gulf area. These limestones, which range from Lower Miocene to Pliocene in age, total 365 metres in thickness and are discontinuously overlain by Pleistocene and Recent beds approximately 135 metres thick. Marine Tertiary sediments which are so well developed along the western margin of the basin extend as a thin discontinuous formation unconformably over the Permian beds of the eastern part of the basin, indicating that in Upper Eocene times the sea transgressed practically the whole of the Carnarvon Basin.

The sedimentary rocks of the Carnarvon Basin were affected by earth movements at various times. Even the youngest of the Tertiary rocks have been thrown into gentle folds which are significant so far as the search for oil is concerned because, in addition to having suitable conditions for the formation and preservation of oil, suitable structures are necessary for its concentration into local areas (oil 'pools'). So far as structure is concerned, the general picture of the Carnarvon Basin is the gentle westerly regional dip of the Palaeozoic sediments of the eastern half of the basin and the gentle dome and basin folding of the western half.

Offshore extensions of the northern part of the Carnarvon Basin have proved to be economically important, for it is here that the Barrow Island Oilfield is situated. A number of Permian to Recent epicontinental basins lie offshore between the coast and the edge of the Continental Shelf, extending north from North West Cape to the Browse Basin. It is in this area that the rich gas fields (North Rankin, Goodwyn and Angel) of the North-West Shelf are situated. Major interest in the Carnarvon Basin is now centred on the Exmouth Plateau, west of the Rankin Platform. This is a major faulted uplift, in water 800 to 2,000 metres deep, and the stratigraphy resembles that of the Rankin Platform.

The *Perth Basin* (formerly called the Coastal Plain Artesian Basin) is a narrow elongated basin on the western border of Western Australia extending from Geraldton in the north to Cape Leeuwin in the south. At Geraldton it is about fifty kilometres wide and is flanked both to the west and east by Precambrian crystalline rocks (mainly gneisses). The maximum width of the basin is approximately eighty kilometres at Watheroo and it narrows again to the south being approximately fifty kilometres wide in the sunland between Busselton and Augusta. At this southern end it is again flanked both to the east and west by Precambrian rocks. The surface of the basin is mostly covered by Recent sands but occasional outcrops of rocks as old as the Permian occur in places. The only evidence available regarding the structure, thickness and age of the sediments in the basin is that provided by geophysical surveys, some deep bores sunk in the search for oil and a number of water bores up to 730 metres deep in the metropolitan area. Gravity surveys indicate that there is a very considerable thickness of sediments, perhaps exceeding 9,000 metres, and it is probable that in this basin we have a complete succession from the Younger Proterozoic (*Cardup Group*), which outcrops along the Darling Scarp, to the Recent sands. Other than the Proterozoic of the Darling Scarp, the oldest sediments exposed are the gently folded Permian marine sediments of the *Eradu* and *Irwin River Basins* at the north end of the main basin. The Permian sediments of the Irwin River area have a total thickness of 1,200 metres and vary from marine glacial beds at the base (as in the Carnarvon and Canning Basins) through fossiliferous marine shales and limestones to lacustrine sandy sediments with coal seams in the upper part of the sequence. Marine and continental Jurassic limestones and sandstones outcrop east of Geraldton and Jurassic beds, overlain by Cretaceous chalks and greensands, occur near Gingin and Dandaragan. In the southern part of the Perth Basin the oldest rocks exposed (if we except the Permian of the separate minor *Collie Basin* which is situated well to the east of the Darling Scarp in a glacially-gouged trough) are the Cretaceous *Donnybrook Sandstones*.

In the vicinity of Perth, artesian bores to a maximum depth of 730 metres expose a sequence varying from Jurassic sandstone at depth, through Cretaceous and Paleocene shales. The *King's Park Shale* of Paleocene (older Tertiary) age is overlain by Pleistocene aeolian sandstones of the *Coastal Limestone Formation*, the base of which is approximately thirty metres below sea-level. There is therefore a big gap in the succession here between the Paleocene and Pleistocene. Many boreholes have been sunk in the north-central part of the basin in the course of oil search operations. Boreholes near the coast (at Jurien Bay and Beagle Ridge) struck Precambrian crystalline basement rocks at comparatively shallow depths of 1,024 metres and 1,481 metres. The sediments thicken further inland, as evidenced by the increasing depth to the Precambrian basement in Cadda No. 1 (2,744 metres), Woolmulla No. 1 (2,810 metres) and Arrowsmith No. 1 (3,420 metres). Very thick sedimentary sequences have been disclosed by Eneabba Bore No. 1 (which bottomed in Lower Triassic at 4,179 metres) and Gingin No. 1 (in Lower Jurassic at 4,544 metres). Some deep wells have been drilled to the south of Perth, namely Pinjarra No. 1 which bottomed in Upper Triassic sandstone at 4,572 metres; in the far south (near the south coast), Sue No. 1 which encountered Precambrian granulites at 3,054 metres; near Perth, Cockburn No. 1 which was abandoned at 3,054 metres in Lower Jurassic sandstone; Whicher No. 1, near Busselton, which reached a depth of 4,653 metres in Permian sandstone before being abandoned; and Blackwood No. 1, abandoned at 3,334 metres in Permian sediments. The first offshore well in the Perth Basin (Quinns No. 1), spudded in on 10 October 1968 at a location approximately thirty-two kilometres north of Rottneest Island, was drilled to a depth of 2,209 metres without finding hydrocarbons. Some oil was found in a second

offshore well (Gage Roads No. 1), drilled to a depth of 3,660 metres, approximately fourteen kilometres north-west of Rottneest Island.

Oil search operations in the Perth Basin have led to the discovery of significant oil and gas in the vicinity of Dongara near the northern end of the Basin and gas at Gingin, about eighty kilometres north of Perth. These discoveries, now proved as gasfields, are supplying natural gas to the metropolitan area and industrial areas south as far as Pinjarra. The other materials of economic significance in the Basin are coal, groundwater, limestone from the Pleistocene Coastal Limestone which is used as a source of lime and as building stone ('Cottesloe Stone'), and sand for building material. In addition, the Coastal Limestone contains picturesque caves of tourist attraction such as those of Yanchep, Yallingup and Margaret River.

The only evidence of igneous activity in the Basin is the Cretaceous basalt of the sunkland between Bunbury and Cape Gosselin on the south coast.

Very little is known about the structure of this basin. It is bounded to the east by a large fault or monoclinical fold. The evidence available indicates that the main structural character of the deeper part is a regional dip to the east (of 15° to 20°) traversed by north-south trending faults with down-throws to the west. There is an unconformity (Upper Jurassic to Lower Cretaceous) at a depth of approximately 600 metres above which the Cretaceous and Tertiary sediments are almost horizontal.

The *Eucla Basin* occupying the Nullarbor Plain, in the south-eastern corner of the State, is occupied at the surface by marine fossiliferous Middle Tertiary (Miocene) limestones with a marginal belt of Lower Tertiary (Eocene) limestones. The Tertiary rocks lie on sandstones and shales of probable Cretaceous age, which in turn overlie the Precambrian crystalline rocks. Little is known of the details of the stratigraphy and structure of the Eucla Basin since the beds are very flat-lying and have only been penetrated by water bores in a few places such as Madura near the coast and Loongana on the Trans-Australian Railway. The Madura bore is artesian but bores along the Trans-Australian Railway have only yielded sub-artesian water (*i.e.* the water will rise under pressure only part of the way to the surface). The oil prospects of this basin are poor because of the comparatively small thickness (600 metres) of the sediments and the absence of suitable folded structures to form oil traps.

The *Collie Coal Basin*. Of the minor basins and isolated occurrences of post-Proterozoic sediments, Collie, since it is the only operating coalfield in Western Australia, is the only one which will be considered here. It is situated approximately 160 kilometres SSE. from Perth, and has an area of about 260 square kilometres. Actually it is made up of two basins separated by a sub-surface granitic ridge. It is composed of sandstones and shales with interbedded coal seams and is surrounded by Precambrian rocks. The coal measures, of Permian age, are of the order of 600 metres in thickness of which approximately forty metres is coal. The actual contact between the Permian coal measures and the Precambrian granitic basement has nowhere been seen at the surface but has been encountered in deep drill holes in various parts of the Basin. Such drill holes reveal that Permian mudstone containing granite pebbles lies on an ice-planed surface of the Precambrian granitic rocks. This suggests that the Collie Basin, formerly considered to be a block of the Permian downfaulted into the Precambrian basement, is actually a glacially-gouged trough formed by terrestrial glaciation in the Permian and since filled with Permian lacustrine sediments. Coal occurs at three horizons and the seams, which average two metres in thickness, persist over fairly long distances. From the associated plant fossils these coal measures appear to be comparable in age with those of the upper part of the Permian sequence at the Irwin River near the northern end of the Perth Basin. There is another similar basin, containing Permian coal measures, the *Wilga Basin*, of about fifty square kilometres extent, approximately thirty kilometres SSE of Collie. There may be other small glacially-gouged Permian basins in the southern part of the State, which are yet unknown. [An early history of the discovery of coal and other minerals in the Colony of Western Australia was published in the *Western Australian Year Book* for 1900-01, page 76. See also the history of the Department of Mines in the 1977 Year Book. Ed.]

The Superficial Deposits

Over a great part of the State fresh rock outcrops are comparatively sparse. Most of the country is covered by highly-weathered rocks, laterite, drift sand, soils, and, in the arid salt lake country, by calcrete and thin evaporite deposits.

Laterite. In the southern half of the State the remnants of the Darling Plateau are covered by a thin layer up to three to five metres thick of a reddish-brown rock composed of spherical pebbles tightly or loosely cemented together by a lighter-coloured earthy matrix. This material in its poorly consolidated state is popularly referred to as 'ironstone gravel' and when strongly cemented as 'ironstone'. This rock, called laterite, although it covers large areas, is purely superficial and wells or bores sunk in it pass within a few metres into highly weathered country rock which may extend down for distances up to thirty metres before encountering fresh unweathered rock. This laterite crust and the underlying highly weathered country rock were developed on a gently undulating surface during a period of warmer, more humid, climatic conditions. These tropical conditions probably existed in Late Tertiary (Pliocene) times when a great part of Western Australia had been reduced by long-continued erosion to a peneplain lying close to sea-level, or soon after, when this peneplain had been uplifted to form the *Darling Plateau*. This uplift, judged by the elevation of the laterite-capped hills and the occurrence of fossiliferous marine Eocene sediments 270 metres above sea-level at Norseman, was of the order of 300 metres. On the Great Plateau, remnants of this Darling Plateau are evidenced by the table-topped hills so characteristic of much of the Plateau country. The significance of the laterite profile and the soils developed from the laterite and associated weathered rocks has already been mentioned. Economically, the laterite is important for road-making materials and in a few places (such as Wundowie) as an iron ore. The main constituents of the laterite are the insoluble products of intense rock weathering—iron oxide, alumina and silica. In many places the alumina content is sufficiently high to call them bauxite. Bauxites are the main source of aluminium, and the bauxitic laterites of the Jarrahdale and Del Park-Huntly areas in the Darling Range near Perth are being exploited as aluminium ore. Bauxite deposits further south, near Wagerup, are now being developed for mining.

The mid-Tertiary land surface of the southern half of Western Australia on which the laterite profile was developed at a time when this country was subjected to a tropical climate extends into the northern part of the State. In the Hamersley Iron Province of the North-West Division this old land surface truncated the Lower Proterozoic banded iron formations of the Hamersley Group. At and below this old land surface (the *Hamersley Surface*) which can be traced without tectonic break from sea-level to elevations of 1,200 metres, there was a secondary concentration of the iron of the Lower Proterozoic rocks resulting in extensive rich iron-ore deposits which make this area one of the richest iron provinces in the World.

In the far south-west of the State sub-surface hard pan formations consisting of ferruginous sandstone are a potential source of low-grade iron ore.

Soils and drift sands. Western Australia, an area of 2,525,500 square kilometres extending from lat. 13° 44' S to lat. 35° 08' S, although having little variety in its broad physical features, has very considerable variation in climates from the tropical areas of summer rainfall in the north through a central and inland province of low rainfall to the temperate areas of winter rainfall in the south. Moreover, throughout this enormous area there is very considerable variation in the nature of the country rocks. The nature of the soils developed is dependent on these two factors—climate and parent rock—so it will be apparent that there will be very considerable variation in the soils over this extensive area. L. J. H. Teakle has recognised the following major soil zones of Western Australia:

1. Grey, yellow and red podsolised, or leached, soils of the temperate sclerophyll forests.
2. Red-brown earths of the eucalyptus-acacia woodlands.
3. Grey and brown calcareous, solonised soils of the low rainfall eucalyptus woodlands—('mallee' soil zone of Prescott).

4. Red and brown acidic soils of the acacia semi-desert scrub—mulga, etc.
5. Brown acidic soils of the spinifex semi-desert steppes of the north-west.
6. Pinkish-brown calcareous soils of the Nullarbor Plain desert shrub steppes.
7. Pinkish-brown calcareous soils of the acacia semi-desert scrub, mallee and salt bush-blue bush zone.
8. Brown soils of the tropical woodlands, savannahs and grasslands.
9. Red sands of the central desert sandhills—spinifex with desert acacias, desert gums and mallees (*Eucalyptus spp.*).

Each of these major soil zones may be subdivided into one or more soil regions and the reader is referred to a paper 'A Regional Classification of the Soils of Western Australia', by L. J. H. Teakle (*Jour. Roy. Soc. West. Aust. XXIV*, pp. 123-95) for details concerning the soil characteristics of these various zones and regions.

There are considerable areas of Western Australia covered by drift sand which may be in the form of parallel red sand dunes or, in the southern part of the State, extensive sandy plains. The latter have been generally considered to be residual from the weathering of granite. These sand plains are often underlain by lateritic material and they probably represent the leached zone of the laterite profile. The youngest of the drift sand deposits are the coastal sand dunes.

Coastal sand deposits are of considerable economic importance. At various places along the south and west coasts there are beach sand deposits in which there is a natural concentration of heavy minerals such as zircon, monazite, xenotime, rutile and ilmenite. Such deposits are at present being exploited at Capel and Bunbury for their ilmenite content, which is valuable because of its low chrome content. The other heavy minerals such as zircon, monazite and xenotime are also being exported overseas. Similar deposits have been discovered at Eneabba (approximately thirty kilometres inland at 240 kilometres north of Perth)—deposits which have been evaluated and are now being exploited.

Calcrete. Throughout the arid and semi-arid parts of inland Western Australia, former stream channels are now represented by elongate areas of calcrete deposition or by elongate salt lakes. Calcrete is chemically-deposited calcium carbonate. These calcretes, because they contain networks of solution channels, have a high permeability and therefore are aquifers in which underground water may occur. Such groundwater has been of considerable significance in the establishment of mining communities in outback arid areas. In calcretes of some areas (such as Yeelirrie, south of Wiluna), uranium deposits have been formed from circulating waters draining areas of weathering Precambrian rocks, mainly granites, which contain small amounts of uranium-bearing minerals. Such secondary uranium deposits are of potential economic significance.

Salt lake deposits. These, together with the coastal sand deposits, represent the youngest of the geological formations developed—indeed they are in course of formation at the present time. They are evaporite deposits resulting from the evaporation of lake waters in the areas of internal drainage. Soluble salts produced by rock weathering are leached out by rain and running water and transported by streams to these lakes. During the long dry summers most of these lakes dry up and the soluble salts are deposited, yielding accumulations of gypsum and common salt. In a few of these inland lakes hydrated potassium aluminium sulphate (alunite), which is a valuable source of potash for fertilisers, has been formed but its actual mode of formation has not yet been satisfactorily explained.

Valuable potash reserves occur at Lake MacLeod, north of Carnarvon. This 2,700-square kilometre coastal lake contains brines rich in potash salts (which are the last salts to crystallise on the evaporation of sea water) saturating the mud of the lake floor. These deposits, which are Australia's only domestic source of potash, are now being exploited.

Solar salt (sodium chloride) is at present being produced at several localities in the north-west, such as Port Hedland, Exmouth Gulf, Lake MacLeod and Shark Bay, where a combination of low-lying flat topography and shallow marine embayments (such as Useless Loop in Shark Bay) with hot dry climate resulting in high evaporation are the ideal conditions for crystallisation of sea water salts. The production of such solar salt

amounted to approximately 3·9 million tonnes in 1978. In localities such as Shark Bay, where the waters are abnormally saline, other rocks—limestones—are in course of formation. The Shark Bay area has proved a very fruitful area for research on the formation of various limestones and the information being derived from the study of these presently forming rocks has helped in the interpretation of the significance of such deposits which formed in past geological times.

Groundwater. Shallow groundwater, one of the most recent accumulations, has become of major importance in Western Australia, particularly in the arid areas of the developing mining areas of the Pilbara, and in supplementing the surface-conserved waters used in the Perth Metropolitan Area. This matter is dealt with fully at the end of this Part.

Conclusion

From the foregoing summary of the geology of Western Australia we see that, although nowhere do we find the complete geological succession, somewhere in the State there are deposits representative of every Period. The geological history of Western Australia begins with the basaltic igneous activity of the Early Archaean some 3,000 million years ago, followed by sedimentation, intense mountain building activity and associated granitisation and granite intrusions. In post-Archaean times there is a record of sedimentation throughout all the main geological periods. Igneous activity ceased in the Lower Palaeozoic and only re-occurred during the late Mesozoic, yielding the basaltic lavas of the far south-west and the volcanic rocks of the west Kimberley. By mid-Tertiary times much of Western Australia had been reduced by denudation to a gently undulating peneplain land surface on which, under tropical climatic conditions, there was an extensive development of laterite which in places constitutes valuable bauxite and iron-ore deposits. Geological processes are continuing and at the present day rocks and soils are still in the process of formation.

A more complete description of the geology of Western Australia is contained in 'The Geology of Western Australia' (*Geol. Surv. West Aust. Mem. No. 2, 1975*).

The Mineral Deposits

In the foregoing pages mention has been made in various places of the mineral deposits on which the development of Western Australia has been so dependent. These deposits are directly related to the geology—the nature of the rocks and their structural relationships—of the areas in which they occur. One would not, for example, look for coal, oil or natural gas in the crystalline Precambrian Shield, nor for gold or nickel deposits in the sedimentary basins that have been described. Moreover, in spite of the fact that the nickel deposits occur in Older Precambrian rocks, not all of these rocks are potential hosts for nickel deposits—they are only likely to occur in the ultrabasic rocks which constitute a very small fraction of 1 per cent of the Older Precambrian rocks. The following tabulated statement summarises the sequence of events represented in the geological history of Western Australia and the mineral deposits associated with each. This table, read in conjunction with a geological map of any area, will indicate the economically important deposits which could possibly occur in that particular geological environment.

GEOLOGICAL EVENTS AND MINERAL DEPOSITS IN WESTERN AUSTRALIA (a)

Era	Main geological events	Economic mineral deposits
CAINOZOIC	15. Weathering and erosion (Present day)	Beach sand deposits, salt, gypsum, sands and clays, peat, alluvial deposits (gold, tin, etc.), groundwater, uranium in calcareous areas.
	14. Sedimentation (Pleistocene and Recent)	Ilmenite and other black sand minerals, limestone

GEOLOGICAL EVENTS AND MINERAL DEPOSITS IN WESTERN AUSTRALIA (a)—*continued*

Era	Main geological events	Economic mineral deposits
CAINOZOIC— <i>continued</i>	13. Peneplanation (mid-Tertiary) and laterite formation	Bauxite Iron and manganese ores Alluvial tin and gold Clays
	12. Sedimentation (older-Tertiary)	Artesian water
MESOZOIC	11. Sedimentation (with Cretaceous basalt outflows and Jurassic volcanic pipes)	Artesian water Oil and gas, coal Basalt for aggregate stone Diamonds in Jurassic pipes
PALAEOZOIC	10. Sedimentation, earth movements, periods of erosion	Coal Oil and gas
PROTEROZOIC	9. Basic igneous intrusions	Road metal (blue metal) Lead, zinc and copper
	8. Sedimentation and minor granitic magma intrusions	Iron ore (of Yampi Sound) Alluvial gold (of Nullagine and Patterson Range)
	7. Chemical sediments (banded iron formations)	Iron ore and blue asbestos (in Hamersley Basin)
ARCHAean	6. Pegmatite and quartz vein formation from end-stages of granitic intrusions	Tin, tantalum, tungsten, beryllium, lithium, uranium minerals Gold and silver in early Archaean country rocks (1 and 2)
	5. Intrusion of granitic magma (2,700 million years ago)	Aggregate and building stone
	4. Granitisation—conversion of all pre-existing rocks into granitic rocks Contemporaneous with intense folding, fracturing and metamorphism of pre-existing rocks	Aggregate and building stone
	3. Intrusion of basic magma forming stratiform layered basic/ultrabasic igneous complexes	Nickel, copper and chromium in ultrabasic rocks
	2. Sedimentation with minor periods of acid volcanic activity	Copper in acid volcanics
	1. Eruption of submarine basaltic lavas and chemical deposition of banded ferruginous cherts	Iron ore

(a) A geological map of Western Australia appears at the beginning of this Part.

Current Geological Investigations in Western Australia

While much is known about the geology and mineral resources of Western Australia, there is still much to be learned. The foregoing summary account of the geology of Western Australia is based on work carried out in the past, which has increased in tempo during the last decade because of the discovery of important oil, gas and metal-bearing mineral deposits.

At present, geological work in Western Australia is being carried out by the following bodies.

1. The Geological Survey Branch of the Department of Mines of Western Australia, which is engaged in regional geological mapping, special investigations of varied character concerned with groundwater resources, mineral deposits, and engineering geology problems, and problems arising daily, which require geological advice to the public. The major results of the Geological Survey's operations are published annually in the Annual Report of the Department of Mines of Western Australia, in Bulletins issued at irregular intervals and in four-mile or 1:250,000 scale geological maps with explanatory notes, which are also issued at irregular intervals.

2. The Geology Department of the University of Western Australia. Research projects are undertaken by members of staff and research students, varying from mapping and petrological-mineralogical projects concerned with the Precambrian rocks which make up the greater part of the State and their associated ore deposits, through petrological and palaeontological work on rocks from the various sedimentary basins, to studies of present-day marine sedimentation. The results of such investigations are published in various scientific periodicals, both in Australia and overseas.
3. Oil exploration companies. Such companies have carried out geological and geophysical surveys of the various sedimentary basins and some offshore areas, and are presently engaged in deep-drilling programmes. Attention is now being given to drilling in the offshore continental shelf areas of the Canning, Carnarvon and Perth Basins.
4. Mineral exploration companies. Following the discovery of important nickel deposits at Kambalda and Scotia near Kalgoorlie, and, subsequently, at Mount Windarra near Laverton, and other localities, many Australian and overseas exploration companies became engaged in base metal exploration, particularly in the Norseman to Laverton belt of Precambrian greenstones.

The continued efforts of these institutions and exploration companies are adding much to our knowledge of the geology of the western third of the Australian continent.

Seismicity of Western Australia

It had been generally considered that Western Australia was a stable block free of seismic activity in the form of earthquakes but this idea was shattered by the occurrence, on 14 October 1968, of a major earthquake centred near Meckering, 135 kilometres inland from Perth. This earthquake, of magnitude 6.9 on the Richter Scale, completely wrecked the town and most farm houses in the vicinity; alarmed numerous residents of Perth; caused minor damage to many buildings in the Perth Metropolitan Area; was felt within a radius of about 640 kilometres; and made people realise that Western Australia was not as stable as was previously thought. On 2 June 1979, another earthquake of magnitude 6.0 on the Richter Scale, resulted in the destruction of the small town of Cadoux, 215 kilometres NE from Perth. Other major earthquakes, such as the Meeberrie earthquake of 29 April 1941 (of magnitude 7.5 on the Richter Scale, the most severe earthquake yet recorded on the Australian continent) and the more recent submarine earthquake of 23 April 1979, of magnitude 7 on the Richter Scale, which originated on the edge of the continental shelf about 260 kilometres NNW of Broome, have tended to pass without much notice since they either occurred in less densely populated areas or were of low intensity. Records show (according to Everingham in a report of the Bureau of Mineral Resources, Geology and Geophysics, *Seismicity of Western Australia*) that there were forty-seven Western Australian earthquakes of local magnitude greater than 3.5 (Richter scale) recorded in the period August 1959 to June 1965, and 210 less intense earthquakes during the same period.

Most of the recorded minor earthquakes have originated in the Yandanooka-Cape Riche belt of country about 480 kilometres long by fifty kilometres wide, which lies just within the western margin of the crystalline Precambrian Shield. Indeed, all except five of the 210 recorded minor earthquakes of the period 1959 to 1965 originated in this narrow belt which is parallel to the regional geological structure of the older Precambrian rocks of the southern half of Western Australia. It was in this belt, at Meckering, that the severe earthquake of 14 October 1968 had its origin.

The major fault structure of Western Australia is the Darling Fault which forms the western margin of the Precambrian Shield and the eastern margin of the Perth Basin. It extends meridianally from the south coast for about 1,000 kilometres. It is considered that the total west block downward movement on this fault has been of the order of 9,000 metres to 12,000 metres. In spite of the fact that there is a major negative gravity anomaly over the Perth Basin causing this region to be isostatically unbalanced, no earthquakes have been recorded which originated on this fault—indeed there is no geological evidence of any

movement on the Darling Fault for at least 1 million years. The October 1968 movement on the Meckering Fault indicates that the Precambrian Shield is in a state of compression and would support a hypothesis that the Darling Fault, instead of being a westerly-dipping tension structure with downthrow to the west as commonly thought, is more probably an easterly-dipping compression structure with the east (continental) block thrust up over the Perth Basin. This would explain the observed stability of the Perth Basin which should, according to the gravity measurements, be a very unstable area. Instead of rising, as it should because of the major negative gravity anomaly, it is being held down by the overthrust continental block.

As has been indicated, the Meckering earthquake has drawn attention to the possibility of earthquake occurrence in south Western Australia and for the necessity to consider this factor when designing large structures. Calculations have been made from records during the period 1960 to 1969 to give an approximate idea of the order of earthquake frequency in the south-west corner of the State. These have indicated that an earthquake of magnitude greater than 6.5 would occur once every fifty years, and one of magnitude greater than 5.5 every ten years, but these figures are thought to be pessimistic because records kept since 1840 suggest a lower average frequency and the data used for these calculations are swamped by the foreshocks and aftershocks of the Meckering earthquake.

PERTH'S UNDERGROUND WATER (1)

Underground water (groundwater) has provided a significant proportion of Perth's water supply since first settlement in 1829. The first sources of groundwater were shallow wells and springs. However, from 1897 onwards artesian bores were also used, and prior to the completion of the Canning Reservoir in 1940, produced 60-70 per cent of Perth's water supply.

With the rapid growth of Perth in the early 1960s it was realised that the local surface water resources were inadequate to meet projected demands. This stimulated the continuing systematic exploration of the groundwater resources on the coastal plain for about seventy kilometres to the north and south of Perth. As a result the Mirrabooka (1971), Gwelup (1974), and Wanneroo (1977) Groundwater Schemes were constructed. They draw mainly on the shallow (unconfined) groundwater but each is supplemented by a few deep bores. Several other schemes are planned, and by the year 2000 some 30-40 per cent of Perth's water supply may be from groundwater.

Stratigraphy and Structure

Perth is situated on the eastern onshore edge of the Perth (sedimentary) Basin and overlies about 8,000 metres of Phanerozoic sedimentary rocks which are separated from Archaean crystalline rocks of the Darling Scarp (Yilgarn Block) by the Darling Fault. The formations which contain potable groundwater in the upper 1,000 metres of the basin near Perth are given in the table on the following page.

The Cockleshell Gully and Yarragadee Formations are extensively block faulted and have a regional dip to the eastward. They are unconformably overlain by the Warnbro and Coolyena Groups which are apparently folded into shallow north-east-trending folds. The largest of these, the Swan Syncline, underlies most of the coastal plain except in the north-west near Yanchep, where there is a complementary anticline and another syncline. The folds are not known to have been faulted but have been deeply eroded prior to deposition of the King's Park Formation and Rockingham Sand in deep channels; and by the flat-lying 'superficial formations' which conceal the structure.

Occurrence of Groundwater

With the exception of some saltwater adjacent to the coast, groundwater in the basin originates from the relatively high (865 mm) rainfall on the coastal plain, or locally by run-off from streams rising to the east of the Darling Scarp. This water maintains a regional body of unconfined groundwater in the superficial formations from which leakage

(1) Contributed by the Geological Survey of Western Australia.

may take place into underlying water-bearing beds (aquifers) where relatively impermeable formations (aquicludes) are not present. The main aquifers in downward order are described below.

Superficial Formations. The superficial formations are a complex sequence of sand, limestone and clay up to ninety metres thick, which despite their variation in lithology form a single aquifer. They contain groundwater which originates from direct rainfall or locally by surface run-off. The groundwater is unconfined and to the north of Perth forms a prominent mound, referred to as the Gnangara Mound, rising to about seventy metres above sea level, from which groundwater flows radially toward the major rivers and the sea. Groundwater flow south of Perth is generally westward except in the vicinity of the small Jandakot Mound about twenty-five metres above sea level, where some flow is northward into the Canning and Swan Rivers. The average recharge to the aquifer is estimated to be about 7 per cent of rainfall and the outflow to be greater than 220 million cubic metres per year. The water table is highest in September-October after the winter rain, and lowest in March-April. The groundwater salinity ranges from about 250 to 1,000 milligrams per litre of total dissolved solids (mg/l TDS) with some small local areas of brackish water. It has a temperature of 18°-20°C, and frequently contains organic colouration, turbidity and dissolved iron which require treatment before the water can be used for public supply. The aquifer is capable of considerable further development, fortuitously adjacent to the developing north-west and south-west corridors. A constraint on the use of groundwater from this aquifer is the effect which lowering of the water table by pumping may have on the wetlands.

NEAR-SURFACE STRATIGRAPHIC SEQUENCE—PERTH AREA

	Formal age	Group	Formation	Max. Thickness (m)	Lithology	Remarks
CAINOZOIC	Quaternary	....	Superficial formations (a)	90	Sand, limestone, clay	Major unconfined aquifer
	UNCONFORMITY					
	?Quaternary	....	Rockingham Sand	110	Sand	Aquifer; may contain brackish or salt water near coast
	UNCONFORMITY					
	Early Tertiary	....	King's Park Formation	240	Siltstone, shale, minor sand	Aquiclude; upper part of formation may locally be sandy and carry water
UNCONFORMITY						
MESOZOIC	Late Cretaceous	Cool-yena	Poison Hill Greensand	710	Glauconitic sand	Minor aquifer
			Gingin Chalk	55	Fossiliferous and glauconitic chalk	Aquiclude
			Molecap Greensand	220	Glauconitic sand	Minor aquifer
			Osborne Formation	160	Glauconitic shale and siltstone with minor sand	Major aquiclude; contains local minor aquifer near base
	Early Cretaceous	Warnbro	Leederville Formation	300	Sandstone, siltstone, shale	Major aquifer; potable and brackish groundwater
			South Perth Shale	300	Shale, siltstone, minor sand	Major aquiclude; local minor aquifer at base
UNCONFORMITY						
Early Cretaceous-Early Jurassic	....	Yarragadee Formation	3,000	Sandstone, siltstone, shale	Major aquifer; potable water only in northern area	
Middle Jurassic	....	Cadda Formation	7350	Shale, siltstone	Not definitely known	
Early Jurassic	....	Cockleshell Gully Formation	2,000	Sandstone, massive siltstone, shale	Local aquifer containing potable and brackish water; usually too deep	

(a) Informal name used in the account.

The *Rockingham Sand* is a sequence of brown to light green slightly silty sand up to 110 metres thick, which has been deposited in channels eroded into the pre-existing formations. The extent and occurrence of groundwater in this aquifer is not fully known. Groundwater in the formation results from downward leakage from the superficial formations, and near Rockingham, by upward leakage from the Leederville Formation. It is believed to flow approximately parallel with the water table and is known to be in contact with a saltwater interface near Rockingham. The formation contains considerable resources of potable and brackish groundwater which are not at present being exploited for public water supplies.

The *Leederville Formation* consists of interbedded sand, siltstone and shale up to 300 metres thick, in which sand makes up about half the formation. It has been partially eroded over about half of the coastal plain and now underlies the superficial formations, through which it is recharged by downward leakage. There is also some upward recharge from the Yarragadee Formation where the South Perth Shale was eroded away prior to deposition of the King's Park Formation. Groundwater flow is toward the coast with local discharge into the superficial formations or the Rockingham Sand. Except in the intake areas the groundwater is under pressure, and bores may flow when drilled in topographically low areas. The groundwater salinity ranges from 250–3,000 mg/l TDS being generally lowest at the intake areas and increasing with depth and distance from the intakes. The groundwater has a temperature of 23.0°–31.7°C and usually contains dissolved iron, necessitating treatment before use for public water supply. At present there is only limited development of the aquifer for public water supply but the thickness, extent, and distribution of potable water in the formation is such that it is capable of considerable further development.

The *Yarragadee Formation* consists of thick bedded sandstone, siltstone, and shale about 3,000 metres thick. Of this thickness the top 500 metres beneath the Warnbro Group may contain potable water. Recharge takes place by downward leakage from the Leederville Formation in places where the South Perth Shale is absent. Groundwater flow is towards the west, and discharge takes place into the Leederville Formation near Perth and presumably at sites offshore. The formation contains pressure water, and bores drilled at sites with an elevation of less than about twenty-five metres usually flow. The groundwater ranges in salinity from 150 to 7,500 mg/l TDS with the average salinity being about 3,000 mg/l TDS. Downstream from the main recharge area, potable water occurs in the formation in the central part of the coastal plain from about Perth to Lake Pinjar. The groundwater is usually iron-free and does not require treatment. It ranges in temperature from 21°–44°C. Because of the depth at which the aquifer usually occurs and also because of legislation restricting depth of bores in the Metropolitan Area, there are only a few production bores in the formation. There is scope for considerable further development of potable water supplies and potential for very large production of brackish water for industrial use or desalinisation.

The *Cockleshell Gully Formation* consists of interbedded sandstone, shale, and coal measures. It may locally contain beds of shale up to 300 metres thick. The formation extends beneath the coastal plain but is only at shallow depth in the Mandurah-Serpentine area where the Yarragadee Formation has been eroded away. Where the South Perth Shale is missing, recharge to the formation takes place by leakage from the Leederville Formation. Groundwater movement is westward, presumably with submarine discharge taking place offshore. Salinity ranges from 270 to 3,000 mg/l TDS, increasing with depth and distance from the intake area. Between Serpentine and Pinjarra the formation has potential for development adjacent to the Darling Scarp.

Conclusions

The situation of Perth on the Perth Basin, and the relatively high winter rainfall, together have resulted in the accumulation of substantial potable groundwater resources in the vicinity of Perth. Developed as required and used together with surface water resources they should ensure a secure water supply for Perth until well into the next century.

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Chapter II—continued

Part 2—Climate and Meteorology ⁽¹⁾

(Contributed by the Western Australian Regional Office of the Bureau of Meteorology)

Western Australia is the largest State in the Commonwealth, extending from latitude 13° 30' S to 35° 08' S, and from longitude 113° 09' E to 129° E. It stretches a distance of about 2,400 kilometres in a north-south direction and about 1,600 kilometres west-east. A little more than one-third of the State lies within the tropics, while the remainder extends southward to the temperate zone.

Because of its large size and its latitudinal position, Western Australia has entirely different climates in its northern and southern parts, while in the central regions there is a gradual change from the tropical climate of the north to the typical Mediterranean climate of the south.

Most of the State is a plateau between 300 and 600 metres above mean sea-level and there are no outstanding mountain ranges. Where the edge of the plateau forms the Darling Range along the southern part of the west coast, it exerts a marked influence on the rainfall, causing a rapid increase from the coastal plain to the higher land. Elsewhere the effect of topography is less marked and its main influence is seen in the general decrease of rainfall with increasing distance from the coast.

PRESSURE SYSTEMS

Weather during the year is controlled largely by the movement of the anticyclonic belt (high pressure systems with anti-clockwise winds), which lies in an east-west direction across the continent for about six months of the year.

In winter this system moves northward, bringing clear skies with fine sunny days and easterly winds to the tropics. With this northward movement, westerly winds on the southern side of the anticyclones extend over the southern part of the State, bringing with them cool cloudy weather and rain. In mid-winter the northern fringe of the 'Roaring Forties' extends to Western Australia and there are frequent westerly gales in the south coastal belt.

These westerly winds are maintained by a series of depressions (low pressure systems with clockwise winds), which move eastward well south of the Western Australian coast, and others which originate in the Indian Ocean and move south-eastward past Cape Leeuwin. The extent to which westerlies affect the State depends largely on the intensity and the position of these depressions.

Towards the end of winter the anticyclonic belt moves southward, and the westerlies are confined more to the lower south-west and the south coastal districts. By summer the anticyclonic belt has moved so far south that its axis is off the south coast and easterly winds prevail over most of the State.

During this summer period the midday sun is at a high elevation in the tropics and the continual heating leads to the development of a monsoonal depression over this region. Wind circulation round this system causes easterlies on its southern or inland side, but in the coastal districts north-east from Onslow, and in parts of the Kimberley, westerlies prevail. Winds in both the north and the south of the State are then in the opposite direction to those prevailing during the winter.

As the sun moves northward again the anticyclonic belt follows it. The monsoonal depression over the tropics dissipates and westerlies again gradually extend northward to the southern part of the State.

(1) See *Appendix* for reference to additional information in earlier issues of the Year Book.

During the northern 'Wet' season (from about December to March), occasional cyclones, known locally as 'willy willys', bring strong winds and rain to the tropics. They originate generally in the Timor Sea or off the north-west coast and often move first in a south-westerly direction parallel to the coast and later in a south-easterly direction.

They frequently move inland between Broome and Onslow but occasionally travel further westward before curving to the south-east and moving inland over the west coast. Others fade out at sea without ever crossing the coast. Those that move inland usually commence to dissipate soon after crossing the coast, but occasionally they move right across the State, passing into the Southern Ocean and moving off towards Tasmania.

These storms are often extremely violent and have on occasions almost completely wrecked towns on the north-west coast, while a cyclone which struck a pearling fleet off the Eighty Mile Beach in 1887 caused the loss of twenty-two vessels and 140 lives.

However, despite the damage which they cause, the storms are of great benefit to the pastoral regions on account of the heavy and widespread rain which generally accompanies them. The heaviest fall ever recorded in one day in Western Australia, 747 millimetres, was received at Whim Creek from a cyclone in 1898.

RAINFALL

The moist rain-bearing winds in this State are in general from a westerly direction. The easterlies, having come from the dry inland parts of Australia, usually bring fine weather and clear skies.

Because of this the highest rainfall occurs in the winter months in the south of the State, and in the summer months in the north. In between these areas there is a gradual change from one rainfall regime to the other.

From the map showing the wettest six-monthly period of the year, it can be seen that the summer rainfall area extends southward from the Kimberley to the Trans-Australia Railway, where there is a rapid change to the winter rainfall regime of the south coast. However, the difference between summer and winter totals decreases southward, and the southern part of this region is one of almost uniform average rainfall.

Proceeding northward from the winter rainfall area of the south-west of the State, the wet period occurs earlier during the year. Across a belt Carnarvon-Menzies-Eucla, there is a more rapid change, and this belt divides the winter rainfall area from that which receives most of its rain in the first six months of the year. Further north, the change is more gradual but continuous and in the Kimberley most of the year's rainfall is received in the summer months which, in the southern parts of the State, are the driest of the year.

The mean annual rainfall for Western Australia is shown on the map later in this Part.

The following table shows the average rainfall and number of wet days, the highest and lowest monthly totals, and the highest daily fall for various centres.

RAINFALL AT REPRESENTATIVE CLIMATOLOGICAL STATIONS

(Figures revised since previous issue)

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
COASTAL													
<i>Wyndham</i> —													
Rainfall—Average (mm)	195	165	120	27	8	5	4	1	2	11	46	108	692
Highest (mm)	717	523	447	515	88	120	133	21	35	85	142	292	1,431
Lowest (mm)	0	14	0	0	0	0	0	0	0	0	1	7	365
Highest one day (mm)	308	150	318	440	69	113	48	19	35	57	90	110	440
Wet days—Average number	13	11	9	3	1	1	0	0	0	2	6	10	56
<i>Broome</i> —													
Rainfall—Average (mm)	150	158	94	25	36	23	6	1	2	2	8	32	537
Highest (mm)	825	427	439	226	176	208	72	23	24	28	50	279	1,228
Lowest (mm)	7	8	1	0	0	0	0	0	0	0	0	0	139
Highest one day (mm)	351	140	204	107	119	127	55	9	13	15	37	210	210
Wet days—Average number	11	10	8	3	3	2	2	1	1	1	1	4	47

RAINFALL AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—*continued*

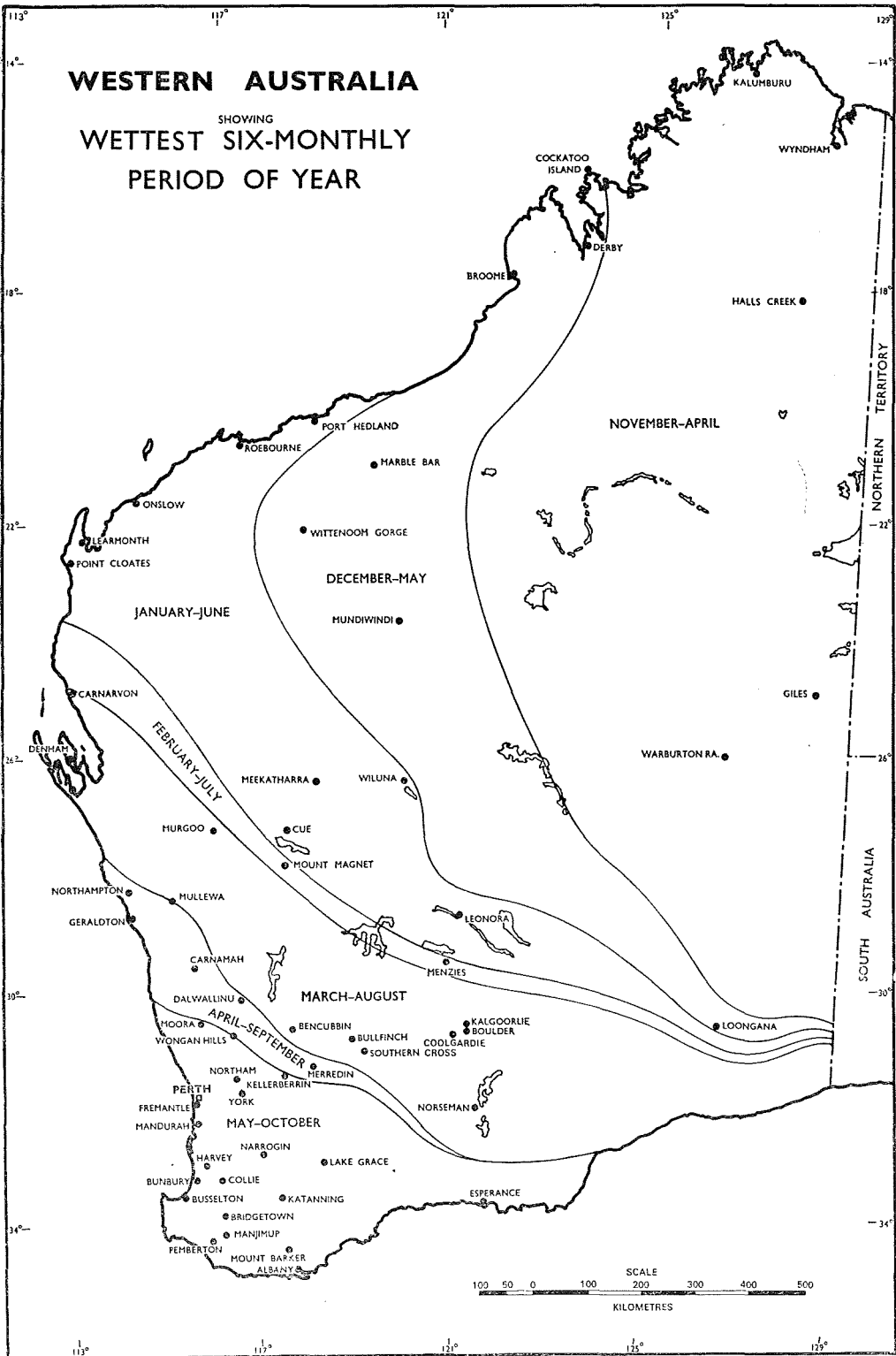
Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
<i>COASTAL—continued</i>													
<i>Port Hedland—</i>													
Rainfall—Average (mm)	61	91	36	24	31	20	9	4	1	1	3	23	304
Highest (mm)	454	360	251	352	170	125	81	35	4	8	67	219	627
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	47
Highest one day (mm)	387	329	152	111	156	53	46	22	3	7	59	169	287
Wet days—Average number	5	7	4	2	4	3	2	1	1	1	1	2	33
<i>Roebourne—</i>													
Rainfall—Average (mm)	66	63	67	32	29	31	14	5	1	1	2	10	321
Highest (mm)	368	325	408	552	225	309	135	98	40	31	31	129	1,060
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	3
Highest one day (mm)	213	169	234	146	168	134	57	44	23	29	17	97	234
Wet days—Average number	3	4	4	1	3	3	2	1	0	0	0	1	22
<i>Onslow—</i>													
Rainfall—Average (mm)	25	46	51	21	44	43	19	9	1	1	2	3	265
Highest (mm)	261	539	415	279	259	183	222	107	25	27	56	61	999
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	15
Highest one day (mm)	158	356	283	157	117	111	76	62	17	21	30	38	356
Wet days—Average number	2	3	3	2	4	4	2	2	0	0	0	1	23
<i>Carnarvon—</i>													
Rainfall—Average (mm)	19	25	16	12	42	50	51	18	4	6	4	1	248
Highest (mm)	157	149	93	89	195	161	180	51	19	38	81	4	556
Lowest (mm)	0	0	0	0	0	1	0	0	0	0	0	0	75
Highest one day (mm)	52	78	77	76	95	96	82	35	11	15	7	4	96
Wet days—Average number	2	3	2	3	6	8	8	5	3	3	1	1	45
<i>Geraldton—</i>													
Rainfall—Average (mm)	7	12	14	27	76	116	101	66	30	19	8	6	482
Highest (mm)	53	131	89	100	282	286	243	131	81	109	47	59	843
Lowest (mm)	0	0	0	1	0	34	32	11	0	0	0	0	220
Highest one day (mm)	36	69	88	48	62	109	72	49	39	71	17	51	109
Wet days—Average number	2	2	3	7	10	15	15	13	9	7	4	2	89
<i>Perth—Bureau—</i>													
Rainfall—Average (mm)	8	12	20	45	124	183	174	138	81	56	20	14	875
Highest (mm)	55	166	145	149	308	476	425	318	199	200	71	81	1,338
Lowest (mm)	0	0	0	0	14	55	61	12	9	1	0	0	508
Highest one day (mm)	44	87	77	67	76	99	76	74	47	50	39	47	99
Wet days—Average number	3	3	4	7	14	17	18	17	14	11	6	4	118
<i>Bunbury—</i>													
Rainfall—Average (mm)	10	11	23	46	131	185	175	126	81	55	25	14	882
Highest (mm)	86	103	91	175	288	412	417	302	201	195	84	80	1,365
Lowest (mm)	0	0	0	0	10	73	49	21	0	5	0	0	484
Highest one day (mm)	66	86	66	61	79	82	95	62	58	39	38	27	95
Wet days—Average number	3	3	4	8	14	18	20	18	14	11	7	4	124
<i>Albany—</i>													
Rainfall—Average (mm)	18	21	29	73	97	95	132	103	78	86	45	32	809
Highest (mm)	68	62	85	127	192	224	204	174	133	172	117	97	966
Lowest (mm)	3	4	7	41	54	45	55	52	43	38	6	5	628
Highest one day (mm)	43	36	33	52	40	38	43	44	44	53	28	19	53
Wet days—Average number	9	8	11	16	17	19	23	21	19	16	11	9	179
<i>Esperance—Post Office—</i>													
Rainfall—Average (mm)	18	20	28	45	82	101	107	97	71	55	28	23	675
Highest (mm)	133	120	125	176	179	274	240	211	174	146	145	81	1,003
Lowest (mm)	0	0	0	2	20	28	24	19	11	13	0	0	438
Highest one day (mm)	60	37	42	126	52	106	55	48	116	43	51	44	126
Wet days—Average number	5	5	7	10	15	16	17	16	13	12	7	6	129
<i>Eucla—</i>													
Rainfall—Average (mm)	15	16	21	27	32	27	23	24	19	18	17	13	252
Highest (mm)	95	182	127	205	104	155	62	82	85	74	67	116	453
Lowest (mm)	0	0	0	0	0	3	0	3	1	1	0	0	52
Highest one day (mm)	54	115	51	41	75	36	26	31	40	33	28	49	115
Wet days—Average number	3	4	5	7	9	10	10	9	7	6	5	4	79

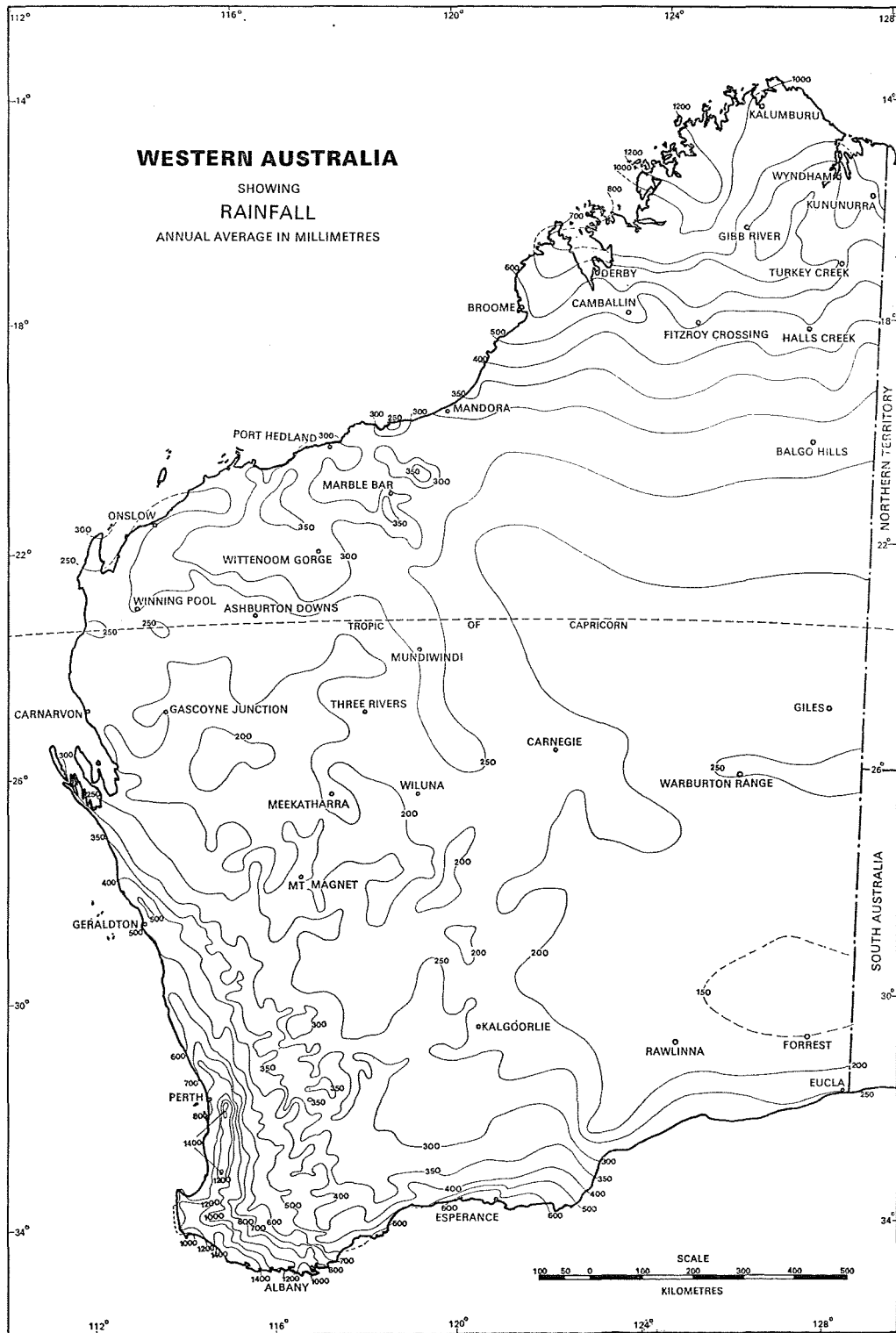
RAINFALL AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—*continued*

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
WHEAT BELT													
<i>Carnamah</i> —													
Rainfall—Average (mm)	11	14	23	23	52	83	72	54	29	18	10	8	397
Highest (mm)	103	103	180	121	170	231	188	192	84	73	91	56	782
Lowest (mm)	0	0	0	0	2	21	14	12	1	0	0	0	204
Highest one day (mm)	97	78	153	89	74	61	43	79	33	40	71	50	153
Wet days—Average number	2	2	3	6	8	13	14	11	8	6	3	2	78
<i>Wongan Hills</i> —													
Rainfall—Average (mm)	11	15	22	24	55	81	72	52	27	20	10	8	397
Highest (mm)	70	111	166	81	188	220	174	131	97	66	43	59	675
Lowest (mm)	0	0	0	0	0	17	8	8	2	0	0	0	161
Highest one day (mm)	69	80	81	62	64	70	41	34	37	36	32	57	81
Wet days—Average number	2	2	3	5	8	12	13	11	7	6	3	2	74
<i>Kellerberrin</i> —													
Rainfall—Average (mm)	11	13	23	22	44	59	55	42	27	19	11	13	339
Highest (mm)	87	127	152	110	119	163	123	100	76	77	68	67	661
Lowest (mm)	0	0	0	0	0	15	11	3	2	0	0	0	172
Highest one day (mm)	52	108	103	58	40	53	38	40	24	37	33	57	108
Wet days—Average number	2	2	4	5	8	12	13	11	8	6	3	2	76
<i>Southern Cross</i> —													
Rainfall—Average (mm)	14	19	23	22	33	41	39	30	19	16	14	11	281
Highest (mm)	113	137	169	128	119	183	107	88	106	79	75	72	577
Lowest (mm)	0	0	0	0	0	5	11	1	0	0	0	0	118
Highest one day (mm)	63	84	61	44	55	43	36	31	25	55	51	40	84
Wet days—Average number	3	3	4	5	8	10	11	9	6	5	3	2	69
<i>Merredin</i> —													
Rainfall—Average (mm)	11	12	23	23	42	55	55	39	25	20	13	13	331
Highest (mm)	77	80	161	114	132	135	127	86	86	75	69	93	565
Lowest (mm)	0	0	0	0	1	6	9	1	0	0	0	0	130
Highest one day (mm)	66	66	83	60	49	59	45	34	45	30	37	49	83
Wet days—Average number	2	2	4	5	8	11	13	10	7	5	3	2	72
<i>Northam</i> —													
Rainfall—Average (mm)	8	12	20	23	57	86	86	62	37	25	10	9	435
Highest (mm)	56	190	189	88	148	233	221	170	129	100	41	66	711
Lowest (mm)	0	0	0	0	1	10	20	3	3	0	0	0	194
Highest one day (mm)	41	116	126	75	65	57	51	33	31	58	32	50	126
Wet days—Average number	2	2	3	6	10	15	16	14	11	8	4	2	93
<i>Wandering</i> —													
Rainfall—Average (mm)	9	13	22	35	82	122	119	94	63	45	18	14	636
Highest (mm)	56	244	122	121	195	368	324	270	192	129	65	106	1,051
Lowest (mm)	0	0	0	0	11	25	34	14	8	1	0	0	297
Highest one day (mm)	49	138	104	51	61	85	69	53	40	43	48	64	138
Wet days—Average number	3	3	5	7	13	16	18	16	14	11	6	4	116
<i>Narrogin</i> —													
Rainfall—Average (mm)	9	16	22	30	67	93	92	69	48	34	16	13	509
Highest (mm)	69	237	128	121	167	300	243	185	121	123	77	95	741
Lowest (mm)	0	0	0	0	10	25	25	16	7	2	0	0	269
Highest one day (mm)	50	115	114	63	68	71	81	42	36	38	38	50	115
Wet days—Average number	2	3	4	6	11	14	16	13	11	8	5	2	95
<i>Katanning</i> —													
Rainfall—Average (mm)	11	16	24	32	63	82	79	63	47	38	20	16	491
Highest (mm)	87	225	134	162	148	214	174	173	123	115	98	74	782
Lowest (mm)	0	0	0	1	7	21	22	13	4	5	0	0	273
Highest one day (mm)	64	126	70	106	59	70	38	44	37	50	55	55	126
Wet days—Average number	3	4	4	7	13	16	18	16	13	11	6	4	115
OTHER INLAND													
<i>Halls Creek</i> —													
Rainfall—Average (mm)	144	121	54	24	13	4	6	3	5	16	32	67	489
Highest (mm)	501	369	163	162	80	87	69	49	85	87	175	208	791
Lowest (mm)	14	3	2	0	0	0	0	0	0	0	1	4	250
Highest one day (mm)	202	124	95	88	30	36	48	42	37	30	97	120	202
Wet days—Average number	13	11	8	3	2	1	1	1	1	3	6	10	60

RAINFALL AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—*continued*

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
OTHER INLAND—<i>continued</i>													
<i>Marble Bar—</i>													
Rainfall—Average (mm)	71	74	51	20	24	25	12	5	1	4	9	37	333
Highest (mm)	310	235	389	241	187	165	134	35	14	116	62	243	742
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	72
Highest one day (mm)	146	121	305	125	91	105	63	32	24	84	61	150	305
Wet days—Average number	7	7	4	2	2	2	2	1	0	1	2	4	34
<i>Mundiwindi—</i>													
Rainfall—Average (mm)	44	44	46	22	21	22	9	7	3	7	11	26	262
Highest (mm)	321	325	267	180	121	205	70	53	61	93	71	160	816
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	26
Highest one day (mm)	133	71	175	80	56	123	43	39	34	53	58	114	175
Wet days—Average number	6	5	5	3	3	3	2	2	1	1	3	4	38
<i>Warburton Range—</i>													
Rainfall—Average (mm)	24	27	22	22	20	20	11	11	4	11	17	24	213
Highest (mm)	177	149	181	111	91	99	54	72	25	102	83	95	691
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	35
Highest one day (mm)	58	78	101	77	41	42	22	50	24	45	47	61	101
Wet days—Average number	3	3	3	3	4	3	2	2	1	2	3	4	33
<i>Meekatharra—</i>													
Rainfall—Average (mm)	31	29	27	17	24	37	25	12	4	5	11	7	229
Highest (mm)	129	142	166	65	72	156	166	56	21	18	94	25	420
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	66
Highest one day (mm)	103	57	54	37	37	61	62	23	13	25	82	24	103
Wet days—Average number	5	4	4	4	5	7	6	3	2	1	2	3	46
<i>Laverton—</i>													
Rainfall—Average (mm)	22	22	32	21	23	23	14	13	6	7	14	15	212
Highest (mm)	142	144	122	205	124	126	66	85	67	50	152	152	452
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	66
Highest one day (mm)	75	87	67	54	52	40	21	41	44	49	91	71	87
Wet days—Average number	3	3	4	3	5	5	4	3	2	2	3	3	40
<i>Kalgoorlie—</i>													
Rainfall—Average (mm)	23	32	23	23	26	33	27	20	15	14	15	12	263
Highest (mm)	186	308	143	99	110	186	83	65	98	70	70	41	488
Lowest (mm)	0	0	0	0	0	2	5	4	0	0	0	0	108
Highest one day (mm)	154	178	70	70	45	57	28	40	44	26	65	25	178
Wet days—Average number	3	4	4	6	7	9	9	7	6	4	4	3	66
<i>Rawlinna—</i>													
Rainfall—Average (mm)	14	16	19	19	19	19	14	16	12	14	13	13	188
Highest (mm)	210	123	85	114	81	131	58	155	85	64	81	117	497
Lowest (mm)	0	0	0	0	0	0	0	0	0	0	0	0	79
Highest one day (mm)	100	73	48	58	31	38	25	66	72	31	65	49	100
Wet days—Average number	2	3	3	3	5	5	5	4	4	3	3	3	43
<i>Collie—</i>													
Rainfall—Average (mm)	13	14	25	50	133	193	191	147	103	71	29	16	985
Highest (mm)	85	178	105	183	270	474	440	414	249	213	90	81	1,467
Lowest (mm)	0	0	0	4	15	58	52	31	15	2	1	0	605
Highest one day (mm)	74	106	84	63	62	91	69	73	58	49	36	32	106
Wet days—Average number	4	3	5	10	17	20	22	20	17	14	8	5	145
<i>Manjimup—</i>													
Rainfall—Average (mm)	19	19	33	65	139	183	185	150	109	81	45	25	1,053
Highest (mm)	92	117	138	194	269	332	320	323	257	165	122	78	1,761
Lowest (mm)	0	0	1	9	26	86	43	49	24	9	3	0	650
Highest one day (mm)	79	44	89	77	79	83	50	54	59	53	49	32	89
Wet days—Average number	5	5	7	11	17	20	21	20	16	14	10	7	153
<i>Pemberton—</i>													
Rainfall—Average (mm)	21	18	40	87	159	209	234	169	119	94	57	38	1,245
Highest (mm)	80	86	128	213	337	365	391	388	214	189	158	92	1,712
Lowest (mm)	1	1	5	10	36	118	130	84	45	13	6	3	802
Highest one day (mm)	60	30	77	53	77	59	68	51	45	44	45	42	77
Wet days—Average number	7	6	8	12	18	20	23	20	18	16	12	9	169
<i>Mount Barker—</i>													
Rainfall—Average (mm)	22	24	37	57	86	100	108	94	82	74	42	30	756
Highest (mm)	179	179	129	234	243	209	261	173	157	160	155	87	1,095
Lowest (mm)	1	1	4	4	16	43	22	33	18	16	3	1	431
Highest one day (mm)	105	72	57	139	69	68	72	48	45	54	64	44	139
Wet days—Average number	8	7	10	13	17	19	21	20	18	16	11	10	170





TEMPERATURES AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—continued

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
COASTAL—continued													
Port Hedland—													
Temperature:													
Mean max., °C	36.2	35.9	36.9	35.2	29.9	27.2	26.4	28.8	32.3	34.2	36.2	36.5	33.0
Mean min., °C	25.1	25.1	24.1	20.9	17.0	13.8	11.7	12.4	15.1	17.1	20.9	23.6	18.9
Highest max., °C	47.5	47.1	44.5	42.3	37.2	34.4	33.8	36.8	40.8	43.7	47.4	47.9	47.9
Lowest min., °C	19.4	11.7	15.8	12.2	7.0	4.7	3.2	3.7	8.4	11.1	12.4	16.6	3.2
No. of days 30.0°C and over	30.4	27.7	30.3	28.4	16.7	5.0	2.8	9.6	22.2	26.5	28.2	30.7	258.9
No. of days 40.0°C and over	5.0	4.5	4.8	0.9	0.0	0.0	0.0	0.0	*	1.9	5.4	6.2	28.6
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roebourne—													
Temperature:													
Mean max., °C	38.3	37.7	37.2	34.8	30.0	26.6	26.2	28.5	32.2	34.9	37.8	38.8	33.6
Mean min., °C	26.1	26.0	25.1	21.8	18.1	14.9	13.2	14.2	16.5	19.2	22.6	24.6	20.2
Highest max., °C	47.8	47.6	45.2	43.4	37.8	34.3	33.3	36.1	41.6	45.0	47.4	47.6	47.8
Lowest min., °C	18.6	12.8	17.2	14.1	8.2	4.4	4.4	1.8	7.8	11.1	9.4	11.7	1.8
No. of days 30.0°C and over	30.3	27.4	30.3	28.9	18.6	4.8	3.2	10.3	24.4	28.3	29.5	30.8	268.5
No. of days 40.0°C and over	12.3	8.8	8.1	1.4	0.0	0.0	0.0	0.0	*	3.5	10.2	12.8	56.8
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
Onslow—													
Temperature:													
Mean max., °C	35.9	35.8	35.4	33.3	28.7	25.3	24.7	26.4	29.2	31.7	34.1	35.4	31.3
Mean min., °C	23.3	23.8	22.8	19.7	15.6	12.6	11.0	11.8	13.7	16.1	18.9	21.2	17.6
Highest max., °C	47.7	48.3	46.4	43.8	38.3	32.2	32.3	35.3	38.3	44.6	46.1	47.5	48.3
Lowest min., °C	15.8	16.6	14.7	10.0	5.6	2.9	3.1	4.4	5.5	7.4	10.0	9.4	2.9
No. of days 30.0°C and over	30.0	27.4	28.2	26.6	10.6	0.8	0.3	3.2	13.1	22.6	25.6	29.0	217.8
No. of days 40.0°C and over	6.1	5.3	4.1	0.5	0.0	0.0	0.0	0.0	0.0	0.8	2.9	5.5	25.1
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carnarvon—													
Temperature:													
Mean max., °C	30.8	32.0	30.1	28.1	25.9	23.1	21.9	22.4	23.8	25.6	27.0	28.9	26.7
Mean min., °C	22.6	23.1	21.9	18.7	14.9	13.0	11.0	11.3	13.8	16.4	18.7	20.8	17.2
Highest max., °C	47.7	46.6	45.3	41.1	36.2	31.8	30.3	31.2	38.4	42.4	43.4	45.4	47.7
Lowest min., °C	16.8	17.2	13.4	9.5	6.1	3.6	3.4	3.5	7.8	8.8	10.7	12.6	3.4
No. of days 30.0°C and over	15.1	16.9	14.9	8.4	2.8	0.1	0.0	0.3	1.8	3.7	4.5	8.4	76.6
No. of days 40.0°C and over	1.8	2.3	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.8	6.0
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geraldton—													
Temperature:													
Mean max., °C	31.6	32.2	30.6	26.7	24.0	20.6	19.4	19.8	21.6	24.5	27.1	29.9	25.7
Mean min., °C	18.7	19.1	17.5	14.9	12.6	11.2	9.2	8.7	8.8	10.9	13.7	16.7	13.5
Highest max., °C	47.7	44.8	44.3	39.4	36.6	28.5	28.8	31.6	35.5	39.6	42.2	46.7	47.7
Lowest min., °C	10.2	10.0	8.9	6.9	2.1	0.5	1.1	1.3	1.8	3.1	3.8	7.7	0.5
No. of days 30.0°C and over	15.1	16.6	14.6	6.7	1.1	0.0	0.0	0.1	0.7	3.0	7.0	11.2	75.8
No. of days 40.0°C and over	3.3	2.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3	8.3
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	*	0.0	0.0	0.0	0.4
Perth—													
Temperature:													
Mean max., °C	29.6	29.9	27.8	24.5	20.7	18.2	17.3	17.9	19.4	21.2	24.6	27.3	23.2
Mean min., °C	17.7	17.9	16.6	14.1	11.6	9.9	9.0	9.1	10.1	11.5	14.0	16.2	13.1
Highest max., °C	44.7	44.6	41.3	37.6	32.4	28.1	26.3	27.8	32.7	37.3	40.3	42.3	44.7
Lowest min., °C	9.2	8.7	7.7	4.1	1.3	1.6	1.2	1.9	2.6	4.2	5.6	8.6	1.2
No. of days 30.0°C and over	14.8	14.6	9.9	2.6	0.1	0.0	0.0	0.0	0.1	1.3	4.2	8.9	55.0
No. of days 40.0°C and over	1.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.8
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Bunbury—													
Temperature:													
Mean max., °C	27.5	27.6	25.8	22.9	19.8	17.6	16.8	17.1	18.2	19.9	23.0	25.6	21.8
Mean min., °C	14.8	15.1	14.1	12.0	10.2	9.1	8.2	8.3	9.2	10.1	12.1	13.7	11.4
Highest max., °C	41.2	40.1	38.3	33.9	28.7	25.1	22.3	24.2	28.8	33.6	37.7	38.6	41.2
Lowest min., °C	5.6	5.2	4.1	2.6	0.1	0.6	-2.2	0.6	-1.1	0.6	4.0	3.6	-2.2
No. of days 30.0°C and over	9.0	9.3	4.2	0.4	0.0	0.0	0.0	0.0	0.0	0.2	1.2	4.8	29.7
No. of days 40.0°C and over	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3
Albany—													
Temperature:													
Mean max., °C	25.8	25.4	24.2	21.0	18.5	16.3	15.7	15.5	16.7	18.8	21.1	23.9	20.2
Mean min., °C	13.3	13.9	12.9	11.6	9.5	8.1	7.4	6.8	7.4	9.0	10.4	12.4	10.2
Highest max., °C	45.6	41.6	40.5	38.8	32.6	23.6	22.5	22.0	26.8	31.7	41.1	41.1	45.6
Lowest min., °C	5.6	5.1	5.0	5.2	2.9	0.0	1.1	1.4	1.4	2.3	2.9	3.7	0.0
No. of days 30.0°C and over	4.2	4.4	4.0	0.8	0.1	0.0	0.0	0.0	0.0	0.1	1.1	2.7	15.9
No. of days 40.0°C and over	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.4	0.3	0.0	0.0	0.0	1.2

TEMPERATURES AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—*continued*

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
COASTAL—<i>continued</i>													
<i>Esperance—Post Office—</i>													
Temperature:													
Mean max., °C	25.9	25.2	24.8	22.9	20.1	18.5	17.0	17.2	18.8	20.7	22.5	23.5	21.4
Mean min., °C	15.9	16.4	14.9	13.1	10.1	9.1	7.9	7.2	8.7	10.6	12.6	14.4	11.7
Highest max., °C	47.2	44.3	43.6	38.9	33.1	27.2	26.0	31.5	35.6	39.9	42.2	44.4	47.2
Lowest min., °C	4.9	4.9	3.9	3.3	1.7	0.0	-0.6	0.0	1.3	1.0	3.3	4.4	-0.6
No. of days 30.0°C and over	5.7	4.3	4.7	2.7	0.5	0.0	0.0	0.0	0.4	2.4	3.0	3.0	27.6
No. of days 40.0°C and over	1.5	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	2.9
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.0	0.0	0.0	0.0	0.6
<i>Eucla—</i>													
Temperature:													
Mean max., °C	24.9	24.6	24.7	22.9	20.9	18.7	17.8	18.8	20.6	21.8	22.7	23.8	21.8
Mean min., °C	16.5	16.7	16.1	13.4	10.2	8.2	6.9	7.5	8.9	10.9	13.2	15.1	11.9
Highest max., °C	50.7	48.9	44.4	41.4	35.8	33.3	32.1	34.9	40.0	43.1	46.7	49.3	50.7
Lowest min., °C	7.2	6.6	4.6	-0.2	0.6	-2.2	-2.2	-1.6	-0.6	-0.3	2.8	3.3	-2.2
No. of days 30.0°C and over	6.0	4.7	5.2	4.2	0.7	0.2	0.0	0.3	2.4	5.7	5.7	6.1	42.6
No. of days 40.0°C and over	2.1	1.1	0.8	0.7	0.0	0.0	0.0	0.0	0.1	0.4	0.5	1.2	6.1
No. of days 2.0°C and under	0.0	0.0	0.0	0.1	0.0	0.3	0.5	0.6	0.2	0.0	0.0	0.0	1.5
WHEAT BELT													
<i>Carnamah—</i>													
Temperature:													
Mean max., °C	36.0	35.3	32.7	27.4	22.6	19.1	17.7	19.3	22.2	25.6	29.8	33.1	26.7
Mean min., °C	18.2	18.5	16.6	13.3	10.3	8.6	7.0	6.9	7.8	9.8	12.7	15.4	12.1
Highest max., °C	45.7	45.6	43.9	40.0	34.4	27.8	27.8	29.4	35.1	40.0	43.1	44.1	45.6
Lowest min., °C	5.1	6.9	6.7	1.7	1.1	0.0	0.6	0.7	1.0	1.1	2.3	6.7	0.0
No. of days 30.0°C and over	27.7	24.8	21.2	8.5	0.7	0.0	0.0	0.0	0.5	6.3	14.9	25.9	132.0
No. of days 40.0°C and over	4.7	6.8	1.9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.7	17.9
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.9
<i>Wongan Hills—</i>													
Temperature:													
Mean max., °C	34.0	33.9	30.1	25.3	21.3	17.6	16.9	17.2	19.9	24.9	29.1	32.5	25.2
Mean min., °C	17.6	17.6	15.4	12.4	9.1	7.7	6.2	5.8	6.7	9.9	12.9	15.6	11.4
Highest max., °C	44.8	44.4	42.5	39.2	34.7	26.0	25.4	27.2	35.2	38.8	41.8	44.2	44.8
Lowest min., °C	8.8	9.5	5.6	2.8	-0.6	0.5	-0.9	-0.5	0.6	1.7	4.3	5.3	-0.9
No. of days 30.0°C and over	25.1	22.1	16.3	6.3	0.5	0.0	0.0	0.0	0.3	4.8	11.1	21.7	107.6
No. of days 40.0°C and over	3.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	9.5
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.5	0.7	1.2	3.1	0.5	0.2	0.0	0.0	6.4
<i>Kellerberrin—</i>													
Temperature:													
Mean max., °C	33.9	33.2	30.2	25.5	20.5	17.3	16.2	17.6	20.8	24.4	28.9	31.9	25.1
Mean min., °C	16.8	16.7	15.1	11.7	8.4	7.0	5.7	5.6	6.6	8.8	12.3	14.9	10.8
Highest max., °C	46.1	46.7	44.4	39.2	35.6	26.9	24.4	28.3	36.5	39.4	43.1	45.0	46.7
Lowest min., °C	7.2	6.1	4.8	1.1	-2.2	-3.1	-3.3	-2.4	-1.1	0.3	1.7	5.6	-3.3
No. of days 30.0°C and over	24.9	20.8	15.3	4.7	0.3	0.0	0.0	0.0	0.4	4.9	11.5	20.3	102.5
No. of days 40.0°C and over	3.5	1.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	7.3
No. of days 2.0°C and under	0.0	0.0	0.0	*	1.0	1.8	3.1	4.6	2.1	0.1	*	0.0	12.9
<i>Southern Cross—</i>													
Temperature:													
Mean max., °C	34.7	33.8	30.7	25.7	20.6	17.1	16.3	18.2	22.1	25.6	30.1	33.2	25.7
Mean min., °C	17.1	16.9	14.9	11.1	7.4	5.6	4.2	4.6	6.3	9.0	12.7	15.3	10.4
Highest max., °C	46.1	47.2	44.4	39.6	33.3	27.5	26.7	30.6	34.8	39.3	43.4	45.9	47.2
Lowest min., °C	5.6	5.6	3.4	-1.1	-3.3	-4.3	-5.0	-3.9	-3.3	-0.8	2.0	4.9	-5.0
No. of days 30.0°C and over	26.6	22.7	17.2	6.0	0.5	0.0	0.0	0.1	0.6	6.6	13.6	23.8	117.8
No. of days 40.0°C and over	5.0	2.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.9	10.8
No. of days 2.0°C and under	0.0	0.0	0.0	0.2	1.9	4.1	7.7	8.0	3.5	0.9	*	0.0	26.3
<i>Merredin—</i>													
Temperature:													
Mean max., °C	33.6	32.9	29.8	25.0	19.7	16.7	15.6	17.0	20.6	24.1	28.6	31.7	24.6
Mean min., °C	16.8	16.7	15.1	11.6	7.9	6.3	4.7	4.6	5.8	8.4	12.2	14.9	10.4
Highest max., °C	45.0	44.5	39.6	36.2	33.4	24.6	25.1	26.9	34.4	36.3	41.6	42.8	45.0
Lowest min., °C	10.6	8.9	5.4	2.5	-1.4	-2.1	-1.7	-2.8	-1.8	-0.3	0.6	3.3	-2.8
No. of days 30.0°C and over	24.4	21.0	15.5	4.5	0.2	0.0	0.0	0.0	0.4	3.6	10.8	20.7	99.9
No. of days 40.0°C and over	2.5	2.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3	7.0
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	1.1	2.4	4.4	6.9	3.8	0.5	0.1	0.0	19.8
<i>Northam—</i>													
Temperature:													
Mean max., °C	33.9	33.5	30.6	26.1	20.7	17.6	16.6	17.8	20.5	23.5	28.4	31.9	25.1
Mean min., °C	17.0	16.9	15.3	11.8	8.4	6.4	5.4	5.7	7.1	8.9	12.4	15.3	10.9
Highest max., °C	46.2	46.7	43.9	39.4	35.1	27.2	25.0	28.0	34.6	39.4	44.1	45.6	46.7
Lowest min., °C	7.3	7.5	5.5	0.6	-2.7	-3.9	-2.1	-1.1	-0.9	0.4	2.1	5.6	-3.9
No. of days 30.0°C and over	25.1	22.1	16.3	5.6	0.4	0.0	0.0	0.0	0.2	4.0	10.1	21.8	106.6
No. of days 40.0°C and over	3.7	3.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.2	10.5
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	1.2	2.8	3.4	4.3	1.9	0.2	0.0	0.0	13.5

TEMPERATURES AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—continued

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
WHEAT BELT—continued													
<i>Wandering—</i>													
Temperature:													
Mean max., °C	31.6	30.9	28.2	23.6	18.8	15.8	14.9	15.9	18.1	21.0	25.8	29.4	22.8
Mean min., °C	13.6	13.4	11.8	8.7	6.2	4.9	3.9	4.0	4.9	6.1	8.9	11.8	8.2
Highest max., °C	45.6	44.6	41.9	37.2	33.2	25.0	23.8	26.1	30.9	36.9	39.8	42.8	45.6
Lowest min., °C	3.3	2.8	0.6	-2.2	-5.6	-5.7	-4.4	-3.9	-2.8	-2.2	-1.7	1.0	-5.7
No. of days 30.0°C and over	20.5	16.9	11.3	2.7	*	0.0	0.0	0.0	*	1.6	6.9	16.3	76.2
No. of days 40.0°C and over	1.5	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.3
No. of days 2.0°C and under	0.0	0.0	*	1.2	5.8	6.7	8.9	10.7	9.2	4.8	1.1	*	48.2
<i>Narrogin—</i>													
Temperature:													
Mean max., °C	30.9	30.0	26.7	22.2	18.1	15.0	14.5	14.6	16.7	20.9	25.1	29.2	22.0
Mean min., °C	14.7	14.5	12.8	10.4	7.4	6.8	5.3	5.0	5.8	8.0	10.4	12.5	9.5
Highest max., °C	43.4	42.3	38.2	36.1	32.2	22.7	22.2	23.9	28.6	33.7	42.1	40.1	43.4
Lowest min., °C	8.4	6.1	3.6	0.8	-1.1	-2.7	-0.9	-0.9	-0.5	1.1	3.0	3.2	-2.7
No. of days 30.0°C and over	16.5	13.8	7.5	1.6	0.1	0.0	0.0	0.0	0.1	0.8	4.9	13.6	56.6
No. of days 40.0°C and over	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.8
No. of days 2.0°C and under	0.0	0.0	0.0	0.2	1.2	2.4	3.8	4.6	3.2	0.3	0.0	0.0	17.0
<i>Katanning—</i>													
Temperature:													
Mean max., °C	30.3	29.4	26.7	22.7	18.2	15.4	14.3	15.4	17.7	20.6	25.2	28.4	22.1
Mean min., °C	13.4	13.5	12.4	10.2	7.8	6.6	5.3	5.5	6.3	7.6	9.9	12.1	9.2
Highest max., °C	43.8	44.6	41.7	36.1	32.3	24.1	22.2	31.1	30.6	37.8	41.1	43.3	44.6
Lowest min., °C	5.0	3.3	1.7	0.6	-1.1	-2.1	-3.9	-2.2	-1.2	-0.6	1.7	2.7	-3.9
No. of days 30.0°C and over	16.7	13.3	8.4	1.3	*	0.0	0.0	0.0	0.0	1.2	5.0	12.5	58.1
No. of days 40.0°C and over	1.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.0
No. of days 2.0°C and under	0.0	0.0	0.0	*	1.3	2.5	2.7	3.5	2.2	0.5	0.0	0.0	12.8
OTHER INLAND													
<i>Halls Creek—</i>													
Temperature:													
Mean max., °C	37.0	36.3	35.7	34.2	29.7	27.4	26.9	29.8	34.0	37.4	38.5	38.3	33.8
Mean min., °C	24.3	23.8	22.9	20.4	17.0	13.8	12.3	14.5	18.5	22.7	24.3	24.6	19.9
Highest max., °C	44.0	42.6	42.1	39.4	36.7	33.8	33.6	36.6	38.8	43.8	43.8	44.9	44.9
Lowest min., °C	17.7	17.7	15.6	11.2	7.1	3.0	1.7	4.9	8.3	12.8	13.9	15.6	1.7
No. of days 30.0°C and over	29.7	27.0	29.8	27.9	16.6	6.3	6.3	16.1	27.4	30.5	29.7	30.5	279.2
No. of days 40.0°C and over	5.6	3.5	1.6	0.0	0.0	0.0	0.0	0.0	0.0	2.6	8.3	8.7	30.7
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
<i>Marble Bar—</i>													
Temperature:													
Mean max., °C	41.2	40.3	39.3	36.1	30.8	27.1	26.7	29.6	34.1	37.4	40.7	41.8	35.4
Mean min., °C	26.1	25.6	24.6	21.1	16.3	12.7	11.4	13.0	16.5	20.0	23.6	25.3	19.7
Highest max., °C	49.2	48.3	46.7	45.0	39.4	35.6	35.0	37.2	42.6	45.6	47.2	48.3	49.2
Lowest min., °C	18.9	13.9	15.3	11.1	5.6	1.1	2.2	3.9	5.6	10.0	14.4	17.2	1.1
No. of days 30.0°C and over	30.7	27.7	30.7	28.7	19.4	6.3	5.1	12.5	26.2	30.2	29.8	30.7	279.8
No. of days 40.0°C and over	20.0	15.4	12.9	2.6	0.0	0.0	0.0	0.0	0.2	8.3	16.6	24.0	100.0
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	*
<i>Mundiwindi—</i>													
Temperature:													
Mean max., °C	38.3	36.6	35.6	31.2	25.3	22.3	21.2	23.4	28.0	32.8	35.7	37.8	30.7
Mean min., °C	23.8	22.8	21.0	16.2	10.8	8.0	5.7	7.4	11.1	15.7	19.4	22.3	15.4
Highest max., °C	44.6	44.4	42.3	40.6	36.4	31.7	30.6	37.2	39.5	41.4	43.3	45.5	44.6
Lowest min., °C	13.9	12.8	9.4	3.9	-1.7	-4.4	-5.3	-3.6	-1.7	3.3	7.8	10.9	-5.3
No. of days 30.0°C and over	30.4	26.6	29.4	20.5	3.9	0.2	0.0	1.1	10.4	23.2	28.0	30.1	201.4
No. of days 40.0°C and over	10.9	5.2	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.9	8.0	27.2
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.6	3.0	6.3	3.1	0.1	0.0	0.0	0.0	13.2
<i>Warburton Range—</i>													
Temperature:													
Mean max., °C	38.6	37.2	35.4	29.9	25.0	21.3	21.3	22.5	28.0	32.6	34.8	36.6	30.3
Mean min., °C	22.7	22.5	20.5	14.5	11.5	7.4	6.4	7.2	11.1	16.1	19.2	21.0	15.0
Highest max., °C	46.6	46.9	43.4	40.4	33.9	32.3	31.7	34.3	39.9	42.7	44.4	46.3	46.9
Lowest min., °C	10.0	9.1	9.6	1.8	-1.1	-2.6	-4.1	-2.2	1.1	4.1	7.2	9.4	-4.1
No. of days 30.0°C and over	30.0	26.6	27.4	16.5	4.1	0.0	0.0	2.2	12.0	23.1	25.5	29.3	197.8
No. of days 40.0°C and over	14.6	10.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.4	4.6	32.2
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.6	1.7	5.9	1.5	0.4	0.0	0.0	0.0	8.7
<i>Meekatharra—</i>													
Temperature:													
Mean max., °C	37.8	35.9	34.3	28.9	23.6	19.6	18.6	20.7	24.9	29.6	33.5	36.3	28.6
Mean min., °C	24.2	23.1	21.3	16.8	11.9	9.2	7.3	8.1	11.1	15.1	18.9	22.2	15.8
Highest max., °C	44.3	43.8	43.6	38.8	34.3	28.3	27.9	32.6	35.9	39.4	42.3	45.0	45.0
Lowest min., °C	12.2	12.3	10.3	5.8	1.7	-3.1	-0.2	0.1	-0.6	5.2	7.2	11.1	-3.1
No. of days 30.0°C and over	29.9	26.3	26.8	13.3	1.5	0.0	0.0	0.2	3.8	13.5	22.7	29.0	169.4
No. of days 40.0°C and over	9.9	5.5	1.7	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9	4.1	22.5
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.1	0.4	1.0	0.4	*	0.0	0.0	0.0	1.8

TEMPERATURES AT REPRESENTATIVE CLIMATOLOGICAL STATIONS—*continued*

Reporting station and characteristic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
OTHER INLAND—<i>continued</i>													
Laverton—													
Temperature:													
Mean max., °C	36.3	34.3	32.0	27.8	22.6	19.1	17.7	19.9	24.2	28.7	32.3	34.2	27.4
Mean min., °C	21.0	19.9	18.1	14.7	9.9	7.7	5.4	6.2	9.4	13.7	16.8	19.1	13.5
Highest max., °C	46.1	46.1	44.4	40.0	35.0	30.2	30.1	33.9	36.8	40.6	43.9	45.6	46.1
Lowest min., °C	7.2	7.5	6.1	2.8	-0.9	-2.8	-4.2	-2.8	-1.1	2.2	4.4	10.0	-4.2
No. of days 30.0°C and over	27.7	22.7	20.4	11.6	1.7	0.1	0.0	0.4	3.5	13.2	21.0	25.3	146.7
No. of days 40.0°C and over	7.5	3.6	1.9	0.1	0.0	0.0	0.0	0.0	0.0	0.1	2.1	3.1	18.3
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.7	1.5	5.5	3.7	0.2	0.0	0.0	0.0	11.6
Kalgoorlie—													
Temperature:													
Mean max., °C	33.6	32.0	29.5	25.2	21.0	17.8	16.5	18.2	21.7	26.1	29.4	32.0	25.3
Mean min., °C	18.3	17.7	15.8	12.3	8.3	6.7	4.8	5.1	7.3	11.0	14.0	16.5	11.5
Highest max., °C	44.3	43.3	44.5	38.9	32.9	27.6	28.1	29.7	35.1	40.7	41.7	45.0	45.0
Lowest min., °C	9.8	8.6	6.1	1.7	-1.8	-2.6	-3.4	-2.4	-0.6	-1.0	3.7	5.5	-3.4
No. of days 30.0°C and over	23.6	18.1	13.8	5.0	0.4	0.0	0.0	0.0	1.4	6.1	11.9	20.6	99.6
No. of days 40.0°C and over	3.2	2.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	*	0.4	1.7	7.8
No. of days 2.0°C and under	0.0	0.0	0.0	*	1.1	3.9	6.8	5.7	1.1	0.1	0.0	0.0	18.9
Rawlinna—													
Temperature:													
Mean max., °C	32.9	31.7	29.6	25.5	21.7	18.6	17.9	19.8	23.4	26.3	29.6	31.7	25.7
Mean min., °C	15.3	15.1	14.3	11.3	8.1	5.9	4.4	5.1	7.4	9.8	12.2	14.2	10.3
Highest max., °C	47.9	46.4	44.7	40.0	35.0	31.3	29.7	33.9	39.3	41.7	45.6	47.7	47.9
Lowest min., °C	5.6	5.0	6.1	1.7	0.0	-2.7	-2.3	-3.2	-0.6	0.7	0.8	5.1	-3.2
No. of days 30.0°C and over	22.9	17.0	14.4	7.0	1.2	0.0	0.0	0.5	3.0	9.0	13.7	19.4	105.8
No. of days 40.0°C and over	4.8	2.7	1.5	*	0.0	0.0	0.0	0.0	0.0	0.3	1.1	2.9	12.7
No. of days 2.0°C and under	0.0	0.0	0.0	*	0.5	2.6	6.2	4.3	1.2	0.0	*	0.0	15.2
Collie—													
Temperature:													
Mean max., °C	31.1	30.6	27.7	22.4	19.1	16.5	15.6	16.3	18.0	21.3	24.8	28.9	22.7
Mean min., °C	14.2	14.1	12.3	9.5	7.1	6.2	4.7	4.7	6.1	7.8	10.2	12.6	9.1
Highest max., °C	44.4	43.4	40.8	36.7	30.4	24.4	22.8	26.1	30.3	36.3	38.8	41.7	44.4
Lowest min., °C	3.2	1.8	0.2	-1.3	-2.2	-4.0	-3.9	-3.2	-2.2	-0.6	0.3	1.7	-4.0
No. of days 30.0°C and over	18.6	14.8	9.5	1.6	*	0.0	0.0	0.0	0.0	1.3	5.3	12.9	63.3
No. of days 40.0°C and over	1.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.8
No. of days 2.0°C and under	0.0	0.0	*	0.8	2.7	5.3	6.3	7.6	4.1	1.1	0.2	0.0	28.3
Manjimup—													
Temperature:													
Mean max., °C	26.6	26.5	24.3	20.6	17.1	15.1	14.0	14.8	16.4	18.3	21.5	24.3	19.9
Mean min., °C	12.6	12.7	12.0	10.1	8.3	7.1	5.8	6.0	6.8	7.8	9.6	11.2	9.2
Highest max., °C	41.7	41.2	38.9	33.6	29.2	22.9	21.7	24.7	28.1	33.3	37.4	38.8	41.7
Lowest min., °C	5.6	4.4	3.3	1.6	1.1	0.2	-2.8	-1.1	-0.6	0.1	1.7	4.4	-2.8
No. of days 30.0°C and over	10.3	10.0	4.8	0.4	0.0	0.0	0.0	0.0	0.0	0.2	1.4	6.6	33.2
No. of days 40.0°C and over	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
No. of days 2.0°C and under	0.0	0.0	0.0	0.1	0.1	0.7	0.4	0.8	0.3	0.1	0.0	0.0	2.4
Pemberton—													
Temperature:													
Mean max., °C	25.9	25.8	23.9	20.4	17.6	15.6	14.6	15.3	16.4	18.3	21.1	23.4	19.8
Mean min., °C	12.9	13.2	12.6	10.6	8.9	8.2	6.9	6.6	7.2	8.1	9.8	11.6	9.7
Highest max., °C	41.7	40.1	38.9	33.9	28.3	23.2	22.0	25.6	28.3	41.2	36.9	38.5	41.7
Lowest min., °C	4.4	4.4	3.9	2.8	0.0	-0.4	-1.4	-1.1	-0.3	0.6	2.5	3.9	-1.4
No. of days 30.0°C and over	8.1	7.9	4.1	0.6	0.0	0.0	0.0	0.0	0.0	0.9	1.2	4.6	29.1
No. of days 40.0°C and over	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.5	0.5	0.2	0.0	0.0	1.7
Mount Barker—													
Temperature:													
Mean max., °C	27.4	26.3	24.7	21.0	18.1	15.5	14.8	15.0	16.5	19.2	21.8	24.9	20.4
Mean min., °C	13.3	13.6	12.7	10.8	8.7	7.5	6.5	6.0	6.7	8.3	10.0	12.0	9.7
Highest max., °C	43.9	43.6	40.6	37.2	32.2	24.3	22.2	25.0	29.3	35.6	39.4	42.9	43.9
Lowest min., °C	1.7	3.9	3.6	2.2	0.6	0.0	-0.4	-1.3	-0.6	0.6	1.1	1.1	-1.3
No. of days 30.0°C and over	9.6	7.5	5.2	0.8	0.1	0.0	0.0	0.0	0.0	0.5	2.3	6.1	31.8
No. of days 40.0°C and over	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
No. of days 2.0°C and under	0.0	0.0	0.0	0.0	0.1	0.3	0.7	0.7	0.4	0.0	0.0	0.0	2.2

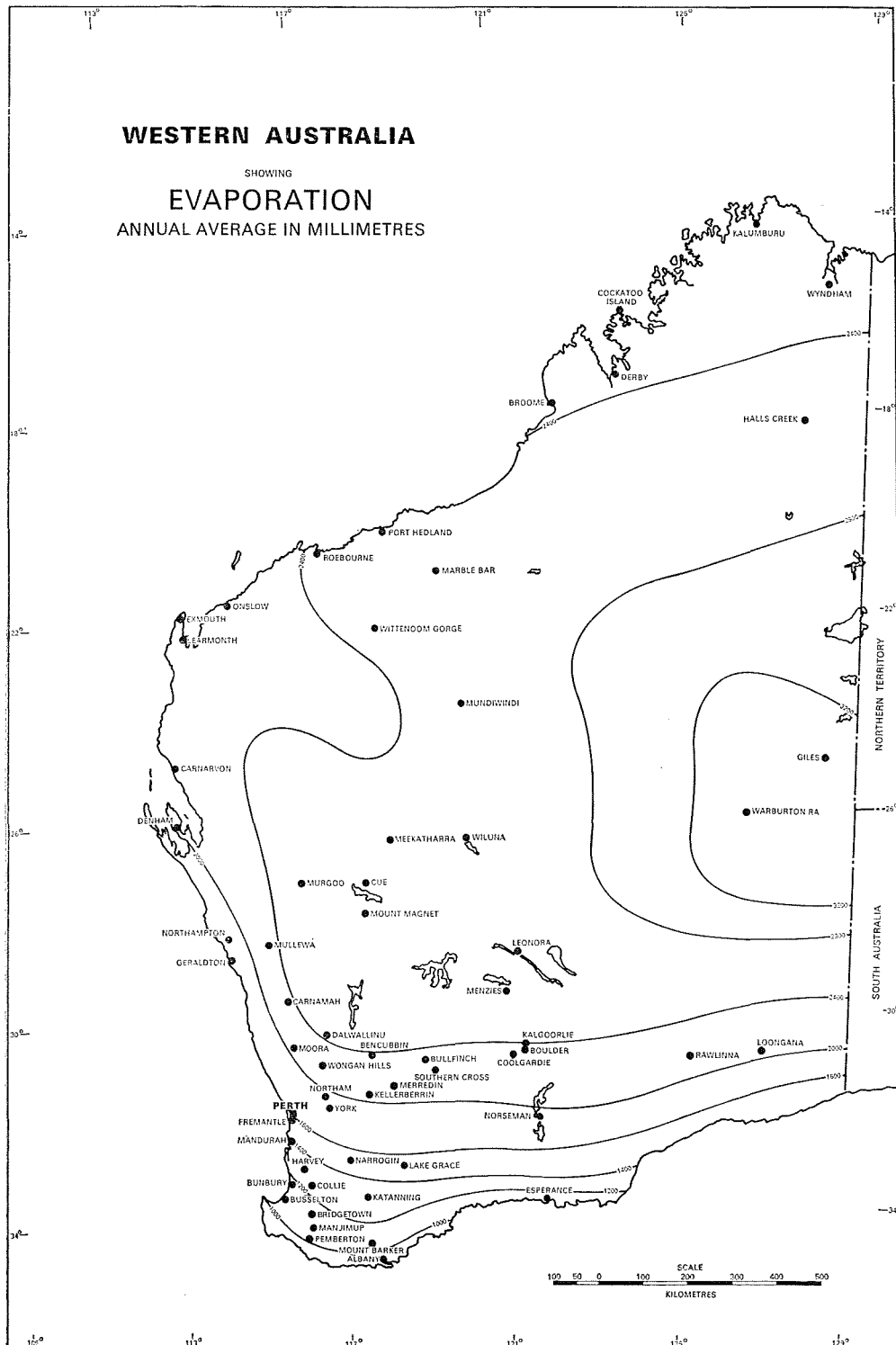
* Number of occurrences is greater than 0.0 but less than 0.05.

THUNDERSTORMS

Thunderstorms are most frequent along the Kimberley coast where they occur during the 'Wet' season but are practically unknown in the 'Dry'. In the remainder of the tropics they occur over roughly the same period but the season is a little shorter and the storms less frequent.

In most of the State south from the tropics thunderstorms are most frequent in the summer months but in the south-west they are more uniformly distributed and in many places in coastal districts they are most frequent in winter.

The winter storms are often accompanied by hail which, however, is usually not heavy enough to cause any damage. Hail accompanying summer storms can be much heavier, and occasionally damages ripening crops in the wheat belt. Both winter and summer thunderstorms may be accompanied by severe squalls, but these are infrequent.



EVAPORATION

Except in the lower south-west, evaporation from a free water surface exceeds the annual rainfall, and in a large proportion of the State it is more than ten times greater than the rainfall.

It is least in the winter months, amounting in July to less than twenty-five millimetres in the far south-west, and to about 200 millimetres in the northern tropics. In January, when evaporation is highest, it totals about 130 millimetres on the far south coast and reaches 350 millimetres in the East Gascoyne and North-Eastern Meteorological Districts. Further north, evaporation is reduced by the moister air over the tropics at this time of the year.

The map on the previous page shows average annual evaporation throughout the State.

GROWING SEASON

Less moisture is required to sustain plant life when evaporation is low than when it is high, and the minimum amount required can be related to evaporation from a free water surface.

That part of the year during which rainfall is greater than this minimum amount (the 'effective rainfall'), may be taken as the *growing season*. The map on the following page shows the length of this season in the agricultural area of the State. It is based on average monthly rainfall and effective rainfall, the latter being calculated from the formula $P = 0.54 \times E^{0.7}$ (after Prescott), where P is effective rainfall and E is evaporation (both in millimetres per month).

METROPOLITAN CLIMATE

Perth has more sunshine and a greater number of clear days during the year than any other State capital city. It also has the wettest winter, the driest summer, and is the windiest of the capital cities. The highest temperature on record for Perth is 44.7°C (12 January 1978) and the lowest 1.2°C (7 July 1916).

CLIMATOLOGICAL DATA—PERTH BUREAU OF METEOROLOGY

(For other data relating to Temperature and Rainfall see preceding tables)

Month	Wind				Temperature				Relative humidity (Saturation = 100%)		Sunshine	Cloud (proportion of sky covered)	Evaporation
	Prevailing direction		Speed		Highest in sun	Lowest terrestrial	Mean	At 3 p.m.	Mean daily amount	Mean of readings at 9 a.m., 3 p.m. and 9 p.m.				Mean amount
	9 a.m.	3 p.m.	Average	High-est							°C		%
Number of years of observations	30 (a)		30 (a)	60	63		78		30 (a)		30 (a)	30 (a)	30 (a)
January	E	SSW	17.5	81	80.7	22/1914	4.2	20/1925	53	43	10.4	29	263
February	ENE	SSW	17.2	113	78.7	4/1934	4.3	1/1913	52	43	9.8	31	219
March	E	SSW	16.2	113	75.0	19/1918	2.6	(b)	57	46	8.8	35	191
April	ENE	SSW	13.7	130	69.4	8/1916	-0.7	26/1960	60	48	7.5	42	117
May	NE	WSW	13.5	119	63.3	4/1925	-3.9	31/1964	68	58	5.7	54	71
June	N	NW	13.5	129	57.5	9/1914	-3.4	27/1946	72	63	4.8	59	46
July	NNE	W	14.2	137	56.2	13/1915	-3.8	30/1920	73	63	5.4	56	45
August	N	WNW	15.1	156	62.8	29/1921	-3.0	18/1966	71	60	6.0	56	60
September	ENE	SSW	15.1	109	67.5	29/1916	-2.7	(c)	64	57	7.2	49	87
October	SE	SW	16.1	105	71.8	19/1954	-1.2	16/1931	64	54	8.1	48	137
November	E	SW	17.2	101	75.0	30/1925	-1.1	1/1968	57	47	9.6	39	194
December	E	SSW	17.7	103	76.0	11/1927	3.3	29/1957	54	46	10.4	32	246
Year—													
Average....	E	SSW	15.6	....	....	....	....	....	62	52	7.8	44	....
Extremes	....	....	....	156	80.7	22/1/14	-3.9	31/5/64	....	....	....	....	....
Total ....	....	....	....	....	....	....	....	....	....	....	....	....	1,676

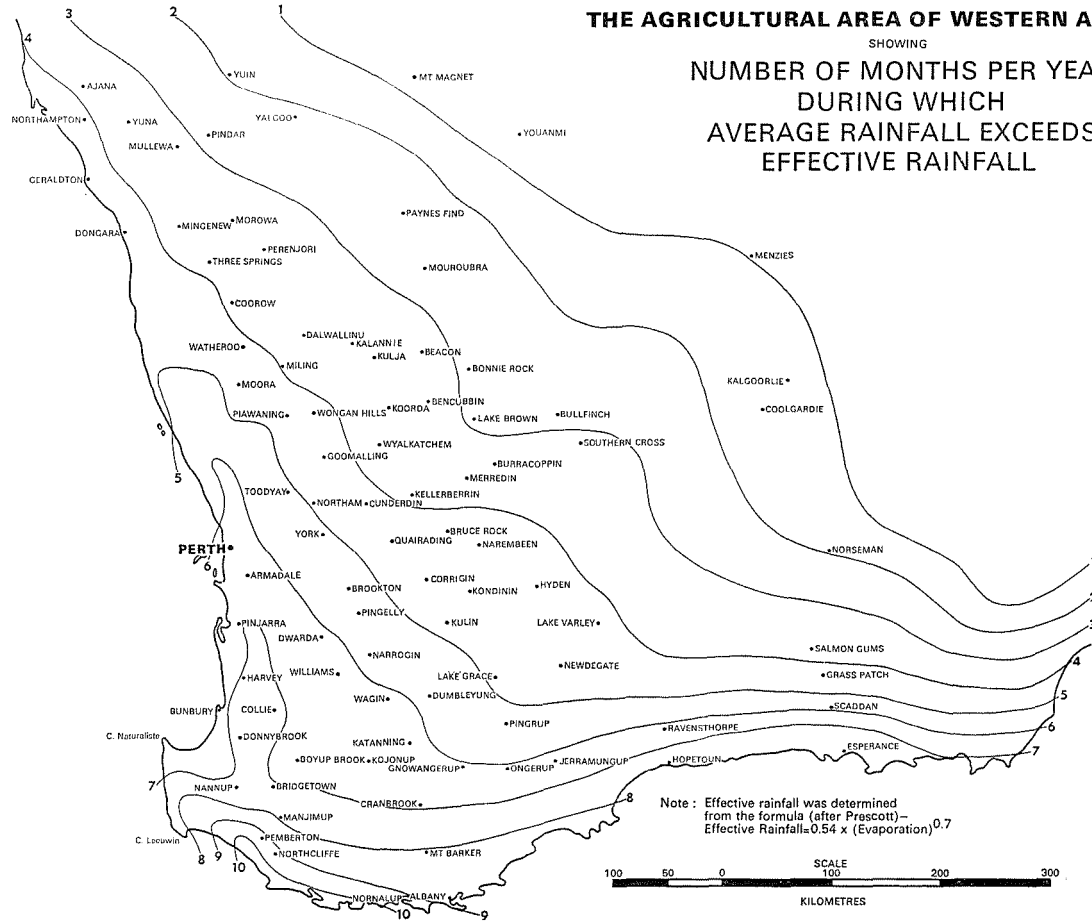
(a) Standard 30 years' normal (1911-1940).

(b) Recorded on 8 March 1903 and 16 March 1967.

(c) Recorded on 8 September 1952 and 6 September 1956.

THE AGRICULTURAL AREA OF WESTERN AUSTRALIA

SHOWING
 NUMBER OF MONTHS PER YEAR
 DURING WHICH
 AVERAGE RAINFALL EXCEEDS
 EFFECTIVE RAINFALL



SNOW

Snow has been known to fall as far north as Wongan Hills, but it is only in the southern districts that it occasionally lies on the ground. It is seen on top of the Stirling Range for a short time nearly every winter, but elsewhere is very infrequent and of negligible importance.

INTERSTATE COMPARISONS

In general, humidity and rainfall are lower in Western Australia than in corresponding places in eastern Australia. The following table shows average rainfall, mean humidity and temperature for groups of reporting stations at approximately the same latitude. The stations have been selected in such a way that, in each pair, one is on the west coast and the other on the east coast or, where a pair relates to inland stations, each station is situated at about the same distance from the coast. The group appearing last in the table has been included to provide a comparison between observations at Albany, the most southerly town in Western Australia, and those at places elsewhere in Australia at about the same latitude. The height above mean sea-level is also given for each station.

INTERSTATE COMPARISONS—RAINFALL, HUMIDITY, TEMPERATURE

Reporting station	Height above mean sea-level	Average rainfall		Relative humidity (a) (9 a.m.)		Average daily mean temperature	
		May to October	November to April	May to October	November to April	May to October	November to April
	metres	mm	mm	%	%	°C	°C
Bunbury	5	753	129	75	66	13·7	19·6
Sydney, New South Wales	42	590	626	67	65	14·9	21·0
Perth	19	756	119	73	56	14·7	21·7
Newcastle, New South Wales	34	560	585	72	75	14·7	20·7
Kalgoorlie	380	135	128	64	49	13·8	23·1
Cobar, New South Wales	251	165	191	62	42	14·0	24·6
Geraldton	4	408	74	69	50	16·0	23·3
Brisbane, Queensland	42	366	780	64	65	17·7	23·7
Wiluna	518	83	160	49	32	15·9	27·1
Charleville, Queensland	294	158	357	56	46	15·5	25·7
Carnarvon	5	171	77	62	59	18·6	24·6
Bundaberg, Queensland	14	318	841	66	69	18·5	24·5
Mundiwindi	561	69	193	38	29	18·5	28·4
Longreach, Queensland	187	117	374	49	44	19·1	27·9
Onslow	4	117	148	53	46	20·6	28·3
Mackay, Queensland	11	262	1,378	72	75	19·5	25·3
Port Hedland	8	66	238	38	45	22·2	29·8
Townsville, Queensland	22	107	1,097	62	67	21·5	26·6
Derby	16	44	525	38	59	26·4	31·2
Innisfail, Queensland	7	912	2,732	82	81	21·2	25·7
Wyndham	7	40	708	34	52	27·5	31·4
Cooktown, Queensland	5	223	1,561	73	76	23·9	27·2
Albany	13	591	218	81	67	12·5	18·0
Adelaide, South Australia	43	365	168	68	50	13·4	20·5
Swan Hill, Victoria	70	201	144	77	51	11·8	20·6
Canberra, Australian Capital Territory	560	293	340	78	63	8·1	17·3

(a) Saturation = 100%.

Chapter II—continued

Part 3—The Vegetation of Western Australia⁽¹⁾

Contributed by T. E. H. Aplin

(Western Australian Herbarium, Department of Agriculture)

The flora of Western Australia consists of about 6,500 species of flowering plants (angiosperms), 15 cycads and conifers (gymnosperms) and 50 ferns. The families of flowering plants which characterise the flora are also widespread throughout Australia, e.g. Myrtaceae, Proteaceae and Leguminosae. The Stylidiaceae, Goodeniaceae and Epacridaceae, which are poorly represented outside Australia, are well developed in Western Australia. The five families which are endemic in Western Australia are entirely restricted to the South-West Province. These are the Cephalotaceae, Eremosynaceae, Emblingiaceae, Ecdeiocoleaceae and Anarthriaceae. Other large groups of plants (below the level of family) which are almost wholly endemic in this State are the *Chloanthoideae* (Verbenaceae), *Prostantheroideae* (Lamiaceae), *Persoonieae* and *Banksieae* (Proteaceae) and *Epacrideae* (Epacridaceae). The *Chamelaucoideae* (Myrtaceae), although not strictly endemic, has a high percentage of species restricted to Western Australia. At the generic level there are forty-seven monotypic genera, most of which are endemic in the South-West Province.

The State of Western Australia occupies about one-third of the continental land-mass of Australia and lies south of the equator between latitudes 13° and 35°. One-third of the State lies within the tropics, while the remainder extends into the temperate zone. Climatologically, Western Australia shows a marked variation from a predominantly summer rainfall pattern in the north to a characteristically Mediterranean-type winter rainfall pattern in the south. Between these two rainfall systems is a large region whose climate is characterised by the extreme variability of the rainfall both annually and seasonally.⁽²⁾ The vegetation of Western Australia, in general terms, is determined by these varying climatic patterns, although local changes in geology, soils, topography and drainage may affect the structure and/or the floristic composition of plant communities. The delineation of the present day vegetation also reflects the past tectonic and climatic history of the Australian continent.

The development of the so-called pan-Australian mesophytic flora, which includes the tropical broad-leaved genera *Cinnamomum* and *Tristania*, the more temperate genera *Dacrydium*, *Podocarpus*, *Araucaria*, *Nothofagus* and *Phyllocladus* and the typically Australian genera *Eucalyptus*, *Casuarina*, *Callitris* and *Banksia*, began early in the Tertiary era. It is generally accepted that in the Palaeozoic era the Australian continent was united with the continents of Africa, Antarctica, India and South America in a once common land-mass known as Gondwanaland. During this period these continents had a common flora as exemplified by the *Glossopteris* elements. In the late Neocomian period (Early Cretaceous), rifting between India (with Africa and South America) and Australia (with Antarctica) was initiated. In Eocene times (Early to Mid-Tertiary), sea-floor spreading between Australia and Antarctica commenced and for the first time the southern coasts were warmed by the entering Indian Ocean. The early Tertiary flora of the South-West Province contained several sub-tropical rainforest and mangrove genera in abundance. This phenomenon has prompted the suggestion that some 'tropical' elements may in fact be 'palaeoantarctic' in origin. The Australian continental block was isolated at about the time the pan-Australian flora began to develop, and the northward drift of the continent which brought the Australian block into contact with the Asian block in the middle Miocene period (Late Tertiary) allowed the entry of a different flora, the 'Indo-Malayan' flora.

⁽¹⁾ See *Appendix* for reference to additional information in earlier issues of the Year Book.

⁽²⁾ See Part 2 of Chapter II—*Climate and Meteorology*.

The degree of endemism and diversification in the south-western flora, which had its origin in pre-Miocene times, was brought about largely by the isolation caused by the late Eocene and Miocene seas which inundated the Nullarbor Shelf. Another factor that contributed to the diversification of the flora was the lateritisation that occurred in the Tertiary period, with the subsequent dissection of the lateritic landscape causing fragmentation of a once continuous flora.

Plant taxonomists and morphologists cannot entirely agree, among themselves, on the evolutionary relationships of plants. However, certain floral and morphological characters are considered to be primitive or to have developed at a very early stage in the evolution of plants. Primitive floral characters are seen in 27 relict genera in Western Australia (17 in the South-West Province, 12 in the Eremaean Province and 16 in the Northern Province). They include *Cycas*, *Macrozamia*, *Callitris*, *Casuarina*, *Hibbertia*, *Emblingia*, *Codonocarpus*, *Persoonia*, *Clematis* and *Pandanus*. Relict species which have retained primitive morphological characters number 234 for the State. A large proportion of these are found in the South-West Province. One hundred and nine species are present in the Stirling botanical district. Many endemic genera are represented, e.g. *Isopogon*, *Adenanthos*, *Stirlingia*, *Synaphea* and *Franklandia* (Proteaceae) and *Andersonia*, *Sphenotoma*, *Cosmelia*, *Lysinema*, *Coleanthera* and *Conostephium* (Epacridaceae). *Thysanotus* (Liliaceae) and *Stylidium* (Stylidiaceae) which, although not strictly endemic in, are most richly represented in the State.

Formations and Alliances

The classification of vegetation involves the grouping of similar structural units and the grouping or classification of the floristic components present in all strata of plant communities that form part of the vegetation.

In a survey of major plant communities of Australia and Papua New Guinea for the Conservation of Terrestrial Communities Section of the International Biological Programme (I.B.P./C.T.) a structural classification scheme was devised. This scheme, produced by Australian plant ecologists and freed from previous conceptions of the Australian Vegetation, was considered to be easy to understand and to use in the field in Australia. The classification of plant communities involved a simple two-dimensional table using the variables height/life form of the tallest stratum, and the projective foliage cover of the tallest stratum. Major structural formations recorded in Australia are summarised in the table which follows and further divisions based on height classes and projective foliage cover can be instituted. The nature of the understorey provides logical subdivisions to the formations.

To include floristic detail, the following three categories are often used to define subdivisions within a structural formation.

1. *Alliance*—A series of climax plant communities which have (i) the same structural characteristics, (ii) related species as dominants in the uppermost stratum, and (iii) possibly the same or related species in the understorey.
2. *Association*—A series of climax plant communities which have (i) the same structural characteristics, (ii) the same species as dominants in the uppermost stratum, and (iii) possibly different floristic composition in the understorey.
3. *Society*—A series of climax plant communities which have (i) the same structural characteristics, (ii) the same species as dominants in the uppermost stratum, and (iii) the same species prominent in the lower strata.

High open forest and high woodland are represented by *Eucalyptus diversicolor* (Karri), *E. marginata*-*E. calophylla* (Jarrah-Marri) and *E. gomphocephala* (Tuart) alliances, all in the South-West Province.

The forest formations are represented by *E. marginata*-*E. calophylla* and *Agonis flexuosa* (West Australian Peppermint) alliances in the South-West Province; and by *E. tetradonta*-*E. miniata* (Darwin Stringybark-Darwin Woollybutt), *E. tectifera*-*E. grandifolia* (Darwin Box-Cabbage Gum) alliances in the Northern Province. Woodland and open

woodland formations are represented by *E. loxophleba* (York Gum), *E. wandoo* (Wandoo), *E. salmonophloia* (Salmon Gum), *E. occidentalis* (Swamp Yate), *E. astringens* (Brown Mallet), *E. cornuta* (Yate), *E. rudis-Melaleuca* spp. (Flooded Gum-Paperbark) and *Casuarina obesa* (Swamp Sheoak) alliances in the South-West Province; by *E. torquata-E. lesouefii* (Coral Gum-Goldfields Blackbutt), *E. dundasii* (Dundas Blackbutt) and *E. transcontinentalis-E. flocktoniae* (Redwood-Merri) alliances in the Eremaean; and by *E. camaldulensis* (River Red Gum), *E. tectifera-E. grandifolia*, *E. tetradonta-E. miniata*, *E. latifolia* (Round-leaf Bloodwood), *E. papuana* (Ghost Gum), *E. polycarpa-E. apodophylla* (Small-flowered Bloodwood-Whitebark), *E. microtheca* (Flooded Box) and by *Terminalia* spp., *Melaleuca* spp. and *Adansonia gregorii* (Baobab) alliances in the Northern Province.

The low forest formations are represented by *Melaleuca lanceolata-Callitris preissii* (Rottnest Teatree-Rottnest Cypress Pine), *E. platypus-E. spathulata-E. annulata* (Moort-Swamp Mallet-Open-fruited Mallee), *E. cornuta* (Yate), *E. lehmannii* (Bushy Yate), *Agonis juniperina* (Warren River Cedar), *Banksia menziesii-B. attenuata-Casuarina fraserana-E. todiana* (Menzies Banksia-Slender Banksia-Fraser's Sheoak-Pricklybark), *E. falcata*, and *B. prionotes* (Acorn Banksia) alliances in the South-West Province. Low woodland and low open woodlands are represented by *E. erythrocorys* (Illyarrie), *Casuarina huegeliana* (Rock Sheoak) and *Banksia* spp. alliances in the South-West Province; by *E. brevifolia* (Northern White Gum), *E. pruinosa* (Silver Box), *E. dichromophloia* (Variable-barked Bloodwood), *E. argillacea* (Northern Grey Box), *E. microtheca*, *Grevillea striata* (Beefwood), *Lysiphylum cunninghamii* (Bauhinia) and *Melaleuca* spp. (Paper Bark) alliances in the Northern Province; and by *E. gongylocarpa* (Desert Gum), *E. kingsmillii* (Kingsmill's Mallee), *E. leucophloia* (Migum), *Casuarina decaisneana* (Desert Sheoak), *Acacia aneura* (Mulga) and *A. sowdenii* (Myall) alliances in the Eremaean Province.

The scrub formations are represented in the South-West Province by *Acacia rostellifera-A. cyclops-A.cochlearis*, *Agonis* spp., *Pultenaea reticulata*, *Melaleuca huegelii*, *M. globifera*, *E. foecunda* (Narrow-leaved Red Mallee), *Acacia* spp.-*Casuarina* spp.-*Melaleuca* spp. (Woodjil-Tamar-Broombush) and mixed Proteaceae-Myrtaceae alliances; and by *Melaleuca thyoides*, *Melaleuca uncinata* and *Acacia aneura* (Mulga) alliances in the Eremaean Province. High shrubland formation include *Actinostrobos arenarius* (Sandplain Cypress Pine), *Banksia ashbyi-B. sceptrum*, *B. baxteri*, *B. speciosa* (Showy Banksia), *E. redunda-E. uncinata* (Black Marlock-Hook-leaf Mallee), *E. tetragona* (Tallerack), *Grevillea eriostachya-G. didymobotrya-G. leucopteris* and *B. hookerana-Xylomelum angustifolium* (Banksia-Sandplain Woody Pear) alliances; and by *Acacia* spp.-*Cassia* spp.-*Eremophila* spp., *E. kingsmillii*, *E. youngiana* (Large-fruited Mallee), *Acacia victoriae*, *A. pyrifolia*, *A. pachycarpa-Grevillea wickhamii*, *Acacia lysiphloia-Acacia* spp., and *A. aneura* alliances in the Eremaean Province.

Heath and low heath formations are restricted to the South-West Province and are made of mixed communities in which the families Proteaceae, Myrtaceae, Epacridaceae, Xanthorrhoeaceae and Leguminosae are well represented. The genera *Dryandra*, *Banksia*, *Hakea*, *Casuarina*, *Xanthorrhoea* (Blackboy or Grass Tree), *Leptospermum*, *Kunzea* and *Melaleuca* usually dominate the heath communities. Shrubland and low shrubland formations are dominated by chenopodiaceous shrubs. The most important alliances are *Maireana sedifolia* (Blue Bush), *Atriplex* spp. (Saltbush) and *Arthrocnemum* spp. (Samphire), which are well represented in the Eremaean Province.

The hummock grasslands are dominated by species of *Triodia* and *Plectrachne*. These genera, commonly called Spinifex, grow outwards leaving the centre senescent or dead. This formation is found in the Eremaean Province. Tussock grasslands are dominated by species of *Astrelba* (Mitchell Grass), *Dichanthium-Chrysopogon* (Blue Grass-Ribbon Grass), *Iseilema* (Flinders Grass) and by *Themeda* (Kangaroo Grass) alliances with *Sehima* (White Grass), *Heteropogon* (Bunch Speargrass), *Cymbopogon* (Scent Grass), *Sorghum* (Wild Sorghum) and *Aristida* (Three-awn Grass) usually seen only under woodland formations. Fringing grasslands include *Coelorhachis*, *Arundinella* (Reed Grass) and *Imperata* (Blady Grass). These formations are restricted to the Northern Province. Sedgeland formations are represented in the South-West Province by communities in which the families Juncaceae, Cyperaceae, Restionaceae and Anarthriaceae are prominent.

Other plant communities, recorded in edaphic complexes, include coastal dune vegetation, halophytic communities, swamp communities, lithic complexes and aquatic complexes. Each of these complexes may be unimportant in terms of area, but are of significance in providing the habitat for particularly interesting plants, e.g. *Cephalotus*, *Byblis*, *Drosera*, etc.

PLANT COMMUNITIES—MAJOR STRUCTURAL FORMATIONS

Life-form and height of tallest stratum	Projective foliage cover of tallest stratum, as per cent	Description
Trees over 30 m	70-100 30-70 10-30 under 10	High closed forest High open forest High woodland High open woodland
Trees 10-30 m	70-100 30-70 10-30 under 10	Closed forest Open forest Woodland Open woodland
Trees under 10 m	70-100 30-70 10-30 under 10	Low closed forest Low open forest Low woodland Low open woodland
Shrubs over 2 m	70-100 30-70 10-30 under 10	Closed scrub Open scrub High shrubland High open shrubland
Shrubs 1-2 m	70-100 30-70 10-30 under 10	Closed heath Open heath Shrubland Open shrubland
Shrubs under 1 m	70-100 30-70 10-30 under 10	Low closed heath Low open heath Low shrubland Low open shrubland
Herbs	70-100 30-70 10-30	Closed herbland, closed tussock grassland, closed sedgeland, etc. Herbland, tussock grassland, sedgeland, etc. Open herbland, open tussock grassland, open sedgeland, etc.
Hummock grasses	10-30 under 10	Hummock grassland Open hummock grassland

Botanical Provinces and Districts

The vegetation of Western Australia has been sub-divided into three Botanical Provinces. The areas that these provinces occupy, is determined largely by climatic pattern. Within each province are smaller regions, known as Botanical Districts, in which the structure and floristics of the vegetation are determined partly by climate and partly by geology and soils. The boundaries of these provinces and districts are shown on the map on page 73.

The *Northern Province*, or Tropical Zone, is characterised by a dry monsoonal climate. The rainfall received in the summer months ranges from less than 500 mm to over 1,250 mm per annum. The annual mean maximum temperature is over 30°C. The evaporation rate ranges from 2,000-2,500 mm per annum.

The vegetation formations consist of grassy *Eucalyptus* open forests and woodlands. The major components are 'Australian' elements, with 'Indo-Malayan' elements as minor components. The latter are usually found in special habitats such as streamlines or scarps. Some important 'Indo-Malayan' genera are *Ficus* (Moraceae), *Barringtonia* (Lecythidaceae) and *Terminalia* (Combretaceae).

The Gardner botanical district, commonly referred to as the Kimberley Plateau, consists of a series of sandstone, shale, quartzite and volcanic rocks. The topography varies from alluvial flats through rolling to hill landscape to a very rugged dissected plateau. Saline mud flats are present along estuaries.

On the volcanic rocks and shales, on gently undulating to hilly topography, the woodland and open woodland formations consist mainly of *E. tectifera*-*E. grandifolia* alliance. The *E. tectifera* sub-alliance is restricted to the volcanic soils while the *E. grandifolia* sub-alliance is developed on the shales and sandstones. *E. latifolia* and *E. papuana* alliances characterise the flats and levee soils. These alliances and sub-alliances include a number of plant associations. Each association is characterised by one or more *Eucalyptus* species. The understorey layers consist of a sparse low tree or high shrubland layer and a dense to moderately dense grassland layer. Small tree genera include *Cochlospermum*, *Terminalia*, *Atalaya* and *Erythrophleum*. Grass genera include *Dichanthium*, *Sehima*, *Chrysopogon*, *Sorghum*, *Heteropogon* and *Themeda*.

On the sandstone and quartzite rocks, ranges and hogbacks, the woodland, open woodland and low open woodland formations are mainly made up of *E. tetradonta*-*E. miniata* alliance. In this alliance, the *E. tetradonta* sub-alliance is found mainly in the northern high-rainfall region while the *E. phoenicea*-*E. ferruginea* (Scarlet Gum-Rusty Bloodwood) sub-alliance is its southern lower-rainfall counterpart. *Callitris intratropica* (Northern Cypress Pine) forms pure stands on deep red sands. The *E. dichromophloia* alliance is found on skeletal sands in rugged sandstone areas. The small tree/shrub layer in the *E. tetradonta*-*E. miniata* alliance includes the genera *Petalostigma*, *Grevillea*, *Gardenia*, *Persoonia*, *Buchanania*, *Ventilago*, *Planchonia*, *Eugenia*, *Brachychiton*, *Terminalia*, *Acacia*, *Jacksonia* and *Melaleuca*. The grass storey is dominated by *Plectrachne pungens*, together with *Sorghum* and *Aristida*. Flats and levees usually carry a *E. polycarpa*-*E. apodophylla* alliance, while the very steep scarps carry a *Brachychiton* spp.-*Terminalia* spp.-*E. confertiflora* variable woodland.

Other alliances and associations found in the Gardner botanical district are *Terminalia* spp.-*Dichanthium* spp. woodland and grassland communities, on soils of heavy texture; *E. brevifolia*, *E. argillacea* and *Melaleuca viridiflora* associations on podsolics, over shales and sandstones; fringing communities of *E. camaldulensis* and *Terminalia* spp.-*Ficus* spp.-*Melaleuca* spp.; and mangrove communities on the estuarine mud flats. Closed mixed forests of 'Indo-Malayan' elements such as *Calophyllum*, *Ficus*, *Carallia*, *Barringtonia*, *Nauclea*, *Randia* and *Myristica* and *Melaleuca leucadendron* (Cadjaput) fringe gullies, while semi-deciduous vine thickets with lianes such as *Aristolochia*, *Capparis*, *Cansjera*, *Adenia* and *Canavalia* occur in small pockets.

The alluvial flood plains of the Ord River system carry a tall grass formation including the genera *Dichanthium*, *Astrebala*, *Chrysopogon*, *Sorghum* and *Ophiurus*. Frontage woodlands carry a *E. papuana* alliance. *E. tetradonta*-*E. miniata* alliance occurs mainly on lateritic areas or on acid rocks. *E. tectifera*-*E. grandifolia* alliance occurs more commonly on soils formed on basic rocks, or shales and limestones. In the Hall botanical district, the low open woodlands of *E. pruinosa* association are the low-rainfall counterparts of the *E. tectifera* woodlands and occur on soils derived from basic rocks. *E. brevifolia* association is generally seen on skeletal soils on acid rocks, and also on many other soils. Low open woodlands of *Terminalia* spp. alliance occur on cracking clay soils formed on volcanics and limestone. Tussock grasslands with *Astrebala*, *Dichanthium*, *Chrysopogon* and *Panicum* occur on high-level plains of Tertiary alluvia. The rugged hilly country of the Halls Creek ridges carries *E. brevifolia* and *E. pruinosa* low open woodland associations over *Triodia intermedia*. The gently undulating plains with calcareous soils carry arid short grass communities of *Enneapogon* (Bottle Washers), *Aristida* and *Sporobolus*. These areas have

suffered severe wind and gully erosion and have in recent years been resown to the alien *Cenchrus ciliaris* (Buffel Grass). Low open woodlands of *E. argillacea* are present on red soils on basic rocks (limestone dolomites and volcanics).

The *Fitzgerald* botanical district consists essentially of mountain ranges, plateaus and steep sided valleys. The ranges and plateaus are made up of quartzite and shale-sandstone with lateritic remnants, lightly covered with a thin soil mantle. The vegetation comprises mainly low open woodland of *E. brevifolia*, *E. dichromophloia* and *E. phoenicea-E. ferruginea* communities, with a patchy shrub layer and *Plectrachne pungens* as the main ground component.

The land systems eroded below the quartzite and sandstone surfaces comprise basalt hills with narrow valleys. The vegetation consists of *E. tectifera* woodlands with *Sehima nervosum-sorghum* sp. ground storey on the hills and *Chrysopogon* spp.-*Dichanthium fecundum* grassy understorey on the drainage floors and small areas of cracking clay plains.

The *Dampier* botanical district, is a region in which a great thickness of gently folded sedimentary rock, of Palaeozoic and Mesozoic age, overlies a Precambrian basement of crystalline rock. The basement outcrops along the north and east of the basin.

The up-land regions consist of low hills and stony plains with granite domes, gneiss hills, schist ridges and gently sloping sandy plateaus. The vegetation formations consist of low open woodland formations of *Eucalyptus* species with a hummock grassland ground layer. The main alliance of *E. brevifolia* is represented by a number of associations. One noteworthy association is *Grevillea pyramidalis*. The hummock grassland layer consists of the genera *Triodia* and *Plectrachne* in almost pure stands of species. A short grass ground storey with *Enneapogon* and *Aristida* may be seen on the interfluves and hill-foot slopes to the south-east. The drainage floors usually carry low open woodland formations of *E. dichromophloia* and *E. tectifera* alliances. The grass layer includes the genera *Chrysopogon*, *Sehima*, *Sorghum* and *Dichanthium*.

Rocky limestone areas and shallow calcareous soils are characterised by *Triodia wiseana* hummock grassland. The *Adansonia gregorii* open woodland association is largely restricted to rugged limestone country, although *A. gregorii* may be found associated with other species, e.g. with *E. dichromophloia* and *E. perfoliata* (Twinleaf Bloodwood) on granite tors or domes to the north. *E. dichromophloia*, *Grevillea striata* and *Lysiphylum cunninghamii* low open woodland alliances occur on the outcrop plains over the gently folded sandstone, shale and limestone. These may be linearly oriented along strike lines and associated with *Acacia*, *Atalaya*, *Ventilago* and *Dolichandrone*. Cracking clay plains on the sedimentary rocks carry tussock grasslands of *Astrebla*, *Dichanthium* and *Chrysopogon*. The tributary alluvial plains of the Fitzroy River consist mainly of *Grevillea striata* and *Lysiphylum cunninghamii* low woodland with *Triodia* and *Chrysopogon*. The stable and active flood-plains carry *Astrebla* and *Chrysopogon-Dichanthium* tussock grasslands, with *Acacia suberosa* as an important associate, and *E. papuana* and *E. microtheca* woodland alliances. Lining the main channels are *E. camaldulensis-Terminalia platyphylla* fringing communities. Coastal flats have fringing mangrove forests. Open grasslands of *Xerochloa* spp. occur on the margins of saline influence.

The *Dampier* botanical district contains extensive areas of sand plains which lack surface drainage. The dominant layer in the vegetation is composed of *Acacia*, the more important species being *A. tumida*, *A. eriopoda*, *A. pachycarpa*, *A. holosericea* and *A. monticola*. *E. dichromophloia* and *E. zygophylla* make up the tallest stratum of the low woodland formation containing these *Acacia* species. Other tree genera include *Gyrocarpus*, *Atalaya*, *Hakea*, *Grevillea*, *Lysiphylum*, *Persoonia* and *Erythrophleum*, with the occasional *Adansonia*. In the high rainfall area, a woodland formation of *E. miniata* alliance is present. This alliance also has a strong layer of *Acacia* shrubs. In this district *E. tetradonta* is not associated with *E. miniata* as it is in the Gardner botanical district. The grass ground storey is predominantly *Plectrachne pungens-Chrysopogon* spp. Shallow valleys, pans and depressions, which may be up to five kilometres wide, carry woodlands of *E. polycarpa*, *E. tectifera*, *E. microtheca* and *Melaleuca* spp. alliances, with various tall grasses. The saline coastal flats carry *Sporobolus virginicus* and *Arthrocnemum* spp. communities.

The *Eremaean Province*, which lies between the predominantly summer and predominantly winter rainfall patterns of the north and the south-west, respectively, is intermediate in character. The rainfall, which over most of the province is less than 400 mm per annum, is received either from extensions of summer rainfall southward or from northern extensions of the southern winter systems. The vegetation of the province varies from woodland, high shrubland, low shrubland to hummock grassland. Eleven botanical districts have been broadly recognised, seven of them in the desert area.

The *Fortescue* botanical district, usually placed in the Northern Province, consists of the Pilbara block. This district is intermediate in character between the Northern and the Eremaean Provinces. It consists of granite plains to the north and west, rising gently inland to a capping of basalt in the Chichester Range and beyond this to the dolomite and jaspilite of the Hamersley Range. The vegetation of the narrow coastal strip carries grasslands of *Eragrostis* and *Eriachne* and low open shrublands of *Acacia translucens*-*A. inaequilatera* alliance. *Acacia pyrifolia* high open shrubland alliance is present on granite and basalt soils. The *Acacia* alliances have a strongly developed *Triodia pungens* hummock grassland ground layer. The high shrubland and low woodland *A. aneura* alliance is found along the major valleys and southern flanks of the Hamersley Range. A sparse shrub layer and a short grass ground flora composed of *Eragrostis* (Love Grass), *Eriachne* (Wanderrie Grass) and *Aristida* characterise these communities. On the Proterozoic rocks of the Hamersley Range the characteristic vegetation is a low open woodland formation, with *E. leucophloia* alliance. The hummock grassland ground layer found on stony soils consists mainly of *Triodia wiseana* and *T. basedowii*. Low woodland formations of *E. dichromophloia*-*E. setosa*, with *Triodia basedowii* as ground cover, occur on the sand plains. *E. camaldulensis*-*Melaleuca leucadendron* fringing communities line the permanent pools of the Fortescue River. Coastal flats have fringing mangrove scrub.

The *Ashburton* and the *Austin* botanical districts are separated by the prevailing rainfall patterns. The former, with its rainfall more likely to occur in summer, and the latter, with its rainfall more likely to occur in winter, both carry extensive low woodland and high shrubland formations of *A. aneura* alliance but, whereas the northern alliance is associated more with grass genera such as *Aristida*, *Eragrostis*, *Eriachne*, *Panicum*, *Brachyaria*, *Triodia* and *Setaria*, the southern alliance is associated more with genera such as *Danthonia*, *Eremophila*, *Maireana*, *Bassia*, *Helipterum*, *Cephalopterum*, *Velleia*, *Swainsona* and other herbaceous annuals. The *A. aneura* alliance consists of a number of sub-alliances and associations. These include the *A. aneura*-*Eremophila leucophylla*, *A. aneura*-*E. fraseri*, *A. aneura*-*A. tetragonophylla*, *A. aneura*-*A. craspedocarpa*, *A. aneura*-*A. sclerosperma*, *A. aneura*-*A. linophylla*, *A. aneura*-*Callitris huegelii*, *A. xiphophylla*-*A. grasbyi* and *A. sclerosperma*-*A. ramulosa* sub-alliances. *E. kingsmillii* is also associated with *A. aneura*, and with a hummock grassland ground layer. *Maireana pyramidata* is associated with *A. aneura* on saline alluvial plains. Other woody genera that are prominent in the *A. aneura* alliance are *Hakea*, *Grevillea*, *Atriplex*, *Frankenia*, *Plagianthus*, *Heterodendron* and *Brachychiton*. The upper margins and floors of pans and salt lakes in the Austin district carry an *Arthrocnemum* spp. alliance. Fringing these flats are *Melaleuca uncinata* communities. The drainage channels are fringed by *E. camaldulensis* and *E. coolabah* (Coolibah) alliances.

The *Carnarvon* botanical district, a sedimentary basin in which the exposed surface rocks range from Permian to Recent in age, is mostly low-lying. The vegetation on the northern plains consists of *Acacia xiphophylla* high open shrubland with *Triodia basedowii* as ground cover. On the sand plains the vegetation is predominantly *Acacia pyrifolia* open shrubland, with scattered *Owenia reticulata*, and with *Triodia pungens* and *Plectrachne schinzii* as ground cover. On Cape Range *E. dichromophloia* low open woodland, with *Triodia pungens* and *T. wiseana*, is to be seen. *Acacia* species such as *A. coriacea*, *A. ramulosa*, *A. sclerosperma*, *A. xiphophylla*, *A. tetragonophylla*, *A. grasbyi* and *A. ligulata* form high open shrubland or low open woodland communities with shrub species of other genera over a wide area of this botanical district. On alluvial flats the low shrub understorey layer consists of species of *Maireana* and *Atriplex*. *Arthrocnemum* low open

shrubland occupies the wetter sites. On Kennedy Range a mixed open shrubland with *Triodia basedowii* and *T. pungens* as ground cover is present.

The Canning, Mueller, Keartland, Carnegie, Giles and Helms botanical districts comprise what was once called the Carnegie botanical district. These make up the desert region of Western Australia.

The Canning and Mueller districts contain extensive areas of high shrubland with several species of *Acacia* dominating. On the sandy plains the dominant species is *A. pachycarpa* with *Triodia pungens* as ground cover. Scattered trees of *Eucalyptus* sp. (Desert Bloodwood) are present on the dunes. *Owenia reticulata* (Desert Walnut) is the principal low tree species in the north-western sector. *E. pachyphylla* and *E. odontocarpa* are prominent in the north-eastern sector, while woodlands of *Casuarina decaisneana* are also of local importance there, in the interdunes. The ground layer of hummock grassland include *Triodia* and *Plectrachne*. *Grevillea wickhamii* and *Acacia monticola* are dominant on stony rises. Low trees of *E. pruinosa*, *E. brevifolia*, *E. setosa* and *E. coolabah* occur at a very low density.

The Keartland district has a noticeable abundance of *Thryptomene maisonneuvei* and other Myrtaceae in the high shrubland formation. The Desert Bloodwood is present on the dunes, together with *Plectrachne schinzii*. *A. aneura* is of local importance, on small hills and mesas, with *Triodia pungens*. Hills of igneous rocks are covered with *Plectrachne melvillei*.

The Carnegie district carries extensive areas of *A. aneura*, with *Danthonia* and seasonal ephemerals. On the rises of the lateritic plains hummock grasslands of *Triodia basedowii* and high shrublands with *E. kingsmillii* merge in with the *A. aneura* which tend to thin out. Desert Bloodwood, *Casuarina decaisneana*, and *E. coolabah* become more local in distribution, while *Plectrachne schinzii* is increasingly replaced by *Thryptomene maisonneuvei* southwards.

The Giles district consists of ranges with sandhill country between them, somewhat similar to the Carnegie district. *Casuarina decaisneana* groves are very common in sandhill country between the ranges. *Triodia basedowii* and *Plectrachne schinzii* provide ground cover. On the ranges the high shrubland is made up predominantly of *Acacia* spp. including *A. aneura*, with *Eremophila*, *Hakea*, *Grevillea* and *Eucalyptus* as co-dominants in some areas. *Callitris columellaris* is locally dominant. *Triodia basedowii* and *Plectrachne melvillei* form the hummock grassland ground layer. The *A. aneura* alliance, prominent on basalt soils, has a ground flora of seasonal ephemerals and scattered *Eremophila* and *Cassia*.

The Helms district contains extensive areas of *A. aneura* alliance. A high shrubland formation characterised by *E. youngiana* alliance is also well developed. Associated with the shrubland community are other tall shrubs such as *Hakea*, *Acacia*, *Melaleuca*, *Grevillea* and other *Eucalyptus* species. Patches of open woodland of *E. gongylocarpa* are restricted apparently to areas where the sand is deeper. The hummock grass associated with *E. youngiana* and *E. gongylocarpa* is *Triodia basedowii*.

The Eucla botanical district, commonly referred to as the Nullarbor Plain, is dominated by a low shrubland formation of *Maireana sedifolia*. *Atriplex*, *Stipa* and seasonal ephemerals are well represented. Towards the margin a low open woodland of *Acacia sowdenii* alliance, with a shrubland understorey of *Maireana* and *Atriplex*, becomes more and more evident. To the north this is replaced by a low woodland made up of *Acacia aneura*, *Casuarina cristata* and *Myoporum platycarpum*. Along the coastal strip low woodlands of *E. socialis*, *E. gracilis* and *A. sowdenii* alliances are to be seen on the ridges and flats, respectively. A *E. transcontinentalis*-*E. flocktoniae* woodland alliance found in the extreme south-western portion forms a continuum with a similar formation in the Coolgardie botanical district.

The Coolgardie botanical district marks the transition from the South-West Province to the Eremaean Province, from the Eucalyptus zone to the Acacia zone. In this district a high degree of variability occurs within Eucalyptus and Acacia. It is thought

that this variability may have been due to climatic oscillations known to have occurred since the Pleistocene period, thus making many of the 'species' of recent origin. The vegetation is a mosaic of woodland and shrubland formations. The woodland formations include *E. salmonophloia*, *E. transcontinentalis*-*E. flocktoniae*, *E. torquata*-*E. lesouefii*, *E. dundasii*-*E. longicornis*, *E. brockwayi* and *Acacia aneura* alliances. Shrubland formations include *Grevillea eriostachya*-*G. didymobotrya*-*G. excelsior*, *Eucalyptus foecunda*, *E. eremophila* and other mallee or shrub eucalypts, *Acacia* spp.-*Casuarina* spp.-*Melaleuca* spp. and *Acacia aneura* alliances. Salt lakes and salt pans are associated with halophytic communities of *Arthrocnemum* and *Atriplex* alliances.

The *South-West Province*, which receives its rainfall in winter and has a warm to cool temperate climate, has a high degree of endemism in its flora. The degree of endemism is most powerfully expressed in the cusps of its triangular-crescentic area particularly in the high shrubland and heath formations found to the north of the Hill River and to the east of the Fitzgerald River. Large areas of this province have been altered greatly by man and contain a high proportion of the naturalised alien species recorded in the State.

The *Darling* botanical district consists of four subdistricts. The *Warren* subdistrict, which occupies the extreme south-western corner of Western Australia, has an annual rainfall in excess of 1,200 mm. The main vegetation formations are the high open forest, on granite soils represented by *E. diversicolor* alliance; open forest, on lateritic soils represented by *E. marginata*-*E. calophylla* alliance; low forest and scrub of *Agonis flexuosa* on extensive coastal dunes; also on sand dunes, heaths, with *Jacksonia horrida*-*Acacia decipiens*; and sedgelands of *Evandra aristata*-*Anarthria* spp. in waterlogged areas. Seasonally flooded areas may also carry a *Melaleuca preissiana* low forest alliance. Small patches of *E. cornuta* woodland are to be seen on dune sands. Other species associated with the alliances include *E. jacksonii* and *E. guilfoylei* with *Banksia grandis*, *B. littoralis*, *Casuarina decussata*, *Agonis flexuosa* and *A. juniperina* as understorey trees and a dense high shrub layer of *Trymalium*, *Chorilaena*, *Hovea elliptica*, *Acacia pentadenia*, *Albizia* and *Pteridium*, (in *E. diversicolor* alliance) and *E. patens*, *E. megacarpa* and *E. rudis* with *Banksia grandis*, *B. littoralis*, *Casuarina fraserana*, *Persoonia longifolia*, *P. elliptica*, *Nuytsia floribunda* and *Xylomelum occidentale* as understorey trees and a low shrub heathlike groundlayer (in *E. marginata*-*E. calophylla* alliance).

The *Menzies* subdistrict marks the transition from the Warren subdistrict, with its high rainfall, to the Dale subdistrict where the annual rainfall for the most part scarcely exceeds 600 mm. The vegetation is predominantly *E. marginata*-*E. calophylla* open forest, merging eastwards into *E. wandoo* and *E. cornuta* woodlands.

In the *Drummond* subdistrict the narrow strip of Recent or Pleistocene sand dunes carry scrub or low forests of *Agonis flexuosa* alliance at the southern edge, with *Acacia rostellifera*-*A. cyclops*-*A. cochlearis* alliance and sand dune complex over most of its length. Inland and parallel to the coastal dune system is a narrow belt of coastal limestone hills, the natural habitat of the *E. gomphocephala* woodland alliance. This alliance has an understorey tree layer of *Banksia grandis* and *Agonis flexuosa*, with a sparse shrub layer. The greater part of the Perth basin is mantled with aeolian sands. The northern sector carries a low forest formation of *Banksia menziesii*-*B. attenuata*-*Casuarina fraserana*-*E. todiana* alliance, with a heath understorey, and smaller areas of *B. prionotes* alliance; the southern part is dominated by a *E. marginata*-*E. calophylla* open forest or woodland alliance, with a heath understorey, and smaller areas of *Banksia* low forest. Poorly drained swampy areas carry *Casuarina obesa* low forest alliance; *Actinostrobus pyramidalis* (Swamp Cypress Pine) is of local significance. Swamp and fen formations are made up of complex communities of sedgeland. Watercourses in the district are fringed by a *E. rudis*-*Melaleuca* spp. alliance.

The *Dale* subdistrict occupies the laterite capped plateau dissected by young streams to form steep sided valleys. An open forest formation of *E. marginata*-*E. calophylla* alliance characterises the lateritic erosional and deep depositional surfaces, with *E. wandoo* alliance restricted to the heavier pediment soils. The understorey layers of

the *E. marginata-E. calophylla* alliance resemble those in the same alliance in the Warren district. The *E. wandoo* understorey layer has a more open character. This alliance, which in its most highly developed state fringes the eastern boundary of this district, is more widely distributed in the Avon botanical district.

The Irwin botanical district, for the most part, overlies sedimentary rocks from Silurian to Quaternary age, with smaller areas of Precambrian metamorphics. This district forms one of the two floristically important cusps of the South-West Province. At the northern extremity, the Irwin district consists of red and yellow sands underlain by Mesozoic sediments. The high shrubland formations are made up of mixed high shrubland with a heath understorey, with mainly proteaceous and myrtaceous elements, *Acacia* spp.-*Casuarina acutivalvis* and *Melaleuca* spp. and *Hakea* spp. scrub alliances. Low woodlands of *Banksia menziesii-B. attenuata*, *B. ashbyi-B. sceptrum*, *B. prionotes* and *Actinostrobos arenarius* occur on deep sands. Heath and low heath formations of Proteaceae, Myrtaceae, and Leguminosae occur in areas where the sand is shallow or where a lateritic crust is present. These formations vary considerably in floristic composition.

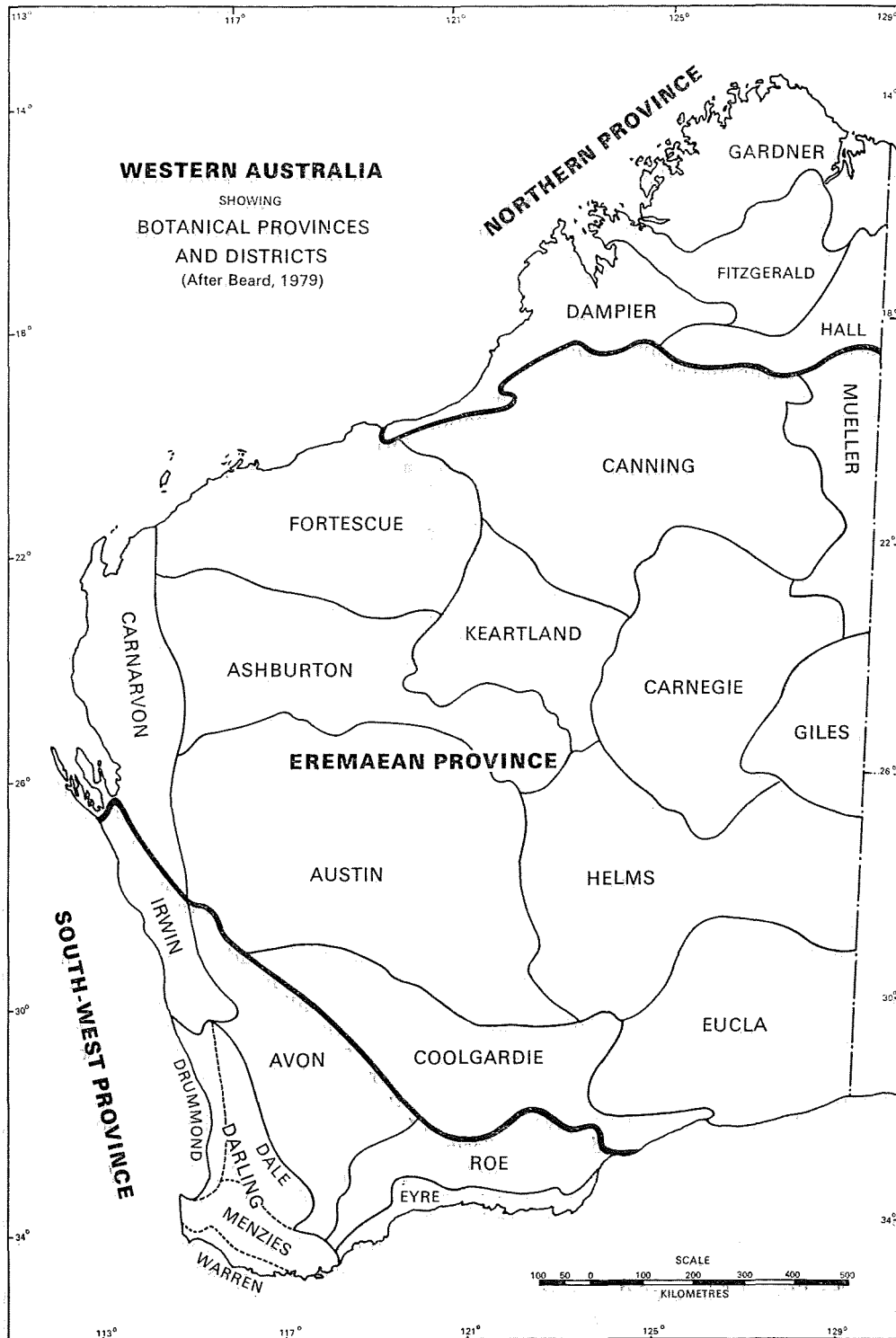
On the metamorphic rocks, the vegetation on residual flat tops and plateau surfaces carries low forests of *B. prionotes* alliance with heath on the lateritic surfaces. A low woodland formation of *E. loxophleba-Acacia acuminata* alliance dominates the loamy valley soils, now extensively used for farming. This alliance is associated with a herbaceous ground layer composed of *Stipa*, *Neurachne* and seasonal ephemerals. *E. salomonophloia* alliance is significant only in the eastern part of the district.

The vegetation of the coastal dune system is an extension of the Darling district. The limestone hills in the Irwin district carry low woodlands of *E. erythrocorys*. Poorly drained areas and small lakes carry or are fringed by *Casuarina obesa* and *E. rudis-Melaleuca* spp. alliances.

The central to southern portions of the Irwin district are characterised by the so-called 'sand plains'. These carry low woodlands of *Banksia menziesii-B. attenuata-E. todiana* and *B. prionotes* alliances particularly on the deeper sands. *E. lanepoolei* (Salmonbark Wandoo) and *E. accedens* (Powderbark Wandoo) are of local significance, on heavy clay soils. In areas of deep dissection, the valleys carry woodlands of *E. wandoo* and *E. calophylla* alliances. Heath and low heath formations cover most of the elevated regions. The heath communities vary in composition, depending upon the depth of sand and the presence of laterite, and some may eventually develop into high shrubland communities with long-term fire protection. Proteaceae, Myrtaceae and Leguminosae are dominant components, while on laterite hills *Xanthorrhoea reflexa* and *Dryandra* spp. become very conspicuous. *Banksia hookerana* alliance is locally significant north of the Arrowsmith River. High shrubland communities with *Grevillea eriostachya-G. didymobotrya-G. eriostachya*, *Lambertia multifloras* (Native Honeysuckle) and *Actinostrobos arenarius* alliances are also significant in the sandplain region.

The Avon botanical district, which covers most of the so-called wheat belt, is now for the most part cleared of native vegetation for farming.

On the eastern edge of the Darling district, on the low hilly to hilly terrain, with hard acidic yellow mottled soils, the pediments of early erosional cycles, the woodland formation consists of *E. wandoo* alliance. *E. marginata-E. calophylla* alliance occur on soils which tend more to ironstone gravels with a sandy matrix. The *E. wandoo* alliance is associated with *E. accedens*, and with *E. astringens* which commonly occur on lateritic breakaways. In the southern portion *E. gardneri* (Blue Mallet) and *E. falcata* (Silver Mallet) are more commonly seen on the breakaways, while *E. cornuta* woodland alliance replaces the *E. wandoo* woodland alliance. The *E. wandoo* woodland has a very open low shrub layer. Poisonous plants of the genera *Gastrolobium* and *Oxylobium* are commonly seen in this woodland formation. On granite outcrops, a vegetation complex reflects the succession of colonisation by algae and lichen to shrublands with *Leptospermum* and eventually to climax communities of woodland of *Casuarina huegeliana* alliance, which occur on sandy or gritty soils over one metre in depth.



On the hard neutral red soils of the river valley systems, which represent further erosional cycles, the woodland formation is represented by the *E. loxophleba* alliance, with *Acacia acuminata* as its main associate. *A. acuminata* tends to merge with the *E. wandoo* alliance, particularly as the soils become sandy or gritty. In the southern portion *E. occidentalis* alliance replaces the *E. loxophleba* alliance. *E. occidentalis* woodlands occur also on the clay soils of swamps or seasonal shallow lakes.

Extensive areas of *E. salmonophloia* woodland alliance are found in the hard alkaline yellow soils further to the east, on valley plains and terraces. *E. salmonophloia* woodland has an open mixed low shrub understorey with *Maireana* and *Atriplex* dominating in more saline soils. Other trees associated with this alliance are *E. salubris* (Gimlet), *E. longicornis* (Red Morrel) and *E. melanoxyton* (Black Morrel).

Forming a mosaic with the woodland formations are the low woodland and shrubland formations developed on the plateau areas, on sandy yellow earths containing ironstone gravel and over mottled or pallid-zoned clays. The *B. prionotes* woodland alliance and *Acacia* spp.-*Casuarina* spp.-*Melaleuca* spp. and *Grevillea eriostachya*-*G. didymobotrya*-*G. leucoptervis* shrubland alliances occur on yellow sand. *Dryandra* spp. and mixed Myrtaceae, Proteaceae, Leguminosae and Epacridaceae heath alliances occur on laterite or shallow sand over laterite. Other shrubland formations include *E. eremophila* (Tall Sand Mallee), *E. oldfieldii* (Oldfield's Mallee), *E. drummondii* (Drummond's Gum), *E. pyriformis* (Pear-fruited Mallee) and other mallee or shrub eucalypt alliances. *E. macrocarpa* (Mottlecuh) shrubland occurs on deep sand.

The salt lakes, remnants of once extensive river systems, carry *Casuarina obesa* and *Melaleuca* spp. low woodland alliances on the fringes with low shrubland formations of *Arthrocnemum* spp. alliance in the old watercourses. *E. sargentii* (Salt River Gum) and *E. kondininensis* (Kondinin Blackbutt) grow on saline soils.

The Eyre botanical district, which includes the Stirling and Mount Barren Ranges, forms the second of the two floristically important cusps of the South-West Province. It lies at the edge of the Archaean Shield where it abuts into the Proterozoic metamorphics of the Albany-Esperance block. The latter consists largely of sediments of middle and late Eocene age, at one time mantled by a lateritic crust, which is represented in the present landscape by narrow ironstone gravel ridges and erosional scarps along the northern edge.

The Stirling and Mount Barren Ranges which rise abruptly out of an otherwise predominantly undulating landscape are composed of hard Proterozoic metasedimentary rocks. The ranges carry closed heath and scrub formations of mixed Myrtaceae, Proteaceae, Leguminosae and Epacridaceae alliance. They are noted for their diversity in the flora and their conspicuous endemic or near endemic species. Woodlands of *E. marginata*-*E. calophylla*, *E. wandoo* and *E. cornuta* occur on the lower slopes and valleys of the Stirling Range.

Over a large area of the Eyre district, the vegetation is made up of high shrubland formations with shrub or mallee eucalypts dominating. *E. tetragona*, *E. redunca*-*E. uncinata*, *E. gardneri*-*E. nutans* and *E. eremophila*-*E. oleosa* alliances form a mosaic over the area, the former on the undulating upper slopes and rises nearer the coast. Patches of mixed heath and low heath of Proteaceae, Myrtaceae and Leguminosae are present. The heath vegetation merges into and forms the understorey of the high shrubland communities. Low forests of *E. platypus*-*E. gardneri*-*E. falcata* alliance occur locally on scarp slopes. To the east *E. tetragona* alliance gives way to *E. tetragona*, while on the sandy soils *Banksia speciosa*-*Lambertia inermis* and *Nuytsia floribunda* become dominant.

Woodland formations of *E. occidentalis*, *E. loxophleba* and *E. salmonophloia* alliances occur along drainage lines and loamy slopes and flats. The former alliance is favoured by higher rainfall and winter wet sites and is often seen on or around clay pans. Salt lakes are covered by or fringed by low shrubland formations of *Arthrocnemum* spp. and *Atriplex* spp. alliances. A scrub formation of *Melaleuca* spp. alliance may also be present.

The littoral fringe of the coastal plain is made up of a chain of granite bosses with drift sand between them. *Acacia rostellifera*-*A. cyclops*-*A. cochlearis* and *Agonis flexuosa* scrub alliances are present with the sand dune and granite lithic complexes. *Banksia*

baxteri and *B. attenuata*, as well as *Lambertia inermis* (Chittick), are dominant on the drift sand, inland, with *E. marginata* and *E. cornuta*, the former found to the west, the latter restricted to interdunal flats. Coastal swamps carry a *Melaleuca* spp. alliance. The islands of the Recherche Archipelago carry low forests of *E. cornuta* and *E. lehmannii* as well as mixed scrub and heath formations.

The Roe botanical district contains a number of plant communities found in the adjacent Eyre, Avon and Coolgardie districts. On residual sandplains there are extensive areas of mixed heath. These merge into *E. eremophila*-*E. oleosa* and *E. redunca*-*E. uncinata* tall shrublands. *E. forrestiana* (Fuchsia Mallee) is present in these alliances. Further to the east, on limestone, the tall shrubland is dominated by *E. cooperana* (Many-flowered Mallee). Patches of *E. falcata* and *E. gardneri* occur on higher ground, particularly to the west. *E. platypus* low forest is found in pockets on clay soils, *E. salmonophloia* and *E. occidentalis* woodlands are seen in the valleys, the former to the north, the latter mainly to the south.

The salt lakes carry *Arthrocnemum* spp. low shrubland communities. These are fringed by *Melaleuca* spp. low woodland or shrubland communities. The dominant species are *M. lateriflora* and *M. uncinata*.

Naturalised Flora

The naturalised flora of Western Australia which now make up so much of the landscape of the South-West Province is composed of elements from many parts of the world. These plants have in some instances been deliberately introduced, others have been introduced by accident. Some species have been introduced on more than one occasion and several variants may be present. The more successful species originate from areas of similar climate, and in the absence of disease and insect attack, which in their native habitat would keep them in check, are able to disseminate at an alarming rate. South Africa and the Mediterranean Region provide most of the successful alien species found in the South-West Province.

Grasses of importance are represented by the genera *Bromus* (Brome Grass), *Lolium* (Rye Grass), *Hordeum* (Barley Grass), *Avena* (Oats), *Aira* (Silver Grass), *Briza* (Blowfly Grass), *Poa* (Winter Grass) and *Vulpia* (Silver Grass) from Southern Europe, and *Eragrostis* (Love Grass), *Ehrharta* (Veldt Grass) and *Rhynchelytrum* (Red Natal Grass) from South Africa. Pasture legumes from southern Europe include *Trifolium* (Clover), *Medicago* (Medic, Lucerne), *Lupinus* (Lupin), *Ornithopus* (Serradella), *Vicia* (Vetch) and *Lotus* (Birds-foot Trefoil). *Psoralea pinnata* (African Scurf Pea) from South Africa is a shrubby weed.

The weed flora of Western Australia is composed largely of alien species. Very few native species have become weeds in this State. The ubiquitous composite *Arctotheca calendula* (Cape Weed) originates from South Africa, as do *Arctotis*, *Berkheya*, *Osteospermum*, *Gorteria*, *Cotula* and *Ursinia*. Naturalised European composites include *Carthamus* (Saffron Thistle), *Hypochoeris* (Flat Weed), *Carduus* (Slender Thistle), *Ditrichia* (Stinkwort), *Lactuca* (Lettuce), *Conyza* (Fleabane), *Centaurea* (Cockspur Thistle) and *Cirsium* (Spear Thistle). The Brassicaceae, significant as crop weeds, comprise *Raphanus* (Radish), *Brassica* (Turnip), *Rapistrum* (Turnip Weed) and *Sinapis* (Charlock). *Carrichtera annua* (Ward's Weed) is widely naturalised in the Eucla district. All these are of European origin. The South African Iridaceae are represented by genera such as *Homeria* (Cape Tulip), *Watsonia*, *Gladiolus*, *Moraea*, *Ixia* and *Sparaxis* and were introduced in the first instance as garden subjects. *Echium* (Paterson's Curse) (Boraginaceae) was another garden introduction, while *Rubus* (Blackberry) (Rosaceae), a woody species, was introduced for its fruit. *Oxalis* (Soursob) (Oxalidaceae), from South Africa, is common in vineyards and orchards, while the family Polygonaceae is represented by *Rumex* (Dock) and *Emex* (Double Gee), weeds of wide habitat. The latter, introduced as a spinach from South Africa, is now extremely widely distributed in the South-West and Ereman Provinces. Also widely distributed but more localised in occurrence is *Argemone* (Mexican Poppy) (Papaveraceae), with origins in North America. *Prosopis* (Mesquite) (Mimosaceae) and *Parkinsonia* (Cesalpiniaceae) from the Americas, and *Calotropis* (Asclepiadaceae) from Africa, are weedy shrubs or small trees naturalised in the tropics.

In addition to the naturalised alien species which now exceed 700 in number, there are hundreds of species of plants under cultivation in Western Australia. These include field crops (cereals, legumes, fibre and oil seeds), horticultural plants (fruit, vegetables and garden subjects) and forest trees. Other species are being deliberately introduced for particular purposes, e.g. the reclamation of waste land and saline areas.

As Man's activities further impinge upon the natural ecosystems and as more and more alien plants become naturalised in this State, so will the effect of these plants species be more widely felt in the natural environment. It is essential to have information on the biology of alien species so that proper management measures can be applied to maintain harmony within our natural ecosystems.

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Chapter II—continued

Part 4—The Fauna of Western Australia

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DISTRIBUTION

Terrestrial Vertebrates

An observer who looks carefully at the fauna of a large land mass like the Australian continent will soon discover that its animals are not distributed uniformly throughout it. He will find that groups of species which are characteristic of some places are missing from others. This is because the distribution of animals results both from their response to the physical (*i.e.* ecological) conditions of their environment (and these are not uniform from place to place), and from their past histories. For example, the presence of routes along which a species could have moved in the past, and of barriers which would have made its movement from one place to another impossible, decide whether any species could have reached a particular locality by today. But whether it has persisted there until today depends upon local conditions having been suitable for it.

The relationship between the distribution of a species and the character of its environment may be demonstrated dramatically and most easily by comparing the distribution of animals with that of climate, and in particular with its components of temperature, rainfall and the time of the year at which rain falls. In Western Australia many species lie within one or other of the boundaries of two rather different climatic regions. These are the south-west with its regular and plentiful rainfall during cold winters, and the Kimberley with regular, plentiful rainfall during hot summers. The remainder of the State receives intermittent and unreliable rainfall in quantities which vary widely; some parts of this area (*e.g.* the Pilbara) receive their small amount of rain principally in the summer and other parts (*e.g.* the Nullarbor) in the winter.

An analysis of most of the Western Australian groups of vertebrate animals shows that they can be referred to three faunal assemblages characteristic of these climatic regions. These assemblages are called *faunas* and have been named by zoogeographers *Bassian* which, in this State, is the fauna characteristic of the south-west; *Torresian* which, in this State, is characteristic of the Kimberley; and *Eyrean* which is the fauna which occupies the land between. While the composition of a fauna is, generally speaking, characteristic of the area in which it occurs, the occurrence of a particular species in a fauna does not mean that it will not be found in another because each of the faunas has several elements which are sufficiently wide in their requirements for them to occur as 'foreigners' in the faunas of neighbouring regions. Examples of these are the species with predominantly Torresian populations (and apparently histories of origin) which are found today in the otherwise Eyrean fauna of the Pilbara district of the north-west; and various Eyrean species which occur in the Bassian fauna of the south-west.

Among the birds the sharpest faunal break is between the Torresian fauna of the Kimberley division and the Eyrean fauna of the Pilbara. The Kimberley is the headquarters in Western Australia of the Scrub Fowl (*Megapodius freycinet*), the Fruit Pigeons (Ptilinopinae), Lorikeets (*Trichoglossus* and *Psitteuteles*), the White Cockatoo (*Cacatua galerita*) and most of the Grass Finches. The Torresian species which penetrate further southwards include the Brolga (normally only to Onslow), White-breasted Wood Swallow (to Shark Bay), and the Brown Honeyeater (right through to the south-west).

Among mammals there seem to be a few truly Torresian species in Western Australia. Examples would be the Fruit Bats or Flying Foxes (*Pteropus* and *Macroglossus*), the Little Rock Wallaby (*Peradorcas concinna*), the Jungle or River Wallaby (*Macropus agilis*) and the Antelope Kangaroo (*Macropus antilopinus*). On the whole most of the mammal species which occur in the Kimberley seem to be characteristic of that part of the Eyrean fauna inhabiting the country which receives intermittent rainfall during the summer.

Even among birds, the boundary between the majority of the Eyrean species and the bulk of the Bassian species is less well defined than that which separates Eyrean and Torresian faunas as there is a good deal of overlapping. For example, the line which separates the woodland eucalypts and the mulga, the so-called 'mulga-eucalypt line', is the extreme limit of most Bassian species, though many do not range inland beyond a line connecting Geraldton, Moora, Northam and the Stirling Range. The mulga-eucalypt line separates, to quote an example, the main distributions of the Grey Kangaroo (Bassian) and the Red Kangaroo (Eyrean). This line is the northern limit of other well known Bassian species such as the Red Wattle Bird.

The south-west of the State has representatives of many well known Bassian species also found in south-eastern Australia. These include among birds, the Brush Bronzewing, White-tailed Black Cockatoo, Western Rosella, Scarlet Robin, Yellow Robin, Southern Emu-Wren, Silveryeye, White-naped Honeyeater, Western Spinebill, New Holland Honeyeater and Red-eared Firetail. Among mammals there are the Pigmy Possum, the Wambenger, the Grey Kangaroo, the Tammar Wallaby, the Brush Possum and various dunnarts (marsupial mice, *Sminthopsis*). Among frogs there are various *Crinia* and *Heleioporus inornatus* and *australiacus*; and fishes such as *Galaxias* and *Nannoperca*. However, there has been an extensive intermingling of Eyrean and Bassian elements in the south-west on a scale not paralleled in south-eastern Australia. In the south-west we have a blend of faunas in the sclerophyll forests which, though essentially Bassian in character, contain such Eyrean intrusives as the Purple-crowned Lorikeet, the Twentyeight Parrot, the Rufous Tree-creeper, the Western Warbler, the Banded Blue Wren and the Red-tipped Diamond-bird.

It must be recognised also that the distribution of animals that we see today may be a very recent pattern, and subject to continual fluctuation. Studies of fossil pollen in the south-west suggest there have been fluctuations in the relative abundance of jarrah, marri and karri trees over the last few thousand years. Even more marked fluctuations in vegetation may have been produced by climatic changes accompanying glaciation and deglaciation in high latitudes and altitudes over the past 2 million years. Marked changes in vegetation would usually be accompanied by changes in fauna. We know that the Marsupial Wolf or Tiger (*Thylacinus*), the Koala (*Phascolarctos*) and other marsupials, some of them now extinct throughout their ranges in Australia, once lived in the south-west, and it is possible that climatic changes were responsible for their vanishing from that area of Western Australia.

Climatic alterations, on a minor scale, are constantly going on. In the past half-century, or longer, there has been a considerable change in northern Europe, Asia and America, an amelioration in some parts and a drying-up in others, with widespread effects on the distribution of animals. Something similar appears to have been taking place in Western Australia. Many dry-country bird species, of the Eyrean faunal assemblage, have made notable extensions of range into the south-west corner. These include the Galah, Little Corella, Budgerygah, Smoker Parrot, Crested Pigeon, Black-faced Woodswallow, Crested Bell-bird, Blue-and-white Wren, Black-throated Butcher-bird and Little Crow. The records of local naturalists, who keep district lists of local birds and mammals over a period of years, are very useful sources of data for plotting these changes. Frequent Museum surveys will provide more positive information.

In some cases distribution changes due to natural causes may be masked or modified through the alterations of habitat due to settlement. These habitat changes act to the detriment of woodland birds but favour open-country species (like pipits and plovers).

Coastal Marine Fauna⁽¹⁾

The nature of the coastal waters varies from the warm mangrove-lined mud flats of the north to the clean sandy bays and cool crystal-clear waters of the south. The types of coastal marine habitats depend on the range of tide, the exposure to oceanic swells, the sediments carried off the land by wind or river and some local biological activities such as reef coral or algal building. There is a gradual change in water temperature, salinity and other physical characteristics of the sea as one moves along the long Western Australian coastline of 12,500 kilometres; these changes reflect the nature of the adjacent water mass modified by local effects such as occur in large and small embayments, near river mouths or behind protecting headlands. The coastal waters may be divided into the following broad zones:

1. North: from the Western Australian-Northern Territory border to Cape Leveque with very broken coastline, a high tidal range, high runoff from well vegetated hinterland and no exposure to heavy oceanic swell.
2. North-north-west: from Cape Leveque to Cape Keraudren with eighty miles of low beach, a high tidal range, little regular runoff from desert sands which are blown into the sea by the 'South-East Trades'.
3. North-west: from Cape Keraudren to North West Cape with an indented coastline, moderate tidal range, irregular runoff from some mountains and desert sands.
4. West-north-west: from North West Cape to Kalbarri with some high cliffs, a deep embayment (Shark Bay), moderate tidal range, irregular low runoff from little vegetated desert hinterland and exposure to the south-west oceanic swell. A barrier coral reef, unique in Western Australia, runs southward from North West Cape for nearly 160 kilometres.
5. West-south-west: from Kalbarri to Cape Naturaliste with fairly smooth low white sandy coastline and some limestone headlands; rainfall moderate with little runoff from coastal sands, water clear; tidal range low, offshore coastal reefs give some protection to the coast from the south-west swell.
6. South-west: from Cape Naturaliste to Israelite Bay with broken headland and surf beach formations, high south-west swell exposure, low tidal range, many inlets and low-volume river discharges.
7. South-east: from Israelite Bay to the Western Australian-South Australian border with smooth coastal outline of beaches and some cliffs, modified exposure to south-west swell, low tidal range and low rainfall runoff.

Certain coastal marine areas are special in the sense that they represent either a transition (*i.e.* rapid change of character) between two adjacent zones or possess unique features found in such combinations nowhere else on the coast. Examples of such special places are the coastal waters in the Broome to Derby region, around North West Cape, in Exmouth Gulf, in Shark Bay, the Perth metropolitan beaches (including Cockburn Sound), around Cape Naturaliste and around Cape Leeuwin.

The islands and reefs off the coast are also regarded as special because of their marine faunal peculiarities; for example, the Houtman Abrolhos, the Monte Bellos, the Rowley Shoals, the North West Cape Barrier Reef and the Archipelago of the Recherche.

The marine fauna of the north coast is distinct from that of the south coast although a few species do occur in both regions. The northern fauna is regarded as part of the Indo-West Pacific fauna, and the southern fauna of Western Australia as part of the southern Australian fauna. Some species of both these faunas extend and overlap along the west coast and there are several species which are endemic to this region only. One of these is the Western Australian commercial rock lobster *Panulirus cygnus* and another is the Western Australian commercial jewfish *Glaucosoma hebraicum*.

Fauna of Inland Waters⁽²⁾

The inland waters are of many types and possess very varied faunas. They may be divided into four main ecological groupings: (1) the rivers of the Kimberley Division; (2) the river systems of the north-west from the De Grey to the Murchison; (3) the streams,

(¹) Written in collaboration with Dr R. W. George. (²) Written in collaboration with Dr E. P. Hodgkin.

swamps, and lakes of the south-west corner; and (4) the temporary waters of the dry inland represented by two widely different habitats, (i) freshwater claypans and soaks (including man-made dams) and (ii) the salt lakes.

Marked seasonality characterises river flow in the Kimberley Division because of the alternation of regular summer rain with winter drought. The river pools and many isolated springs support an extensive fauna of fish, insects, molluscs and other animals, many of which show close affinities with the aquatic fauna of Asia and the Indo-Malay Archipelago.

The rivers of the north-west from the De Grey to the Murchison flow only intermittently, and between times of flood the fauna must survive in widely separated spring-fed pools in river beds. These pools, like those at Millstream Station on the Fortescue River, are often of striking beauty. Their fauna is relatively sparse as compared with the richer assemblages in the Kimberley rivers, the most conspicuous elements being a few fish species and a freshwater tortoise (*Chelodina steindachneri*) which is confined to the region.

The permanent hill streams of the south-west have a diverse arthropod fauna. Most of these are insects but, in addition, there are several species of freshwater crayfish in slower-running parts—Marron (*Cherax tenuimanus*) occur in permanent streams of deep water; Jilgie (*C. quinquecarinatus*) in shallow permanent water; Koonac (*C. preissi*) make burrows in the mud of swamps. A species of a closely related group, the so-called 'land-crabs' (*Engaewa*), has been recently discovered in the swamps of the south-west. The freshwater mussel *Westralunio carteri* is confined to the streams of the south-west. Most rivers stagnate and may become saline in summer; they are reduced to chains of large or small pools to which the fauna is restricted. The small transparent prawn *Palaemonetes* is often abundant in these pools. Shallow permanent lakes and swamps near the coast also have a fairly varied insect fauna, among which certain species of dragonflies are particularly abundant; at times there are enormous numbers of *Daphnia* and related small crustaceans.

The inland freshwater claypans are characterised by an interesting ephemeral fauna, mainly of phyllopod Crustacea. The most conspicuous is the large shield shrimp (*Triops australiensis*) but a variety of fairy shrimps (Anostraca and Conchostraca) occur also. The eggs of these creatures survive for years in the dried mud and development is rapid when the claypans fill after occasional rains.

The most conspicuous animals in the waters of the salt lakes are the brine shrimps (*Artemia* and *Parartemia*), which at times build up to such high population densities as to attract large flocks of Banded Stilts, which breed only in certain of the inland salt lakes. The Salt Lake Snails *Coxiella* reach their greatest diversity and abundance in the south-west saline lakes.

THE COMPOSITION OF THE FAUNA

The fauna of Western Australia includes representatives of all major phyla of the Animal Kingdom and individuals range in size from the Blue Whale (*Balaenoptera musculus*), the largest mammal that has ever lived, to minute single-celled protozoa which cannot be seen without a microscope. No estimate can be made of the number of species, and probably the number of species of insects alone out-numbers all the rest by a comfortable margin. Here we have not attempted to describe all phyla. The vertebrates are given fairly full treatment because they are obvious and familiar animals to most of us. The insects (mostly those of economic importance) are dealt with in Part 5 of this Chapter, and the remaining phyla are treated in a few paragraphs which confine themselves to groups of interest.

THE VERTEBRATE FAUNA

Mammals

Unlike the birds and reptiles, wild mammals are not frequently seen in most parts of Western Australia. This is because most of the species are small and secretive and appear only at night. However, there are exceptions and, as any traveller in inland and northern parts of the State can attest, kangaroos of one species or another can often be seen in large numbers during daylight hours.

Most species of mammals have distinct ecological preferences which allow them to be categorised into one or other of the three main faunal groups which are described earlier in this Part under the heading *Distribution*. For example, in the kangaroo family, the Tammar Wallaby (*Macropus eugenii*), the Quokka (*Setonix brachyurus*), and the Brush Wallaby (*Macropus irma*) are found only in the south-west or on certain isolated islands off the coast. Of these, the Brush Wallaby is closely related to the South Australian Toolache Wallaby (*Macropus greyi*) and the Tammar to the Flinders Island Wallaby and the now extinct St Peter Island Wallaby of South Australia. The most familiar kangaroo of the dry country with unreliable rainfall is the Red Kangaroo or Marloo (*Megaleia rufa*), while in the summer-rainfall country of the Kimberley Division we find such species as the Jungle Kangaroo or River Wallaby (*Macropus agilis*), the Little Rock Wallaby (*Peradorcas concinna*) and the Northern Nail-tailed Wallaby or Karrabul (*Onychogale unguifera*). In addition to the species which sort out in this convenient way, there are others which are widely distributed and in fact occur as members of all three faunal assemblages. The most familiar members of the family which do this are the Euro or Biggada (*Macropus robustus*), the Boodie (*Bettongia lesueur*), and the Rock Wallaby (*Petrogale penicillata*). Of these, the Euro may still be found anywhere in suitable local habitats from the Kimberley to the south-west and inland across the South Australian border. At one time this was true also of the Boodie and the Rock Wallaby which, however, are today unfortunately absent from much of their former range.

So far, only the kangaroos have been mentioned but, in fact, representatives of all three major divisions of the mammals (*i.e.* monotremes, marsupials and placentals) occur in the State.

The egg-laying monotremes are represented by the Echidna (*Tachyglossus aculeata*), sometimes called Spiny Anteater or Porcupine. This curious and completely inoffensive animal is not uncommon in the country around Perth and it even appears on occasions in densely-settled suburban areas. In drier districts, its diggings, made in its search for insects, are familiar around rocky hills and breakaways.

Marsupials, or pouched mammals, occur in great variety in Western Australia. The kangaroos and wallabies, already mentioned, are the herbivorous members of the group. These animals are the Australian evolutionary equivalent of the antelopes, deer, and horses of the other continents and there is often an extraordinary similarity in structure between members of the kangaroo family and these other herbivores. These similarities extend even to such details as the physiology and shape of the stomach and other organs of digestion. The reproductive systems of marsupials and their physiology have also long been of great interest to biologists because they differ from those of other animals. For example, it is now known that in the Quokka, and some other wallabies, the adults mate again immediately after the birth of the 'joey'. The embryo which is the product of this second mating does not develop immediately but is held in a dormant state in the female system. However, if the first young joey is lost from the pouch, this dormant embryo immediately begins to develop and a second joey is produced after a minimum period of time.

In Western Australia the kangaroos and wallabies are all terrestrial (there are no tree kangaroos), and even their arboreal relatives, the phalangerids, are few in number as compared with other parts of Australia. The Brush Possums, the Pigmy Possums and the Ring-tails have Western Australian representatives, but the Koalas and the striped Possums are absent, and of the four species of flying possums of eastern Australia only one (*Petaurus breviceps*) occurs in Western Australia and that only in the Kimberley Division. Although the species of possums in Western Australia are few in number, there are some unique forms which are of great interest. One of these is the rare Scaly-tailed Possum (*Wyulda*) of the Kimberley; unlike other Australian possums this animal has a hairless scaly tail and only twelve specimens of it are known. There is also the curious and rarely-seen Honey Possum (*Tarsipes*) of the south-west. Wombats are known to have occurred in Western Australia around the turn of the century and were thought to be extinct until a small colony was rediscovered in 1965 near Caiguna in the Eucla Division.

Although the large carnivorous marsupials no longer live in the State, the smaller representatives of this group are still fairly common. There are two separate species of native-cats, a southern species (*Dasyurus geoffroii*) and a northern one (*Dasyurus hallucatus*), as well as many species of smaller carnivorous and insectivorous forms. One of the smaller members of this family, the Dibbler (*Antechinus apicalis*), one of our least-known marsupials and last recorded in 1884, was rediscovered during 1967 at Cheyne Beach near Mount Manypeaks on the south coast.

The remaining group of marsupials is that commonly called the bandicoot family. One of these, the Pig-footed Bandicoot (*Chaeropus ecaudatus*) is probably the State's rarest mammal, but it once occurred in the Nullarbor region where its remains have recently been discovered in caves and two living specimens of it were collected by John Gilbert in 1841 some miles to the north-east of Northam. No confirmed record has been made of the species in Western Australia since then. On the other hand another species of bandicoot, the Quenda, or Short-nosed Bandicoot (*Isodon obesulus*), is one of the commonest of marsupials. Its scratchings are common in country gardens and the little animal is often run over and found dead on roads. It lives largely on insects and, being nocturnal, it is seldom seen but it is nevertheless very common in many areas in the south-west.

The third main group of mammals is that of the higher mammals or placentals. Animals of this group occur in Western Australia in addition to the marsupials and the monotremes, and it always comes as something of a surprise to visitors (who generally have a strong preconception of Australia as a land in which all but introduced mammals and the Dingo are pouched mammals and monotremes) to learn that there are many species of Western Australian native placental mammals. In fact, if the seals, whales, and Dugong which occur around our coasts be counted, the species of native placental mammals outnumber the marsupial and monotreme species.

The composition of the mammal fauna is shown in the following table.

Kinds of wild mammals	Number of species occurring in Western Australia (a)	Kinds of wild mammals	Number of species occurring in Western Australia (a)
Monotremes	1	Introduced placentals—	
Marsupials	60	Rodents	5
Native placentals—		Land carnivores	2
Bats	23	Ungulates (Horses, Deer, Camels, etc.)	9
Rodents	24	Rabbits	1
Marine mammals:			17
Seals (b)	2		—
Dugong	1		—
Whales	22		—
Land carnivores—Dingo	1	TOTAL, ALL SPECIES	151
	73		—

(a) Total numbers of species are from *A Guide to the Native Mammals of Australia* by W. D. L. Ride. (b) Only resident seals are counted. Antarctic seals are occasionally 'shipwrecked' on southern coasts but these are clearly stragglers into the area.

Within Western Australia the best-established groups of native placental mammals, i.e. the bats and rodents, are distributed in much the same ecological manner as are the marsupials; some are dry country forms like *Leggadina hermannsburgensis*, the small mouse which builds mounds of pebbles on stony ridges^(c), others are predominantly animals of the wet tropics like the majority of the Fruit-bats or Flying Foxes (*Pteropus* and *Macroglossus*), while yet others are confined to the country of reliable winter rainfall in the south-west, e.g. the Southern Bush-rat (*Rattus fuscipes*). These native placental mammals are of great zoological interest because some of them, and in particular the

(c) It is suspected that these may be dew-traps.

native rats and mice, have been here for many millions of years and closely parallel (in adaptation to our stringent ecological conditions) their relatives in similar places in other lands. Thus, we have hopping-mice (*Notomys*), like miniature kangaroos, which are very similar in appearance and habits to the jumping-mice (*Zapodidae*) of the American and Eurasian dry-lands, and the jerboas (*Dipodidae*) of Africa; but it must be emphasised that the jumping specialisations of our own hopping-mice have evolved quite independently within Australia.

Some of our native placental mammals have been economically important. Until 1963 a shore-based Western Australian fishery at Carnarvon depended upon the migrating groups of Humpback Whales (*Megaptera novaeangliae*) which move along the western coast between their feeding grounds in Antarctic waters and their breeding places in the tropics. Until late 1978 another whale fishery, at Albany, operated upon Sperm Whales (*Physeter catodon*). The humpback fishery collapsed because of immoderate exploitation which so reduced the population that it was in danger of extinction. The sperm whale fishery ceased operations following a decision by the company on economic grounds; in addition stock analyses have shown that over-exploitation of the Sperm Whale also has been occurring. No whaling is now permitted within the 200-mile zone as a result of a policy decision by the Commonwealth Government based on recommendations from a judicial inquiry. The catching of Southern Fur-seals (*Arctocephalus doriferus*), formerly lucrative, is now no longer permitted. The Dugong (*Dugong dugon*) was once an important source of food for the natives of the coastline from Shark Bay to the Northern Territory. The Dingo (*Canis familiaris dingo*) has probably not been in Australia for as long as the other native mammals, and may well have entered with the Australoid people who were ancestral to our present Aborigines. In some parts of the State the Dingo is a major problem to the pastoral industry because of its attacks on livestock.

The preceding table also shows that there is a large number of introduced species as well as native mammals. These are now a part of the wild mammal fauna of Western Australia and all are placentals. Some of these species are also agricultural and pastoral pests and they have become so well entrenched in the environment that there is no doubt that any discussion of the mammalian fauna of the State must take them into account and mention should be made of some of them here. Red Deer (*Cervus elephus*) occur spasmodically in the south-west around Pinjarra, Waroona and Harvey. Camels (*Camelus dromedarius*) occur in large numbers and are distributed through the Eastern Goldfields up through the Pilbara and into the Kimberley. They have been declared vermin around Laverton, Nullagine, Port Hedland and Halls Creek. Donkeys (*Equus asinus*) have a distribution very much like that of the camel and also occur generally throughout the Kimberley. Wild goats (*Capra hircus*) are ubiquitous in dry country but are mainly concentrated in the Murchison and the north-west. A small herd of Black-buck (*Antelope cervicapra*) occurs near Geraldton. Rabbits (*Oryctolagus cuniculus*) are widespread in Western Australia but are only of economic significance south of the Murchison. They are by no means the problem that they used to be, due largely to programmes of intensive rabbit extermination. Foxes (*Vulpes vulpes*), declared vermin, are also widespread but do not commonly occur north of the De Grey River, having only been reported spasmodically from the Kimberley Division. The domestic cat run wild (*Felis catus*) occurs commonly in the bush and is an efficient predator on native fauna. It became feral in the early days of settlement and soon spread throughout the Colony. The naturalist Kearthland while a member of the Calvert Scientific Exploring Expedition in 1896, recorded that 'in the desert of north-west Australia' he saw a tabby cat at least 400 miles [644 kilometres] from the nearest house. Earlier still the ornithologist Tom Carter writing in 1887 from the Carnarvon district spoke of 'the domestic cat, which is found quite wild and of a large size all through the colony'.

Examination of the composition of the older mammal fauna of Western Australia, *i.e.* monotremes, marsupials, bats and native rodents, as set out in the following table, reveals that only one-eighth of all species recorded from the State today appear to occur only in Western Australia. The south-west contains by far the greatest number of endemic species.

ENDEMISM OF NATIVE MAMMALS TO WESTERN AUSTRALIA
(excluding marine mammals)

Group	All endemic and non- endemic species	Number of endemic species—			
		Total endemics	Endemics north of Fitzroy River	Endemics of South-West Land Division	Endemics of remainder of State
Monotremes	1	—	—	—	—
Native cats	23	5	1	2	2
Marsupial moles	1	—	—	—	—
Bandicoots	7	—	—	—	—
Possums	8	2	1	1	—
Wombats	1	—	—	—	—
Kangaroos and Wallabies	20	4	—	3	1
Rats	24	3	—	2	1
Bats	23	—	—	—	—
Dingo	1	—	—	—	—
Totals	109	14	2	8	4

Birds

The bird fauna of Western Australia consists of a selection of the species occurring in eastern Australia, with only a very minor development of endemic forms. All of these latter, except one (the Western Australian King Parrot, *Purpureicephalus spurius*), have a close and obvious affinity to other Australian forms. The quantitative relationship of the Western Australian bird fauna to that of Australia as a whole is indicated in the following table, which has been prepared on an ecological basis.

	Number of breeding species		Number of non-breeding visiting migratory species	
	Western Australia	Australia	Western Australia	Australia
Land birds	307	499	6	8
Inland water birds	51	52	33	42
Sea birds	25	38	33	55
Total	383	589	72	105

Representatives of most of the families and genera of Australian birds occur in this State. Notable absentees include the Cassowary (*Casuarius casuarius*), Brush Turkey (*Alectura lathami*), several of the fruit-pigeons, the Crimson Rosella (*Platycercus elegans*), Lyre-bird (*Menura novaehollandiae*), several honeyeaters including the Regent (*Zanthomiza phrygia*), Apostle-bird (*Struthidea cinerea*), Cat-birds (*Ailuroedus*), Satin Bower-bird (*Ptilonorhynchus violaceus*) and Rifle-birds (*Ptiloris*).

Space is insufficient to detail all the forms occurring in Western Australia. Mention may be made only of some distinctive species and groups which are common and widely distributed.

The Emu (*Dromaius novaehollandiae*) is still numerous all over the State and is occasionally encountered in the Darling Range near Perth. Australia's only breeding species of penguin, the Fairy Penguin (*Eudyptula minor*), nests on islands off the southern and south-western coasts as far north as Carnac near Fremantle. The Mallee-fowl or Gnow (*Leipoa ocellata*) is still plentiful and, after a period of decline during which its disappearance was feared, it is now increasing in abundance. All of the widespread

species of Australian quails occur but owing probably to the scarcity of natural grasses in the south are not individually very numerous. Among the pigeons two species have shown notable recoveries in population strength. After a long period of scarcity the Common Bronzewing (*Phaps chalcoptera*) began a cycle of increase about 1936 and is still very abundant. The rare Flock Pigeon (*Histriophaps histrionica*) of the more arid country of the north-west and the far north has declined all over Australia and had not been recorded in this State since 1927 until 1958 when considerable flocks were observed in the Hamersley Range and the Fortescue River country. It has also reappeared in parts of the Kimberley Division.

A very distinctive member of the rail family is the Black-tailed Native Hen or Gallinule (*Tribonyx ventralis*). It is a creature of the drier country but is subject to violent fluctuations in numbers, when it is liable to invade the south-west in great strength. A famous occasion was in May 1833 when it overran the settlers' fields and gardens around Perth and did considerable damage to the crops. Similar irruptions took place in 1853, 1886, 1897 and 1919. Later invasions, such as those in 1952 and 1964, have been on a much more modest scale. Of the three Australian grebes the most plentiful is the Hoary-headed Grebe (*Podiceps poliocephalus*) which assembles in the winter in big flocks on the southern estuaries, including that of the Swan River.

In the petrel group there are five breeding species in local waters. The most numerous is one of the mutton-birds, the Wedge-tailed Shearwater (*Puffinus pacificus*) which nests on most islands between Carnac in the south and Sable Island, in the Dampier Archipelago, in the north. A second mutton-bird, the Fleshy-footed Shearwater (*P. carneipes*) nests between Cape Leeuwin and the Archipelago of the Recherche; it is a migratory species and in the winter months migrates to the north-western sector of the Indian Ocean. A similar trans-equatorial migrant is the White-faced Storm-petrel (*Pelagodroma marina*), a diminutive form rarely observed at sea. It nests often in vast aggregations on islands off the south coast and as far north as the Abrolhos. All of these species nest in the spring and summer months. The remaining two breed in the winter. The Great-winged Petrel (*Pterodroma macroptera*) shares the nesting islands off the south coast with the Fleshy-footed Shearwater in a sort of 'Box and Cox' relationship. The black and white Little Shearwater (*Puffinus assimilis*) has a wider nesting range, from the Recherche to as far north as the Abrolhos; in former times it nested at Parrakeet Island off Rottneest Island. In the winter months some twenty-two species of southern-breeding petrels visit local seas. They vary in size from the little Wilson Storm-petrel (*Oceanites oceanicus*), barely larger than a swallow, to the great Wandering Albatross (*Diomedea exulans*). The Wilson Storm-petrel 'winters' all along the Western Australian coast to the tropics and is a familiar sight around fishing boats in Shark Bay. The most common of the albatrosses is the Yellow-nosed Albatross (*Diomedea chlororhynchos*) and may be seen as far north as Point Cloates. The most familiar of these visitors is the dusky Giant Petrel (*Macronectes giganteus*). Ringing experiments have demonstrated that the birds seen here are first-year individuals making circumpolar flights round the Southern Hemisphere; marked birds found in the south-west had been ringed a few months previously in their nests at Heard Island, Macquarie Island, and islands in the South Orkneys in the South Atlantic.

All of the five species of Australian cormorants or shags occur locally. Despite complaints of their depredations on commercially important fish, investigations have cleared the birds of blame, though one species, the Black Cormorant (*Phalacrocorax carbo*), specifically identical with the Cormorant of Europe, does occasionally include edible fish in its diet. One marine species, the Pied Cormorant (*P. varius*), which enters the Swan River estuary and Peel Inlet, is mainly responsible for the guano deposits on the coastal islands. Deposits at Shark Bay were commercially exploited in the last century and at one stage, in 1850, a detachment of troops was stationed at The Quoin Bluff, Dirk Hartog Island, to ensure the collection of royalties. Pelicans in Western Australia, unlike those in eastern Australia, breed only on coastal islands and not on inland waters. Until recently the nearest breeding place to Perth, and presumably the origin of most of the Swan River Pelicans, was Pelican Island, Shark Bay. However, since 1962 a breeding colony has become established at Peel Inlet, Mandurah.

Fourteen species of terns are recorded for the southern parts of the State and three more for the Kimberley Division. Three of the seventeen are migrants from the Northern Hemisphere and ringed individuals of the European Common Tern (*Sterna hirundo*) and the Arctic Tern (*S. macrura*), marked in northern Europe, have been recovered near Fremantle. These birds must have reached our coast via the Cape of Good Hope. The Silver Gull (*Larus novaehollandiae*) is noteworthy for having two breeding seasons in the southern part of the State. On the islands at Safety Bay, for example, there is an egg-laying peak in the autumn and another in the spring.

The numerous Order of wading or shore-birds (sandpipers, dotterels, and plovers) includes a few locally-breeding species but the majority are migrants from the Northern Hemisphere, where they breed in the tundra zone of northern Asia. Though they frequent ocean beaches and estuaries, as well as swamps and lakes, they are listed in the category of 'inland water birds' in the table at the beginning of this section. Some twenty-five species of these birds, commonly called 'snipe' (though the true Snipe of eastern Australia, *Gallinago hardwickii*, does not occur in this State) migrate to Western Australia. In addition there are sixteen species of this Order which breed in Australia. One of them, the Red-capped Dotterel (*Charadrius alexandrinus*), is virtually identical with the rare Kentish Plover of England. Here it is very common and nests at Pelican Point on the Swan River. Another local breeder is the remarkable Banded Stilt or Rottnest Snipe (*Cladorhynchus leucocephalus*) which is an attractive inhabitant of the salt lakes of Rottnest Island. However, it nests only on the inland salt lakes. The nesting habits remained long unknown until colonies were discovered at Lake Grace and Lake King in 1930.

The Australian Bustard ('Wild Turkey', *Eupodotis australis*) is a magnificent bird which has been largely exterminated by shooters over much of south-eastern Australia and in the developed south-west of this State. It is not uncommon in sparsely-settled areas and individuals occasionally appear on the open coastal country quite near Perth. It has recently been demonstrated by ringing that the Straw-necked Ibis (*Threskionis spinicollis*) ranges between south-western Australia and northern and eastern Australia. Fledglings marked in the nests at Muchea have later been taken in the North-West, the Kimberley Division, Arnhem Land and near Orange (New South Wales).

The Brolga (*Grus rubicunda*) is a northern bird normally found as far south as Onslow, but some individuals may wander into the outer parts of the south-west as occurred in 1952. In the heron family a new bird has been added to the State list—the Cattle Egret (*Bubulcus ibis*), which appears to have colonised northern Australia from Indonesia and has now spread over much of eastern and Western Australia.

There are eighteen species of swans and ducks occurring in the State, one of the most remarkable, perhaps, being the Cape Barren Goose, which is now restricted to the islands of the Archipelago of the Recherche. Recent leg-ringing experiments have shown that the common and widespread Grey Teal (*Anas gibberifrons*) wanders indiscriminately all over Australia, its movements being influenced by availability of surface waters.

Though the Black Swan (*Cygnus atratus*) occurs all over Australia, and in fact is more plentiful in some of the other States, historical reasons give it a peculiar association with Western Australia. The bird was first recorded by Europeans in this State, by Antonie Caen, skipper of the Dutch ship 'Banda' in July 1636 off the north-west coast. The first specimens were captured on the Swan River by Willem de Vlaming in January 1697 and taken alive to Batavia, whence they astonished the scientific world. Vlaming named the river after them, and the first colonisation in 1829 was known as the Swan River Settlement. The bird became the emblem of the Colony and State, with the motto, *Cygnus insignis*. The birds do not, and probably never did, occur in the broadwaters of the Swan River estuary, but in the shallows at Lucky Bay and above Heirisson Island. During the 1890s the authorities imported birds from elsewhere in the State, and even from Victoria, and set them free, pinioned, in Perth Water, where they were an attraction in Mounts Bay when the old men's home was located near there.

The State is also well provided with hawks and eagles, twenty-four species being found within its limits. Most are harmless economically and the few that do take chickens and lambs are not serious depredators, though there is controversy on the role of the

Wedge-tailed Eagle (*Aquila audax*) which is, however, classified by the Agriculture Protection Board as vermin in certain districts in the central and north-west portions of the State.

There are not as many species of the parrot group in Western Australia as there are in eastern Australia but one species, the Western Australian King Parrot or Red-capped Parrot (*Purpureicephalus spurius*), is restricted to the south-west and has no near relatives elsewhere. The Twentyeight Parrot is a form of the Port Lincoln Parrot (*Barnardius zonarius*) and is common almost everywhere, being regularly present in Kings Park, a natural reserve adjacent to the City of Perth.

The Kookaburra (*Dacelo gigas*), so common in the forests of the south-west, is not a Western Australian native but was introduced from eastern Australia by the Acclimatisation Board during January 1897. A similar species, however, the Blue-winged Kookaburra (*D. leachii*) occurs in the north, as far south as the Wooramel River. The Rainbow-bird (*Merops ornatus*) in the south is a strict migrant, arriving regularly in the first week in October. Local birds migrate to the north of the State, the wintering area being from the Gascoyne River northward, but some individuals cross the Timor Sea to the Indonesian islands. There are eleven cuckoo species in our area, the commonest being the Pallid Cuckoo (*Cuculus pallidus*) whose plaintive insistent note is heard soon after the winter rains set in.

In the great group of passerines, or song-birds (Order Passeriformes), the most celebrated is the Noisy Scrub-bird (*Atrichornis clamosus*), a primitive almost-flightless bird which until recently was believed to be the only Australian bird which had become extinct since white settlement. The last specimen was collected by the ornithologist A. J. Campbell at Torbay in 1889, but late in 1961 a surviving population was discovered at Two Peoples Bay east of Albany. Space is insufficient to deal in any detail with other members of this large Order. Throughout the State there are 172 species, of which 95 occur in the southern, settled parts and at least 33 are found in Kings Park. A distinctive robin, the White-breasted Robin (*Eopsaltria georgiana*), occurs in the south-west. It is a relative of the yellow robins and is found in the dense coastal and forest thickets from Geraldton southward and east to Albany and the Porongurups. The Western Warbler (*Gerygone fusca*) is a sweet-voiced songster which may be heard in the street trees of Perth, the only Australian capital city in which it lives; in the other States the bird is an inland species. Another distinction of the Perth metropolitan area is that four species of blue-wren, a greater number of species than in the environs of any other capital city, have been noted there. One species, the Red-winged Wren (*Malurus elegans*), which used to live near the city, disappeared when Herdsman Lake was drained. The remaining species are the Splendid Wren (*Malurus splendens*), occasionally still seen in the University grounds; the Blue-and-white Wren (*Malurus leuconotus*) in the coastal dune scrubs, and the Causeway and Pelican Point samphire flats; and the Variegated Wren (*Malurus lamberti*) in the dune thickets. Honeyeaters are numerous, the largest, the Red Wattle-bird (*Anthochaera carunculata*), being a familiar bird in metropolitan streets and gardens. Most of the grassfinches are restricted to the Kimberley Division, where ten species are found. However, one of them, the widespread Zebra Finch (*Taeniopygia castanotis*), nests as near to Perth as Northam and York. Two bower-birds occur in the State. The Great Bower-bird (*Chlamydera nuchalis*) is confined to the Kimberley Division, but the Spotted Bower-bird (*C. maculata*) is found in the north-west and ranges south to the East Murchison country and Malcolm in the Eastern Goldfields.

In contrast with all other Australian States there are very few species of exotic birds established in Western Australia. (The same is true of the Northern Territory.) In the towns of the south-west two turtledoves are plentiful, the Indian (*Streptopelia chinensis*) and the Senegal (*S. senegalensis*). The Goldfinch (*Carduelis carduelis*), an escapee from aviaries, breeds freely in the Perth metropolitan area and around Albany. Recently another cage-bird escapee, the Red-browed Finch (*Aegintha temporalis*), an eastern Australian species, has established itself east of Kalamunda in the Darling Range near Perth. The Indian or Ceylon Crow (*Corvus splendens*) repeatedly arrives at Fremantle on ships from the Orient but the vigilance of officers of the Department of Agriculture and port officials

has led to the successful eradication of the unwanted immigrants. The House Sparrow (*Passer domesticus*) has been similarly kept at bay at Fremantle. This species did, however, make a temporary colonisation, from South Australia, in the vicinity of Eucla and Mundrabilla in 1917-18 but it failed to make any headway and disappeared from there.

Reptiles

In Western Australia the reptiles are represented by three major zoological groups or Orders. These are the Chelonia (four marine species of turtles and six of freshwater tortoises), Crocodilia (two of crocodiles) and the Squamata (sixty-two species of snakes and 159 of lizards).

The freshwater tortoises of Western Australia, like those of the rest of the continent, belong to the ancient group of side-necked tortoises. In most other parts of the world tortoises retract their heads straight backwards bending their necks in a vertical S-shaped curve. Australian tortoises, and certain others from South America, bend their necks sideways; this is believed to be an ancient character. Although the species of Western Australian tortoises are few, they are of great interest and their distributions are far from well understood. This is especially true of the species inhabiting the Kimberley. Freshwater tortoises do not seem to fall into simple faunal zone classifications. The common long-necked tortoise of the south-west, *Chelodina oblonga*, is closely related to the long-necked tortoise of the Kimberley Division, *Chelodina rugosa*. However, neither of the short-necked tortoises of the Kimberley Division, *Emydura australis* and *Elseya dentata*, is represented in the south-west. The river systems from the Irwin, in the Northern Agricultural Division to the De Grey in the northern Pilbara, have their own tortoise (*Chelodina steindachneri*), while a highly specialised short-necked tortoise (*Pseudemydura umbrina*) is apparently confined to a few square kilometres of winter swamps between Upper Swan and Bullsbrook to the north of Perth. Because of its vulnerability to extinction this last species is rigidly protected.

Marine chelonians also occur in large numbers around the coasts. The Green Turtle (*Chelonia mydas*), the species which is used for soup making, comes ashore to lay its eggs on the northern beaches. Attempts have been made in the past to exploit this species commercially but it is now protected. However, a non-profit organisation has been granted a licence on behalf of a group of Aborigines in the Kimberley region to take a specified number of eggs and day-old hatchlings. These will be raised by the Aborigines at a commercial turtle farm at One Arm Point, north of Broome. A certain proportion will be liberated so that the wild stock will not be depleted.

Snakes and lizards are common and widespread throughout the State, and in numbers of obvious individuals they are probably surpassed among the vertebrates only by the birds. In the south-west, Bobtails (*Trachysaurus rugosus*) can often be seen crossing the roads at most times of the year, while the walker among coastal sand dunes on warm days cannot avoid noticing innumerable small dragon-lizards which move away from in front of him. In the southern part of the State the largest lizard which is at all common is the Goanna (*Varanus gouldi*). These are frequently between 0.9 and 1.2 metres in length. In northern areas the Perentie (*Varanus giganteus*) exceeds it in size. A few species are confined to the south-west and of these the most interesting are Mueller's Snake (*Rhinophlocephalus bicolor*), the Little Brown Snake (*Elapognathus minor*), the Black-Striped Snake (*Vermicella calonota*) and the Slender Snake Lizard (*Pletholax gracilis*) which is also one of our rarest species of lizard. An Eyrean species which never ceases to surprise the visitor is the terrible-looking Mountain Devil (*Moloch horridus*). This lizard is actually one of the most gentle and harmless of animals and lives exclusively on ants.

The snake fauna of the State is diverse and, like that of other parts of Australia, contains many venomous species, the best known being the Tiger Snake (*Notechis scutatus*), the Dugite (*Demansia affinis*), the Gwardar (*D. nuchalis*), the Death Adders (*Acanthophis antarcticus* and *A. pyrrhus*) and the Mulga Snake (*Pseudechis australis*).

The snakes and lizards are well described in Glauert's *Handbook of the Snakes of Western Australia* and *Handbook of the Lizards of Western Australia* (see bibliography at the end of this Part).

Because of the great distance of the Kimberley Division from centres of scientific research, insufficient is known of its snakes and lizards. As in the case of some of the smaller mammals, some endemic species of lizards have been described, but until much more scientific collecting and research has been done it will not be possible to evaluate such apparently-unique species. Some Kimberley species of lizard, e.g. the Frilled Lizard (*Chlamydosaurus kingi*), through being commonly illustrated in journals because of their bizarre appearance, have become familiar to the public.

Amphibia⁽⁴⁾

Unlike the other continents Australia has no newts or salamanders (Urodela) or worm-like gymnophionans (Apoda). However, frogs (Anura) are abundant.

The frogs of Western Australia fall into the same grouping (Bassian, Eyrean and Torresian) which was mentioned in the section on mammals. However, they lack the diversity of genera and species shown by other groups and only ten genera with about thirty species are known from south of the Tropic of Capricorn. Of these, two genera, *Metacrinia* and *Myobatrachus*, each with one species, are restricted to the south-west. Most of the other kinds of frogs are distinct from, but related to, species found elsewhere in Australia.

Since most of Western Australia is exceedingly dry it is of interest to note that frogs are common in these arid regions. Those species of *Heleioporus* which occupy marginal desert habitats overcome drought conditions by burrowing into the damp sub-soil. However, the arid-country species of *Neobatrachus* frequent clay soil where deep burrows are impossible and water can be lost. These species show no special capacity to endure greater water loss than *Heleioporus* species, but they do display an exceptional capacity for rapid replacement of water when water is present, as for example after thunderstorms. The water-holding frog, *Cyclorana platycephalus*, is found in inland and northern parts of the State. All 'desert' species retain an aquatic larval life, but this is much shorter than that of species in the well-watered parts of the State. The only species lacking aquatic larval development occur in the wetter south-west; these are *Myobatrachus gouldii*, *Metacrinia nichollsi* and *Crinia rosea*. *Myobatrachus gouldii* is the only species which exhibits any strong dietary preference and eats only termites (Isoptera).

Freshwater Fishes⁽⁵⁾

The truly freshwater fish fauna of the southern part of the State is, by eastern Australian standards, an impoverished one and the species, with the exception of the freshwater catfish ('cobbler'), are diminutive in size. Most of the species are representatives of eastern Australian genera, such as the Pigmy Perch (*Edelia vittata*), Mountain Trout (*Galaxias truttaceus*), the Native Minnow (*G. occidentalis*) and Black-striped Minnow (*Galaxiella nigrostriata*). Others are more distinctive, with no near relative in eastern Australia, such as the Nightfish (*Bostockia porosa*), the King River Perchlet (*Nannatherina balstoni*) and the Salamander Fish (*Lepidogalaxias salamandroides*). There are several gobies (*Favonigobius suppositus* and *Pseudogobius olorum*) and hardyheads (including *Atherinosoma presbyteroides*, *A. elongata* and *Craterocephalus cuneiceps*). A lamprey (*Geotria australis*) ascends the rivers to breed and has been recorded north to the Moore River, but is more abundant in the streams emptying on the south coast. An eel (*Anguilla australis*) has been recorded from the south-west but it is not known whether it is native to the area or has been introduced.

The north-western rivers have a richer fish fauna. The most widespread species is the Spangled Perch (*Leiopotherapon unicolor*), a useful food fish which occurs in all rivers south to the Murchison. A large catfish (*Arius australis*) reaching 2.3 kg in weight, occurs in the systems south to the Fortescue. The Rainbow Fish (*Melanotaenia australis*), popular with aquarists occurs in the river systems of the Pilbara and the Kimberley. The remarkable Blind Gudgeon (*Milyeringa veritas*) and blind eel (*Anommatophasma candidum*) occur in wells and subterranean channels in the North West Cape area. The Kimberley

(4) Written in collaboration with Prof. A. R. Main.

(5) Revised by J. B. Hutchins.

Division has an even larger series of freshwater fishes. These include a catfish (*Tandanus unicolor*), various Bony Bream (*Nematolosa erebi*), various perch-like fishes (family Teraponidae), Gudgeons (*Hypseleotris*) and two freshwater saw-fishes (*Pristis clavata* and *Pristiopsis leichhardti*). There is also a freshwater eel (*Anguilla bicolor*) in these far northern waters.

Marine Fishes ⁽⁶⁾

The marine fish fauna of Western Australia is probably richer in species than that of any other Australian State. This is because the fishes of the northern part of the State's very long coastline belong to the rich tropical Indo-Pacific fauna, while its southern fauna is a temperate one which includes many elements peculiar to Australian waters. The most up-to-date list of the species of Western Australian fishes, published in 1948, enumerates 740 species, but since that time collecting has revealed about 700 more. Even so, this figure is still far short of the total number which, it is suspected, will eventually be found to be in the neighbourhood of 2,000.

From this it can be seen that there is much to be learnt about fishes of Western Australia but it is probable that only a few of these species are confined to Western Australian waters. At present it seems that most of the fish occurring in the tropical part of the State are widely distributed, and species often range throughout the whole of the tropical Indian and Pacific Oceans, while the species which are found along the south coast usually occur also in the waters of South Australia, Victoria, Tasmania and southern New South Wales.

Between Cape Leeuwin and Shark Bay both northern and southern elements are found, the tropical element dominating as far south as the Houtman Abrolhos.

In addition to the widely-distributed tropical and southern elements, there are a number of species, between thirty and forty, which seem to be peculiar to Western Australia. It is necessary to be cautious here for two reasons. Firstly, because the Indo-Pacific fish fauna is, as a whole, poorly known and some fishes, at present only recorded from Western Australia, may actually have wider ranges. Secondly, our classification of fishes is still imperfect so that fishes which we regard as endemic to Western Australia may be known from some other region, but under different names. On the other hand there can be no doubt that at least a proportion of these species which we now believe to be endemic will prove to be confined to Western Australian waters.

In the following very incomplete review, a number of the more important and interesting families and species are listed.

Of the major groups, the Elasmobranchii (sharks and rays) are richly represented, with nearly eighty species, of which the most familiar are the Port Jackson Shark (*Heterodontus portusjacksoni*), the Carpet Shark or Wobbegong (*Orectolobus maculatus*) and the shark known locally as the Swan River Whaler (*Carcharhinus leucas*), which can be caught in the Swan River as far upstream as the Garratt Road Bridge. It occurs during the summer months and one non-fatal attack in the Swan River has been attributed to this species. The Port Jackson Shark and the Carpet Shark are regarded as harmless to man; of the dangerous species, the Tiger, the Whaler and the White Pointer are perhaps the best known. Four fatalities from shark attack have been recorded for Western Australia (in 1803, 1923, 1925 and 1967) and a few people are known to have been maimed. It may be said, however, that in Western Australia the danger of shark attack is low.

Most major families of bony fishes are represented, but only a number of the more interesting or familiar species can be mentioned here.

There are about ten species of true herring (Clupeidae), one of which, the Pilchard (*Sardinops neopilchardus*) will in future probably become of economic importance. The rather similar-looking *Amblygaster postera* seems to be confined to Western Australia. The State is particularly rich in sea-horses and pipe fishes, there being some thirty-eight species. The most familiar of these is perhaps the leafy sea-horse (*Phyllopteryx foliatus*)

⁽⁶⁾ Contributed by Dr G. F. Mees.

which is often found on the beaches after storms. The so-called Sand Shark or Rat Fish (*Gonorrhynchus greyi*), a peculiar fish and the sole representative of its family, deserves mention; it is fairly common off sandy coasts of the south-west. Though eels are represented by several families and over twenty species, only three are common in the south-west; the Snake Eel (*Ophisurus serpens*), a slender golden brown eel inhabiting sandy estuaries, which is often taken for a snake and referred to as the water snake; Woodward's Eel (*Gymnothorax woodwardi*), found on rocky shores, yellowish green with a network of grey lines; and the Conger Eel (*Conger wilsoni*), which normally is grey in colour.

Garfishes (Hemiramphidae) are common. Of their relatives the Long Toms (Belontiidae), only *Belone ciconia* is common in the south-west, the others being more tropical in distribution, though one of the northern species, *Belone hians*, has been found as far south as Rottneest Island.

Silversides and hardyheads (Atherinidae) are well represented and so are mullets (Mugilidae). Some representatives of these groups have been mentioned in the preceding section, which deals with freshwater fishes.

The family Serranidae, known as groper, rock cod, etc. are represented by nearly thirty species. The best known is the North-west Groper (*Epinephelus tauvina*) which attains a length of more than two metres. Most species have a very wide, mainly tropical, distribution, but *Epinephelus rankini* is only known from a restricted area round Onslow and must be looked upon as endemic to Western Australia. In temperate waters the preceding family is more or less replaced by the related Hypoptectrodidae.

Some small families, like the Australian Salmon (Aripidae), Whiting (Sillaginidae) and Snappers (Sparidae) are of great economic importance, though there are only a few species. On the other hand the Skipjacks (Carangidae) are one of the largest families of the State and comprise some thirty species. Another group which are also called Snappers (Lutjanidae) is prominent in the tropical part of the State. These are often referred to as North-west Snappers and should not be confused with the southern Snapper (*Chrysophrys unicolor*) which belongs to the Sparidae.

Coral fishes (Chaetodontidae) are richly represented, mainly along reefs in the tropics, but a number of species come down to the Houtman Abrolhos, and some even near to Perth. Most species have a very wide distribution in the Indo-Pacific, but one, *Chaetodon assarius*, has not been found outside Western Australia.

The Mackerel family (Scombridae), which includes mackerel, Spanish mackerel, tuna, bonito and albacore, is important both in tropical and temperate waters. The related marlins and swordfishes, well known to sporting fishermen, also occur in these waters.

Flatfishes (Heterosomata) occur in a great variety of species, and the same can be said of Parrotfishes and Wrasses (Scaridae and Labridae). All these groups are as yet very insufficiently known.

The stargazers and stonelifers are sluggish bottom fishes that deserve mention because of their unusual shape. One, *Ichthyoscopus barbatus*, occurs off the south-west coast and also in South Australia, and is regularly caught by anglers. Another species, *Ichthyoscopus insperatus*, a common fish of the north-west coast from Broome to Shark Bay, seems to be confined to Western Australia. The dragonets (Callionymidae), of which nine species have been recorded, are smaller, but their pretty appearance attracts attention, and one species, *Dactylopus dactylopus*, widely distributed in the Indo-Pacific, is regularly found off sandy beaches as far south as Rockingham.

Blennies (Blenniidae), weedfish (Clinidae), and gobies (Gobiidae) are small fishes of which there are many species; blennies are most plentiful in rockpools and on reefs in the tropics, while gobies are also found on sandy bottoms.

There are some forty species of scorpion fishes known from the State, the most familiar of which are *Scorpaena sumptuosa* in the south, and the small *Scorpaena bynoensis* in the north; the first-mentioned species is also interesting in that, though it has been known for almost a century, it has never been recorded from outside Western Australia.

Of the closely-related Synancejidae, the feared stone fish, three species are known from the State, one of which, *Erosa daruma*, is apparently restricted to the north-west and is known from but two specimens. A related species occurs in Queensland and Japan.

Flatheads (Platycephalidae) are common in the temperate part of the State.

An interesting family is that of the angler fishes or toad fishes (Antennariidae). Their curious shape with the leg-like pectoral fins always excites attention. There are about a dozen species, two of which are endemic to the State. One of these is *Echinophryne glauerti* which is occasionally found washed up on City Beach.

Leatherjackets (Monacanthidae) are a large group distinguished by the rough leathery skin and a single large erectile spine on the nape. Some species, like *Chaetoderma penicilligera*, are common and of attractive appearance.

Of the blowfish family, the common Blowie (*Tetraodon (Spheroides) pleurogramma*) needs special mention; it is extremely plentiful off the coast at Fremantle and in the Swan River estuary. It is poisonous to eat and is greatly disliked by anglers who find that it greedily takes their bait. Fishes of this family contain a poisonous substance called tetraodontoxin and the celebrated navigator Captain James Cook was very ill after eating a blowfish in the course of a voyage in the Pacific in 1774. Boxfishes (Ostraciontidae) and porcupine fishes (Diodontidae) are related groups, each represented by a number of species.

Further information about the commercial fishes in Western Australian waters is given in the Fisheries section of Chapter VIII, Part 1—*Primary Production* where the principal species of edible fish are listed together with the quantities of each species caught. The section also contains additional information relating to whaling (see *Mammals* earlier in this Part).

THE INVERTEBRATE FAUNA(?)

The invertebrate fauna of Western Australia is large and varied, as one would expect in a third of a continent which extends from temperate to tropical zones and includes both coastal and desert areas. Rather than spread our descriptions too thinly over this enormous field we have restricted ourselves to a brief summary of the position in relation to a few selected groups in which work is being actively carried out.

Several invertebrate species are commercially exploited here, the most important being the Western Rock Lobster (*Panulirus cygnus*) which supports an extensive export fishery. Others commercially important include several species of octopus, cuttlefish and squid, the Blue Swimming Crab ('Blue Manna', *Portunus pelagicus*), several species of prawns, two species of scallops (*Amusium balloti* and *Pecten modestus*), and three species of abalone. Pearl-shell was fairly extensively fished along the north-west coast but this fishery has now declined, the smaller quantity of pearl-shell now taken being used in the developing pearl-culture industry.

A summary of the terrestrial and freshwater invertebrate fauna and their ecology is given in Main's *Guide for Naturalists* (1968).

Echinodermata

All five groups of echinoderms, feather stars (Crinoidea), star fish (Asteroidea), brittle stars (Ophiuroidea), sea urchins (Echinoidea) and sea cucumbers (Holothuriodea) are well represented in the rich echinoderm fauna of the continental shelf and shore waters of Western Australia.

The majority are either tropical species or endemic species with tropical affinities.

A recent assessment of the starfish has shown that of the 114 described species nearly half are either widely distributed Indo-Pacific species or are found in the East Indian region while less than 20 per cent are southern Australian species and nearly 40 per cent are found only in Western Australia.

(?) Written with assistance from Drs R. W. George, E. P. Hodgkin, L. E. Koch, Barbara Y. Main and B. R. Wilson, Mr G. W. Kendrick and Mrs L. M. Marsh.

The only starfish likely to be of economic importance in Western Australia is *Acanthaster planci*, the crown-of-thorns, which feeds on living corals and has caused extensive damage to coral reefs in the Indo-Pacific region when in plague numbers. This species is found in Western Australia from the Kimberley coast to the North West Cape area. A fairly large population in the Dampier Archipelago, monitored by the Western Australian Museum between 1972 and 1974, was found to aggregate seasonally in shallow water but did not cause significant damage to the coral reefs.

Certain edible species of holothurians known as *beche-de-mer* or *trepang* occur on the shores and reefs of north-western Australia. Little is known of the fishing potential for trepang on the offshore reefs but the resource has been traditionally fished by boats from Indonesia.

Mollusca

The molluscan fauna of the Western Australian coastline has not been recently catalogued, but from the area within fifty-six kilometres of Fremantle 270 species of bivalves (Pelecypoda), and univalves (Gastropoda) are recorded. The smaller groups, chitons (Amphineura), octopus and cuttlefish (Cephalopoda) and tusk shells (Scaphopoda) are also represented.

Molluscs dominate the intertidal rocks of the west coast, especially chitons, periwinkles, and limpets; the limpets range from the very large *Patellanax laticostata* to the small *Notoacmea onychitis*. On the north-western coast, rock oysters (*Saccostrea* spp.) and barnacles are dominant intertidally. The oysters are fished for food on a small scale in places where extensive beds are uncovered at low tide.

Bivalves occur mainly on sandy and muddy bottoms such as those of Cockburn Sound and King George Sound, and along the north-western coast. They are less plentiful on the unstable sandy shores of the open western coast. The Golden-lipped Pearl-shell (*Pinctada maxima*) is the basis of a flourishing pearl-culture industry in the north of the State. This species is favoured because of the quality of the pearls produced and because of the speed with which the nacre or mother-of-pearl is laid down on the 'seeds'. Using techniques developed by the Japanese these seeds are inserted into the pearl-shell's flesh to produce spherical pearls, or between the flesh and the shell to produce half-pearls. The small pearl-shell which is so abundant in Shark Bay belongs to the species *Pinctada albina* which is widely distributed in the Indian and Pacific Oceans. It was formerly gathered for the natural pearls which, though small, are of a fine colour and texture.

An abalone fishery has been established in temperate waters. On the lower west coast the small Roe's or Western Black-lip abalone (*Haliotis roei*) is gathered. Along the southern coast east of Cape Leeuwin the larger Green-lip (*Haliotis laevigata*) and the Brown-lip abalone (*Haliotis conicopora*) are taken.

Many species of cowrie shells occur on the rocky shores of the north-west coast while a few species such as *Cypraea (Zoila) friendii* and *Cypraea (Austrocypraea) reevei* are confined to the south-western corner of the State. The north-west coast also has many endemic species of volute shells such as *Volutoconus hargreavesi*, *Amoria macandrewi* and *Amoria praetexta*.

Of the gastropods without visible shells two species are conspicuous in the fauna of the Fremantle area. One is the large sea-hare (*Aplysia gigantea*) with a small internal shell; it may be cast up on the beaches in large numbers after winter storms. The other is a nudibranch, with no shell at all, the colourful *Glossodoris westraliensis*, well known to visitors to Rottnest Island.

The non-marine molluscan fauna (terrestrial and aquatic) is not diverse. Conspicuous in the south-west are species of the pulmonate genus *Bothriembryon*, which are adapted to a wide variety of habitats from cool temperate rain forest to arid steppe. In the Kimberley, north-west, and arid regions generally the snail family Camaenidae predominates. Throughout the State there are also many other smaller and inconspicuous terrestrial snails and a small number of aquatic snails and bivalves.

Corals

Coral reefs are well developed in a number of places on the shores and continental shelf of Western Australia (Fairbridge, 1950). Patch and platform reefs are numerous on the inner part of the Sahul and North West Shelves while on the outer parts of these shelves is a series of great atolls, Scott and Seringapatam Reefs and the Rowley Shoals, the fauna of which is poorly known. There are fringing reefs along the shores of the mainland and near-shore islands of the Kimberley and Pilbara coasts but coral growth is restricted due to turbidity caused by the outflow of rivers, muddy shoreline (in parts) and the large tidal range. However, some coral genera such as *Trachyphyllia*, *Caulastrea* and *Moseleya* appear to favour the turbid inshore waters while many others tolerate these conditions. In the Dampier Archipelago there is a rich coral fauna of more than forty-eight genera (Wilson and Marsh, in press) found from the most turbid inshore waters to the relatively clear waters of the outer islands.

A part barrier, part fringing reef, the Ningaloo Reef Tract, extends for 145 kilometres southwards from North West Cape. It lies up to five kilometres off the coast with deep water off its outer edge and a shallow lagoon inshore. The barrier reef is broken by a number of passages along the sides of which the most diverse and luxuriant coral growth is found while in places there are dense thickets of staghorn corals (*Acropora* spp.) in the lagoon. Thirty-eight genera and over eighty species of reef-building corals, including the non-scleractinian blue coral *Heliopora* and the fire coral *Millepora* occur on these reefs.

The most southerly true coral reefs in the Indian Ocean are found at the Houtman Abrolhos which lie near the edge of the continental shelf off Geraldton in latitude 28-29°S. *Acropora*, one of the most important reef builders, flourishes at the Abrolhos, where the minimum sea temperature seldom falls below 19°C, but does not occur further south except in Pleistocene fossil beds at Rottneest Island.

The great diversity of habitat in the Abrolhos reefs, from extreme shelter of the 'blue holes' in the inner reefs to extreme exposure on the seaward reefs, provides conditions for several genera not found on more northerly reefs making the Abrolhos an exceptionally rich coral area for its latitude. The generic diversity at the Abrolhos is as high as in the North West Cape area although there is a general reduction in the number of species recorded.

The coral fauna diminishes sharply south of the Abrolhos but a number of species extend their range into the south-west of the State, sometimes forming extensive colonies but never true reefs. At Rottneest Island *Pocillopora damicornis* and *Montipora* make striking pink and violet patches in shallow water while *Pocillopora* covers a shallow reef at Parker Point. Twelve genera of reef corals are found in the Fremantle area including Rottneest Island and Cockburn Sound where corals are well developed despite minimum water temperatures sometimes falling below 14°C.

Further south seven genera reach Geographe Bay where *Turbinaria* forms large colonies, and three genera extend along the south coast to the Recherche Archipelago.

Crustacea

The most important commercial species of crustacean in Western Australian marine waters is the Western Rock Lobster, *Panulirus cygnus*. It occurs from North West Cape in the north to Hamelin Bay in the south. In the tropics five additional species of *Panulirus* occur; these are collectively referred to as 'Tropical Rock Lobsters' (*Panulirus versicolor*, *P. ornatus*, *P. homarus*, *P. penicillatus* and *P. polyphagus*). On the southern coast occurs *Jasus novaehollandiae*, (Southern Rock Lobster) which is the commercial species of Rock Lobster in south-eastern Australia, but it is not of economic importance in this State.

Two species of Shovel-nosed Lobsters are sometimes taken in prawn trawls. *Thenus orientalis*, the Moreton Bay Bug, occurs in Exmouth Gulf and further north. *Ibacus peronii*, the Balmain Bug, lives in sandy silt along our south coast. Both species are good eating. Offshore beyond the 180-metre depth limit of the Western Rock Lobster, lives a large spiny crab *Hypothalassia armata* which may develop into a commercial proposition.

The Swan River Prawn or School Prawn (*Metapenaeus dalli*) is taken by amateur and professional fishermen in the west coast estuaries by small hand-hauled nets. In the northern gulfs and bays larger prawns of the genus *Penaeus* and *Metapenaeus* are sought by large commercial prawn trawls for export. The present main centres are at Shark Bay, Exmouth Gulf and Nickol Bay and exploration of waters around the Kimberley Region is continuing. The main species are the Western King Prawn (*P. latisulcatus*), the Brown Tiger Prawn (*P. esculentus*) and the Banana Prawn (*P. merguensis*).

The Blue Swimming Crab (*Portunus pelagicus*), plentiful in the summer in the estuaries of the Swan River and at Mandurah, is one of the common commercial crabs of Australia.

Two common species of crab are the Rock Crab (*Leptograpsus variegatus*) and the Ghost Crab (*Ocypode convexa*). The Rock Crab scrambles among rocks and jetty piles of the west and south coasts, whereas the Ghost Crab digs spiral burrows at the edge of the beach and is endemic to the west coast.

Of the many other species of non-commercial crustaceans some groups have been recently monographed by scientific workers. These are the swimming crabs, mantis shrimps, pebble crabs and ghost crabs.

Crustacea are also common in inland waters (see *Fauna of Inland Waters* at the beginning of this Part).

Spiders

Like most other invertebrate groups, the spiders are represented by a large number of genera and species and it is not possible at this stage to give an accurate picture of the relationships of the Western Australian fauna to the rest of Australia. Early work on the Western Australian spiders was restricted to the description and naming of species. Research now is centred on investigations of the biology of various species and the special adaptations of endemic forms to the particular conditions of the Western Australian environment. The most interesting of the spiders, when viewed from this aspect, are the burrowing groups, including primarily the Mygalomorphae ('trapdoor' spiders) and the Lycosidae (Wolf spiders). Some of these forms show special adaptations to semi-arid environments, to reduced food supply, and to flash-flooding, such adaptations being paralleled in many taxonomically unrelated genera. It is also of interest that some families, which in other parts of the world and in the wet forests of Australia are primarily web weavers and litter dwellers, are burrowers in the arid parts of Western Australia (and also in other dry parts of Australia). Such forms are essentially nocturnal and escape the unfavourable conditions of the day by remaining in their burrows and some species seal their burrows during the summer period.

Scorpions

The large brown scorpions, belonging to the genus *Urodacus*, are common in Western Australia where they live under small rocks and in deep spiral burrows in more arid places. Other scorpion genera (e.g. *Lychas*, *Cercophonius*) are small and variegated and live under the bark of trees and logs and amongst stones and litter. All these scorpions are nocturnal and sometimes sting humans.

Insects

The more important insect species occurring in Western Australia (particularly those of economic significance) are dealt with in Part 5 of this Chapter.

FURTHER SOURCES OF INFORMATION ON THE WESTERN AUSTRALIAN FAUNA

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Chapter II—continued

Part 5—Entomology in Western Australia

With Particular Reference to Agriculture

(Contributed by the Entomology Branch, Department of Agriculture)

The entomological field in Western Australia is so vast and the number of active workers on the subject so few that much still remains to be learned about the insects found in this State. A wide range of environmental conditions exists, from the tropical north to the temperate south, and the geographical isolation of the State has allowed the development of numerous endemic forms. As may be expected, the insect fauna of the Kimberley Division shows closer affinities with that of North Queensland than with the lower half of the State. The central desert, which reaches the coast to the south along the Great Australian Bight and to the north along the Eighty Mile Beach, forms an effective barrier discernible in the distribution of flora, mammals, insects and birds.

Owing to the limitations of space no attempt has been made to cover all the various insect orders which occur in the State, but the economic importance of various groups and their influence on major agricultural industries have been outlined, and some of the more outstanding forms of general interest have been mentioned. There are several references to beneficial insects which have been introduced to the State for the control of agricultural pests. This reflects a worldwide trend towards the use of biological control measures which can operate in conjunction with, and sometimes replace, chemical pesticides. In Western Australia, the use of natural agents in pest control is an increasingly important facet of agricultural research.

CLASS INSECTA (Insects)

Order Collembola (Springtails)

The springtails include the lucerne flea, *Sminthurus viridis* (Linnaeus) which was introduced into this State from eastern Australia in about 1910. It has spread to almost all the clover-growing areas in the south-west and is a very serious pasture pest. Partial control is exercised by the predatory bdellid mite, *Bdellodes lapidaria* (Kramer).

Order Odonata (Dragonflies and Damselflies)

These insects are predatory in both the immature and adult stages and are usually regarded as beneficial creatures. However, they sometimes injure vegetable seedlings by ovipositing into furrow-irrigated crops. This has occurred mainly at Carnarvon where surface water is scarce and where irrigated plants are presumably mistaken for aquatic vegetation.

In order to survive in the diverse climatic conditions which exist in Western Australia, some members of the dragonfly group have developed the ability to breed in highly saline waters and to take advantage of ephemeral inland pools.

Orders Orthoptera, Mantodea, Blattodea, Phasmatodea (Grasshoppers, Locusts, Mantids, Cockroaches, etc.)

The grasshoppers and locusts are represented by a large number of different species. The most important pest form is the small plague grasshopper, *Austroicetes cruciata* (Saussure). The normal habitat of this species lies roughly between the 200 millimetre and the 400 millimetre isohyets. For breeding it favours hard, bare soil and as extensive

areas once utilised for wheat growing have now reverted to grazing, these uncultivated tracts periodically give rise to serious grasshopper swarms, which menace the adjacent wheat lands. The Australian plague locust, *Chortoicetes terminifera* (Walker), so troublesome in other States, occurs in Western Australia but rarely as a plague species. In the Kimberley the yellow-winged locust, *Gastrimargus musicus* (Fabricius), the migratory locust, *Locusta migratoria* (Linnaeus) and the spurthroated locust, *Austracris guttulosa* (Walker) assume plague proportions, but in the southern agricultural districts they occur in the solitary phase only. The mantids (Mantidae) are represented by many different species. Their well-developed fore-limbs are admirably adapted for catching prey and, like their foliage-feeding relatives the phasmatids or leaf insects (Phasmatidae), their colouring harmonises remarkably with the sticks and leaves on which they rest. The cockroach fauna includes a large number of native species as well as several introduced forms. The commonest pest species is the cosmopolitan American cockroach, *Periplaneta americana* (Linnaeus). Some large and quite colourful forms occur in the inland regions with the genus *Polyzosteria* well represented.

Order Isoptera (Termites)

The so-called white ant is a serious pest in all parts of the State. Earth-dwelling types occur mainly, and among the most important species may be cited the giant termite, *Mastotermes darwiniensis* Froggatt of the north and the widely distributed subterranean termite, *Coptotermes acinaciformis* (Froggatt). The large mounds of the spinifex termite, *Nasutitermes triodiae* (Froggatt) are characteristic of certain landscapes in the pastoral areas. Heavy annual losses are caused by termite damage.

Order Phthiraptera (Lice)

Indigenous species occur on birds and native mammals, and various introduced forms infest domestic poultry, horses, cattle and sheep.

Order Thysanoptera (Thrips)

This order is represented locally by a large number of native species as well as several introduced forms. The most serious native species is the plague thrips, *Thrips imaginis* Bagnall which may swarm in apple blossoms and seriously affect the crop setting.

Thrips tabaci Lindeman, often called the onion thrips, is a carrier for the plant disease spotted wilt. Severe damage to tomato plants may result from this virus.

Order Hemiptera (Bugs, Aphids, Scale Insects)

This group contains a large number of pest species, many of them introduced. The green vegetable bug, *Nezara viridula* (Linnaeus) is now present throughout the State but is well controlled by the introduced parasitic wasp, *Trissolcus basalus* (Wollaston). The native Rutherglen bug, *Nysius vinitor* Bergroth may at times swarm on vegetables and fruit trees, but seems less serious in this State than on the other side of the continent. The crusader bug, *Mictis profana* Fabricius, so named because of the light-coloured St Andrew's cross on the back of the adult, feeds normally on acacias and other native plants, but it frequently invades cultivated areas and it may be troublesome to young citrus. The apple dimpling bug, *Campylomma livida* Reuter is a native species which sometimes causes severe malformation of apples by feeding upon the very small developing fruit.

One native aphid, *Anomalaphis comperei* Pergande has been recorded. The only two districts from which it has so far been collected are Albany and Karridale where it has been found infesting native peppermint, *Agonis flexuosa*. A point of interest about these occurrences is that the aphids were associated with a heavy Argentine ant infestation in the area. Since the removal of the ants no further aphids have been discovered.

Numerous introduced species occur as pests on vegetables, garden plants and fruit trees. The green peach aphid, *Myzus persicae* (Sulzer) occurs on peaches, potatoes, rape, etc.; citrus and apple trees are attacked by the black citrus aphid, *Toxoptera aurantii*

(Boyer de Fonscolombe) and the woolly aphid, *Eriosoma lanigerum* (Hausmann) respectively, and the cabbage aphid, *Brevicoryne brassicae* (Linnaeus) is found on cabbages, cauliflowers, rape, etc. The cowpea aphid, *Aphis craccivora* Koch which carries a virus disease of subterranean clover known as 'stunt' has also been found attacking lupins. The spotted alfalfa aphid, *Therioaphis trifolii* (Monell) f. *maculata* was found in eastern Australia in 1977 and was first detected in Western Australia in 1978. It is a serious pest of lucerne and has since spread to all lucerne growing areas of the State. Three species of parasitic wasp have been introduced to help in its control.

Of the native coccids the gall-forming members of the genus *Apiomorpha* are among the most remarkable. The woody galls in which the female insects pass their days vary from minute structures to woody knobs the size of an apple. From an economic point of view, however, the various introduced scale insects demand most attention. Included in the list of pest species are the following:

San Jose scale, *Comstockaspis perniciosus* (Comstock), which is a serious pest of apples.

California red scale, *Aonidiella aurantii* (Maskell), which is found mainly on citrus but with a wide host range.

Black scale, *Saissetia oleae* (Olivier), which is found attacking citrus, stone fruits and garden shrubs.

White wax scale, *Gascardia destructor* (Newstead), which is mainly a pest of citrus but also attacks many cultivated shrubs.

Soft brown scale, *Coccus hesperidum* Linnaeus, which has a wide host range but is of greatest importance on citrus.

Grass-crown mealybug, *Antonina graminis* (Maskell), which is a widespread and troublesome pest causing damage to lawns particularly in warm parts of the State.

Order Coleoptera (Beetles)

This order is the dominant one among existing insects and is represented in Western Australia by many and varied forms. The carnivorous ground beetles (Carabidae) are widely distributed, one of the best-known species being the green carab beetle, *Calosoma schayeri* Erichson. The tiger beetles, of the sub-family Cicindelinae, are of interest not only because of the metallic colouration seen in many forms but because of their association with the inland salt-lakes. The larvae are subterranean and may be collected by digging on the lake margins.

The ladybirds (Coccinellidae) comprise a group of considerable economic importance and in addition to native species the State contains a number specially introduced to combat various scale insects and aphids. Among the best known of the introduced species are the mealybug ladybird, *Cryptolaemus montrouzieri* Mulsant and the common ladybird, *Harmonia conformis* (Boisduval). The larvae of *Cryptolaemus* are covered with a whitish material which makes the insect superficially resemble the mealybugs upon which it feeds. *H. conformis*, in conjunction with the parasitic wasp, *Aphelinus mali* (Haldeman), plays an important role in combating the woolly aphid of apple trees. Destructive leaf-eating ladybirds belonging to the genus *Henosepilachna* were once found only in the northern parts of the State where they attack vegetables, especially pumpkins and melons. In 1956, specimens of *Henosepilachna* were collected in Perth. Since then they have become established in several suburban areas, but how the introduction occurred is not known.

The jewel beetles (Buprestidae) contain some of the most colourful beetles to be found anywhere in the world. Western Australia is particularly rich in species and at times the beetles may be found in large numbers on flowering mallee and sandplain flora. One of the most attractive is the metallic green *Stigmodera gratiosa* Chevrolat, and one of the largest is *Julodimorpha bakewelli* White, measuring approximately seventy millimetres in length.

The cockchafers or scarabs (Scarabaeidae) are represented by a great diversity of forms. Several species may swarm on to flowering fruit trees and roses in the early summer and are popularly known as spring beetles. The bronze-coloured *Colymbomorpha vittata*

Britton is a common pest of apple trees during the blooming period and the saddle-backed beetle, *Phyllotocus ustulatus* Blanchard sometimes visits citrus blossoms in large numbers. An introduced species commonly known as the African black beetle, *Heteronychus arator* (Fabricius) has gained a firm footing in the State and is a troublesome pest of lawns and turf. It is also growing in importance as a pasture and vegetable pest. A native species of *Colpochilodes* has caused spasmodic damage to cereal crops and clover pastures in the southern portions of the State.

The longicorn beetles (Cerambycidae) are a group of wood-boring insects represented by a number of different species. They are often blamed for the death of forest eucalypts, although investigations have shown that heavy beetle infestations are usually secondary and that healthy trees are seldom seriously affected by the beetles. The larval stage of this group is the so-called 'bardee', at one time prized by the Aborigines as food. They are not a pest of structural timber as they do not attack seasoned material.

The leaf beetles (Chrysomelidae) may superficially resemble ladybirds in general appearance as some of them are rounded and quite brightly coloured. Two species have been introduced into the State for the purpose of combating St John's Wort, a troublesome weed in some districts. *Chrysolina quadrigemina* (Suffrian) and *C. hyperici* (Forster) were originally introduced into Australia from the South of France and liberated in Victoria with very satisfactory results. The local colonies were obtained from the latter source and have become established in several districts. In some situations a reduction in St John's Wort can be attributed definitely to beetle activity, but in many areas the picture is obscure due to the extensive use of chemical sprays.

Common pest species in eastern Australia are the pumpkin beetles, *Aulacophora hilaris* (Boisduval) and *A. palmerstoni* Blackburn. These beetles are found in the north of the State but do not extend into the cooler latitudes.

The weevils (Curculionidae) are a very specialised group characterised by the presence of a rostrum or 'snout' which bears the mouth and antennae. The genus *Leptopius* contains a number of large greyish weevils, many of which breed in association with acacias. One of the best-known members of the family is the red-legged weevil, *Catasarcus impressipennis* (Boisduval) which feeds on eucalypt foliage and may disfigure young street trees. The almost world-wide rice weevil, *Sitophilus oryzae* (Linnaeus) is our principal pest of stored grain, but the granary weevil, *S. granarius* (Linnaeus) also occurs. Two common orchard pests are the introduced apple weevil, *Otiorrhynchus cribricollis* Gyllenhal and Fuller's rose weevil, *Asynonychus cervinus* (Boheman). The small lucerne weevil, *Atrichonotus taeniatus* (Bergroth) and the white fringed weevil, *Graphognathus leucoloma* (Boheman) have recently increased their attack on the roots of lucerne and potato tubers in the lower south-west and coastal areas. Two other pest species of weevil which appear to have been introduced recently into this State are the sitona weevil, *Sitona humeralis* Stephens, a pest of legumes, and the garden weevil, *Phlyctinus callosus* Boheman.

Order Neuroptera (Lacewings)

This order contains a number of useful insects, for many of the neuropterous larvae feed upon scale insects and other pests. The family Myrmelontidae has a number of large, rather dragonfly-like species, the larval stages of which build conical sand pits and are commonly known as ant lions. Amongst the most remarkable of the local lacewings are two members of the family Nemopteridae in which the hind wings are greatly modified. In the genus *Croce* they are long and thread-like and in the spoonwinged lacewing, *Chasmoptera hutti* Westwood they are spoon-shaped or paddle-shaped.

Order Diptera (Flies, Mosquitoes, etc.)

This group contains a vast number of species, many of which are of major economic importance.

The mosquitoes are well represented, the commonest species being the brown house mosquito, *Culex fatigans* Wiedemann and the dengue mosquito, *Aedes aegypti* (Linnaeus). The latter species is the carrier for dengue fever in the northern portion of the

State. The anophelines are represented by the widely distributed *Anopheles annulipes* Walker and several much rarer forms. *A. annulipes*, together with *Aedes alboannulatus* Macquarie, have played an important part in the spread of the rabbit virus *Myxomatosis*.

Of the introduced flies, those causing most trouble are the Australian sheep blowfly, *Lucilia cuprina* (Wiedemann) and the Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann). Recent research has revealed that the Western Australian brown blowfly, *Calliphora albifrontalis* Malloch is also important in sheep strike. The buffalo fly, *Haematobia irritans exigua* De Meijere is a serious stock pest in the Kimberley Division of the State, but so far has not become established in the cattle areas of the south. It is believed to have originally reached Australia on buffaloes introduced from Asia.

The common house fly, *Musca domestica* Linnaeus is widespread as is also the native bush fly, *Musca vetustissima* Walker.

Insecticides such as DDT, dieldrin and the various organic phosphates gave outstanding control of various fly pests for several years. The widespread development of resistance in both house fly and blowfly populations has greatly complicated the matter, however, and drawn attention to the importance of preventive measures, such as sanitation in the case of house flies, and the Mules operation and crutching in the case of the sheep blowfly.

The March flies (Tabanidae) are well represented but, although their blood-sucking habits render them annoying, both to livestock and humans, they are not a serious pest.

Of the many useful flies may be mentioned the blowfly-like tachinids which parasitise caterpillars, grasshoppers and other pests and the bee flies (Bombyliidae) which parasitise the eggs of other insects. The maggots of the bombyliid fly, *Cyrtomorpha flaviscutellaris* Roberts are commonly found in the egg pods of the small plague grasshopper, *Austroicetes cruciata* (Saussure).

Order Siphonaptera (Fleas)

A number of introduced as well as native fleas occur in this State. The rabbit stickfast flea, *Echidnophaga myrmecobii* Rothschild, found originally on native mammals, is a very common parasite of rabbits in the drier parts of the State. The poultry stickfast flea, *E. gallinacea* (Westwood) closely resembles the former species but is mainly a pest of poultry and domestic animals. The oriental rat flea, *Xenopsylla cheopis* (Rothschild), the human flea, *Pulex irritans* Linnaeus and the cat and dog fleas, *Ctenocephalides felis* (Bouche) and *C. canis* (Curtis) are among the most important introduced species.

Order Lepidoptera (Moths, Butterflies, etc.)

The primitive swift moths (Hepialidae) are represented locally by a number of very beautiful forms. The larvae are wood borers but do not occur in sufficient numbers to constitute a serious forestry pest. Several large and striking members of the genus *Aenetus* occur in the lower south-west.

A group of small native moths of the family Pyralidae, sub-family Crambinae and commonly known as pasture webworm moths, *Hednota pedionoma* (Meyrick), *H. cryptosichroa* Lower, etc. are serious pests of cereal crops (excepting oats) and grass pastures. Depredations are controlled by planting on clean fallow, but the recent trend towards ley farming has greatly favoured these pests.

A family of considerable interest to the orchardist is the Tortricidae, in which group are included the codling moth, *Cydia pomonella* (Linnaeus) and the oriental fruit moth, *C. molesta* (Busck). Outbreaks of codling moth have occurred on a number of occasions but drastic eradication measures have so far prevented this major apple pest from becoming permanently established and have given Western Australia the distinction of being the only large apple-producing country where the moth is not a major problem. The oriental fruit moth has not recurred since eradication measures were taken against an outbreak in the Bickley Valley in 1952.

One of the best-represented families is the Noctuidae which contains several important pests. Included under this heading are the native budworm and the cotton bollworm, *Heliothis punctigera* Wallengren and *H. armigera* (Hübner), the cluster caterpillar,

Spodoptera litura (Fabricius), the rough bollworm, *Earias huegeli* Rogenhofer, the brown cutworm, *Agrotis munda* Walker, the southern armyworm, *Persectania ewingii* (Westwood), the common armyworm, *Pseudaletia convecta* (Walker) and the northern armyworm, *Pseudaletia separata* (Walker). A parasitic wasp, *Apanteles ruficrus* Haliday has been introduced to help in the control of armyworms and cutworms. The fruit-sucking moth, *Othreis materna* (Linnaeus) also belongs to this group and causes heavy losses in citrus fruit grown around pastoral homesteads in the Kimberley and the north-west. In almost all cases where moths and butterflies are regarded as pests it is only the caterpillar stage which is destructive. The fruit-sucking moth, however, has a rasp-like proboscis capable of piercing orange and citrus skins and then sucking up the juice. Fortunately the creatures do not normally range to the citrus areas of the south-west.

One of the most remarkable members of the family Agaristidae is the whistling moth, *Hecatesia thyridion* Feisth. The male of this species is active just at sunset and makes a loud clicking noise during its fast circling flight.

Other common moth pests are the cabbage moth, *Plutella xylostella* (Linnaeus), the potato moth, *Phthorimaea operculella* (Zeller) and the apple looper moth, *Chloroclystis laticosta* (Walker).

The beautiful dryandra moth, *Carthaea saturnioides* Walker with its large eye spots on the wings superficially resembles the emperor moths. Its range is restricted to south-west Australia and the creature is much prized by collectors.

The butterfly fauna of the State lacks many large and showy forms. Some of the northern species such as *Hypolimnas bolina nerina* Fabricius are quite colourful but the State has nothing to compare with the conspicuous and beautiful species found in the tropics of eastern Australia.

The blues (Lycaenidae) are well represented and the association of many larvae with ant nests renders the group a particularly interesting one.

The skippers (Hesperiidae) are relatively drab-coloured butterflies with strong powers of flight. Over twenty species are recorded from the State and some forms are endemic to the south-west.

Only one butterfly is of economic importance and that is the introduced cabbage white butterfly, *Pieris rapae* (Linnaeus) which reached this State in 1943. It attacks cabbages, cauliflowers and related plants as well as one or two other strong-tasting herbs such as watercress. The butterfly belongs to the whites, or Pieridae, which group contains a number of native species. Several members of this family, including the cabbage white, display extraordinary powers of flight and the caper white, *Anaphaeis java teutonia* (Fabricius) has been observed to carry out mass migrations of remarkable proportions on the eastern side of the continent.

A rather showy butterfly which appears to have become established here recently, at least around the Perth area, is the wanderer or monarch, *Danaus plexippus plexippus* (Linnaeus). This large orange and black butterfly has apparently reached Western Australia from the other States. The colourful larvae feed on certain noxious weeds such as the introduced narrow-leaf cotton-bush, *Azclepias fruticosa*.

Order Hymenoptera (Bees, Wasps, Ants)

The wood wasps and Sirex wasps (Siricidae) include several pests which have been established in New Zealand and Tasmanian pine forests. Imported timber has been fumigated from time to time following the location of infested material.

The sawflies (Pergidae and Tenthredinidae) are represented locally by a number of native forms. The larvae of the genus *Perga* may often be seen in caterpillar-like clusters amongst the foliage of eucalypts. An introduced sawfly, the pear and cherry slug, *Caliroa cerasi* (Linnaeus), is a common pest on pear and plum trees. The smaller parasitic wasps (ichneumonids, chalcids and their allies) are well represented and play an important role in combating many insect pests. Some attack insect eggs while others parasitise caterpillars, aphids and scale insects, so that without their aid the problem of pest control would be even more difficult than at present.

The ant fauna (Formicidae) of the State is extremely varied. One of the best-known native species is the meat ant, *Iridomyrmex purpureus* (F. Smith) which often nests on gravel paths and roadsides. Among the most remarkable of the local ants may be listed *Camponotus inflatus* Lubbock, the honey-pot ant of the interior, and *Myrmecia regularis* Crawley of the karri forest area which has the frog *Metacrinia nichollsi* (Harrison) as a tolerated guest in its nest. The honey-pot ant derives its name from the fact that certain individuals in the nest store honey until their abdomens become inflated to the size of grapes. This honey is then regurgitated to other ants as required. These ants were once prized by the natives as a food delicacy.

Two important introduced ant pests are the Argentine ant, *Iridomyrmex humilis* (Mayr) and the Singapore ant, *Monomorium destructor* (Jerdon). The Argentine ant was once widespread in the metropolitan area, Albany and Bunbury, with several other country outbreaks. The insect has been reduced in recent years, however, as a result of a large-scale control campaign. The scheme involved the spraying of all infested areas, with government-controlled labour, and a restriction on the movement of goods likely to spread the pest. Since the commencement of the campaign in 1954 some 25,067 hectares have been treated at a cost of approximately \$2 million.

The social wasps (Vespidae) were once known only from the northern portion of the State. About 1949, however, colonies of *Polistes variabilis* Fabricius were located in various parts of the Perth suburban area and they have now extended their range into surrounding country areas.

The European wasp, *Vespula germanica* (Fabricius) was detected in Western Australia for the first time in January 1977, in the Mosman Park area. Subsequent surveys and follow-up of reports from the public resulted in a further five nests being located in the suburbs of Cottesloe, Peppermint Grove and Attadale. Although all nests of this troublesome exotic insect were destroyed, it is not yet known whether the wasp has been eradicated. The European wasp is similar in appearance to a honey bee but has distinct bright yellow and black markings across the body.

During surveys for the above insect, several colonies of an exotic paper nest wasp species, *Polistes gallicus* (Linnaeus) were discovered, mainly in the suburbs of Bicton, Palmyra and Beaconsfield. Coincidentally, this insect is similar in appearance to the European wasp in that it is roughly the same size and it has yellow and black markings. It differs by having a more slender body and a more pronounced 'wasp waist'.

The burrowing wasps, including the sand wasps (Pompilidae), the flower wasps (Scoliidae) and solitary ants (Mutillidae) are well represented. The mutillids are, of course, not true ants but the wingless females bear a superficial resemblance to ants which is further accentuated by their ability to inflict a painful sting. The flower wasps are particularly numerous and winged males carrying wingless females are common around flowering plants in the early summer. Of the solitary ants the black and white *Ephutomorpha rugicollis* Westwood is the best known. Most of the wasps mentioned are beneficial, for they store caterpillars and other insects in mud nests and underground burrows to serve as food for the wasp grubs.

The majority of native bees are solitary forms although some, like the Colletidae, often choose a common site for nest burrowing and hundreds of tunnels may be located close to one another.

The leaf-cutting bees (Megachilidae) often attract notice from their habit of cutting circular pieces from rose leaves and other foliage for use in nest construction.

The only native social bees belong to the genus *Trigona* which does not occur in the southern portions of the State.

CLASS ARACHNIDA (Spiders, Mites, Ticks, etc.)

Creatures grouped under the above heading are, of course, not true insects and will be dealt with only very briefly. Several forms are of considerable economic importance, as for example the cattle tick, *Boophilus microplus* (Canestrini) and the fowl tick, *Argas persicus* (Oken). The cattle tick is confined to the Kimberley Division and its range

corresponds roughly with that of the buffalo fly. The ornate kangaroo tick, *Amblyomma triguttatum* Koch is a common species. It is occasionally collected as an accidental parasite on domestic animals and man.

The most serious mite pest is the red-legged earth mite, *Halotydeus destructor* (Tucker) which is very destructive to young legumes and other seedlings. It may be particularly troublesome on subterranean clover pastures. Other mites of importance to orchardists and market gardeners are the spider mites (Tetranychidae) which include such cosmopolitan species as the two-spotted mite, *Tetranychus urticae* Koch and the byrobia mite, *Bryobia rubrioculus* (Scheuten). A predacious mite, *Typhlodromus occidentalis* Nesbitt has recently been introduced to Western Australia for the control of the two-spotted mite. The predator has become established in a Manjimup apple orchard where its progress is being monitored by research workers.

Spiders constitute a large group, most of which are useful on account of their insectivorous habits, although bites from some of the larger species may produce painful after-effects. The most dangerous local spider is the redback spider, *Latrodectus mactans hasselti* Thorell. This species, whose bite may even prove fatal, is easily recognised by the conspicuous red streak down the centre of the abdomen.

Scorpions of various kinds are widely distributed over the State and the larger ones may be able to inflict a painful sting. There is one record of a baby dying at Pemberton from the effects of scorpion venom but no other reports of serious after-effects are available and, generally speaking, the group is of little local importance.

FURTHER SOURCES OF INFORMATION

The difficulties confronting anyone trying to review in a few pages the entomological fauna of such a large State as Western Australia will be better appreciated if it is remembered that in the *Western Australian Year-Book* for 1898-99 the late A. M. Lea expressed the opinion that there were about 30,000 species of insects indigenous to this State. Many additions have been made in the last seventy-five years and one is faced with the problem of deciding which creatures warrant special mention and which must be excluded for lack of space. The general reader interested in consulting other short reviews of the local insect fauna is referred to A. M. Lea's article in the 1898-99 Year Book under the title of 'The Insects of Western Australia'; in the Year Book for 1900-01 the late H. M. Giles wrote 'A Glimpse of Western Australian Entomology'.

Two short summaries have also appeared in conjunction with science conferences in this State. The *Handbook and Review* published for the 1926 meeting of the Australasian Association for the Advancement of Science contained an article by L. J. Newman and the *Handbook* for the 1947 meeting of the Australian and New Zealand Association for the Advancement of Science printed a short summary of the local insects by L. Glauert.

Readers interested in more technical summaries are referred to Professor G. E. Nicholl's 'The Composition and Biographical Relation of the Fauna of Western Australia' (*A.N.Z.A.A.S.*, Vol. XXI, 1933, p. 93), the relevant volumes of *Die Fauna Sudwest-Australiens* by Michaelsen and Hartmeyer, 1907-1930, and the report of the Swedish expedition under Dr E. Mjoberg.

More detailed information relating to the forms of economic importance will be found in the publications of the Western Australian Department of Agriculture.

Literature covering the general aspects of Australian entomology includes:

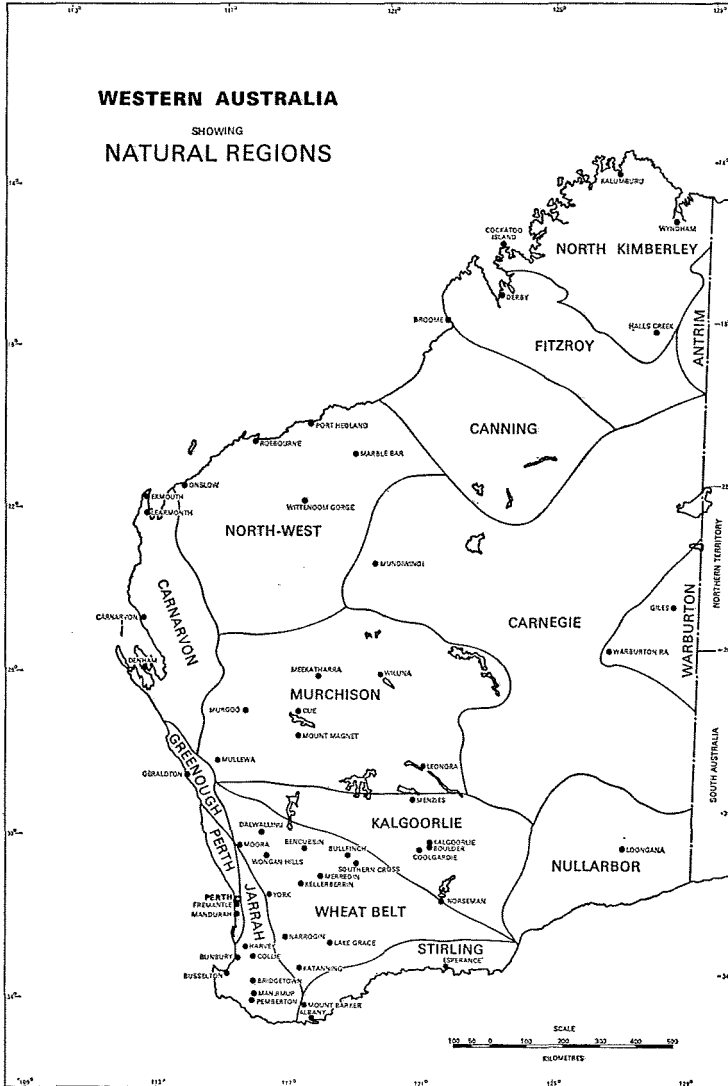
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Chapter II—continued
Part 6—Natural Regions

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The physical features, geology, climate, flora and fauna of Western Australia have been outlined earlier in this Chapter and the subdivision of the State into 'natural regions' may now be considered. A Natural Region is one clearly marked off from neighbouring regions by topographical, geological, climatic, or biological conditions, or by combinations of these, so that, as far as Man's activities are concerned, they have different economic possibilities.



CHARACTERISTICS OF THE NATURAL REGIONS OF WESTERN AUSTRALIA

The subdivision of Western Australia into Natural Regions (see map on preceding page) has been described by E. de C. Clarke in *Jour. Roy. Soc. West. Aust.*, vol. XII, pp. 117-32. A summary of the characteristics of these different Natural Regions (reprinted by courtesy of the University of Western Australia Press from Clarke, Prider and Teichert: *Elements of Geology for Western Australian Students*) is given below.

NATURAL REGION	TOPOGRAPHY	GEOLOGY	RAINFALL	WATER SUPPLY (a)	VEGETATION, ETC.
ANTRIM (<i>geographic</i>)	Tableland	Cambrian sediments and lavas	Summer, monsoonal, 500 to 1,000 millimetres	Catchments, wells and artesian	Grassland and savannah
NORTH KIMBERLEY (<i>geographic</i>)	Dissected stony tableland	Younger Precambrian	Summer, monsoonal, 750 millimetres or more	Streams, springs, catchments	Luxuriant in valleys, sparse on tableland
FITZROY (<i>chief river</i>)	Very wide valleys and low hills	Palaeozoic (largely Permian)	Summer, monsoonal, 500 to 750 millimetres	Catchments and artesian	Grassland and savannah
CANNING (<i>A. W. Canning, surveyor and explorer</i>)	Sand ridges and table-top hills	Palaeozoic and Mesozoic	Summer, 375 millimetres or less	Springs, pools, artesian water? (undeveloped)	'Spinifex' (species of <i>Triodia</i>) and desert shrubs
CARNEGIE (<i>David Carnegie, explorer</i>)	Sand ridges and table-top hills	Mesozoic, Palaeozoic and Younger Precambrian	Variable and unreliable, probably about 125 millimetres	Catchments, wells	'Spinifex' and desert shrubs
WARBURTON (<i>Warburton Range</i>)	Hills (some over 900 metres) separated by sandy country	Older Precambrian	Variable and unreliable, perhaps about 125 millimetres. Probably better than Carnegie Region owing to high hills	Catchments, wells, some springs	'Mulga' (species of <i>Acacia</i>) and 'Spinifex'
NORTH-WEST (<i>common usage</i>)	Rugged hills. Rivers in well-defined valleys	Younger and Older Precambrian. Many economic minerals	Variable, unreliable, 375 millimetres or less	Wells, catchments, pools	'Spinifex', few shrubs and trees
MURCHISON (<i>common usage</i>)	Ridge hills and breakaways. Rivers in shallow beds. Salt 'lakes'	Older Precambrian. Economic minerals especially gold and nickel	Summer or winter, unreliable, 250 millimetres or less	Wells (potable ground-water)	'Mulga'. Eucalypts scarce except along rivers

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CHAPTER III—CONSTITUTION AND GOVERNMENT

Western Australia is one of the six federated sovereign States which, together with the Northern Territory and the Australian Capital Territory, constitute the Commonwealth of Australia. Thus, in addition to having its own Parliament and executive government, it is represented in the federal legislature. As well as government at the Federal and State levels, there is a third system, that of local government, which functions through City Councils, Town Councils and Shire Councils.

OUTLINE OF CONSTITUTIONAL DEVELOPMENT

A Legislative Council was established in Western Australia shortly after its foundation as a Crown Colony and sat for the first time in February 1832. The Council was non-elective and consisted of the Governor and four senior officials. In 1839, membership was increased to nine when the Governor nominated four unofficial members. Additional appointments were made from time to time until the dissolution of the nominee Legislative Council in 1870 with the inauguration of representative government as provided for in the Australian Colonies Government Act of 1850. This Act, which enabled the establishment of representative governments in other Australian Colonies, withheld the privilege from Western Australia until such time as the Colony should be able to defray all costs of government from its own revenues, and it was not until 1870 that it was felt that Western Australia was able to satisfy this condition. The new Legislative Council, elections for which took place in October of that year, consisted of twelve elected members, three nominees and three officials. The number of members of the Council was increased in 1874 to 21, of whom 14 were elected, in 1882 to 24, of whom 16 were elected and in 1886 to 26, comprising 17 elected members, 5 nominees and 4 officials.

Following the passage by the Legislative Council of a Constitution Act in 1889 and subsequent representations made in London by delegates sent from the Colony, responsible government was granted to Western Australia by an Imperial Act assented to on 15 August 1890. Provision was made for the establishment of a Parliament of two Houses, to be known as the 'Legislative Council' and the 'Legislative Assembly', to replace the old Council. Proclamation of responsible government was made in Perth on 21 October 1890 and election of the thirty members of the Legislative Assembly took place in November and December. The fifteen members of the Legislative Council were nominated by the Governor, as provided in the Constitution Act, and the Parliament was officially opened on 30 December 1890. The Constitution Act of 1889, while prescribing a Council which was originally nominative, contained a provision that, after the expiration of six years or on the population of the Colony reaching 60,000, the Council should become fully elective. The required population was attained in 1893 and an amendment to the Act in that year enabled the election of twenty-one members to the Legislative Council, and at the same time increased the Legislative Assembly to thirty-three members. By an amendment of 1899, membership of the Legislative Council was raised to thirty and of the Legislative Assembly to fifty. Provision was made for the Legislative Assembly to be increased to fifty-one members by the *Constitution Acts Amendment Act (No. 2), 1965*. The increase in numbers, however, did not become effective until the State general election in 1968.

On 1 January 1901, Western Australia and the five other Australian Colonies were federated under the name of the 'Commonwealth of Australia', authority for the union having been given by the Commonwealth of Australia Constitution Act which was passed by the British Parliament in 1900. By a provision of the Constitution Act the constituent parts of the Commonwealth previously designated 'Colonies' became known as 'States'. Under the Constitution, powers are divided between the Parliaments of the

Commonwealth and of the States by conferring power in respect of specific subjects on the Commonwealth either exclusively or jointly with the States, leaving the remaining powers to the States.

Procedure in both Federal and State Parliaments is based on British practice. The legislatures consist of the Sovereign, represented by the Governor-General of Australia or the Governor of the State, and the elected members. In the field of executive government the British 'Cabinet' system has also been adopted. The members of the Cabinets must hold seats in the legislature as elected members. The Cabinet is responsible to the Parliament and continues in office only while holding the confidence of the Parliament. All Cabinet Ministers are members of the Executive Council, the supreme group of advisers to the Crown, and the Cabinet thus provides the executive government of the Commonwealth or the State. The Executive Council is presided over by the Governor-General of Australia or the Governor of the State and at its meetings, which are formal and official in character, the decisions of the Cabinet are given legal form, appointments are made, resignations accepted, proclamations issued and regulations approved.

VICE-REGAL REPRESENTATION

The Governor-General of Australia

Under the Commonwealth Constitution, ultimate executive power is vested in the Crown and is exercised by the Governor-General as the direct representative of the Sovereign. Appointment to the office is made by the Crown after consultation with the Prime Minister of the Commonwealth. The present Governor-General is His Excellency the Right Honourable Sir Zelman Cowen, A.K., G.C.M.G., K.St.J., who was sworn in on 8 December 1977. During the absence from Australia of the Governor-General it is usual for the senior among the State Governors to be appointed Administrator.

The Governor of Western Australia

The Governor of Western Australia is the personal representative of the Sovereign in the State and exercises the powers of the Crown in State matters. He is the titular head of the Government and performs the official and ceremonial functions attaching to the Crown. The present Governor of Western Australia, His Excellency Air Chief Marshal Sir Wallace Kyle, G.C.B., K.C.V.O., C.B.E., D.S.O., D.F.C., K.St.J., was sworn in on 24 November 1975. In the event of the Governor's absence from Western Australia the Lieutenant-Governor of the State is appointed Administrator. If there is no Lieutenant-Governor it is customary for the Chief Justice of Western Australia to be appointed Administrator. The present Lieutenant-Governor, the Chief Justice Sir Francis Burt, K.C.M.G., received his commission on 11 May 1977, replacing Commodore Sir James Maxwell Ramsay, C.B.E., D.S.C., who was appointed Governor of Queensland.

The last Governor of Western Australia as a Colony was Lieutenant-Colonel Sir Gerard Smith, K.C.M.G., whose term of office expired on 29 June 1900 and the first Governor of the State was Captain Sir Arthur Lawley, K.C.M.G., who was sworn in on 1 May 1901. The names and dates of assumption of office of Governors, Lieutenant-Governors and Administrators from the foundation of the Colony to 1974 were shown in the 1975 issue of the Year Book.

THE FEDERAL PARLIAMENT

The legislative power of the Commonwealth is vested in a Federal Parliament which consists of Her Majesty the Queen (represented by the Governor-General), a Senate and a House of Representatives. Subject to the Constitution, the Federal Parliament is empowered to make laws concerning, among other things, defence, external affairs, customs and excise, trade and commerce with other countries and among the States, taxation, borrowing of money on public credit, currency and coinage, banking, insurance, navigation, fisheries, quarantine, posts and telegraphs, census and statistics, immigration, naturalisation and aliens, copyrights and trade marks, bankruptcy, marriage, divorce and matrimonial causes, social services, and conciliation and arbitration for the prevention

and settlement of industrial disputes extending beyond the limits of any one State. The Constitution provides that, when a law of a State is inconsistent with a law of the Commonwealth, the Commonwealth law shall prevail and the State law shall, to the extent of the inconsistency, be invalid.

The qualifications necessary for membership of the Federal Parliament and for voting at federal elections are described in the *Official Year Book of Australia*. Under the provisions of the *Commonwealth Electoral Act 1973*, which was proclaimed operative from 21 March 1973, the age qualification for enrolment, voting and candidature for federal parliamentary elections was lowered from twenty-one years to eighteen years.

The payment of allowances to Senators and Members of the House of Representatives is provided for in the Constitution and a superannuation scheme is established under the provisions of the *Parliamentary Retiring Allowances Act 1948*.

The Senate

The Senate consisted originally of thirty-six members, six Senators being returned from each State. The Parliament is authorised by the Constitution to increase or decrease the number of members. The growth of the population since Federation having been such as to warrant a considerable enlargement of the Parliament, a Representation Act was passed in 1948 to provide for increased membership by raising from six to ten the number of Senators from each State. At the same time the alternative system of counting of votes in elections for the Senate was altered by the Commonwealth Electoral Act to one of proportional representation, a summarised description of which is given in the *Official Year Book of the Commonwealth of Australia*, No. 38, pages 82-3.

Members are elected on the basis of adult suffrage by the people of the State which they represent. As provided by the *Commonwealth Electoral Act 1918*, enrolment as an elector is compulsory for all qualified persons except those who are aboriginal natives of Australia. Aborigines, although entitled to enrol, are not required to do so. Voting is compulsory for all enrolled persons in terms of an amendment of 1924 which operated for the first time at elections held on 14 November 1925. The term of office of a Senator is normally six years and commences on the first day of July following his election. One-half of the members retire at the end of every third year and are eligible for re-election.

Elections for the Senate were held on 10 December 1977. The following table shows the Western Australian membership of the Senate as from 1 July 1978 as a result of the election.

WESTERN AUSTRALIAN MEMBERS OF THE SENATE

Due to retire on 30 June 1981				Due to retire on 30 June 1984			
Name		Political party		Name		Political party	
Durack, Hon. P. D., Q.C.	Lib.	Chaney, Hon. F. M.	....	....	Lib.
McIntosh, G. D.	A.L.P.	Coleman, Ruth N.	....	....	A.L.P.
Sim, J. P.	Lib.	Rocher, A. C.	....	....	Lib.
Wheeldon, Hon. J. M.	A.L.P.	Thomas, A. M.	....	....	Lib.
Withers, Rt Hon. R. G.	Lib.	Walsh, P. A.	....	....	A.L.P.

A.L.P. = Australian Labor Party.

Lib. = Liberal Party of Australia.

The House of Representatives

State membership of the House of Representatives is on a population basis with the proviso that each State shall have at least five members. The Constitution provides further that the number of members of the House of Representatives shall be, as nearly as practicable, double the number of Senators. With the enlargement of the Senate from thirty-six to sixty members, the membership of the House of Representatives was increased,

from the date of the 1949 elections, from seventy-four to 121, not including a member for the Australian Capital Territory, which achieved representation for the first time at this election, and a member for the Northern Territory, which had been represented since 1922.

Western Australia's population growth had been such as to necessitate an increase in representation from five to eight, and this number was raised to nine in 1955 as a result of a redistribution following the Census of 30 June 1954. At the same time, the total number of members of the House of Representatives was increased to 122, excluding the two members for the internal Territories.

Consequent upon the population changes disclosed by the 1966 Census, a redistribution of the State electoral division boundaries was carried out in 1968 and the following representation in the House of Representatives became effective as from the general election held on 25 October 1969: New South Wales 45, Victoria 34, Queensland 18, South Australia 12, Western Australia 9, and Tasmania 5, the total number of members (excluding the members for the internal Territories) being increased from 122 to 123.

A redistribution of Western Australian electoral division boundaries was carried out in 1973, as a result of the population changes disclosed by the 1971 Census, and the State gained an additional seat in the House of Representatives. The tenth seat was named Tangney after Dame Dorothy Tangney, a former Labour senator for Western Australia. Representation of the Australian Capital Territory in the House was increased from one to two by the *Australian Capital Territory Representation (House of Representatives) Act 1973* and consequently the total number of members was raised to 127.

Members of the House of Representatives are elected for the duration of the Parliament, which is limited to three years, by the people of the electorate which they represent. As provided by the *Commonwealth Electoral Act 1918*, enrolment as an elector is compulsory for all qualified persons except those who are aboriginal natives of Australia. Aborigines, although entitled to enrol, are not required to do so. Voting is on the preferential system and is compulsory for all enrolled persons in terms of an amendment of 1924 which operated for the first time at elections held on 14 November 1925.

Elections for the House of Representatives were held on 10 December 1977. The next table shows the Western Australian membership of the House of Representatives as a result of the election.

WESTERN AUSTRALIAN MEMBERS OF THE HOUSE OF REPRESENTATIVES

Electoral division	Name	Political party	Electoral division	Name	Political party
Canning	Bungey, M. H.	Lib.	Moore	Hyde, J. M.	Lib.
Curtin	Garland, Hon. R. V.	Lib.	Perth	McLean, R. M.	Lib.
Forrest	Drummond, P. H.	Lib.	Stirling	Viner, Hon. R. I.	Lib.
Fremantle	Dawkins, J. S.	A.L.P.	Swan	Martyr, J. R.	Lib.
Kalgoorlie	Cotter, J. F.	Lib.	Tangney	Shack, P. D.	Lib.

A.L.P. = Australian Labor Party.

Lib. = Liberal Party of Australia.

THE STATE PARLIAMENT

The Crown, represented by the Governor, and the Parliament, comprising a Legislative Council and a Legislative Assembly, constitute the legislature of Western Australia.

Executive government is based, as in the case of the Commonwealth and in other States, on the system which evolved in Great Britain in the eighteenth century and which is generally known as the 'Cabinet' system. The Cabinet consists of Ministers of the Crown chosen for the Ministry from members of Parliament belonging to the political party, or coalition of parties, which is in the majority in the Legislative Assembly. The

Constitution requires that at least one of the Ministers be selected from members of the Legislative Council. In Western Australia, as in the other Australian States, the office of principal Minister is designated 'Premier'.

Since 1890, when responsible government was granted to Western Australia, there have been twenty-five separate Ministries as shown in the following table. No organised political party existed in the Colony until the formation of a Labour party in the 1890s. A Labour Ministry assumed office in 1904. As no previous Ministry had a specific party designation, the table has been annotated accordingly.

MINISTRIES FROM 1890

Name of Premier	Political party	Date of assumption of office	Duration			
			Years	Months	Days	
Forrest	(a)	1890—29 December	10	1	17	
Throssell		1901—15 February	....	3	12
Leake		27 May	....	5	25
Morgans		21 November	....	1	2
Leake		23 December	....	6	8
James		1902—1 July	2	1	9
Daglish		Labour	1904—10 August	1	15
Rason		Liberal	1905—25 August	8	12
Moore		Liberal	1906—7 May	4	4	9
Wilson		Liberal	1910—16 September	1	21
Scaddan	Labour	1911—7 October	4	9	20	
Wilson	Liberal	1916—27 July	....	11	1
Lefroy	Liberal	1917—28 June	1	9	20	
Colebatch	Liberal	1919—17 April	....	1	....
Mitchell	Nat. and C.P. (coalition)	17 May	4	10	30	
Collier	Labour	1924—16 April	6	....	8
Mitchell	Nat. and C.P. (coalition)	1930—24 April	3	....	....
Collier	Labour	1933—24 April	3	3	27	
Wilcock	Labour	1936—20 August	8	11	11	
Wise	Labour	1945—31 July	1	8	1	
McLarty	L.C.L. and C.P. (coalition)	1947—1 April	5	10	22	
Hawke	Labour	1953—23 February	6	1	10	
Brand	L.C.L. and C.P. (coalition)	1959—2 April	11	11	1	
Tonkin	A.L.P.	1971—3 March	3	1	5	
Court	Lib. and C.P. (coalition)	1974—8 April	....	....	....

Still in office (b)

A.L.P. = Australian Labor Party.

C.P. = Country Party (c).

L.C.L. = Liberal and Country League (d).

Nat. = Nationalist.

(a) No specific party designation. (b) At 31 March 1979. (c) The name of the Party was changed to the *National Country Party of Australia (W.A.) Inc.* on 5 May 1975. (d) The name of the Party was changed to *The Liberal Party of Australia (Western Australian Division) Incorporated* on 15 July 1968.

The Constitution Act of 1889 provided for a Ministry of five members. This number was increased to six by an amendment to the Act in 1896, to eight by another amendment in 1927, and to ten by the *Acts Amendment (Increase in Number of Ministers of the Crown) Act, 1950*. The Ministry was increased to twelve members under the provisions of the *Constitution Acts Amendment Act, 1965*. As authorised by the *Constitution Acts Amendment Act (No. 4), 1975* the number of Ministers in the State Cabinet was increased from twelve to thirteen. The additional Minister, Mr I. G. Medcalf, M.L.C., was sworn in on 22 December 1975 as Attorney-General, and Minister for Federal Affairs. The names of the Ministers and the portfolios held by them at 31 March 1979 are shown in the next table.

The right to vote at parliamentary elections was extended to women by the *Constitution Acts Amendment Act, 1899* and membership of either House was provided for by the *Parliament (Qualification of Women) Act, 1920*. The first woman member of any Australian Parliament was Mrs Edith Dircksey Cowan, O.B.E., who was elected to the Legislative Assembly in March 1921 as member for West Perth. Mrs A. F. G. (later Dame Florence) Cardell-Oliver, M.L.A. for Subiaco, became the first woman Cabinet Minister in Australia when she joined the McLarty Ministry in 1947.

Payment of members was introduced in 1900 by a Payment of Members Act and a superannuation fund is established under the *Parliamentary Superannuation Act, 1970-1976*. The latter Act replaces the *Parliamentary Superannuation Act, 1948-1968* which came into operation on 1 January 1949.

THE MINISTRY (RECONSTITUTED) FROM 25 AUGUST 1978

Name of Minister	Title of Office
Hon. Sir Charles Walter Michael Court, K.C.M.G., O.B.E., M.L.A.	Premier, Treasurer and Minister Co-ordinating Economic and Regional Development
Hon. Desmond Henry O'Neil, M.L.A.	Deputy Premier, Chief Secretary, Minister for Police and Traffic, and Minister for Regional Administration and the North-West
Hon. Richard Charles Old, M.L.A.	Minister for Agriculture
Hon. Graham Charles MacKinnon, M.L.C.	Minister for Works, Minister for Water Supplies, Minister for Tourism and Leader of the Government in the Legislative Council
Hon. Raymond James O'Connor, M.L.A.	Minister for Labour and Industry, Minister for Consumer Affairs, Minister for Immigration, Minister for Fisheries and Wildlife, and Minister for Conservation and the Environment
Hon. Ian George Medcalf, E.D., Q.C., M.L.C.	Attorney-General and Minister for Federal Affairs
Hon. Peter Vernon Jones, M.L.A.	Minister for Education, Minister for Cultural Affairs, and Minister for Recreation
Hon. Andrew Mensaros, M.L.A.	Minister for Industrial Development, Minister for Mines, and Minister for Fuel and Energy
Hon. Edgar Cyril Rushton, M.L.A.	Minister for Transport
Hon. Keith Alan Ridge, M.L.A.	Minister for Housing
Hon. David John Wordsworth, M.L.C.	Minister for Lands and Minister for Forests
Hon. Margaret June Craig, M.L.A.	Minister for Local Government, and Minister for Urban Development and Town Planning
Hon. Raymond Laurence Young, F.C.A., M.L.A.	Minister for Health, and Minister for Community Welfare

The Legislative Council

At 31 March 1979 the Legislative Council consisted of thirty-two members, each of the sixteen electoral provinces into which the State was divided being represented by two members. Election is for a term of six years and one-half of the members retire every three years.

The qualifications of a candidate for election to the Legislative Council are that he or she shall be at least eighteen years of age, shall have resided in Western Australia for a minimum of one year, be a natural-born or naturalised British subject, and be enrolled or qualified for enrolment, as an elector. No person may hold office as a Member of the Legislative Council and a Member of the Legislative Assembly at the same time. A judge of the Supreme Court, the Sheriff of Western Australia, an undischarged bankrupt, a debtor against whose estate there is a subsisting order in bankruptcy, or a person who has been attainted or convicted of treason or felony may not be elected to the Legislative Council. The qualifications for election as a member of the Legislative Council are identical with those necessary for election as a member of the Legislative Assembly. The qualifying age for a candidate for election to either House was reduced from twenty-one years of age to eighteen years of age under the provisions of the *Constitution Acts Amendment Act, 1973* which was proclaimed operative from 1 January 1974.

The *Electoral Act, 1907-1976* requires that to qualify for enrolment as an elector a person shall be at least eighteen years of age, be a natural-born or naturalised British subject, shall have lived in the Commonwealth of Australia for six months continuously, and shall have lived in Western Australia for three months continuously and in the district for which he claims enrolment for a continuous period of one month immediately preceding the date of his claim. The qualifying age for enrolment as an elector for both the Legislative Council and the Legislative Assembly was reduced from twenty-one years of age to eighteen years of age under the provisions of the *Electoral Act Amendment Act*

(No. 2), 1970. The Act operated for the first time at the conjoint election for the Legislative Council and the Legislative Assembly held on 20 February 1971. A person is disqualified from enrolment if he is of unsound mind, has been attainted of treason, has been convicted and is serving sentence for any offence punishable by imprisonment for one year or longer, is the holder of a temporary entry permit for the purposes of the *Migration Act* 1958 (Commonwealth) or is a prohibited immigrant under that Act. Enrolment is compulsory under the *Electoral Act Amendment Act, 1964* for all qualified persons except those who are aboriginal natives of Australia. Aborigines, although entitled to enrol, are not required to do so. Voting at elections is on the preferential system and, as provided by the foregoing Act, is compulsory for all enrolled persons.

The *Electoral Districts Act Amendment Act, 1975* redefined for electoral purposes the boundaries of the Metropolitan Area and within that area increased the numbers of electoral provinces to six, and electoral districts to twenty-seven.

Complementary legislation in the *Constitution Acts Amendment Act (No. 2), 1975* increased the membership of the Legislative Council to thirty-two and the Legislative Assembly to fifty-five members.

The increased representation in the Legislative Council became effective from 21 May 1977 and in the Legislative Assembly following the elections held in February 1977.

ELECTORAL PROVINCES AND ELECTORAL DISTRICTS

Electoral province	Component electoral districts	Electoral province	Component electoral districts
METROPOLITAN AREA			
East Metropolitan	{ Ascot Canning Victoria Park Welshpool	North-East Metropolitan....	{ Dianella Maylands Morley Mount Lawley Swan
Metropolitan	{ Cottesloe Floreat Nedlands Perth Subiaco	South Metropolitan	{ Cockburn East Melville Fremantle Melville
North Metropolitan	{ Balcatta Karrinyup Mount Hawthorn Scarborough Whitford	South-East Metropolitan	{ Clontarf Gosnells Murdoch South Perth
AGRICULTURAL, MINING AND PASTORAL AREA			
Central	{ Avon Mount Marshall Narrogin	South-East	{ Kalgoorlie Merredin Yilgarn-Dundas
Lower Central	{ Collie Katanning Warren	South-West	{ Bunbury Vasse Wellington
Lower West	{ Dale Murray Rockingham	Upper West	{ Geraldton Greenough Moore
South	{ Albany Roe Stirling	West	{ Darling Range Kalamunda Mundaring

ELECTORAL PROVINCES AND ELECTORAL DISTRICTS—*continued*

Electoral province	Component electoral districts	Electoral province	Component electoral districts
NORTH-WEST—MURCHISON-EYRE AREA			
Lower North	{ Gascoyne Murchison-Eyre	North	{ Kimberley Pilbara

The composition of the Legislative Council at 31 March 1979 is given in the following table.

MEMBERS OF THE LEGISLATIVE COUNCIL AT 31 MARCH 1979

Name	Political party	Electoral province
DUE TO RETIRE IN 1980 (a)		
Berry, Hon. George William	Lib.	Lower North
Cloughton, Hon. Roy Frederick, B.A.	A.L.P.	North Metropolitan
Cooley, Hon. Donald Walter, J. P.	A.L.P.	North-East Metropolitan
Gayfer, Hon. Harry Walter	N.C.P.	Central
Hetherington, Hon. Robert, B.A.	A.L.P.	East Metropolitan
Knight, Hon. Thomas, A.F.A.I.M., A.A.I.B.	Lib.	South
Lewis, Hon. Alexander Ashley	Lib.	Lower Central
MacKinnon, Hon. Graham Charles	Lib.	South-West
Masters, Hon. Gordon Edgar	Lib.	West
McAlee, Hon. Margaret	Lib.	Upper West
Medcalf, Hon. Ian George, E.D., Q.C.	Lib.	Metropolitan
Pratt, Hon. Ian George	Lib.	Lower West
Stubbs, Hon. Robert Henry Claude	A.L.P.	South-East
Thompson, Hon. Ronald	Ind.	South Metropolitan
Tozer, Hon. John Carmichael	Lib.	North
Vaughan, Hon. Grace Sydney, M. Soc. Wk., B.A., Dip. Soc.	A.L.P.	South-East Metropolitan

DUE TO RETIRE IN 1983 (a)

Baxter, Hon. Norman Eric	N.C.P.	Central
Dans, Hon. Desmond Keith	A.L.P.	South Metropolitan
Elliott, Hon. Lyla Daphne	A.L.P.	North-East Metropolitan
Ferry, Hon. Victor Jasper, D.F.C.	Lib.	South-West
Griffiths, Hon. Clive Edward	Lib.	South-East Metropolitan
Leeson, Hon. Ronald Thomas	A.L.P.	South-East
McKenzie, Hon. Fred Evan	A.L.P.	East Metropolitan
McNeil, Hon. Thomas	Ind.	Upper West
McNeill, Hon. Neil, B. Sc. (Agric.)	Lib.	Lower West
Moore, Hon. Norman Frederick, B.A., Dip. Ed.	Lib.	Lower North
Oliver, Hon. Oscar Neil Blackburne, E.D.	Lib.	West
Piesse, Hon. Winifred Margaret, J.P.	N.C.P.	Lower Central
Pike, Hon. Robert Gerald	Lib.	North Metropolitan
Williams, Hon. Richard John Lloyd, B.A.	Lib.	Metropolitan
Withers, Hon. William Robert, J.P.	Lib.	North
Wordsworth, Hon. David John	Lib.	South

A.L.P. = Australian Labor Party. N.C.P. = National Country Party.
 Lib. = The Liberal Party of Australia (Western Australian Division) Incorporated.
 Ind. = Independent.

(a) Section 8 of the *Constitution Acts Amendment Act, 1899-1977* provides that a retiring member shall vacate his seat on 21 May in the year of retirement.

The Legislative Assembly

The following table shows the composition of the Legislative Assembly at 31 March 1979.

MEMBERS OF THE LEGISLATIVE ASSEMBLY AT 31 MARCH 1979

Name	Political party	Electoral district
Barnett, Michael	A.L.P.	Rockingham
Bateman, Thomas Henry	A.L.P.	Canning
Bertram, Ronald Edward, A.A.S.A.	A.L.P.	Mt Hawthorn
Blaikie, Barry Roy	Lib.	Vasse
Bryce, Malcolm John, B.A.	A.L.P.	Ascot
Burke, Brian Thomas	A.L.P.	Balcatta
Burke, Terence Joseph	A.L.P.	Perth
Carr, Jeffrey Phillip, B.A.	A.L.P.	Geraldton
Clarke, James George, A.E., B.A., Dip. Ed., M.A.C.E., J.P.	Lib.	Karrinyup
Court, Hon. Sir Charles Walter Michael, K.C.M.G., O.B.E.	Lib.	Nedlands
Cowan, Hendy John	N.P.	Merredin
Coyne, Peter Joseph Aloysius	Lib.	Murchison-Eyre
Craig, Hon. Margaret June	Lib.	Wellington
Crane, Albert Victor	N.C.P.	Moore
Dadour, Gabriel Thomas, Dr, M.B., B.S.	Lib.	Subiaco
Davies, Hon. Ronald	A.L.P.	Victoria Park
Evans, Hon. Hywel David, B.A.	A.L.P.	Warren
Evans, Hon. Thomas Daniel	A.L.P.	Kalgoorlie
Grayden, Hon. William Leonard	Lib.	South Perth
Grewar, Geoffrey Royden, B.Sc. (Agric.), J.P.	Lib.	Roe
Grill, Julian Fletcher, LL.B.	A.L.P.	Yilgarn-Dundas
Harman, John Joseph	A.L.P.	Maylands
Hassell, William Ralph Boucher, LL.B., M.A.	Lib.	Cottesloe
Herzfeld, Thomas Alexander Albert, B. E. (Hons.), M.I.E. Aust.	Lib.	Mundaring
Hodge, Barry James	A.L.P.	Melville
Jamieson, Hon. Colin John	A.L.P.	Welshpool
Jones, Hon. Peter Vernon	N.C.P.	Narrogin
Jones, Thomas Henry	A.L.P.	Collie
Laurance, Ian James, B.A.	Lib.	Gascoyne
MacKinnon, Barry John, B. Ec., A.A.S.A.	Lib.	Murdoch
McIver, Kenneth Finlay	A.L.P.	Avon
McPharlin, Walter Raymond	N.P.	Mt Marshall
Mensaros, Hon. Andrew	Lib.	Floreat
Nanovich, Michael	Lib.	Whitford
O'Connor, Hon. Raymond James	Lib.	Mt Lawley
Old, Hon. Richard Charles	N.C.P.	Katanning
O'Neil, Hon. Desmond Henry	Lib.	East Melville
Pearce, Robert John, B.A., Dip. Ed.	A.L.P.	Gosnells
Ridge, Hon. Keith Alan	Lib.	Kimberley
Rushton, Hon. Edgar Cyril	Lib.	Dale
Shalders, Richard Steele	Lib.	Murray
Sibson, John	Lib.	Bunbury
Skidmore, John Edward	A.L.P.	Swan
Sodeman, Brian	Lib.	Pilbara
Spriggs, George Clarence Charles	Lib.	Darling Range
Stephens, Matthew Ernest	N.P.	Stirling
Taylor, Hon. Alexander Donald, B.A.	A.L.P.	Cockburn
Thompson, Hon. Ian David	Lib.	Kalamunda
Tonkin, Arthur Raymond, B.A., Dip. Ed.	A.L.P.	Morley
Troy, John Robert, Dr, M.B., B.S.	A.L.P.	Fremantle
Tubby, Reginald John	Lib.	Greenough
Watt, Leon Harold	Lib.	Albany
Williams, Rex Geoffrey, A.A.I.M.	Lib.	Clontarf
Wilson, Keith James	A.L.P.	Dianella
Young, Raymond Laurence, F.C.A.	Lib.	Scarborough

SUMMARY

Australian Labor Party (A.L.P.)	22
National Country Party (N.C.P.)	3
National Party (N.P.)	3
The Liberal Party of Australia (Western Australian Division) Incorporated (Lib.)	27

At 31 March 1979 there were fifty-five members of the Legislative Assembly, each member representing one of the fifty-five electoral districts into which the State was divided for the purpose. Members are elected for the duration of the Parliament, which is limited to three years.

A candidate for election must have resided in Western Australia for twelve months, be at least eighteen years of age, be a natural-born or naturalised British subject, and be enrolled or qualified for enrolment, as an elector at Legislative Assembly elections. No person is qualified to be a Member of the Legislative Assembly if he is a Member of the Legislative Council, a Judge of the Supreme Court, the Sheriff of Western Australia, an undischarged bankrupt, a debtor against whose estate there is a subsisting order in bankruptcy, or has been attained or convicted of treason or felony.

The qualifications and disqualifications applying to enrolment as an elector of the Legislative Assembly are the same as those prescribed for electors of the Legislative Council and enumerated in the preceding section *The Legislative Council*. As provided by the *Electoral Amendment Act, 1919* enrolment is compulsory for all qualified persons except those who are aboriginal natives of Australia. Aborigines, although entitled to enrol, are not required to do so. Voting at elections is on the preferential system and is compulsory for all enrolled persons as provided by the *Electoral Act Amendment Act, 1936*.

ELECTIONS, ELECTORS ON ROLL AND VOTES RECORDED

The Federal Parliament

General elections for the Federal Parliament were held on 10 December 1977. The Liberal-National Country Party coalition, led by the Honourable J. M. Fraser, was elected to office with a majority of forty-eight seats in the House of Representatives.

Liberal-National Country Party coalition representation in the Senate as a result of the elections remained at thirty-five.

Details of the number of electors enrolled for each Division in 1977 and the number of votes recorded at the general elections of 10 December 1977 were given in the 1977 issue of the Year Book.

The State Parliament

At the conjoint election for the Legislative Council and the Legislative Assembly held on 19 February 1977, the Liberal Party-Country Party alliance, led by the Honourable Sir Charles Court, K.C.M.G., O.B.E., was elected to office with a majority in the Legislative Assembly of eleven seats.

Details of the number of electors enrolled in each Province and in each District in 1977 and the numbers of formal and informal votes recorded throughout the State at the election were given in the 1977 issue of the Year Book.

LEGISLATION DURING 1978

During the second session of the twenty-ninth Parliament, which lasted from 9 March to 28 November 1978, the Western Australian legislature enacted 117 Public Statutes and, in addition, dealt with seven Bills which were introduced but not passed.

The titles and a brief summary of the Acts passed by the State Parliament during 1978 (*i.e.* those enacted during the periods specified in the previous paragraph) are given below. The full text of the legislation enacted is contained in the volumes of *The Acts of the Parliament of Western Australia*, to which reference should be made if further details are required.

ACTS PASSED DURING 1978

No. of Act	Short title and summary
57	Abattoirs Act Amendment Act.
80	Abattoirs Act Amendment Act (No. 2).

ACTS PASSED DURING 1978—continued

No. of Act	Short title and summary
76	Acts Amendment and Repeal (Valuation of Land) Act. Amends the <i>City of Perth Endowment Lands Act, 1920-1970</i> , the <i>Country Areas Water Supply Act, 1947-1977</i> , the <i>Country Towns Sewerage Act, 1948-1977</i> , the <i>Fire Brigades Act, 1942-1975</i> , the <i>Health Act, 1911-1976</i> , the <i>Land Drainage Act, 1925-1977</i> , the <i>Land Tax Assessment Act, 1976</i> , the <i>Local Government Act, 1960-1978</i> , the <i>Metropolitan Water Supply, Sewerage, and Drainage Act, 1909-1978</i> , the <i>Rights in Water and Irrigation Act, 1914-1976</i> , the <i>Strata Titles Act, 1966-1970</i> , the <i>Town Planning and Development Act, 1928-1978</i> , and the <i>Water Boards Act, 1904-1973</i> . Repeals the <i>City of Perth (Rating Appeals) Act, 1940-1954</i> .
59	Acts Amendment (Constitution) Act. Amends the <i>Constitution Act, 1889-1970</i> and the <i>Constitution Acts Amendment Act, 1899-1977</i> .
56	Acts Amendment (Land Valuers) Act. Amends the <i>Transfer of Land Act, 1893-1972</i> , the <i>Trustees Act, 1962-1972</i> and the <i>Building Societies Act, 1976-1977</i> .
87	Acts Amendment (Public Service) Act. Amends the <i>Government Employees (Promotions Appeal Board) Act, 1945-1977</i> and the <i>Public Service Arbitration Act, 1966-1977</i> .
70	Acts Amendment (Qualifying Ages Alteration) Act. Amends the <i>Chiropodists Act, 1957-1967</i> , the <i>Optometrists Act, 1940-1966</i> and the <i>Physiotherapists Act, 1950-1977</i> in relation to age requirements.
112	Acts Amendment (Supreme Court and District Court) Act. Amends the <i>Supreme Court Act, 1935-1976</i> and the <i>District Court of Western Australia Act, 1969-1976</i> .
16	Aerial Spraying Control Act Amendment Act.
40	Agriculture and Related Resources Protection Act Amendment Act.
15	Alumina Refinery (Wagerup) Agreement and Acts Amendment Act. Ratifies an Agreement between the State and Alcoa of Australia Limited for the purpose of the establishment of an alumina refinery at Wagerup. Amends the <i>Alumina Refinery Agreement Act, 1961-1974</i> , and the <i>Alumina Refinery (Pinjarra) Agreement Act, 1969-1976</i> .
10	Alumina Refinery (Worsley) Agreement Act Amendment Act.
114	Appropriation Act (Consolidated Revenue Fund).
115	Appropriation Act (General Loan Fund).
39	Architects Act Amendment Act.
35	Art Gallery Act Amendment Act.
46	Auction Sales Act Amendment Act.
17	Audit Act Amendment Act.
78	Betting Control Act Amendment Act.
3	Cemeteries Act Amendment Act.
48	Censorship of Films Act Amendment Act.
100	Colleges Act. Repeals the <i>Teacher Education Act, 1972-1978</i> . Provides for the maintenance of colleges necessary for the post-secondary education of persons; makes provision for councils as the governing authorities of the colleges and defines their functions, duties and powers.
5	Community Welfare Act Amendment Act.
34	Construction Safety Act Amendment Act.
90	Consumer Affairs Act Amendment Act.
117	Control of Vehicles (Off-road areas) Act. Prohibits the use of vehicles in certain places. Makes provision as to the use of vehicles otherwise than on a road; provides for areas where the use of off-road vehicles shall be permitted and for the registration of off-road vehicles.
95	Country Areas Water Supply Act Amendment Act.
96	Country Towns Sewerage Act Amendment Act.
61	Death Duty Act Amendment Act.
60	Death Duty Assessment Act Amendment Act.
33	Evidence Act Amendment Act.
111	Evidence Act Amendment Act (No. 2).
101	Explosives and Dangerous Goods Act Amendment Act.
13	Factories and Shops Act Amendment Act.
30	Family Court Act Amendment Act.
54	Firearms Act Amendment Act.
85	Fire Brigades Act Amendment Act.
93	Government Railways Act Amendment Act.
47	Health Act Amendment Act.
73	Honey Pool Act. Repeals the <i>Honey Pool Act, 1955-1970</i> . Provides for the establishment of the Honey Pool of Western Australia and a board of directors as its governing authority. Provides for the organised marketing of honey.
20	Housing Agreement (Commonwealth and State) Act Amendment Act.
68	Industrial Lands Development Authority Act Amendment Act.
2	Inventions Act Amendment Act.

ACTS PASSED DURING 1978—*continued*

No. of Act	Short title and summary
38	Land Drainage Act Amendment Act.
75	Land Valuation Tribunals Act. Provides for the establishment of Land Valuation Tribunals and defines their jurisdiction, powers and procedures.
55	Land Valuers Licensing Act. Establishes the Land Valuers Licensing Board for the licensing of land valuers and the control of the practice of valuation.
91	Law Reform Commission Act Amendment Act.
8	Legal Aid Commission Act Amendment Act.
113	Legal Aid Commission Act Amendment Act (No. 2).
9	Legal Practitioners Act Amendment Act.
45	Limitation Act Amendment Act.
29	Liquor Act Amendment Act.
84	Liquor Act Amendment Act (No. 2).
26	Listening Devices Act. Regulates the use of listening devices.
116	Loan Act. Authorises the raising of \$84,500,000 by loan for the construction of certain public works and for other purposes.
31	Local Government Act Amendment Act (No. 2).
82	Local Government Act Amendment Act (No. 3).
4	Local Government Grants Act. Establishes the Western Australian Local Government Grants Commission. Provides for the distribution to municipalities in Western Australia of certain financial assistance provided by the Commonwealth.
83	Marine Navigational Aids Act Amendment Act.
19	Metropolitan Water Supply, Sewerage, and Drainage Act Amendment Act.
105	Metropolitan Water Supply, Sewerage, and Drainage Act Amendment Act (No. 2).
107	Mining Act. Repeals the <i>Mining Act, 1904-1973</i> , the <i>Sluicing and Dredging for Gold Act, 1899</i> and the <i>Mining Tenements (Wartime Exemption) Act, 1942</i> . Amends the <i>Local Government Act, 1960-1978</i> , the <i>Town Planning and Development Act, 1928-1978</i> and the <i>Land Act, 1933-1972</i> . Replaces the previous mining legislation with new legislation designed to meet the needs of modern mining and prospecting while ensuring adequate protection for other land usage and for the environment generally.
7	Murdoch University Act Amendment Act.
49	Northern Developments Pty. Limited Agreement Act Amendment Act.
104	Nuclear Activities Regulation Act. Makes provision with respect to the regulation and control of nuclear activities. Provides for the formulation and adoption of codes of practice relating to nuclear activities.
50	Parks and Reserves Act Amendment Act.
99	Pensioners (Rates Rebates and Deferrals) Act Amendment Act.
14	Petroleum Products Subsidy Act Amendment Act.
52	Plant Diseases Act Amendment Act.
43	Poisons Act Amendment Act.
6	Police Act Amendment Act.
94	Prisons Act Amendment Act.
86	Public Service Act. Repeals the <i>Public Service Act, 1904-1977</i> . Establishes the Public Service Board and defines its functions and powers. Defines the constitution of the Public Service and its organisation, and provides for its regulation.
25	Public Trustee Act Amendment Act.
24	Railways Discontinuance and Land Revestment Act. Authorises the discontinuance of portion of the Rous Head-Rocky Bay-Quarry railway starting at a point on the Perth-Fremantle Railway, 18.44 kilometres from the Perth Terminal and reverts in the Crown specified railway land.
72	Real Estate and Business Agents Act. Repeals the <i>Land Agents Act, 1921-1974</i> . Establishes the Real Estate and Business Agents Supervisory Board and makes provision for the appointment of a Registrar. Provides for the licensing of agents and for their regulation and supervision in respect of real estate and certain business transactions.
102	Reserve and Road Closure Act. Excises portions of Reserve No. 28402 for road purposes and for public open space.
11	Reserves Act. Alters the purpose of certain reserves and other lands.
103	Reserves Act and the Reserves and Road Closure Act Amendment Act. Alters the purpose of certain reserves and other lands.
98	Rights in Water and Irrigation Act Amendment Act.
22	Road Maintenance (Contribution) Act Amendment Act.
23	Road Maintenance (Contribution) Act Amendment Act (No. 2).
89	Road Traffic Act Amendment Act.
12	Rural Housing (Assistance) Act Amendment Act.
63	Salaries and Allowances Tribunal Act Amendment Act.

ACTS PASSED DURING 1978—*continued*

No. of Act	Short title and summary
77	Securities Industry Act Amendment Act.
41	Security Agents Act Amendment Act.
88	Shipping and Pilotage Act Amendment Act.
44	Small Claims Tribunals Act Amendment Act.
71	Small Claims Tribunals Act Amendment Act (No. 2).
65	State Energy Commission Act Amendment Act.
66	State Energy Commission (Validation) Act. Validates the operations of the State Energy Commission in respect of funding and charges prior to the enactment of the <i>State Energy Commission Act Amendment Act, 1978</i> .
42	Stock (Brands and Movement) Act Amendment Act.
81	Stock Diseases (Regulations) Act Amendment Act.
37	Suitors' Fund Act Amendment Act.
58	Suitors' Fund Act Amendment Act (No. 2).
18	Supply Act. Grants supply of \$740 million for the year 1978-79.
27	Taxi-cars (Co-ordination and Control) Act Amendment Act.
92	Taxi-cars (Co-ordination and Control) Act Amendment Act (No. 2).
79	Teacher Education Act Amendment Act.
67	Teachers' Registration Act Repeal Act. Repeals the <i>Teachers' Registration Act, 1976</i> .
1	The Fremantle Gas and Coke Company's Act Amendment Act.
32	Town Planning and Development Act Amendment Act.
62	University of Western Australia Act Amendment Act.
110	Uranium (Yeelirrie) Agreement Act. Ratifies an Agreement between the State and Western Mining Corporation Limited with respect to the mining and treatment of certain uranium ore reserves.
74	Valuation of Land Act. Makes provision for the appointment of a Valuer-General who shall have the general administration of the Act. Provides for the constitution of the State into valuation districts and a general valuation to be made of rateable land within each valuation district. Makes provision for the completion and maintenance of valuation rolls of rateable land.
51	Water Boards Act Amendment Act.
97	Water Boards Act Amendment Act (No. 2).
64	Weights and Measures Act Amendment Act.
108	Western Australian Coal Industry Tribunal Act. Provides for the establishment of a Western Australian Coal Industry Tribunal and defines its powers and functions for the purpose of regulating the coal industry.
21	Western Australian Marine Act Amendment Act.
109	Western Australian Overseas Projects Authority Act. Establishes the Western Australian Overseas Projects Authority to facilitate the export of Western Australian goods and services by participation on a contract basis in development projects in overseas countries.
106	Wheat Industry Stabilization Act Amendment Act.
53	Wheat Marketing Act Amendment and Continuance Act.
28	Workers' Compensation Act Amendment Act.
69	Youth, Sport and Recreation Act. Repeals the <i>Youth, Community Recreation and National Fitness Act, 1972</i> . Establishes the Youth, Sport and Recreation Advisory Committee and defines its functions.
36	Zoological Gardens Act Amendment Act.

GOVERNMENT ADMINISTRATION

State Government

The Public Service of Western Australia operates under the provisions of the *Public Service Act, 1978* and consists of a number of departments established in accordance with the regulations made under the Act. The departments are Aboriginal Affairs Planning Authority, Agriculture, Audit, Chief Secretary's, Community Welfare, Conservation and Environment, Corrections, Crown Law, Education, Electoral, Fisheries and Wildlife, Forests, Harbour and Light, Industrial Development, Labour and Industry, Lands and Surveys, Local Government, Medical, Mental Health Services, Metropolitan Water Supply, Sewerage, and Drainage Board, Mines, Police, Premier's, Public Health, Public Service Board, Public Works, Road Traffic Authority, State Government Insurance Office, State Housing Commission, State Taxation, Tourism, Town Planning, Treasury, Workers' Compensation Board and Youth, Sport and Recreation.

Other parts of the State Service normally referred to as Statutory Authorities or Instrumentalities, function under separate Acts although they very largely follow the conditions prescribed in the Public Service Act.

Establishment, abolition or reorganisation of departments are subject to the approval of the Governor.

A brief summary of the functions of each of the departments and principal Statutory Authorities established at 31 December 1971 was given in the 1972 issue of the Year Book.

Australian Government

A comprehensive guide to the organisation and functions of the Australian Government is given in the *Commonwealth Government Directory*, including an outline of the activities of each Department of State together with similar information concerning Boards, Committees, Councils, Commissions and other Instrumentalities. A list of Australian Government Departments, the principal matters dealt with by each Department, and details of the statutes administered by the relevant Federal Minister are published from time to time in the *Australian Government Gazette* as, for example, in the issue dated 8 September 1977.

HISTORY OF STATE GOVERNMENT DEPARTMENTS

A short but reasonably comprehensive history of State Government Departments was commenced in the 1971 issue of the Year Book. The following article, the ninth in the series, presents the historical development of the Department of Lands and Surveys. Departments dealt with in previous articles were the Public Works Department, the Education Department, the Police Department, the Premier's Department, the Department of Tourism, the Forests Department, the Department of Mines and the Department of Agriculture.

DEPARTMENT OF LANDS AND SURVEYS

As might well be expected, land administration commenced in Western Australia with the arrival of the first settlers in 1829. In fact Captain James Stirling (who became the Colony's first Governor) formed an organisation titled 'Board of Counsel and Audit for Management of Property within the Settlement' before the 'Parmelia', the ship in which he was travelling anchored off the mouth of the Swan River. The Board comprised Mr William Stirling, Lieutenant John Septimus Roe and Commander Mark John Currie. Lieutenant Roe later became the first Surveyor General and held that office until 1872.

The original colonists to arrive in the settlement did not receive financial assistance from the British Government but were promised land grants at a ratio of forty acres (sixteen hectares) for every £3 (\$6) invested and people who sponsored the passage of a 'labouring person' received an additional grant of 200 acres (eighty-one hectares) per worker. Entrepreneurs who engaged in an investment of this kind were required to cultivate or improve the land within a period of twenty-one years with the grant reverting to the Crown if conditions were not satisfactorily completed. In 1830 further grants were made to settlers on such conditions as Her Majesty's Government determined.

During the early periods of settlement when grants were being allocated, Governor Stirling and his Board set about progressively subdividing the territory into Counties, Hundreds, Townships and Sections with each Section comprising 640 acres (259 hectares), each Township 25 sections, each Hundred 4 Townships and each County 16 Hundreds. The Counties were also to be further subdivided with the Crown retaining 400 Sections to meet administrative expenses and a further 200 sections for public requirements such as roads, gaols, bridges and racecourses. Sections were designed in a manner to be bounded by lines having a true north and south, east and west direction all as surveyed and mapped by the Surveyor General. However, the entire concept was soon abandoned and before long Locations replaced Sections and the single term Shire replaced Counties, Hundreds and Townships.

Land Regulations created by the Colonial Office in 1831 dictated the method of early land releases and included conditions that no areas should be sold below the value of five shillings per acre (\$1.24 per hectare) with fees also being established for the preparation and registration of a Crown Grant. Additional Regulations were made and others revised to meet changing circumstances and it is interesting to note the remarkable similarity of some of these Regulations in comparison with modern requirements. Particularly so is one governing the sale of a lot at Guildford in 1830 whereby a building, valued at £30 (\$60) had to be erected on the land within a period of three months. Today a town-site lot or residential plot is made available subject to a building condition and time limit as determined by the Minister for Lands.

The Pastoral Lease, as it is known today began unofficially in 1841 when homesteaders were given the right to graze Crown lands for ten miles (sixteen kilometres) around their properties. By 1847, licences to depasture stock on Crown lands were introduced on the basis of 4,000 acres (1,619 hectares) for every sheep, with one horse or one head of cattle deemed to be equivalent to four sheep. Land Regulations proclaimed in 1851 dealt with Pastoral and Tillage Leases, and Pastoral Leases were offered for terms of eight years with the area being restricted to 20,000 acres (8,094 hectares). In 1872 the area limit was increased to 100,000 acres (40,469 hectares) and 1882 saw the introduction of Pastoral Leases in the Kimberley Division. Provision was also made in that year for arbitrary determination of all leases in 1893 and this principle has applied ever since with current leases expiring in 2015. The maximum area a person could hold was fixed at one million acres (404,686 hectares) per Division in 1917 and this was adjusted in 1920 to one million acres (404,686 hectares) throughout the entire State. There are now in operation about 700 Pastoral Leases which occupy nearly 100 million hectares of the State.

In 1842, limits were defined to confine land selections to an area bounded by lines connecting Moore River, Wongan Hills, York, Toolbrunup (Stirling Ranges) and thence directly to the coast. Nearly all land previously granted was included within these boundaries and the limitation was designed to allow more survey work to proceed and additional areas to be earmarked for release.

Between 1872 and 1875 Regulations were created to deal with allocation of mining rights, issue of timber cutting licences, and the Colonial Government-assisted migrant passage from England, whereby the new settlers were promised land grants, provided each completed two years residence in the Colony. It was also at this time that a numerical system commenced to accurately identify reserves, and it is interesting to note that this method still operates today. Approximately 35,000 reserves have been created since its inception.

The Hon. Sir Malcolm Fraser, K.C.M.G., was the first Minister for Lands and he occupied this position from 1872 to 1883. Successive Ministers included Hon. Sir John Forrest, P.C., G.C.M.G., LL.D. (afterwards Lord Forrest) from 1883 to 1890, the Hon. W. E. Marmion, M.L.A., from 1890 to 1894, the Hon. A. R. Richardson, M.L.A., from 1894 to 1897 and the Hon. G. Throssell, M.L.A., from 1897 to 1901.

On 15 August 1890, Queen Victoria assented to a Bill which granted Western Australia a Constitution, and with the swearing-in of our first Parliament on 30 December of the same year, the way was cleared for the introduction of Statutes to enable the State to conduct its own affairs. The first major Statute passed which directly affected the operations of the Department was the *Mineral Lands Act, 1892* and this resulted in the establishment of the Department of Mines in 1893. With the creation of this Department a major division of control over Crown lands occurred with a further separation in 1919 when the Forests Department was established to administer the *Forests Act, 1918*.

The man who can be cited as the person who moulded the early Department of Lands and Surveys was Robert Cecil Clifton, who preferred to be identified as R. Cecil Clifton. The Colonial Office List records that he was a Landing Waiter and Postmaster at Bunbury in 1873, Clerk, Lands and Surveys Department in 1874, Clerk, Customs Department in 1876, Chief Clerk, Lands and Surveys Department in 1880 and the Under Secretary for Lands in 1891 (a position which he held until his retirement in 1918). With the advent of Constitutional Government he was commissioned to report on the working of the

Department and after initial comment on administrative problems he dealt with re-organisation of the Department into two branches, 'Lands' and 'Surveys' with the Under Secretary supervising the first, and the Surveyor General the second. Implementation of this line of thought was effected in association with the introduction of the *Land Act, 1898* but was expanded even further whereby the Department became administered under the direction of the responsible Minister by the Under Secretary for Lands.

The need for provision of cultivable lands suitable for immediate settlement and close to railways prompted the introduction of legislation which was assented to in October 1896 under the title Agricultural Lands Purchase Act. Provision was made for sources of funds, not exceeding £200,000 (\$400,000) for the acquisition of land adjudged suitable by the Land Purchase Board which was created to administer the Act. The Board consisted of not more than five persons appointed by the Governor and operated under the Commissioner of Crown lands (later Minister). The Act also permitted part of such repurchased lands to be set apart for roads, reserves, townsites etc., and the Minister, with the approval of the Governor, was empowered to effect improvements prior to sale. The parent Act and its subsequent amendments were repealed by the *Agricultural Lands Purchase Act, 1909* and in turn this Statute was repealed by the *Land Act, 1933* which provided similar powers and functions. The maximum number of members was increased to nine in 1909 and this limit still applies today.

Allocation of the available agricultural land was decided by land ballot when the *Land Act, 1898* was introduced but deficiencies in this method soon led to the Minister for Lands appointing people to conduct an enquiry in order to determine the most suitable applicant for the land. This was essentially the origin of the Land Board and in 1906 legislation was enacted to enable the appointment of Boards consisting of at least three and no more than five persons, of whom at least one was required to be an officer of the Department of Lands and Surveys. Methods of lodging applications were also devised and the entire concept is fundamentally the same today, except that now only three members are required.

By 1904 settlers had pushed out into the salmon gum country east of Northam with the main impact being on the surveyed agricultural districts comprising Crown lands and various areas re-purchased by the Government in the 1890s. These localities included such well-known centres as Meckering, Tammin, Merredin, Wickopin, Narrogin and Wagin. This thrust was necessary and was partly caused by literature disseminated through the Department of Lands and Surveys with the 'Land Selectors Handy Guide to the Crown Lands of Western Australia', first published in 1897 and supported by numerous pamphlets. The Department also appointed District Inspectors and agents to cope with demands for specialised information and this service remained in force until the middle of the 20th Century, when advances in methods of communication and travel rendered many of the District services redundant.

The area of Crown land under lease, licence or some form of conditional purchase increased from 154 million acres to 267 million acres between 1903 and 1918 and very little of this increase was due to additional pastoral leases. Also in this era the area under wheat trebled between 1905 and 1911, and again trebled between 1911 and 1916. Such figures clearly illustrate the intense activity in settling and farming Crown land.

Following World War I (1914-1918) the *Discharged Soldiers Settlement Act, 1918* was passed, establishing a Board which dealt with the training and settling on farms of eligible discharged soldiers. Administration of the Act passed to the Agricultural Bank of Western Australia (later The Rural and Industries Bank of Western Australia) by virtue of the *Agricultural Bank Act, 1934*.

Allied to the *Discharged Soldiers Settlement Act, 1918* was the *Group Settlers' Advances Act, 1925*. This legislation stemmed from the need to re-establish British ex-servicemen and diminish the effect of unemployment caused by closure of armament factories following cessation of the 1914-1918 War. An overseas settlement committee was set up in 1919 to deal with migration, and field staff of the Lands and Surveys Department were employed in locating suitable farmsites. The Act basically dealt with financial

aspects of the Scheme and led soon after to the *Group Settlement Act, 1925* which dealt with matters of an administrative nature. As with the Discharged Soldiers Settlement Act, control eventually passed to The Rural and Industries Bank of Western Australia.

The problems of farmers both in new areas and on freehold properties in the early part of the 1920s were exemplified by the introduction of the *Wire and Wire Netting Act, 1926* to enable the Minister for Lands to obtain and supply fencing wire and wire netting to settlers. Parliament appropriated about £600,000 (\$1,200,000) for the purchase of wire to overcome depredations by marsupials, rabbits and dogs and records indicate that 11,527 miles (18,551 kilometres) of netting and 433 tons (440 tonnes) of wire were supplied at a cost of around £521,000 (\$1,042,000).

World War II (1939-1945) produced an entirely different set of Statutes to assist members of the armed forces in obtaining agricultural properties. In this instance, the Commonwealth of Australia introduced various measures in co-operation with the States, and in Western Australia, the *War Service Land Settlement Agreement Act, 1945* authorised execution of an agreement between the Commonwealth and State Governments to pave the way for legislation to improve the facilities for giving eligible members of the forces an opportunity to establish themselves as farmers or gain a measure of privilege if already farming. Many well-improved farms were purchased for allotment to members and vast areas of relatively remote virgin land were subdivided and distributed under leases in perpetuity. The Scheme was originally administered by a Directorate but in 1948 control passed to the Land Settlement Board which consisted of four members under the Chairmanship of the Director of Agriculture. The Board eventually disbanded when it had fulfilled its obligations and administration of the Perpetual Leases is now undertaken by the Lands and Surveys Department.

The discovery of the effect of trace elements in an area known as Esperance Downs led to the development of this outstanding pasture country in the 1950s. Thousands of inquiries and applications for land were received and this resulted in an agreement being formalised whereby Crown land was made available to a Company for 40 cents per acre (\$1.00 per hectare) in progressive parcels up to a total of 1.5 million acres (607,029 hectares). In return, the Company was to develop economic-sized holdings with at least 50 per cent of each unit being established as pasture. The organisation defaulted in performance of its obligations and this led to a fresh agreement being prepared (*The Esperance Lands Agreement Act, 1960*) based on similar lines of development. The agreement is still in force although the last transactions are nearing finality.

The Department of Lands and Surveys has always been heavily involved in immigration procedures but it was not until 1973 that a separate entity was established to deal solely with State immigration. All relevant staff were transferred, together with control, to the Department of Labour.

The dangers and damage due to wildfire caused concern from the earliest days of the Colony and penalties for deliberately or carelessly causing bush fires were extremely severe. An Ordinance which was introduced in 1847 provided for a fine of £50 (\$100) if a person was convicted of setting fire to grass or scrub or other natural vegetation. If an Aborigine or lad under 16 years was convicted, a public flogging of no more than fifty lashes could be inflicted. The Ordinance was repealed by *The Bush Fires Act, 1885* which restricted penalties to a fine and this was again repealed by the *Bush Fires Act, 1902* which attempted to diminish the dangers resulting from bush fires. The complicated nature of the problems brought about the *Bush Fires Act, 1937* which rationalised prohibited burning times and recognised and protected Bush Fire Brigades. Sophistication of equipment available and the need for State wide co-ordination of the many organisations involved were recognised by the *Bush Fires Act, 1954* which is still in force today and operates under the Chairmanship of the Under Secretary for Lands.

THE JUDICATURE

The two major factors in the development of the Australian legal system have been its British origin and the Commonwealth Constitution of 1900. This statute, an Act of the Imperial Parliament in London, limited the legislative power of State Parliaments.

in some respects and created a federal legislature. Since 1942, however, the Imperial Parliament can legislate for Australia only at Australia's request. The sources of Australian law of today are, therefore, found in Commonwealth and State legislation, in some Imperial legislation, and in the common law. Independence of the judiciary is an essential part of the Australian legal system.

Listed below are members of the Western Australian judiciary.

Supreme Court of Western Australia

Chief Justice ....	....	....	The Honourable Sir Francis Burt, K.C.M.G.
Senior Puisne Judge ....	....	....	The Honourable J. M. Lavan
Puisne Judges ....	....	....	The Honourable J. L. C. Wickham The Honourable A. R. A. Wallace The Honourable R. E. Jones The Honourable P. F. Brinsden The Honourable C. H. Smith

The District Court of Western Australia

Chairman of Judges ....	....	....	His Honour Judge W. P. Pidgeon
Judges ....	....	....	His Honour Judge D. C. Heenan His Honour Judge F. Ackland His Honour Judge V. J. A. O'Connor His Honour Judge I. R. Gunning His Honour Judge B. T. O'Dea

The Family Court of Western Australia

Chairman of Judges ....	....	....	The Honourable A. J. Barblett
Judges ....	....	....	His Honour Judge I. W. P. McCall His Honour Judge D. F. Connor His Honour Judge G. E. S. Ferrier His Honour Judge D. R. Anderson

Particulars of these and other Western Australian courts, and Commonwealth courts appear in Chapter V, Part 6 and Chapter X, Part 1.

OVERSEAS REPRESENTATION IN WESTERN AUSTRALIA

There are twenty-three countries represented in Western Australia by a consular agent, vice-consul, consul, consul-general, or trade representative as follows.

- Austria—R. Holmes, Honorary Consul, 21 Howard Street, Perth 6000.
- Belgium—S. Drake-Brockman, Honorary Consul, N.C.R. House, 231 Adelaide Terrace, Perth 6000.
- Belgium—L. Bae, Trade Commissioner, St George's Court, 16 St George's Terrace, Perth 6000.
- Britain—A. B. Ball, O.B.E., Consul-General, Prudential Building, 95 St George's Terrace, Perth 6000.
- Denmark—J. C. Garnsworthy, Honorary Consul, 17 Phillimore Street, Fremantle 6160.
- Finland—R. C. Mattiske, Honorary Consul, 47 Allerton Way, Booragoon 6154.
- France—Mme Collett, Consular Representative, 569 Wellington Street, Perth 6000.
- Germany, Federal Republic of—A. E. Blanckensee, Honorary Consul, St George's Court, 16 St George's Terrace, Perth 6000.
- Greece—P. Theodoracopoulos, Consul, St George's Court, 16 St George's Terrace, Perth 6000.
- Guatemala—P. Smetana, Honorary Consul, 28 Warralong Crescent, Mount Lawley 6050.
- Indonesia—W. W. G. Meecham, Honorary Consul, 133 St George's Terrace, Perth 6000.
- Ireland—M. Nolan, Honorary Consul, 6 Cleaver Street, West Perth 6005.

- Italy—S. Stefanni, Consul, 31 Labouchere Road, South Perth 6151.
 Italy—Dr M. Carroni, Trade Commissioner, 256 Adelaide Terrace, Perth 6000.
 Japan—M. Higaki, Consul-General, 111 St George's Terrace, Perth 6000.
 Malaysia—A. Rahmon Haron, Consul, 31 Ventnor Avenue, West Perth 6005.
 Netherlands—T. C. Dercksen, Honorary Consul, 111 St George's Terrace, Perth 6000.
 New Zealand—M. J. McLean, Consul, St George's Court, 16 St George's Terrace, Perth 6000.
 Norway—E. A. M. Wright, Honorary Consul, 193 Stirling Highway, Claremont 6010.
 Philippines—G. V. Mummery, Honorary Consul-General, 451 Murray Street, Perth 6000.
 Portugal—J. A. Quintela, Honorary Vice-Consul, 130 William Street, Perth 6000.
 Sweden—H. Morgan, Honorary Consul, Market House, 849-51 Wellington Street, Perth 6000.
 Switzerland—R. H. Abplanalp, Honorary Vice-Consul, 29 Marie Way, Kalamunda 6076.
 Thailand—Brigadier W. D. Jamieson, R.L., Honorary Consul-General, 135 Victoria Avenue, Dalkeith 6009.
 United States of America—Miss M. C. Carbone, Consul, Scottish Amicable Building, 246 St George's Terrace, Perth 6000.
 Yugoslavia—R. Sarenac, Consul, 24 Colin Street, West Perth 6005.

In addition, the Grand Duchy of Luxembourg is represented in Western Australia by the Consul for Belgium in respect of trade. Other interests are in the charge of the Netherlands consular representative. Liechtenstein is represented by the Vice-Consul for Switzerland.

STATE REPRESENTATION OVERSEAS AND IN OTHER STATES

Western Australia has been represented in the United Kingdom by an Agent General since 1892, the first appointment to the post being that of Sir Malcolm Fraser. An Office is maintained at Western Australia House, 115 Strand, London, W.C.2. Its functions include the representation of all Government Departments which have business in Britain and Europe, the purchase of government stores and equipment, the attraction of migrants, the encouragement of overseas private investment in Western Australia, and the provision of various types of assistance to visitors from Western Australia. In addition, the Office acts as agent for the State Treasury and as a receiving agency for The Rural and Industries Bank of Western Australia. Western Australia's European Public Relations Office and its tourist officer for the United Kingdom and Europe also operate from Western Australia House. The Agent General for Western Australia, Mr L. W. Slade, is the personal representative in Britain of the State Premier.

The State is also represented in Japan, an Office being maintained by the Western Australian Government at Sankaido Building, 9-13 Akasaka, 1-CHOME, Minato-Ku 107, Tokyo.

The Western Australian Department of Tourism has travel centres at 92 Pitt Street, Sydney, 2 Royal Arcade, Melbourne and 108 King William Street, Adelaide. The managers of the travel centres provide liaison on behalf of Government Departments which have business in these cities.

THE LOCAL GOVERNMENT SYSTEM

The function of local government in Western Australia is performed by a number of Councils (or, in special circumstances, by Commissioners appointed by the Governor) exercising powers conferred by the Parliament of the State. Each of the Councils consists of members elected by a local community and is responsible for the provision of many of the services necessary for the organisation and welfare of the community which it represents.

As early as 1838 an Act providing a measure of local government was passed and under its provisions the management and control of the town of Perth was vested in a body of trustees. The first elected Town Trust was constituted at Perth in 1842 under an Act of 1841 for the 'Improvement of Towns in Western Australia'. The Trust was dissolved in 1858 and replaced by a City Council, the town of Perth having been constituted a city when it became the seat of a Bishop in 1856.

Legislation was enacted in 1871 establishing Municipalities and Road Boards throughout the Colony. The existing Statute regulating the operations of the local authorities is the *Local Government Act, 1960-1978*, which is administered through a Department of Local Government by the Minister for Local Government. This Act consolidates the law relating to local government in Western Australia, and by its provisions the Municipal Corporations Act, the Road Districts Act and a number of other, less important, Acts were repealed. The legislation came into operation on 1 July 1961 and from that date new designations were applied to many local government districts, bodies and offices. Former Municipalities, other than Cities, became known as 'Towns' and Road Districts were renamed 'Shires'. Municipalities which already had city status remained 'Cities'. The executive body in each local government district became a 'Council', City Councils and Town Councils being presided over by a Mayor, and Shire Councils by a President. The chief non-elective executive office of a City or a Town is that of 'Town Clerk' and of a Shire, that of 'Shire Clerk'.

At 31 December 1978 there were 8 Cities, 14 Towns and 116 Shires in Western Australia.

Local Government Districts

The only unincorporated area in mainland Western Australia is King's Park, a public reserve of about 403 hectares in Perth, all other land being incorporated within the district of a City, Town or Shire.

On presentation of a petition signed by a prescribed minimum number of ratepayers, the number varying with the subject matter, the Governor may by Order constitute any part of the State as a Town; constitute any unincorporated area as a Shire; constitute as a new Shire any part of an existing Shire; divide a Shire into two or more Shires; sever portion of a district and annex the portion to an adjoining district, or constitute the portion as a new Town or Shire; annex to a district any adjacent unincorporated areas; divide a district into wards; or abolish a district and dissolve the local governing authority. Before any major change can be made in the boundary of a municipal district, the ratepayers of the district concerned have the right to demand that a poll be held on the question. If the result of any such poll does not favour the change then it cannot be put into effect.

The Act establishes a Local Government Boundaries Commission of three members, one being an officer of the Department of Local Government, who is Chairman of the Commission. The other members must be persons having experience in local government and nominated by associations of local government authorities. The Minister may refer to the Commission any question concerning the constitution or alteration of the constitution of local government districts. Every case where authorities are unable to agree on a matter of amalgamation or severance of territory must be referred to the Commission.

On the petition of the local authority concerned, the Governor may by Order declare to be a City any district which satisfies certain specified requirements. These requirements are that, during the three years immediately preceding the declaration, it shall have maintained a population of not less than 30,000 persons if situated in the metropolitan area as declared for the purposes of the Act, or not less than 20,000 persons if situated outside that area; and have maintained a gross revenue of \$200,000 for each of the three years. In addition the district must be clearly distinguishable as a centre of population having a distinct civic centre with adequate halls and cultural facilities, and must have sufficient residential, commercial and industrial centres to justify its declaration as a separate city. The eight Cities in Western Australia are all situated in the Perth Statistical Division and five of them had been granted city status before the requirements imposed

by the present legislation became operative. These five Cities are Perth (proclaimed in 1856), Fremantle (1929), Subiaco (1952), Nedlands (1959), and South Perth (1959). The Town of Melville was declared a city on 3 May 1968, the Shire of Perth was redesignated the City of Stirling with effect from 24 January 1971 and the Town of Gosnells was declared a city on 1 July 1977, having satisfied the requirements for city status provided by the Local Government Act.

The boundaries of local government districts as they existed at 30 June 1978 are delineated on the maps of the State at the end of this *Chapter* and the names and designations as at that date are given in accompanying lists.

Constitution and Electoral Provisions

The provisions of the Local Government Act relating to the composition of a City Council or a Town Council require that, in addition to the Mayor, there shall be, where the population is less than 1,000, six councillors; where the population is between 1,000 and 5,000, nine councillors; and if the population exceeds 5,000, twelve councillors if the district is not divided into wards but, where the district is divided into wards, three councillors for each ward. It is provided that a Shire Council shall consist of not less than five nor more than thirteen members, including the President.

Two methods of election to the office of Mayor or of President are prescribed. In the case of a City or Town, election is usually by a poll of the electors enrolled for the district. The President of a Shire is usually elected by the councillors from among their own number. It is provided, however, that a City or Town may adopt the system of election of the Mayor by the councillors, and that a Shire may conduct a poll of its electors for election to the office of President. The question of the adoption of the alternative system must, in all cases, be determined by submission to a poll of the electors, after delivery to the Mayor or the President of a resolution of a majority of the councillors or a petition signed by one-tenth of the electors, or by fifty electors, whichever is the greater. If not less than 15 per cent of eligible electors vote at the poll and a majority of the valid votes cast are in favour of the proposed alteration, the Governor shall order its adoption.

The Act constitutes the office of Deputy Mayor, in the case of a City or a Town, and of Deputy President in the case of a Shire, and requires that the Council shall elect one of the councillors to the office.

Provision is made for local government elections to be held on the fourth Saturday in May of each year but in specified circumstances the Governor may, by proclamation, appoint a Saturday in May, earlier than the fourth Saturday, to be the election date. Membership of a Council is elective in all cases, the qualified electors being adult natural-born or naturalised British subjects who own or occupy rateable land in the district. The preferential system of voting is used and representation is generally on the basis of wards into which the district may be divided. Plural voting applies, an elector being entitled, in accordance with the rateable value of the property owned or occupied by him, to a number of votes which may not, however, exceed four in elections for Mayor or President, or two in elections for councillor. Voting is not compulsory. The Act contains provisions enabling nominees of corporations owning land in a district to vote at local government elections and to be elected to membership of the Council. Subject to disqualification on certain specified grounds, all adult persons who are natural-born or naturalised British subjects owning or occupying rateable land within the district are eligible for election to the Council of the district whether as Mayor, President or councillor, provided that in the case of occupiers their names appear on the Council's electoral roll.

The term of office of a Mayor or a President is two years if elected by the electors of the district, or one year if elected by the Council. Councillors are elected for a term of three years, as near as practicable to one-third of their number retiring each year. On the expiration of their term of office all members, including the Mayor and the President, are eligible for re-election if not subject to any of the disqualifications contained in the Act.

It is provided that, if in a particular district there should at any time be no Council or insufficient councillors to form a quorum, a Commissioner may be appointed to exercise all the powers of the local authority.

Functions of Local Authorities

The functions and powers of local authorities are extremely diverse in character. They are prescribed in detail in the Local Government Act and some of the more important of them are referred to in later Chapters of the Year Book. For example, reference to local government activity in the fields of road construction and maintenance will be found in Chapter VI, Part 1 and Chapter IX, Part 3; the provision of parks, gardens and recreation grounds in Chapter V, Part 2; libraries in Chapter V, Part 2; public transport facilities in Chapter IX, Part 3; water supplies in Chapter VII, Part 2; town planning and building control in Chapter V, Part 5; and the licensing of vehicles in Chapter IX, Part 3. Among the many other powers of local authorities are those relating to hospitals and nursing services, kindergartens, hostels for school children, community centres, dental clinics, infant and maternal health centres, day nurseries, jetties, swimming pools, sanitation and disposal of refuse, fire prevention, eradication of noxious weeds and vermin, electricity generation, aerodromes, abattoirs, quarries, pounds and cemeteries. Under the provisions of the Health Act local authorities are responsible for certain aspects of health administration.

The operations of any local government authority may be subject to investigation by a person appointed by the Governor or the Minister and having, for the purposes of the inquiry, the powers of a Royal Commission.

Financial Provisions

Financial powers of local authorities, although derived mainly from the Local Government Act, are also provided by other statutes, including the Health Act, the Fire Brigades Act, the Cemeteries Act, and the Library Board of Western Australia Act. Government grants also constitute an important source of revenue for local government authorities. These are granted for specific purposes, for example, road works, or for general purposes, such as grants received under the provisions of the *Local Government (Personal Income Tax Sharing) Act 1976*. In accordance with the *Local Government (Personal Income Tax Sharing) Act 1976*, a State Government was required to constitute a Local Government Grants Commission by 30 June 1978. The Act also requires each State to allocate not less than 30 per cent of the funds among local government authorities on a population basis, but account may also be taken of the area of the authority, population density or any other matter agreed upon between the Commonwealth and the State. The remaining funds are to be allocated having regard to the special needs and disabilities of local authorities.

State legislation constituting the Western Australian Local Government Grants Commission became effective on 11 May 1978, under the authority of the *Local Government Grants Act, 1978*. The Act prescribes that 80 per cent of the State's entitlement be distributed on primarily a population basis. The Minister has discretion to vary this percentage, subject to the requirement that not less than 30 per cent of the funds are distributed on that basis. The remaining 20 per cent of the funds are to be allocated upon the recommendations of the Local Government Grants Commission according to the special needs of local government authorities. The Minister is empowered to request the commission to review its recommendations. In such circumstances, the Commission shall re-submit its recommendations to the Minister with, or without amendment.

The general rate for a local government district in any year is determined by dividing the sum required to make up the difference between anticipated expenditure and estimated revenue from sources other than rates for that year by the total value of rateable property in the district. However, a Council may impose a rate which would yield less than the amount required to balance its budget, subject to approval by the Minister. In assessing the value of rateable property, every local authority must adopt valuations made by the State Taxation Department, by the water supply authority for the district, or by a qualified valuer (or valuers) appointed by the Council. The Act provides for the constitution of Valuation Appeal Courts, to which appeals may be made on matters concerning valuations of property and liability for rates as assessed by the Council.

Valuations may be on the basis of either 'unimproved value' or 'annual value'. The unimproved value generally represents the price which the rated land might be expected to realise if sold on the open market and, as the term implies, excludes any improvements. The annual value is an estimate of the annual rental value of the property including improvements, but with a prescribed deduction to cover rates, repairs, insurance and other related expenditure. Generally, City Councils and Town Councils are required to assess the general rate on the basis of annual value, and Shire Councils on unimproved value. It is provided, however, that any Council may, under certain specified conditions, adopt the alternative basis. Although in general a Council is required to levy a rate which is uniform throughout its district, it may differentiate in rating by charging a higher rate in a specified area where expenditure, including loan interest and repayments, is incurred in providing special services for the benefit of that area. Councils may charge a penalty on unpaid rates. The prescribed maximum percentage in applying an interest penalty is 10 per cent.

Local authorities are authorised to raise loans for works and undertakings and for the liquidation of existing loan debts. A Council may, with the written consent of the Minister obtain advances from a bank for a budget deficiency, for the installation of sewerage connections and septic tanks, and for other work approved by the Governor. With the written permission of the Minister a Council may also borrow from a permanent building society to enable it to acquire or develop land for the purpose of subdivision into residential lots. Money may also be borrowed by the sale of debentures, repayment being either by the system of reducible principal or by means of a sinking fund. Payments to debenture holders are made at prescribed intervals. Under the system of reducible principal, the local authority undertakes to pay both principal and interest by fixed instalments. Where redemption is by means of a sinking fund, the local authority is required to establish and maintain the necessary fund at the State Treasury. Interest on the loan is normally paid half-yearly and the full amount of the loan is repaid at maturity.

The extent of loan raisings for works and undertakings is controlled by a provision which, except with the specific approval of the Governor, imposes a limit on the borrowings of an authority. The total amount of loans for which a Council may be indebted at any one time is a sum equal to ten times the amount obtained by subtracting from the average of the ordinary revenue of the authority during the preceding two years the average, for the same period, of its annual expenditure on the servicing of loans. The legislation allows that balances standing to the credit of sinking funds for loan repayment, as well as amounts actually repaid, may be deemed to be repayments for the purposes of calculating net total debt. In the case of borrowings to liquidate existing loans, it is provided that the money raised shall not exceed the outstanding balance of the loan.

Before a loan may be raised by the issue of debentures, approval of the borrowing must be obtained from the State Treasury and the local authority must then publish in a newspaper and in the *Government Gazette of Western Australia* a notification of its intention to borrow money, including a statement of the amount of the proposed loan, its purpose and other relevant matters. Except in the case of a loan to liquidate an existing loan debt, the ratepayers of the district may demand that the proposition be submitted to a poll. If less than 15 per cent of the ratepayers vote at the poll, or a majority of the votes are in favour of the loan, the raising of the loan is approved.

Certain of the works and undertakings for which loan moneys may be used are specified in the Local Government Act. They include the construction of streets, roads and bridges, sewers, drains and water works; the erection or purchase of electric lighting plant, gas works and stone quarries; the provision of hostels for school children, libraries and other recreational facilities; the construction of civic and other buildings; and the purchase of land, materials and equipment. Where a particular work or undertaking is not specified in the Act the Governor may approve of it as a project for which money may be borrowed.

The financial transactions of local government authorities are subject to annual audit either by an auditor (or auditors) appointed by the Council or by a government inspector appointed by the Minister. To qualify for the office of auditor, a person must

be a member of a specified institute or society of accountants and be registered as an auditor under the Companies Act. Appointment is for a term not exceeding two years, at the end of which time the holder of the office is eligible for reappointment.

The financial year for all Councils ends on 30 June.

Details of the revenue and expenditure of local authorities during the three-year period ending with the financial year 1976-77 are given in the section *Local Government Finance* in Chapter VI, Part 1.

Information in greater detail and particulars relating to the financial operations of individual local authorities are given in the annual publication *Statistics of Western Australia—Local Government* (Catalogue No. 1303·5), issued by the Western Australian Office of the Bureau.

STATISTICAL DIVISIONS

The local government districts are used as the basis of presentation of data derived not only from the population census but also from many of the regular statistical collections. Information presented in this way is valuable when considering activities in particular local government areas but is often more detailed than is required for a broader geographical assessment. For this reason, the local government districts are combined into statistical divisions which provide significant areas for the publication of statistics in a convenient summary form.

The partition of the Australian States into statistical divisions originated from a resolution of a conference of 1928 between the Federal Health Council of Australia and the Statisticians of the Commonwealth and the States concerning the need for the delineation of areas appropriate for the purposes of statistical tabulation. They first became operative in 1929 after consultation between the Australian Statistician, the Statisticians of the States in collaboration with the State health authorities, and the Commonwealth Department of Health. Although statistical divisions were devised initially for use in the compilation and presentation of vital statistics, the advantages of extending the system to other fields of statistical investigation were recognised at once and it soon came to have general application in cases where consideration of geographic areas was relevant.

The statistical divisions of Western Australia and their component local government areas at 30 June 1978 are listed on the following pages and are shown on the accompanying maps.

LIST OF STATISTICAL DIVISIONS

with component Local Government Areas at 30 June 1978

(Statistical divisions are indicated thus: *SOUTH-WEST*; sub-divisions thus: *BLACKWOOD*; local government areas thus: Manjimup. Cities are marked (C) and Towns (T), all other local government areas being Shires.)*PERTH*

CENTRAL METROPOLITAN

Claremont (T)
Cottesloe (T)
Mosman Park (T)
Nedlands (C)
Peppermint Grove
Perth (C)
Subiaco (C)

EAST METROPOLITAN

Bassendean (T)
Bayswater
Kalamunda
Mundaring
Swan

NORTH METROPOLITAN

Stirling (C)
Wanneroo

SOUTH-WEST METROPOLITAN

Cockburn (T)
East Fremantle (T)
Fremantle (C)
Kwinana (T)
Melville (C)
Rockingham

SOUTH-EAST METROPOLITAN

Armadale-Kelmscott
Belmont
Canning (T)
Gosnells (C)
Serpentine-Jarrahdale
South Perth (C)

SOUTH-WEST

MURRAY

Mandurah
Murray
Waroona

PRESTON

Bunbury (T)
Capel
Collie
Dardanup
Donnybrook-Balingup
Harvey

VASSE

Augusta-Margaret River
Busselton

BLACKWOOD

Boyp Brook
Bridgetown-Greenbushes
Manjimup
Nannup

LOWER GREAT SOUTHERN

PALLINUP

Broomehill
Gnowangerup
Katanning
Kent
Kojonup
Tambellup
Woodanilling

*LOWER GREAT SOUTHERN—con-
tinued*

KING

Albany (T)
Albany
Cranbrook
Denmark
Plantagenet

UPPER GREAT SOUTHERN

WILLIAMS

Boddington
Brookton
Cuballing
Dumbleyung
Narrogin (T)
Narrogin
Pingelly
Wagin
Wandering
West Arthur
Wickepin
Williams

LAKES

Corrigin
Kondinin
Kulin
Lake Grace

MIDLANDS

MOORE

Chittering
Dandaragan
Gingin
Moora
Victoria Plains

AVON

Beverley
Cunderdin
Dalwallinu
Dowerin
Goomalling
Koorda
Northam (T)
Northam
Quairading
Tammin
Toodyay
Wongan-Ballidu
Wyalkatchem
York

CAMPION

Bruce Rock
Kellerberrin
Merredin
Mount Marshall
Mukinbudin
Narembeen
Nungarin
Trayning
Westonia
Yilgarn

SOUTH-EASTERN

LEFROY

Boulder
Coolgardie
Kalgoorlie (T)
Laverton
Leonora
Menzies

DUNDAS

Dundas
Esperance
Ravensthorpe

CENTRAL

GASCOYNE

Carnarvon
Exmouth
Shark Bay
Upper Gascoyne

CARNEGIE

Cue
Meekatharra
Mount Magnet
Murchison
Sandstone
Wiluna
Yalgoo

GREENOUGH

Carnamah
Chapman Valley
Coorow
Geraldton (T)
Greenough
Irwin
Mingenew
Morawa
Mullewa
Northampton
Perenjori
Three Springs

PILBARA

DE GREY

East Pilbara
Port Hedland

ASHBURTON

Roebourne
West Pilbara

KIMBERLEY

ORD

Halls Creek
Wyndham-East Kimberley

FITZROY

Broome
West Kimberley

LIST OF LOCAL GOVERNMENT AREAS at 30 June 1978

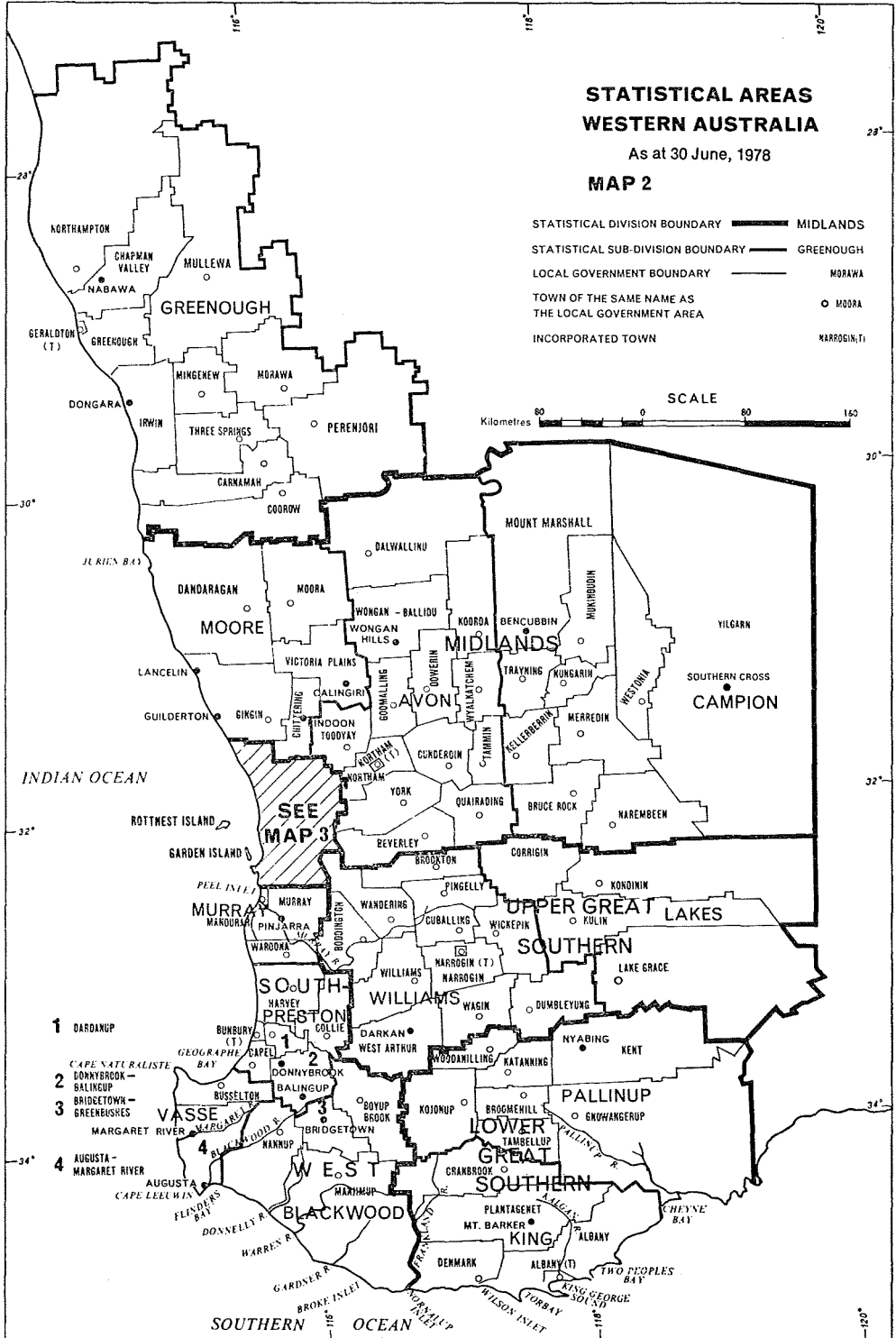
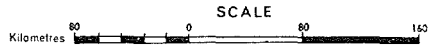
Local government area	City (C) Town (T) Shire (S)	Statistical division in which situated	Local government area	City (C) Town (T) Shire (S)	Statistical division in which situated
ALBANY	T.	Lower Great Southern	Mandurah	S.	South-West
Albany	S.	Lower Great Southern	Manjimup	S.	South-West
Armadale-Kelmscott	S.	Perth	Meekatharra	S.	Central
Augusta-Margaret River	S.	South-West	MELVILLE	C.	Perth
BASSENDAN	T.	Perth	Menzies	S.	South-Eastern
Bayswater	S.	Perth	Merredin	S.	Midlands
Belmont	S.	Perth	Mingenew	S.	Central
Beverly	S.	Midlands	Moora	S.	Midlands
Boddington	S.	Upper Great Southern	Morawa	S.	Central
Boulder	S.	South-Eastern	MOSMAN PARK	T.	Perth
Boyup Brook	S.	South-West	Mount Magnet	S.	Central
Bridgetown-Greenbushes	S.	South-West	Mount Marshall	S.	Midlands
Brookton	S.	Upper Great Southern	Mukinbudin	S.	Midlands
Broome	S.	Kimberley	Mullewa	S.	Central
Broomehill	S.	Lower Great Southern	Mundaring	S.	Perth
Bruce Rock	S.	Midlands	Murchison	S.	Central
BUNBURY	T.	South-West	Murray	S.	South-West
Busselton	S.	South-West	Nannup	S.	South-West
CANNING	T.	Perth	Narembeen	S.	Midlands
Capel	S.	South-West	NARROGIN	T.	Upper Great Southern
Carnamah	S.	Central	Narrogin	S.	Upper Great Southern
Carnarvon	S.	Central	NEDLANDS	C.	Perth
Chapman Valley	S.	Central	NORTHAM	T.	Midlands
Chittering	S.	Midlands	Northam	S.	Midlands
CLAREMONT	T.	Perth	Northampton	S.	Central
COCKBURN	T.	Perth	Nungarin	S.	Midlands
Collie	S.	South-West	Peppermint Grove	S.	Perth
Coalgardie	S.	South-Eastern	Perenjori	S.	Central
Coorow	S.	Central	PERTH	C.	Perth
Corrigin	S.	Upper Great Southern	Pingelly	S.	Upper Great Southern
COTTESLOE	T.	Perth	Plantagenet	S.	Lower Great Southern
Cranbrook	S.	Lower Great Southern	Port Hedland	S.	Pilbara
Cuballing	S.	Upper Great Southern	Quairading	S.	Midlands
Cue	S.	Central	Ravensthorpe	S.	South-Eastern
Cunderdin	S.	Midlands	Rockingham	S.	Perth
Dalwallinu	S.	Midlands	Roebourne	S.	Pilbara
Dandaragan	S.	Midlands	Sandstone	S.	Central
Dardanup	S.	South-West	Serpentine-Jarrahdale	S.	Perth
Denmark	S.	Lower Great Southern	Shark Bay	S.	Central
Donnybrook-Balingup	S.	South-West	SOUTH PERTH	C.	Perth
Dowerin	S.	Midlands	STIRLING	C.	Perth
Dumbleyung	S.	Upper Great Southern	SUBIACO	C.	Perth
Dundas	S.	South-Eastern	Swan	S.	Perth
EAST FREMANTLE	T.	Perth	Tambellup	S.	Lower Great Southern
East Pilbara	S.	Pilbara	Tammin	S.	Midlands
Esperance	S.	South-Eastern	Three Springs	S.	Central
Exmouth	S.	Central	Toodyay	S.	Midlands
FREMANTLE	C.	Perth	Trayning	S.	Midlands
GERALDTON	T.	Central	Upper Gascoyne	S.	Central
Gingin	S.	Midlands	Victoria Plains	S.	Midlands
Gnowangerup	S.	Lower Great Southern	Wagin	S.	Upper Great Southern
Goomalling	S.	Midlands	Wandering	S.	Upper Great Southern
GOSNELLS	C.	Perth	Wanneroo	S.	Perth
Greenough	S.	Central	Waroona	S.	South-West
Halls Creek	S.	Kimberley	West Arthur	S.	Upper Great Southern
Harvey	S.	South-West	West Kimberley	S.	Kimberley
Irwin	S.	Central	West Pilbara	S.	Pilbara
Kalamunda	S.	Perth	Westonia	S.	Midlands
KALGOORLIE	T.	South-Eastern	Wickepin	S.	Upper Great Southern
Katanning	S.	Lower Great Southern	Williams	S.	Upper Great Southern
Kellerberrin	S.	Midlands	Wiluna	S.	Central
Kent	S.	Lower Great Southern	Wongan-Ballidu	S.	Midlands
Kojonup	S.	Lower Great Southern	Woodanilling	S.	Lower Great Southern
Kondinin	S.	Upper Great Southern	Wyalkatchem	S.	Midlands
Koorda	S.	Midlands	Wyndham-East Kimberley	S.	Kimberley
Kulin	S.	Upper Great Southern	Yalgoo	S.	Central
KWINANA	T.	Perth	Yilgarn	S.	Midlands
Lake Grace	S.	Upper Great Southern	York	S.	Midlands
Laverton	S.	South-Eastern			
Leonora	S.	South-Eastern			

STATISTICAL AREAS WESTERN AUSTRALIA

As at 30 June, 1978

MAP 2

- STATISTICAL DIVISION BOUNDARY MIDLANDS
- STATISTICAL SUB-DIVISION BOUNDARY GREENOUGH
- LOCAL GOVERNMENT BOUNDARY MORAWA
- TOWN OF THE SAME NAME AS THE LOCAL GOVERNMENT AREA MOORA
- INCORPORATED TOWN NARROGIN(T)

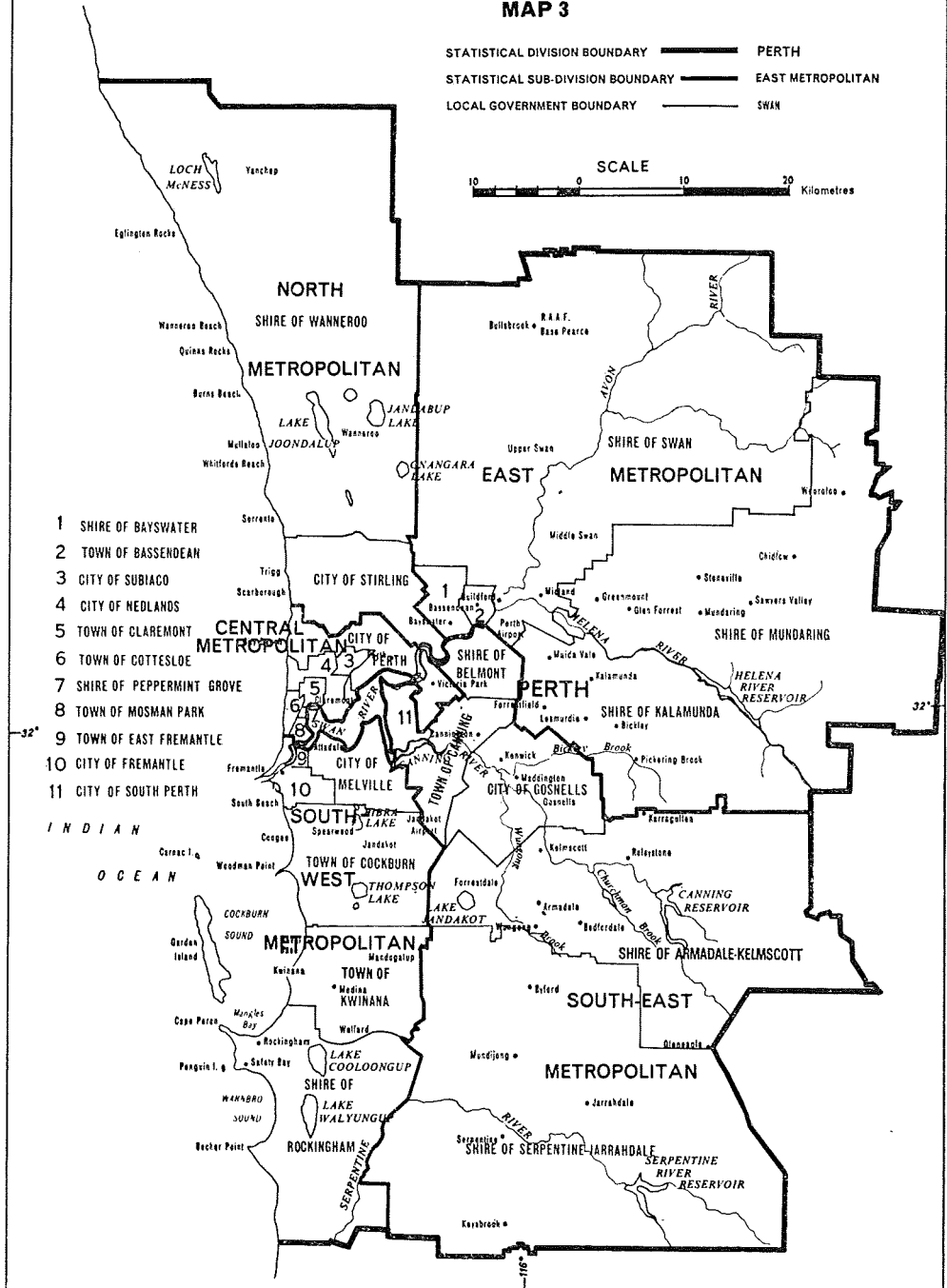
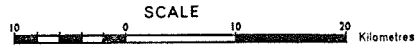


- 1 DARDANUP
- 2 CAPE NATURALISTE
DOHRNBROOK -
SALICUP
- 3 BRIDGETOWN -
GREENESKES
- 4 AUGUSTA -
MARGARET RIVER

**STATISTICAL AREAS
WESTERN AUSTRALIA**
As at 30 June, 1978

MAP 3

STATISTICAL DIVISION BOUNDARY ——— PERTH
 STATISTICAL SUB-DIVISION BOUNDARY ——— EAST METROPOLITAN
 LOCAL GOVERNMENT BOUNDARY ——— SWAN



- 1 SHIRE OF BAYSWATER
- 2 TOWN OF BASSENDEAN
- 3 CITY OF SUBIACO
- 4 CITY OF HEDLANDS
- 5 TOWN OF CLAREMONT
- 6 TOWN OF COTTESLOE
- 7 SHIRE OF PEPPERMINT GROVE
- 8 TOWN OF MOSMAN PARK
- 9 TOWN OF EAST FREMANTLE
- 10 CITY OF FREMANTLE
- 11 CITY OF SOUTH PERTH

CHAPTER IV—POPULATION AND VITAL STATISTICS

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CHAPTER IV—POPULATION AND VITAL STATISTICS

Part 1—Population

The State of Western Australia, although comprising almost one-third of the total area of Australia, contains only about one-twelfth of the population.

At the end of 1829, the year of establishment of the Colony, there were 1,000 persons in Western Australia. Progress in the early years was slow, and in 1849 the population was still less than 5,000. Transportation of convicts, begun in the following year, resulted in some acceleration, but it was not until the discovery of gold in the Kimberley in 1885 and the rich finds at Coolgardie in 1892 and at Kalgoorlie in 1893 that any marked increase took place. This development was so rapid that, in the last decade of the century, the population was almost quadrupled, from 48,500 at the end of 1890 to 180,000 in 1900, representing an average annual rate of increase of 14·01 per cent. The rate of growth in those years has never been approached in the present century, but the average annual rate of increase of Western Australia's population from the Census of 1901 to March 1978, 2·48 per cent, has been higher than that of any other State and of Australia as a whole (1·74 per cent).

THE CENSUS

The first systematic census of the Colony of Western Australia was taken in 1848, since when there have been fifteen enumerations, at the dates shown in the first table in this Part. The Census of 1881 was the first taken simultaneously in all the Australian Colonies and formed part of the first simultaneous census of the British Empire.

The first census of the Commonwealth of Australia conducted under the authority of the *Census and Statistics Act* 1905 was taken in 1911. The Act provided that a census should be taken in that year 'and in every tenth year thereafter'. In 1930 this provision was amended by the addition of the words 'or at such other time as is prescribed'. The depressed economic conditions of 1931 caused the postponement of the third Australian census to 1933, and because of war conditions the fourth Australian census was not taken until 1947. Consideration was then given to holding future censuses in the series of years originally provided for by the Act. However, it was thought that the interval from 1947 to 1951 was too short, and it was therefore decided to take the fifth census in 1954, at the mid-point of the period from 1947 to 1961. The sixth census was held in 1961. Owing to the administrative demand for more frequent counts of the population, censuses were taken in 1966, 1971 and 1976.

Scope of the Census

The Australian census is conducted on a *de facto* basis, *i.e.* it records the population actually in Australia, persons being enumerated at the place where they spent the night of the census, and the population so recorded being credited to that place whether or not it is the usual place of residence.

The census covers the population of Australia and the dwellings in which it lives. The only persons excluded from the census tabulations are diplomatic representatives of overseas countries and their families and staffs having diplomatic immunity in accordance with international practice. Prior to the Census of 30 June 1971 full-blood Australian Aborigines were also excluded (see the following section *Aborigines*).

The term 'dwelling', as defined in the *Census and Statistics Act*, means 'a building, erection, or tenement, whether permanent or temporary, which is wholly or partly used for the purpose of human habitation and includes any ship or other vessel in any port of the Commonwealth or in any inland waters thereof, or any ship or vessel on a passage between any two Commonwealth ports'.

Aborigines. Before an amendment to the Australian Constitution in 1967, it was provided by section 127 that 'in reckoning the numbers of the people of the Commonwealth, or of a State or other part of the Commonwealth, aboriginal natives shall not be counted'. This provision was deleted following a referendum held on 27 May 1967 which resulted in a large majority of votes in favour of its repeal. The enabling Act, the *Constitution Alteration (Aboriginals)* 1967, came into operation on 10 August 1967.

With regard to the original provision, Commonwealth legal authorities were of the opinion that persons of the half-blood were not 'aboriginal natives' within the meaning of the Constitution, and *a fortiori* that persons of less than half Aboriginal blood were not Aboriginal natives. Accordingly, only persons having Aboriginal blood to a degree greater than one-half were excluded from the census tabulations. Dwellings occupied solely by full-blood Aborigines so defined were similarly excluded.

Under-enumeration

Post-enumeration surveys, which are designed to measure the degree of error in a census, were conducted after both the 1971 and 1976 Censuses, by specially trained interviewers. Net under-enumeration was derived by comparing results from the Census and the post-enumeration survey for the same individuals, and identifying omissions and duplications in the Census.

While every effort is made to minimise under-enumeration in the Census, some inevitably remains for various reasons (*e.g.* inadvertent omission of very young children, treatment by the collector of an occupied dwelling as unoccupied). Refusal by householders to complete the Census Schedule is not a significant cause of under-enumeration, as estimates by the collector are used in such cases. These and similar problems are common to all population censuses, and although under-enumeration has increased in Australia since the 1971 Census, it is of a similar order to that experienced by comparable countries. For example, the percentage adjustment for under-enumeration at the 1970 Census of the United States, was measured at 2.5 per cent.

The 1976 post-enumeration survey was based on a sample size of 2/3 per cent of households, compared with 1/4 per cent for 1971. The sample size was increased to provide more reliable data on the characteristics (*e.g.* sex, age) of omitted persons.

Persons living in non-private dwellings (*e.g.* hotels, motels, hospitals) and sparsely settled areas were excluded from both the 1971 and 1976 post-enumeration surveys because of operational difficulties in conducting follow-up interviews. However, these amount only to about 5 per cent of the population and hence any under-enumeration of them is unlikely to have a significant effect on the total level of under-enumeration.

Adjustments have been made to the Australian and State totals for numbers of males and females at the 1971 Census as well as to total population for capital city divisions. In addition, for the 1976 Census, adjustments have been made to the numbers at each age at the Australian and State levels and to total population at the local government area level.

The 1976 Census

Processing of the 1976 Census data was divided into two stages. The first stage, completed in October 1976, involved processing details relating to age, sex, marital status, birthplace, and occupied and unoccupied dwellings. The second stage, involving processing of all other characteristics, was completed in October 1978. Because the second stage involved sample processing, the final results of the census are subject to sampling error and components of tables may not add to totals. Further information on sampling errors is contained in the publication *Sampling Errors Associated With Census Estimates* (Catalogue No. 2129.0) issued by the Australian Statistician, Canberra.

Population at each Census

The population recorded in Western Australia at each census from 1848, its relation to the Australian population, and the masculinity are shown in the following table.

POPULATION AT EACH CENSUS DATE—1848—1976 (a)
WESTERN AUSTRALIA AND AUSTRALIA

Date of census	Western Australia			Australia	Western Australia	
	Males	Females	Persons	Persons (b)	Proportion of Australia (per cent)	Masculinity (c)
1848—10 October	2,818	1,804	4,622	326,500	1.42	156.21
1854—30 September	7,779	3,964	11,743	671,500	1.75	196.24
1859—31 December	9,522	5,315	14,837	1,097,000	1.35	179.15
1870—31 March	15,375	9,410	24,785	1,606,000	1.54	163.39
1881—3 April	17,062	12,646	29,708	2,250,194	1.32	134.92
1891—5 April	29,807	19,975	49,782	3,177,823	1.57	149.22
1901—31 March	112,875	71,249	184,124	3,773,801	4.88	158.42
1911—3 April	161,565	120,549	282,114	4,455,005	6.33	134.02
1921—4 April	177,278	155,454	332,732	5,435,734	6.12	114.04
1933—30 June	233,937	204,915	438,852	6,629,839	6.62	114.16
1947—30 June	258,076	244,404	502,480	7,579,358	6.63	105.59
1954—30 June	330,358	309,413	639,771	8,986,530	7.12	106.77
1961—30 June	375,452	361,177	736,629	10,508,186	7.01	103.95
1966—30 June	432,569	415,531	848,100	11,599,498	7.31	104.10
1971—30 June (d)	534,100	509,000	1,043,100	12,937,200	8.06	104.93
1976—30 June (d)	596,800	573,100	1,169,800	13,915,500	8.41	104.14

(a) Figures for 30 June 1961 and earlier exclude full-blood Aborigines; those for 1966 and later refer to total population (i.e. including Aborigines). (b) Figures for dates prior to 3 April 1881 are estimates. (c) Number of males to each 100 females. (d) Census figures adjusted to take account of under-enumeration.

Characteristics of the Population

Masculinity. The sharp rise in masculinity between the Census of 1848 and the three succeeding enumerations, as shown in the preceding table, was doubtless a result of the transportation of convicts which began in 1850 and continued until 1868. During this period a total of 9,668 convicts, all of whom were males, were brought to the Colony. The high levels of masculinity disclosed by the Censuses of 1891 and 1901 may be attributed to the influx of a predominantly male population following the gold discoveries of 1885 and later years.

The masculinity of Western Australia's population has continued to be high. At 30 June 1976, it stood at 104.14 and was higher than in any other State and significantly higher than the Australian figure of 100.62.

Age. The following table shows the numbers and proportions of the population of Western Australia in selected age groups at each census from 1954 to 1976. The age groups have been chosen as representing, in a general sense, such sectors as the pre-school population, children of school age, minors, women of child-bearing age, the economically active population, and those beyond normal working age.

POPULATION IN SELECTED AGE GROUPS (a)—CENSUSES, 1954 TO 1976

Age last birthday (years)	Number in each age group					Per cent of total				
	Census, 30 June—					Census, 30 June—				
	1954	1961	1966	1971(b)	1976(b)	1954	1961	1966	1971(b)	1976(b)
MALES										
Under 6	45,350	50,559	53,830	64,800	67,100	13.73	13.47	12.44	12.14	11.25
6-12	44,075	56,195	64,380	74,100	78,900	13.34	14.97	14.88	13.87	13.22
6-15	59,028	78,270	90,409	105,200	113,500	17.87	20.85	20.90	19.70	19.03
Under 18	113,847	141,371	160,461	190,400	202,300	34.46	37.65	37.09	35.64	33.89
Under 21	126,605	157,345	183,031	221,300	234,300	38.32	41.91	42.31	41.43	39.26
15-44	142,694	150,826	183,495	244,900	278,500	43.19	40.17	42.42	45.86	46.66
15-64	208,670	228,248	268,110	340,200	386,300	63.16	60.79	61.98	63.69	64.73
65 and over	22,262	24,593	28,850	34,400	41,300	6.74	6.55	6.67	6.45	6.92
All ages	330,358	375,452	432,569	534,100	596,800	100.00	100.00	100.00	100.00	100.00

For footnotes, see end of table.

POPULATION IN SELECTED AGE GROUPS (a)—CENSUSES, 1954 TO 1976—continued

Age last birthday (years)	Number in each age group					Per cent of total				
	Census, 30 June—					Census, 30 June—				
	1954	1961	1966	1971(b)	1976(b)	1954	1961	1966	1971(b)	1976(b)
FEMALES										
Under 6	43,871	47,888	51,154	61,400	63,700	14.18	13.26	12.31	12.06	11.11
6-12	41,897	54,243	61,118	71,500	74,100	13.54	15.02	14.71	14.04	12.93
6-15	56,210	75,024	86,218	101,700	106,800	18.17	20.77	20.75	19.99	18.64
Under 18	109,142	134,811	152,855	182,700	191,700	35.27	37.33	36.79	35.88	33.44
Under 21	121,393	150,128	173,882	211,000	222,900	39.23	41.57	41.85	41.46	38.90
15-44	131,254	143,056	170,476	221,200	258,200	42.42	39.61	41.03	43.46	45.05
15-64	189,062	213,573	250,092	313,000	361,200	61.10	59.13	60.19	61.49	63.03
65 and over	25,027	30,504	36,279	42,900	52,200	8.09	8.45	8.73	8.42	9.11
All ages	309,413	361,177	415,531	509,000	573,100	100.00	100.00	100.00	100.00	100.00
PERSONS										
Under 6	89,221	98,447	104,984	126,200	130,800	13.95	13.36	12.38	12.10	11.18
6-12	85,972	110,438	125,498	145,500	153,000	13.44	14.99	14.80	13.95	13.08
6-15	115,238	153,294	176,627	207,000	220,400	18.01	20.81	20.83	19.84	18.84
Under 18	222,989	276,182	313,316	373,000	393,900	34.85	37.49	36.94	35.76	33.67
Under 21	247,998	307,473	356,913	432,300	457,200	38.76	41.74	42.08	41.45	39.08
15-44	273,948	293,882	353,971	466,100	536,600	42.82	39.90	41.74	44.69	45.87
15-64	397,732	441,821	518,202	653,200	747,500	62.17	59.98	61.10	62.62	63.90
65 and over	47,289	55,097	65,129	77,300	93,500	7.39	7.48	7.68	7.41	7.99
All ages	639,771	736,629	848,100	1,043,100	1,169,800	100.00	100.00	100.00	100.00	100.00

(a) Figures for 30 June 1961 and earlier exclude full-blood Aborigines; those for 1966 to 1976 refer to total population (i.e. including Aborigines). (b) Census figures adjusted to take account of under-enumeration.

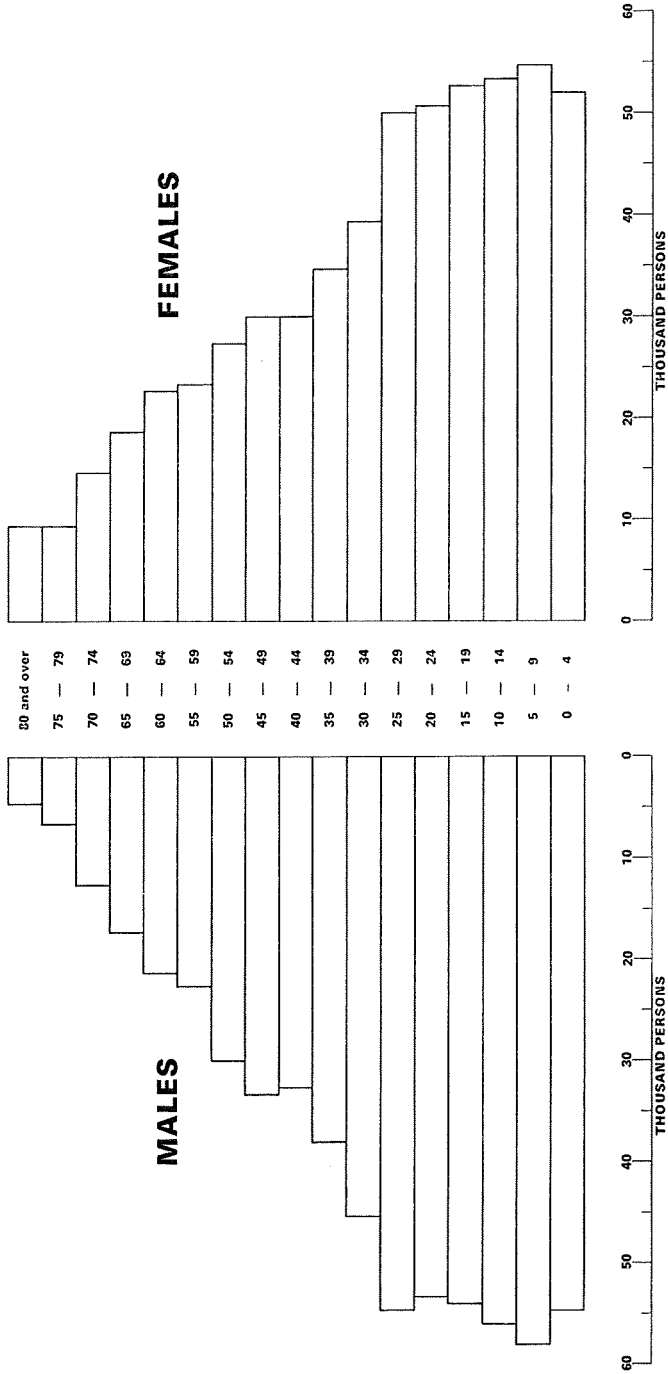
AGE DISTRIBUTION OF THE POPULATION—CENSUSES (a), 1971 AND 1976

Age last birthday (years)	Census, 30 June 1971		Census, 30 June 1976			
	Persons	Per cent of total	Males	Females	Persons	
					Number	Per cent of total
	'000		'000	'000	'000	
0-4	106.8	10.24	54.7	52.0	106.8	9.13
5-9	104.6	10.03	58.2	54.4	112.6	9.62
10-14	104.1	9.98	56.3	53.2	109.5	9.36
15-19	95.9	9.20	54.2	52.9	107.0	9.15
20-24	96.2	9.23	53.6	51.0	104.6	8.94
25-29	77.2	7.40	54.9	50.3	105.2	9.00
30-34	69.3	6.64	45.0	39.1	84.1	7.19
35-39	60.7	5.82	38.1	35.0	73.1	6.25
40-44	62.3	5.98	32.7	30.0	62.6	5.35
45-49	58.3	5.59	33.4	29.8	63.2	5.41
50-54	46.8	4.48	30.1	27.5	57.6	4.93
55-59	44.7	4.29	23.0	23.1	46.1	3.94
60-64	38.2	3.66	21.2	22.7	43.9	3.75
65-69	31.1	2.98	17.2	18.6	35.8	3.06
70-74	21.4	2.05	12.6	14.4	27.0	2.31
75-79	13.1	1.26	7.0	10.0	17.0	1.45
80-84	7.8	0.75	2.9	5.6	8.5	0.73
85 and over	4.5	0.43	1.6	3.6	5.2	0.44
Total	1,043.1	100.00	596.8	573.1	1,169.8	100.00

(a) Census figures adjusted to take account of under-enumeration.

Population, by Age Group: Census, 30 June 1976

AGE GROUP
(years)



Birthplace. The following table shows the birthplace of the population as recorded at the Censuses of 1971 and 1976.

BIRTHPLACE OF THE POPULATION (a)—CENSUSES, 1971 AND 1976

Birthplace	Census, 30 June 1971				Census, 30 June 1976			
	Males	Females	Persons		Males	Females	Persons	
			Number	Per cent of total			Number	Per cent of total
Australia—	'000	'000	'000		'000	'000	'000	
Western Australia	310.1	308.0	618.1	59.98	314.8	315.4	630.2	55.04
Elsewhere in Australia	65.8	63.3	129.1	12.53	102.3	100.0	202.3	17.67
Total	375.9	371.3	747.2	72.51	417.1	415.3	832.4	72.71
New Zealand	4.3	3.2	7.5	0.73	4.9	3.9	8.9	0.77
Europe—								
United Kingdom and Eire	82.2	74.8	157.0	15.24	90.8	85.8	176.6	15.43
Germany	3.6	3.5	7.1	0.69	3.7	3.7	7.4	0.65
Greece	2.8	2.3	5.0	0.49	2.4	2.1	4.5	0.39
Italy.....	17.1	13.4	30.5	2.96	16.1	13.2	29.3	2.56
Netherlands	6.2	5.0	11.3	1.09	5.8	4.9	10.6	0.93
Poland	2.7	2.0	4.7	0.46	2.5	1.9	4.4	0.38
Yugoslavia	6.2	3.9	10.2	0.99	6.0	4.4	10.4	0.91
Other	8.5	5.9	14.5	1.40	8.5	6.8	15.3	1.33
Total	129.4	110.8	240.3	23.32	135.8	122.8	258.6	22.58
Asia—								
Burma	1.5	1.7	3.2	0.31	1.9	2.1	4.0	0.35
India	4.0	3.9	7.9	0.77	4.9	5.0	9.9	0.86
Malaysia	1.7	1.3	3.0	0.29	2.1	1.9	4.0	0.35
Other	4.6	2.9	7.5	0.73	6.2	5.2	11.4	1.00
Total	11.8	9.8	21.6	2.10	15.1	14.2	29.3	2.56
United States of America	2.4	1.6	4.0	0.39	2.1	1.5	3.6	0.32
Other birthplaces	5.3	4.7	9.9	0.96	6.2	5.9	12.1	1.06
GRAND TOTAL	529.1	501.4	1,030.5	100.00	581.2	563.7	1,144.9	100.00

(a) Figures as recorded at the Census.

Religion; Marital Status. The religion and marital status of the population as recorded at the Censuses of 1971 and 1976 are shown in the following table. The Census and Statistics Act provides that there shall be no penalty for failure to answer the question on religion, and a statement to this effect is contained in the census schedule.

RELIGION AND MARITAL STATUS OF THE POPULATION (a)—CENSUSES, 1971 AND 1976

Classification	Census, 30 June 1971				Census, 30 June 1976			
	Males	Females	Persons		Males	Females	Persons	
			Number	Per cent of total			Number	Per cent of total

RELIGION

Christian—	'000	'000	'000		'000	'000	'000	
Baptist	6.3	7.0	13.3	1.3	7.1	7.3	14.4	1.3
Catholic, Roman Catholic	135.8	132.2	268.0	26.0	141.5	141.8	283.2	24.7
Church of England	180.7	182.1	362.8	35.2	177.4	182.9	360.3	31.5
Lutheran	3.6	3.4	7.0	0.7	3.5	3.6	7.1	0.6
Methodist	41.1	44.2	85.3	8.3	36.9	40.1	77.0	6.7
Presbyterian	23.9	24.5	48.4	4.7	20.9	21.8	42.6	3.7
Other	41.6	43.6	85.1	8.3	43.6	46.9	90.4	7.9
Total, Christian	433.0	436.9	869.9	84.4	430.9	444.3	875.2	76.4

RELIGION AND MARITAL STATUS OF THE POPULATION (a)—CENSUSES, 1971
AND 1976—continued

Classification	Census, 30 June 1971				Census, 30 June 1976			
	Males	Females	Persons		Males	Females	Persons	
			Number	Per cent of total			Number	Per cent of total
RELIGION								
Non-Christian—	'000	'000	'000		'000	'000	'000	
Hebrew	1.6	1.5	3.1	0.3	1.5	1.4	2.9	0.3
Muslim	0.7	0.3	1.0	0.1	1.1	0.8	1.9	0.2
Other	1.1	0.6	1.7	0.2	1.8	1.4	3.3	0.3
Total, Non-Christian	3.4	2.5	5.9	0.6	4.5	3.6	8.1	0.7
Non-classifiable	1.8	1.2	3.0	0.3	3.0	2.4	5.5	0.5
No religious denomination	54.9	35.5	90.4	8.8	69.1	50.4	119.5	10.4
Not stated	36.0	25.3	61.4	6.0	73.6	63.0	136.6	11.9
GRAND TOTAL	529.1	501.4	1,030.5	100.0	581.2	563.7	1,144.9	100.0
MARITAL STATUS								
Never married	272.7	222.3	495.0	48.0	291.8	243.6	535.4	46.8
Married	234.6	231.2	465.8	45.2	260.8	257.6	518.4	45.3
Married but permanently separated (b)	7.4	7.4	14.8	1.4	11.0	12.7	23.6	2.1
Divorced	5.7	5.3	11.0	1.1	8.8	10.2	19.0	1.7
Widowed	8.7	35.1	43.8	4.2	8.8	39.6	48.4	4.2
GRAND TOTAL	529.1	501.4	1,030.5	100.0	581.2 (c)	563.7 (c)	1,144.9 (c)	100.0

(a) Figures as recorded at the Census. (b) Legally or otherwise. (c) Includes not stated.

INTERCENSAL INCREASES

The following table shows the population of Western Australia at each census from 1891 to 1976, and the intercensal gains or losses by natural increase and by migration. It also shows the average annual gains or losses in each intercensal period.

POPULATION—ANALYSIS OF INTERCENSAL INCREASES, 1891–1976
(*000)

Period (a)	Population at beginning of period	Natural increase (b)		Net migration (c)		Total increase		Population at end of period
		Total	Annual average	Total	Annual average	Number	Annual average	
1891–1901 (10 years)	49.8	15.9	1.6	118.4	11.8	134.3	13.4	184.1
1901–1911 (10 years)	184.1	44.2	4.4	53.7	5.4	98.0	9.8	282.1
1911–1921 (10 years)	282.1	51.8	5.2	—1.2	—0.1	50.6	5.1	332.7
1921–1933 (12½ years)	332.7	60.1	4.9	46.0	3.8	106.1	8.7	438.9
1933–1947 (14 years)	438.9	69.4	5.0	—5.8	—0.4	63.6	4.5	502.5
1947–1954 (7 years)	502.5	65.6	9.4	71.7	10.2	137.3	19.6	639.8
1954–1961 (7 years)	639.8	79.4	11.3	17.4	2.5	96.9	13.8	736.6
1961–1966 (5 years)	736.6	53.1	10.6	46.9	9.4	100.0	20.0	836.7
1966–1971 (5 years) (d)	848.1	64.5	12.9	117.9	23.6	182.4	36.5	1,030.5
1971–1976 (5 years) (d) (e)	1,043.1	66.7	13.3	57.5	11.5	(f) 126.7	25.3	1,169.8

(a) For census dates, see first table in this Part. (b) Excess of births registered over deaths registered. (c) Interstate and overseas. Minus sign (—) indicates loss by migration. (d) Figures relate to total population (i.e. including Aborigines); those shown for earlier periods exclude full-blood Aborigines. (e) Census figures adjusted to take account of under-enumeration. (f) Includes an adjustment to balance net migration and recorded births and deaths with the June 1976 estimates of population aged 0–4 years.

GEOGRAPHICAL DISTRIBUTION

Urban, Rural and Migratory Population

At the 1971 and 1976 Censuses a boundary was defined for each population cluster of 1,000 or more persons. These clusters are named 'urban centres' and the population enumerated in them is classified as urban for statistical purposes.

In determining the boundary of an urban centre with a population of 25,000 or more, all contiguous census collectors' districts which were found to have a minimum population density of approximately 200 persons per square kilometre at the census were included. Some areas of lower density were classified as urban in accordance with certain other specified criteria. The term *Major urban* is applied to those centres which had a population of 100,000 or more, and supersedes the term *Metropolitan* as used at previous censuses. Urban Perth is the only such centre in Western Australia.

Around each urban centre with a population of at least 100,000 a further boundary was defined to contain the anticipated development of the urban centre and associated smaller urban centres for a period of at least twenty years. This boundary delimits an area which is now, or is expected to be, in close social and economic contact with the urban centre. It is a fixed boundary, as distinct from the boundary of the urban centre which moves from census to census as urbanisation proceeds. In Western Australia, the area within this fixed boundary is described as the Perth Statistical Division (see maps at the end of Chapter III).

Urban Perth at 30 June 1976 comprised the Cities of Fremantle, Nedlands, Perth, South Perth and Subiaco; the Towns of Bassendean, Claremont, Cottesloe, East Fremantle and Mosman Park; the Shires of Bayswater, Belmont and Peppermint Grove; parts of the Cities of Melville and Stirling, parts of the Towns of Canning, Cockburn and Gosnells, and parts of the Shires of Armadale-Kelmscott, Kalamunda, Mundaring, Swan and Wanneroo.

In delimiting urban centres with a population of less than 25,000 persons all continuous urban growth is included (which, in small urban centres, would not necessarily occur if the density criterion were applied), together with any close but non-contiguous development which could be clearly regarded as part of the centre.

Rural population represents persons enumerated in the area not included in urban centres. The term *Migratory* refers to persons (both passengers and crew) who, at midnight on census night, were enumerated on board ships in Western Australian ports, or ships which had left an Australian port before census night for a next port of call in Western Australia. It includes also those who were enumerated on long-distance trains, motor coaches or aircraft.

The following table shows, for 1971 and 1976, a division of the population of each State and Territory into *Urban, Rural and Migratory*. In the intercensal period each of the States and Territories showed an increase in urban population. In Australia as a whole, urban population increased by 735,061 (6.73 per cent) and rural population by 59,424 (3.26 per cent).

URBAN AND RURAL POPULATIONS (a) (b)—STATES AND TERRITORIES
CENSUSES, 1971 AND 1976

State or Territory	Census, 30 June 1971				Census, 30 June 1976			
	Urban	Rural	Migratory	Total population	Urban	Rural	Migratory	Total population
New South Wales	4,074,627	520,594	5,959	4,601,180	4,239,012	531,657	6,434	4,777,103
Victoria	3,072,044	428,004	2,303	3,502,351	3,203,666	441,610	1,705	3,646,981
Queensland	1,450,008	373,392	3,665	1,827,065	1,634,034	400,905	2,258	2,037,197
South Australia	992,689	179,128	1,890	1,173,707	1,056,956	186,433	1,367	1,244,756
Western Australia	840,340	187,512	2,617	1,030,469	956,077	186,115	2,665	1,144,857
Tasmania	289,580	100,418	415	390,413	301,923	100,368	575	402,866
Northern Territory	55,411	30,605	374	86,390	64,439	32,083	568	97,090
Australian Capital Territory	140,864	3,199	—	144,063	194,517	3,105	—	197,622
AUSTRALIA	10,915,563	1,822,852	17,223	12,755,638	11,650,624	1,882,276	15,572	13,548,472

(a) See text preceding table for definitions of *Urban, Rural, etc.*

(b) Figures as recorded at the Census.

Population of Urban Centres and Bounded Localities

Those urban centres and bounded localities which had a population of more than 200 persons at the 1976 Census are included in the following table.

POPULATION—URBAN CENTRES AND BOUNDED LOCALITIES
CENSUSES, 1971 AND 1976

Urban centre (U) or bounded locality	Population (a)				Intercensal increase or decrease	
	Census, 30 June—					
	1971	1976			Number	Per cent
		Persons	Males	Females			Persons
Albany (U)	13,101	6,745	6,951	13,696	595	4.54
Augusta	350	229	235	464	114	32.57
Australind	430	415	417	832	402	93.49
Beverley	785	375	380	755	-30	-3.82
Boddington	351	180	175	355	4	1.14
Boyanup	303	142	141	283	-20	-6.60
Boyup Brook	688	311	300	611	-77	-11.19
Bridgetown (U)	1,536	652	664	1,316	-220	-14.32
Brookton	659	331	273	604	-55	-8.35
Broome (U)	2,049	1,583	1,337	2,920	871	42.51
Bruce Rock	729	318	285	603	-126	-17.28
Brunswick Junction.....	902	483	410	893	-9	-1.00
Bunbury (U).....	17,815	9,686	9,827	19,513	1,698	9.53
Busselton (U)	4,983	2,749	2,801	5,550	567	11.38
Byford	627	404	418	822	195	31.10
Capel	657	340	329	669	12	1.83
Carnamah	466	251	198	449	-17	-3.65
Carnarvon (U)	4,242	2,713	2,628	5,341	1,099	25.91
Chidlow	204	121	127	248	44	21.57
Collie (U)	6,734	3,456	3,315	6,771	37	0.55
Coolgardie	624	327	316	643	19	3.04
Coorow	215	105	104	209	-6	-2.79
Corrigin	784	446	407	853	69	8.80
Cranbrook	392	202	173	375	-17	-4.34
Cue	287	125	133	258	-29	-10.10
Cunderdin	873	390	366	756	-117	-13.40
Dalwallinu	724	363	320	683	-41	-5.66
Dampier (U)	3,585	1,822	905	2,727	-858	-23.93
Darkan	256	132	134	266	10	3.91
Deanmill	324	155	126	281	-43	-13.27
Denham	323	205	141	346	23	7.12
Denmark	658	387	399	786	128	19.45
Derby (U)	2,538	1,212	1,199	2,411	-127	-5.00
Dongara	331	169	155	324	-7	-2.11
Donnybrook.....	998	503	505	1,008	10	1.00
Dowerin	351	212	209	421	70	19.94
Dumbleyung.....	376	139	124	263	-113	-30.05
Dunsborough	n.a.	135	159	294	..	..
Dwellingup	485	258	192	450	-35	-7.22
Eaton.....	785	722	701	1,423	638	81.27
Esperance (U)	4,874	2,694	2,568	5,262	388	7.96
Exmouth (U)	2,670	1,199	1,137	2,336	-334	-12.51
Geraldton (U)	15,457	9,622	9,151	18,773	3,316	21.45
Gingin	344	169	163	332	-12	-3.49
Gnowangerup (U)	1,009	468	424	892	-117	-11.60
Goldsworthy (U)	1,020	616	373	989	-31	-3.04
Goomalling	757	307	337	644	-113	-14.93
Greenbushes	275	118	114	232	-43	-15.64
Halls Creek	678	373	394	767	89	13.13
Harvey (U)	2,337	1,231	1,187	2,418	81	3.47
Jarrahdale	391	190	166	356	-35	-8.95
Jerramungup	n.a.	116	109	225	..	..
Jurien	n.a.	330	275	605	..	..
Kalbarri	n.a.	365	330	695	..	..
Kalgoorlie-Boulder (U)	20,865	9,896	9,145	19,041	-1,824	-8.74
Kambalda (U)	4,224	2,646	2,138	4,784	560	13.26
Karratha (U)	1,838	2,280	1,963	4,243	2,405	130.85
Katanning (U)	3,670	2,108	2,054	4,162	492	13.41
Kellerberrin (U)	1,306	592	606	1,198	-108	-8.27
Kojonup	983	472	472	944	-39	-3.97
Kondinin	311	198	170	368	57	18.33
Koolyanobbing	306	169	127	296	-10	-3.27
Koorda	411	222	197	419	8	1.95
Kuln	309	190	167	357	48	15.53
Kununurra (U)	1,240	822	718	1,540	300	24.19
Kwinana New Town (U)	10,108	5,538	5,443	10,981	873	8.64

POPULATION—URBAN CENTRES AND BOUNDED LOCALITIES
CENSUSES, 1971 AND 1976—continued

Urban centre (U) or bounded locality	Population (a)				Intercensal increase or decrease	
	Census, 30 June—				Number	Per cent
	1971	1976				
	Persons	Males	Females	Persons		
Lake Grace	557	340	276	616	59	10.59
Lancelin	210	143	104	247	37	17.62
Laverton	n.a.	443	405	848	..	..
Leonora	594	259	209	468	-126	-21.21
Mandurah (U)	5,062	3,523	3,527	7,050	1,988	39.27
Manjimup (U)	3,526	1,905	1,829	3,734	208	5.90
Marble Bar	394	136	126	262	-132	-33.50
Margaret River	665	347	354	701	36	5.41
Meekatharra	927	410	419	829	-98	-10.57
Merredin (U)	3,553	1,938	1,723	3,661	108	3.04
Mingenew	504	231	192	423	-81	-16.07
Moora (U)	1,409	774	771	1,545	136	9.65
Morawa	887	414	400	814	-73	-8.23
Mount Barker (U)	1,595	797	765	1,562	-33	-2.07
Mount Helena	n.a.	127	134	261	..	..
Mount Magnet	636	200	162	362	-274	-43.08
Mukinbudin	321	217	175	392	71	22.12
Mullewa	878	503	430	933	55	6.26
Mundaring	630	351	326	677	47	7.46
Mundijong	236	153	146	299	63	26.69
Nannup	513	257	230	487	-26	-5.07
Narembeen	442	260	246	506	64	14.48
Narrogin (U)	4,849	2,439	2,373	4,812	-37	-0.76
Newman (U)	3,906	2,768	1,904	4,672	766	19.61
Norseman (U)	1,789	1,100	929	2,029	240	13.42
North Pinjarra	n.a.	537	469	1,006	..	..
Northam (U)	7,167	3,483	3,383	6,866	-301	-4.20
Northampton	763	353	350	703	-60	-7.86
Northcliffe	224	109	99	208	-16	-7.14
Ongerup	n.a.	127	99	226	..	..
Onslow	349	124	96	220	-129	-36.96
Paraburdoo (U)	2,977	1,436	966	2,402	-575	-19.31
Peelhurst-Singleton	n.a.	166	166	332	..	..
Pemberton	815	415	362	777	-38	-4.66
Perenjori	290	164	141	305	15	5.17
Perth (U)	641,800	360,307	370,968	731,275	89,475	13.94
Pingelly	918	499	479	978	60	6.54
Pinjarra (U)	1,191	584	612	1,196	5	0.42
Port Denison	n.a.	287	235	522	..	..
Port Hedland (U)	7,229	6,483	4,661	11,144	3,915	54.16
Quairading	856	412	396	808	-48	-5.61
Quinns	n.a.	293	267	560	..	..
Ravensthorpe	238	137	119	256	18	7.56
Rockingham (U)	12,029	8,948	8,745	17,693	5,664	47.09
Roebourne (U)	1,515	746	622	1,368	-147	-9.70
Shay Gap	n.a.	599	257	856	..	..
Southern Cross	895	462	418	880	-15	-1.68
Tambellup	406	206	171	377	-29	-7.14
Tammin	365	149	139	288	-77	-21.10
Three Springs	554	325	280	605	51	9.21
Tom Price (U)	3,426	1,854	1,339	3,193	-233	-6.80
Toodyay	581	281	269	550	-31	-5.34
Two Rocks	n.a.	349	312	661	..	..
Wagin (U)	1,633	854	804	1,658	25	1.53
Walpole	222	142	120	262	40	18.02
Wanneroo (U)	1,526	2,140	2,179	4,319	2,793	183.03
Waroona (U)	1,162	589	571	1,160	-2	-0.17
Wickepin	294	132	114	246	-48	-16.33
Wickham	n.a.	1,526	786	2,312	..	..
Williams	450	243	232	475	25	5.56
Wittenoom	422	578	384	962	540	127.96
Wongan Hills	881	463	425	888	7	0.79
Wundowie (U)	1,042	524	445	969	-73	-7.01
Wyalkatchem	573	274	260	534	-39	-6.81
Wyndham (U)	1,515	771	612	1,383	-132	-8.71
Yanchep Beach	n.a.	201	183	384	..	..
Yarloop	519	247	236	483	-36	-6.94
York (U)	1,177	564	544	1,108	-69	-5.86

(a) Figures as recorded at the Census.

Population in Statistical Divisions

In 1929, when statistics were first presented according to statistical divisions, Western Australia was divided into seven such areas. At the 1976 Census there were nine statistical divisions, and these have been used as the basis of compilation of the particulars in the following table. The figures shown refer to the areas contained within the boundaries of the several divisions as they existed at the Census of 30 June 1976.

For further information on the origin and purpose of statistical divisions see Chapter III—*Constitution and Government*.

STATISTICAL DIVISIONS—POPULATION (a) AT CENSUSES, 1971 AND 1976

Statistical division	Census, 30 June—			
	1971		1976	
	Persons	Per cent of total	Persons	Per cent of total
Perth Statistical Division	711,800	68.24	820,100	70.11
Other divisions—				
South-West	77,600	7.44	84,250	7.20
Lower Great Southern	38,780	3.72	39,970	3.42
Upper Great Southern	24,220	2.32	24,150	2.06
Midlands	53,430	5.12	52,060	4.45
South-Eastern	40,930	3.92	41,150	3.52
Central (b)	45,640	4.38	49,920	4.27
Pilbara	33,350	3.20	39,950	3.42
Kimberley	14,750	1.41	15,600	1.33
Total	328,700	31.51	347,050	29.67
Total, all divisions	1,040,500	99.75	1,167,150	99.77
Migratory (c)	2,600	0.25	2,650	0.23
WESTERN AUSTRALIA	1,043,100	100.00	1,169,800	100.00

(a) Census figures adjusted to take account of under-enumeration. (b) Includes Houtman Abrolhos (unincorporated). (c) Refers to persons (both passengers and crew) who, at midnight on census night, were enumerated on board ships in Western Australian ports, or ships which had left an Australian port before census night for a next port of call in Western Australia. It includes also those who were enumerated on long distance trains, motor coaches or aircraft.

The estimated population of the Perth Statistical Division at 30 June 1976 was 820,100, or 70.1 per cent of the State total, compared with 711,800 (68.2 per cent) five years earlier, an increase of 108,300 persons or 15.2 per cent. The State's natural increase between the Censuses was 66,718 of which the Perth Statistical Division contributed 40,971. In addition, this division experienced a net gain by migration of 67,300.

The total population in the area outside the Perth Statistical Division rose by 18,400 or 5.55 per cent. The natural increase recorded in the area was 25,747, so that there was a loss of 7,347 persons by migration.

The South-Eastern Statistical Division, and Carnegie and De Grey Statistical Sub-divisions together comprised an area of 1,565,151 square kilometres (or almost two-thirds of the State) and had a population of only 63,425 persons as recorded at the Census of 30 June 1976. A low rainfall renders much of it virtually uninhabitable and desert or near-desert conditions prevail over some 900,000 square kilometres including much of the eastern and northern parts of the area and extending into the southern portion of the Kimberley Statistical Division. Almost no part of this desert area has an annual rainfall greater than 250 millimetres and a considerable proportion has much less. Of the total population of 63,425 persons recorded in the three areas at the Census, over four-fifths were enumerated in the urban centres of Kalgoorlie-Boulder (19,041), Port Hedland (11,144), Esperance (5,262), Kambalda (4,784), Newman (4,672) and Norseman (2,029), and the townships of Goldsworthy (989), Meekatharra (829), Shay Gap (856), Southern Cross (880), Laverton (848), Coolgardie (643), Leonora (468), Mount Magnet (362), Marble Bar (262), Cue (258) and Ravensthorpe (256).

Population North of 26° S Latitude

For administrative and other purposes, the portion of the State lying north of the 26th parallel of latitude frequently has special significance. This area, which embraces part of the Central Statistical Division, and the whole of the Pilbara and Kimberley Statistical Divisions, is 1,371,367 square kilometres in extent and is therefore somewhat greater in area than half the entire State. It had a population, as recorded at the Censuses, of 58,616 persons in 1971 and 65,086 in 1976. Of this total, over three-quarters were enumerated in the ports and other coastal settlements of Port Hedland (11,144), Carnarvon (5,341), Karratha (4,243), Broome (2,920), Dampier (2,727), Derby (2,411), Exmouth (2,336), Wickham (2,312), Wyndham (1,383), Roebourne (1,368), Denham (346) and Onslow (220); the iron ore mining centres of Newman (4,672), Tom Price (3,193), Paraburdoo (2,402), Goldsworthy (989) and Shay Gap (856); the Ord River agricultural settlement at Kununurra (1,540); and the townships of Wittenoom (962), Halls Creek (767) and Marble Bar (262).

POPULATION DENSITY

Urban Perth (see letterpress *Urban, Rural and Migratory Population* earlier in this Part) is the most densely populated part of the State. Among the statistical divisions, Perth with a population of 820,100 and 5,368 square kilometres in area showed the highest density, 153 persons per square kilometre. The Kimberley Statistical Division was the most sparsely populated with an area of 421,451 square kilometres (more than one-sixth of the entire State) and a population of only 15,600 persons, equivalent to an average of one person to every twenty-seven square kilometres.

STATISTICAL DIVISIONS—AREA, POPULATION AND DENSITY
CENSUS, 30 JUNE 1976

Statistical division	Area (a)		Population (b)		
	Square kilometres	Per cent of total	Persons	Per cent of total	Density (per square kilometre)
Perth Statistical Division	5,368	0·21	820,100	70·11	152·78
Other divisions—					
South-West	26,661	1·06	84,250	7·20	3·16
Lower Great Southern	40,525	1·60	39,970	3·42	0·99
Upper Great Southern	45,687	1·81	24,150	2·06	0·53
Midlands	110,262	4·37	52,060	4·45	0·47
South-Eastern	614,388	24·33	41,150	3·52	0·07
Central (c)	753,365	29·83	49,920	4·27	0·07
Pilbara	510,335	20·21	39,950	3·42	0·08
Kimberley	421,451	16·69	15,600	1·33	0·04
Total	2,522,674	99·89	347,050	29·67	0·14
Total, all divisions	2,525,500	100·00	1,167,150	99·77	0·46
Migratory (d)	..	..	2,650	0·23	..
WESTERN AUSTRALIA	2,525,500	100·00	1,169,800	100·00	0·46

(a) See Chapter II, Part 1. (b) Census figures adjusted to take account of under-enumeration. (c) Includes Houtman Abrolhos (unincorporated). (d) Refers to persons (both passengers and crew) who, at midnight on census night, were enumerated on board ships in Western Australian ports, or ships which had left an Australian port before census night for a next port of call in Western Australia. It includes also those who were enumerated on long-distance trains, motor coaches or aircraft.

Western Australia had a population density at the 1976 Census of only 0·46 persons per square kilometre, compared with an average of 1·81 for Australia as a whole. Victoria was the most densely populated State, having an average of 16·46 persons per square kilometre.

AREA, POPULATION AND DENSITY—STATES AND TERRITORIES: CENSUS, 30 JUNE 1976

State or Territory	Area (a)		Population (b)				
	Square kilometres	Per cent of total	Males	Females	Persons		
					Number	Per cent of total	Density (per square kilometre)
	'000		'000	'000	'000		
New South Wales	801·6	10·43	2,455·8	2,458·4	4,914·3	35·32	6·13
Victoria	227·6	2·96	1,870·1	1,875·9	3,746·0	26·92	16·46
Queensland	1,727·2	22·48	1,063·2	1,048·5	2,111·7	15·18	1·22
South Australia	984·0	12·81	629·9	631·7	1,261·6	9·07	1·28
Western Australia	2,525·5	32·87	596·8	573·1	1,169·8	8·41	0·46
Tasmania	67·8	0·88	204·1	203·2	407·4	2·93	6·01
Northern Territory	1,346·2	17·52	56·2	45·2	101·4	0·73	0·08
Australian Capital Territory	2·4	0·03	103·2	100·1	203·3	1·46	84·71
AUSTRALIA	7,682·3	100·00	6,979·4	6,936·1	13,915·5	100·00	1·81

(a) See Chapter II, Part 1.

(b) Census figures adjusted to take account of under-enumeration.

ABORIGINAL POPULATION

Reference is made at the beginning of this Part to the exclusion of *full-blood* Aborigines from the tabulations of census data prior to 1971. Aborigines have, however, been enumerated at all censuses of the Commonwealth, although the degree of coverage and information obtained have varied substantially since 1911. Since the Census taken in 1933, the adequacy of the particulars obtained has improved progressively, as a result of an increasing number of Aborigines coming into contact with more populated areas.

At the 1971 and 1976 Censuses the question relating to a person's race differed from that asked at previous censuses, and the figures shown in the tables in this section cannot be compared with those published in previous issues of the Year Book.

The following table shows the Aboriginal population of Western Australia as recorded at the Census of 30 June 1976 according to statistical division.

ABORIGINAL POPULATION (a)—STATISTICAL DIVISIONS
WESTERN AUSTRALIA: CENSUS, 30 JUNE 1976

Statistical division	Males	Females	Persons	
			Number	Per cent of total
Perth Statistical Division	2,939	3,193	6,133	23·47
Other divisions—				
South-West	423	374	797	3·05
Lower Great Southern	630	505	1,135	4·34
Upper Great Southern	558	511	1,069	4·09
Midlands	916	897	1,814	6·94
South-Eastern	1,035	1,026	2,062	7·89
Central	2,082	2,003	4,084	15·63
Pilbara	1,376	1,287	2,663	10·19
Kimberley	3,215	3,134	6,349	24·30
Total	10,235	9,737	19,973	76·45
Total all divisions	13,174	12,930	26,106	99·92
Migratory (b)	20	1	21	0·08
WESTERN AUSTRALIA	13,195	12,931	26,126	100·00

(a) Includes Torres Strait Islanders.
Distribution.(b) See letterpress in the earlier section *Geographical*

In the next table, details are given of the age distribution of the Aboriginal population recorded at the 1976 Census.

**ABORIGINAL POPULATION (a)—AGE DISTRIBUTION
WESTERN AUSTRALIA: CENSUS, 30 JUNE 1976**

Age last birthday (years)	Males	Females	Persons	
			Number	Per cent of total
0-4	1,943	1,947	3,890	14.89
5-9	2,100	2,046	4,146	15.87
10-14	1,973	1,850	3,823	14.63
15-19	1,539	1,467	3,006	11.51
20-24	1,185	1,113	2,298	8.80
25-29	922	914	1,836	7.03
30-34	680	667	1,347	5.16
35-39	517	640	1,157	4.43
40-44	506	524	1,030	3.94
45-49	442	443	885	3.39
50-54	343	315	658	2.52
55-59	262	240	502	1.92
60-64	194	263	457	1.75
65 and over	590	502	1,092	4.18
Total	13,195	12,931	26,126	100.00

(a) Includes Torres Strait Islanders.

ESTIMATES OF POPULATION

For dates other than those of the periodic census of population, estimates are based on records of births and deaths and of movements of population interstate and overseas. Estimates of the population of Australia and of each of the States and Territories are prepared by the Australian Statistician as at 31 March, 30 June, 30 September and 31 December in each year. Because the available records of interstate movement are incomplete, these intercensal estimates as they apply to States and Territories are approximate and are revised when the results of the next succeeding census become known.

Mean Population

It is often useful to relate a given characteristic to population in order to express it in *per capita* terms or as 'per head of population'. In some cases it is appropriate to relate a characteristic to the population as at a specified date as, for example, savings bank balances per head of population at 30 June, or motor vehicles per head of population at 31 December.

Where events, as for instance births or deaths, are taking place continuously throughout a period, it is obviously not appropriate to relate these events to the population as at a specific date. It is necessary, therefore, to devise a measure which takes account of the change in population which occurs continuously throughout any period. This measure is known as the *mean population*.

As stated earlier, estimates of population are prepared as at the end of each quarter of the year. The mean population of a quarter might be taken to be the average, or arithmetic mean, of the populations at the beginning and the end of the quarter. If a represents the population at the beginning of a year and b , c , d and e the populations at the end of the first, second, third and fourth quarters, respectively, these quarterly means would then be $\frac{1}{2}(a + b)$ for the first quarter, $\frac{1}{2}(b + c)$ for the second, $\frac{1}{2}(c + d)$ for the third and $\frac{1}{2}(d + e)$ for the fourth quarter. The mean population for the year might then be taken as the arithmetic mean of the four quarterly average populations, or

$$\frac{1}{4}\left\{\frac{1}{2}(a + b) + \frac{1}{2}(b + c) + \frac{1}{2}(c + d) + \frac{1}{2}(d + e)\right\}$$

which may be more simply expressed as $\frac{1}{8}(a + 2b + 2c + 2d + e)$. This method of deriving mean population had been in use in Western Australia prior to its general adoption by the 1903 Conference of Australian Statisticians. It was later superseded by the more precise measure

$$\frac{1}{12}(a + 4b + 2c + 4d + e)$$

which is now commonly used in Australian statistics. In order to establish uniformity with current practice, estimates of mean population for 1901 and later years were revised, where necessary, by the application of this formula.

The estimated mean population of Western Australia is shown in the next table for each financial and calendar year in the period from 1 January 1973 to 30 June 1978.

Population Estimates

As a result of the repeal, with effect from 10 August 1967, of section 127 of the Australian Constitution, to which reference is made earlier, current population estimates no longer exclude full-blood Aborigines. Estimates for earlier dates and periods back to the Census of 30 June 1961 have also been prepared on the basis of *total* population (*i.e.* including Aborigines). Population figures for periods between the Censuses of 30 June 1971 and 1976 have been revised in accordance with the results of the 1976 Census, adjusted to take account of under-enumeration. Figures for dates and periods subsequent to 30 June 1976 are subject to revision in accordance with the results of the next census.

POPULATION ESTIMATES (a)

Year	Population at end of year			Increase during year			Mean population		
	Males	Females	Persons	Natural increase (b)	Estimated net migration (c)	Estimated total increase (d)	Males	Females	Persons
YEAR ENDED 30 JUNE									
1974	570.8	546.5	1,117.4	12.4	14.7	27.6	563.8	539.6	1,103.4
1975	585.0	561.7	1,146.7	12.6	16.2	29.3	578.6	554.5	1,133.1
1976	(e)596.8	(e)573.1	(e)1,169.8	12.6	10.1	23.1	590.7	567.5	1,158.2
1977	609.8	587.3	1,197.1	13.0	14.2	27.2	603.1	580.2	1,183.3
1978	622.3	600.0	1,222.3	13.2	12.0	25.2	616.4	594.0	1,210.5
YEAR ENDED 31 DECEMBER									
1973	563.6	539.6	1,103.2	12.7	9.2	22.4	557.4	533.2	1,090.6
1974	581.0	556.9	1,137.8	12.4	21.7	34.6	571.0	546.8	(f)1,117.7
1975	591.1	567.9	1,159.0	12.4	8.3	21.2	585.2	561.7	1,146.9
1976	603.2	580.5	1,183.7	12.9	11.5	24.7	596.7	573.6	1,170.3
1977	616.7	594.4	1,211.1	12.8	14.7	27.4	609.8	587.3	1,197.0

(a) Population estimates for periods prior to June 1976 have been revised in accordance with the 1976 Census figure adjusted to take account of under-enumeration. (b) Excess of births registered over deaths registered. (c) Interstate and overseas. (d) For periods between the Censuses of 30 June 1971 and 1976 includes an adjustment to balance net migration and recorded births and deaths with the June 1976 estimates of population aged 0-4 years. (e) Census figures adjusted to take account of under-enumeration. (f) Adjusted to negate the effect on the population of Western Australia of evacuees from Darwin as a result of cyclone 'Tracy'.

POPULATION ESTIMATES—STATES AND TERRITORIES ('000)

State or Territory	Estimated population at 31 December—				
	1973	1974	1975	1976	1977
New South Wales	4,816.0	4,878.7	4,895.8	4,933.0	4,979.3
Victoria	3,651.5	3,706.1	3,730.3	3,764.9	3,799.4
Queensland	2,019.4	2,074.0	2,102.2	2,121.6	2,155.1
South Australia	1,227.2	1,253.6	1,257.3	1,268.8	1,283.8
Western Australia	1,103.2	1,137.8	1,159.0	1,183.7	1,211.1
Tasmania	397.2	402.5	406.6	409.3	412.1
Northern Territory	101.8	72.1	97.8	103.9	110.0
Australian Capital Territory	174.1	184.7	200.4	206.2	212.7
AUSTRALIA	13,490.6	13,709.5	13,849.3	13,991.2	14,163.5

Chapter IV—continued

Part 2—Births, Deaths and Marriages

THE REGISTRATION SYSTEM

Compulsory registration of births, deaths and marriages in Western Australia was originally provided for by legislation of the year 1841. The Statutes currently in force are the *Registration of Births, Deaths and Marriages Act, 1961-1975* (State) and the *Marriage Act 1961* (Commonwealth). For administrative purposes, the State is divided into twenty-six Registry Districts, each having a District Registrar. Particulars of births, deaths and marriages reported to the District Registrars are sent to the Registrar-General at Perth, where a central registry office has been maintained since 1841. Local registers are kept at each district office.

Births are required to be registered within sixty days of the event, and must be notified by the father, the mother or the occupier of the premises where the birth took place. Special provisions and penalties apply to notification and registration after the expiration of the sixty-day period.

A stillbirth is required to be registered both as a birth and a death. From 1 January 1968 the term 'stillbirth', for registration purposes, refers to a child, not born alive, of at least twenty weeks' gestation, or with a birthweight of at least 400 grams. Previously it was restricted to cases where the gestation period was at least twenty-eight weeks.

Deaths are required to be registered within fourteen days. Notification must be given by the person who disposes of the body or by the occupier of the premises where the death occurred. As in the case of births, special provisions and penalties exist for the late registration of a death.

Marriages may be celebrated by persons authorised as celebrants under the provisions of the *Marriage Act 1961* (Commonwealth). These may be ministers of religion, District Registrars, or other authorised persons. Celebrants other than District Registrars are required to lodge a marriage certificate with the District Registrar for registration within fourteen days of the celebration of a marriage. A penalty fee is provided for registrations after fourteen days from the date of marriage.

Statistics of births, deaths and marriages are prepared from the registration documents.

The following table shows, for the years 1973 to 1977, the number of births and deaths registered in Western Australia, classified according to statistical divisions. The figures do not necessarily represent the number of such events which actually occurred in a particular statistical division during each year, since births are allocated to the usual place of residence of the mother and deaths to the usual place of residence of the deceased. Further, the statistics are compiled according to date of registration and not date of occurrence.

The statistical divisions shown on the following page are as they existed at 30 June 1978 and their component local government areas are given in lists at the end of Chapter III.

Additional information concerning births, deaths, marriages and divorce is contained in the annual publication *Statistics of Western Australia—Demography* (Catalogue No. 3101.5) published by the Western Australian Office of the Bureau. Details of the number of births and deaths relating to individual local government areas in the State appear in the *Statistics of Western Australia—Local Government* (Catalogue No. 1303.5).

**BIRTHS AND DEATHS—NUMBERS REGISTERED
STATISTICAL DIVISIONS (a)**

Statistical division (a)	Births (b)					Deaths (c)				
	1973	1974	1975	1976	1977	1973	1974	1975	1976	1977
Perth Statistical Division	13,307	13,313	13,406	13,488	13,571	5,641	5,585	5,816	5,641	5,796
Other divisions—										
South-West	1,472	1,384	1,436	1,511	1,523	587	631	614	596	617
Lower Great Southern	780	753	740	762	787	286	286	272	280	269
Upper Great Southern	489	528	536	499	517	139	164	139	118	125
Midlands	1,101	986	1,033	1,065	1,016	295	301	295	262	277
South-Eastern	1,003	920	878	903	808	319	297	330	301	312
Central	1,072	1,000	983	1,008	1,018	250	271	284	269	281
Pilbara	830	874	911	972	1,007	162	119	110	128	102
Kimberley	456	449	415	462	404	166	124	112	145	120
Total	7,203	6,894	6,932	7,182	7,080	2,204	2,193	2,156	2,099	2,103
WESTERN AUSTRALIA	20,510	20,207	20,338	20,670	20,651	7,845	7,778	7,972	7,740	7,899

(a) For component local government areas, see lists at the end of Chapter III. (b) Live births. (c) Stillbirths are not included; see next table.

BIRTHS

Statistics of births in each of the five years 1973 to 1977 in the Perth Statistical Division, the rest of the State, and in Western Australia as a whole are shown in the following table. Additional details of stillbirths appear later in this Part.

BIRTHS REGISTERED

Year	Live births					Stillbirths (c)
	Males (a)	Females (a)	Persons (a)	Ex-nuptial births (b)	Multiple births (b)	
PERTH STATISTICAL DIVISION						
1973	6,799	6,508	13,307	1,295	(d) 263	173
1974	6,792	6,521	13,313	1,238	(d) 244	170
1975	6,918	6,488	13,406	1,309	(e) 279	146
1976	6,931	6,557	13,488	1,342	(e) 219	156
1977	7,070	6,501	13,571	1,308	(e) 251	120
OTHER DIVISIONS						
1973	3,758	3,445	7,203	1,202	(e) 180	97
1974	3,490	3,404	6,894	1,114	(d) 108	104
1975	3,542	3,390	6,932	1,218	(d) 136	96
1976	3,732	3,450	7,182	1,279	(d) 106	80
1977	3,647	3,433	7,080	1,220	(d) 131	70
WESTERN AUSTRALIA						
1973	10,557	9,953	20,510	2,497	(f) 443	270
1974	10,282	9,925	20,207	2,352	(e) 352	274
1975	10,460	9,878	20,338	2,527	(f) 415	236
1976	10,663	10,007	20,670	2,621	(f) 325	242
1977	10,717	9,934	20,651	2,528	(f) 382	190

(a) Includes ex-nuptial births and multiple births. (b) Figures represent the number of children live-born. (c) Figures refer to stillbirths where the child was of at least 20 weeks' gestation. (d) Includes 1 case of triplets. (e) Includes 2 cases of triplets. (f) Includes 3 cases of triplets.

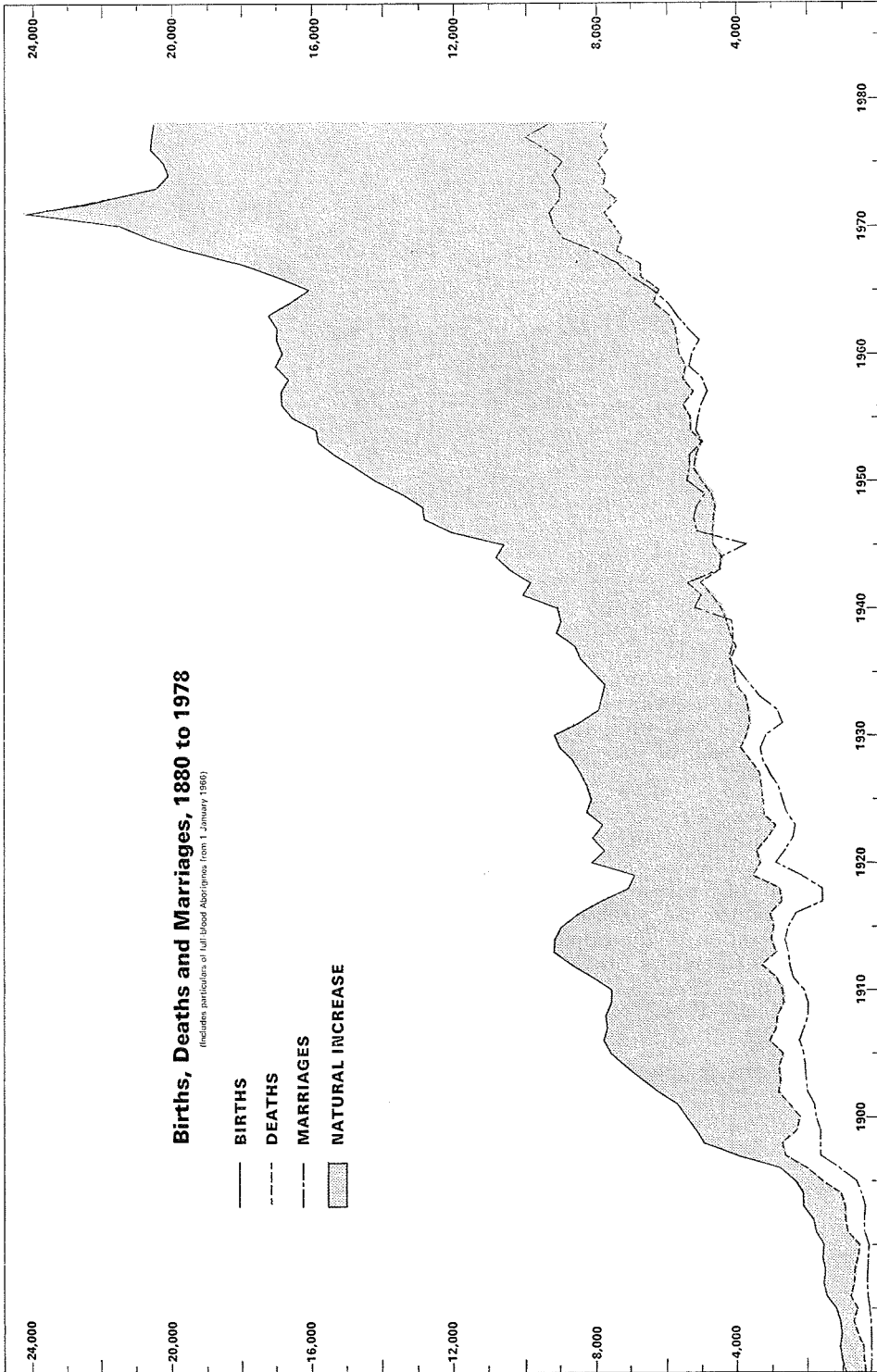
The ages of mothers of children born during each of the years 1973 to 1977 are shown in the following table.

BIRTHS REGISTERED—AGE OF MOTHER

Age of mother (years)	1973	1974	1975	1976	1977
NUPTIAL BIRTHS					
14	—	—	—	—	—
15	3	6	3	3	—
16	87	63	59	55	47
17	264	217	171	160	150
18	463	427	425	351	300
19	694	697	624	594	571
20	954	916	934	882	782
21-24	5,699	5,608	5,565	5,595	5,435
25-29	6,464	6,583	6,708	7,044	7,103
30-34	2,395	2,444	2,460	2,554	2,953
35-39	819	744	715	679	668
40-44	157	143	135	123	110
45 and over	13	7	12	9	4
Not stated	1	—	—	—	—
Total, nuptial births	18,013	17,855	17,811	18,049	18,123
EX-NUPTIAL BIRTHS					
Under 14	2	1	2	5	2
14	9	12	14	10	13
15	78	60	65	76	51
16	150	145	177	165	127
17	236	230	226	242	221
18	313	254	264	243	243
19	236	232	247	237	251
20	184	184	221	217	231
21-24	558	575	592	641	655
25-29	386	352	415	470	430
30-34	210	165	189	196	199
35-39	90	89	80	84	81
40-44	36	27	20	27	19
45 and over	4	2	1	5	2
Not stated	5	24	14	3	3
Total, ex-nuptial births	2,497	2,352	2,527	2,621	2,528
TOTAL BIRTHS					
Under 14	2	1	2	5	2
14	9	12	14	10	13
15	81	66	68	79	51
16	237	208	236	220	174
17	500	447	397	402	371
18	776	681	689	594	543
19	930	929	871	831	822
20	1,138	1,100	1,155	1,099	1,013
21-24	6,257	6,183	6,157	6,236	6,090
25-29	6,850	6,935	7,123	7,514	7,533
30-34	2,605	2,609	2,649	2,750	3,152
35-39	909	833	795	763	749
40-44	193	170	155	150	129
45 and over	17	9	13	14	6
Not stated	6	24	14	3	3
Total, births	20,510	20,207	20,338	20,670	20,651

Ex-nuptial Live Births. A birth is registered as ex-nuptial if the parents were not married to one another at the time of the confinement. Ex-nuptial births in 1977 comprised 12·24 per cent of all births registered.

Legitimations. Under the provisions of the *Marriage Act* 1961 (Commonwealth) which came into operation on 1 September 1963, a child whose parents were not married to each other at the time of its birth becomes legitimised on the subsequent marriage of its parents. The legitimation takes place whether or not there was a legal impediment to the marriage of the parents at the time of the child's birth, and whether or not the child was still living at the time of the marriage, or in the case of a child born before 1 September 1963, at that date.



Crude Birth Rates. The crude birth rate in any period may be defined as the number of live births occurring during the period for every thousand of the mean population.

The average annual rates for each five-year period in the fifty years from 1926 to 1975 and the rates for single years from 1968 to 1977, for Western Australia and Australia as a whole, are shown in the following table.

CRUDE BIRTH RATES (a)
WESTERN AUSTRALIA AND AUSTRALIA

Period	Average annual rate		Year	Annual rate	
	Western Australia	Australia		Western Australia	Australia
1926-30	21.54	20.98	1968	21.34	20.04
1931-35	18.36	16.94	1969	21.72	20.38
1936-40	19.16	17.52	1970	21.74	20.55
1941-45	21.72	20.28	1971	23.26	21.36
1946-50	25.24	23.39	1972	20.71	20.11
1951-55	25.37	22.86	1973	18.81	18.51
1956-60	24.20	22.59	1974	18.08	18.03
1961-65	21.71	21.34	1975	17.73	16.92
1966-70	21.14	19.95	1976	17.66	16.37
1971-75	19.65	18.95	1977	17.25	16.08

(a) Rates prior to 1966 exclude particulars of full-blood Aborigines. Rates for years prior to 1976 are based on final census results; those for 1976 and later are subject to revision.

In each year of the period under review, Western Australia's crude birth rate has been higher than that of Australia.

In Western Australia, the rate showed a marked and almost continuous decrease from the beginning of the century to the depression of thirty years later when the unprecedentedly low rate of 17.64 was recorded in 1934. In the following years a fairly consistent increase was evident until 1952 when the rate reached 25.66, its highest level since 1917. The rate then declined and in 1965 was 19.85, the lowest since 1940. It increased in each succeeding year until 1971 when the rate was 23.50, the highest recorded since 1959. It fell in each of the next five years and in 1977 was 17.25, the lowest ever recorded.

Age-specific Birth Rates. As a measure of fertility, the crude birth rate has the advantage of simplicity in calculation. The data necessary for its computation are usually readily available from published statistics, and it is therefore useful in comparing the fertility of the populations of States and countries for which no additional data are available. However, it is of limited use, since it does not take into account the important factors of age and sex composition of the population. Age-specific birth rates, which do have regard to these factors, therefore provide a better measure of fertility. Age-specific birth rates represent the number of births to women of specified ages per thousand women of those particular ages, and thus take cognisance of the variations in fertility experienced by women at the successive stages of their child-bearing life.

AGE-SPECIFIC BIRTH RATES (a)—WESTERN AUSTRALIA

Year	Age group (years)						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1954	42.74	231.09	217.77	135.74	71.71	23.61	1.52
1961	47.07	246.94	231.92	127.38	61.82	20.55	1.17
1966	53.81	203.08	197.12	102.12	45.68	13.27	1.38
1971	63.33	204.90	203.58	101.91	41.96	9.89	0.73
1976	40.51	143.93	149.45	70.33	21.82	5.00	0.47

(a) Number of live births registered per 1,000 women in each age group. Rates are based on census results and exclude particulars of full-blood Aborigines prior to 1966.

For purposes of comparison with Western Australian experience, age-specific birth rates for Australia as a whole are given in the following table.

AGE-SPECIFIC BIRTH RATES (a)—AUSTRALIA

Year	Age group (years)						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1954	39·19	197·13	194·02	121·76	64·43	20·16	1·47
1961	47·35	225·81	221·21	131·11	63·38	19·17	1·41
1966	49·26	172·81	183·29	105·28	50·60	14·28	1·09
1971	55·17	180·92	195·39	102·26	44·90	11·42	0·78
1976	35·55	r 129·22	r 147·34	r 73·06	24·28	5·57	0·41

(a) Number of live births registered per 1,000 women in each age group. Rates are based on census results and exclude particulars of full-blood Aborigines prior to 1966.

Gross and Net Reproduction Rates. The gross reproduction rate is derived from fertility rates representing the number of *female* births to women of specified ages per thousand women of those particular ages. It provides a measure of the number of female children who would be born, on the average, to every woman assuming that she lives through the whole of the child-bearing period and that the basic fertility rates remain unaltered throughout.

The gross reproduction rate assumes that all females survive to the end of their child-bearing capacity. A more accurate measure, which takes into account the effect of mortality among women during this period is the net reproduction rate. This rate represents the average number of female children who would be born to women during their lifetime if they were subject in each succeeding year of life to the fertility and mortality rates on which the calculation is based. The net reproduction rate is a measure of the number of women who, in the next generation, will replace the women of reproductive age in the current generation. It provides a useful indication of likely future population trends. A rate remaining stationary at unity indicates an ultimately static population. If a rate greater than unity is maintained, an ultimate increase of population will result, while a continuing rate less than unity will lead to an ultimate decline.

GROSS AND NET REPRODUCTION RATES (a)
WESTERN AUSTRALIA AND AUSTRALIA

Year	Gross reproduction rate		Net reproduction rate	
	Western Australia	Australia	Western Australia	Australia
1954	1·772	1·559	(b) 1·704	(b) 1·499
1961	1·785	1·728	(c) 1·730	(c) 1·672
1966	1·486	1·401	(d) 1·441	(d) 1·357
1971	1·516	r 1·427	(e) 1·473	(e) r 1·386
1976	1·043	1·012	(e) 1·014	(e) 0·983

(a) Rates are based on census results and exclude particulars of full-blood Aborigines prior to 1966. (b) Based on 1953-55 mortality experience. (c) Based on 1960-62 mortality experience. (d) Based on 1965-67 mortality experience. (e) Based on 1970-72 mortality experience.

DEATHS

Statistics of deaths in each of the five years 1973 to 1977 in the Perth Statistical Division, the rest of the State, and in Western Australia as a whole appear in the following table.

DEATHS REGISTERED

Year	Deaths (a)			Infant deaths (b)		
	Males	Females	Persons	Males	Females	Persons

PERTH STATISTICAL DIVISION

1973	3,184	2,457	5,641	129	84	213
1974	3,158	2,427	5,585	92	82	174
1975	3,297	2,519	5,816	81	69	150
1976	3,112	2,529	5,641	81	67	148
1977	3,187	2,609	5,796	93	61	154

OTHER DIVISIONS

1973	1,402	802	2,204	112	69	181
1974	1,392	801	2,193	83	70	153
1975	1,404	752	2,156	73	48	121
1976	1,368	731	2,099	72	53	125
1977	1,346	757	2,103	54	43	97

WESTERN AUSTRALIA

1973	4,586	3,259	7,845	241	153	394
1974	4,550	3,228	7,778	175	152	327
1975	4,701	3,271	7,972	154	117	271
1976	4,480	3,260	7,740	153	120	273
1977	4,533	3,366	7,899	147	104	251

(a) Including infant deaths.
of life.(b) Deaths occurring in the first year
of life.

Crude Death Rates. The crude death rate is perhaps the most common measure of mortality, and is derived by relating the deaths occurring in a period to the mean population for that period. It is usually expressed as number of deaths per thousand of mean population.

The rates for Western Australia and for Australia in the period 1926 to 1977 are compared in the following table.

CRUDE DEATH RATES (a)
WESTERN AUSTRALIA AND AUSTRALIA

Period	Average annual rate (b)		Year	Annual rate (b)	
	Western Australia	Australia		Western Australia	Australia
1926-30	8.91	9.26	1968	8.16	9.11
1931-35	8.83	9.00	1969	7.69	8.68
1936-40 (c) ..	9.22	9.63	1970	7.59	9.02
1941-45 (c) ..	9.86	9.96	1971	7.49	8.55
1946-50 (c) ..	9.23	9.74	1972	6.95	8.33
1951-55	8.49	9.25	1973	7.19	8.28
1956-60	7.90	8.78	1974	6.96	8.52
1961-65	7.78	8.75	1975	6.95	7.91
1966-70	7.84	8.90	1976	6.61	8.10
1971-75	7.10	8.31	1977	6.60	7.73

(a) Rates prior to 1966 exclude particulars of full-blood Aborigines. (b) Rates for years prior to 1976 are based on final census results; those for 1976 and later are subject to revision. (c) Excludes deaths of members of defence forces from September 1939 to June 1947.

In the early years of the century, the Western Australian rate was higher than that for Australia as a whole, but fell below the Australian average in 1909. Since that time, the rate for Western Australia has, with very few exceptions, remained lower than that for Australia.

Western Australia's crude death rate for the year 1902 was 13·79 per thousand of the mean population but by 1931 it had fallen to 8·51. After that year, the rate increased until it reached 10·65 in 1942. Then there was a general decline until 1963 when the rate was 7·68. The rate for 1977 was 6·60 per thousand of mean population, the lowest ever recorded in Western Australia.

Standardised Death Rates. The crude death rate expresses simply the number of deaths occurring in a population during any period as a proportion of the mean population for that period. Although this rate is useful as a measure of the absolute level of mortality, its value is necessarily restricted when comparing the mortality in different communities in the same period, or in one community at different times.

The effect on the crude death rate of the presence in a community of a high proportion of young people or of aged people, or of a high or low masculinity, will be readily appreciated. To devise an adequate measure of comparative mortality, it is therefore necessary to select a 'standard' population to which the varying mortality experiences may be referred. A standard population compiled by the International Statistical Institute, based upon the age and sex distribution of the population of nineteen European countries at their censuses nearest to the year 1900, has been used as the basis of the standardised death rates for Western Australia and Australia given in the next paragraph. The rate is computed by applying to each sex and age group in the standard population, the death rates actually recorded in the corresponding groups of the State and Australian populations. The sum of these results represents the number of deaths which would have occurred in the standard population if it had been exposed to the same risks of mortality. The standardised death rate is derived by expressing this number in terms of 'per thousand of the standard population'.

For the Census years 1921, 1933, 1947, 1954, 1961 and 1966 the standardised death rates for Western Australia were 11·88, 8·74, 7·28, 6·71, 6·02 and 6·25, and the corresponding rates for Australia as a whole were 10·58, 8·62, 7·34, 6·90, 6·27 and 6·53. These rates have been compiled on a basis which excludes full-blood Aborigines. The rates for 1971 and 1976, calculated on the basis of total population (*i.e.* including Aborigines), were 6·16 and 5·11 for Western Australia and 6·32 and 5·61 for Australia respectively.

Causes of Death. Statistics of causes of death provide important numerical facts by which to evaluate the varying health conditions and needs of different countries. In order to enable valid international comparisons, it is necessary that each country present its statistics of causes of death in a uniform manner. The first classification of causes of death to be adopted internationally was that compiled by Dr J. Bertillon at the request of the International Statistical Institute meeting in Vienna in 1891. Subsequently this classification was periodically revised by the Institute in collaboration with the League of Nations Health Organization. More recently, revisions have been carried out by a Committee of the World Health Organization.

PRINCIPAL CAUSES OF DEATH, 1977

International number	Cause of death	Males	Females	Persons	Per cent of all deaths	Rate (a)
000-136	Infective and parasitic diseases—					
010-012	Tuberculosis of respiratory system	6	2	8	0·1	0·7
	Other infective and parasitic diseases	19	24	43	0·5	3·6
140-239	Neoplasms—					
140-199	Malignant—					
150-159	Digestive organs and peritoneum	255	220	475	6·0	39·7
162	Trachea, bronchus and lung	320	75	395	5·0	33·0
174	Breast	3	153	156	2·0	13·0
180-189	Genito-urinary organs	118	150	268	3·4	22·4
	Other	154	87	241	3·1	20·1
200-209	Lymphatic and haematopoietic tissue—					
204-207	Leukaemia and aleukaemia	40	33	73	0·9	6·1
	Other	57	42	99	1·3	8·3
210-239	Benign and unspecified	18	8	26	0·3	2·2
240-279	Endocrine, nutritional and metabolic diseases—					
250	Diabetes mellitus	44	63	107	1·4	8·9
	Other	23	19	42	0·5	3·5

PRINCIPAL CAUSES OF DEATH, 1977—*continued*

International number	Cause of death	Males	Females	Persons	Per cent of all deaths	Rate (a)
280-289	Diseases of blood and blood-forming organs	9	4	13	0.2	1.1
290-315	Mental disorders	54	49	103	1.3	8.6
320-389	Diseases of the nervous system and sense organs	64	36	100	1.3	8.4
390-458	Diseases of the circulatory system—					
393-398	Rheumatic heart disease	29	30	59	0.7	4.9
410-414	Ischaemic heart disease	1,348	863	2,211	28.0	184.7
430-438	Cerebrovascular disease	389	557	946	12.0	79.0
	Other	329	309	638	8.1	53.3
460-519	Diseases of the respiratory system—					
480-486	Pneumonia	53	67	120	1.5	10.0
490-493	Bronchitis, emphysema and asthma	260	73	333	4.2	27.8
	Other	31	25	56	0.7	4.7
520-577	Diseases of the digestive system	149	93	242	3.1	20.2
580-629	Diseases of the genito-urinary system	64	40	104	1.3	8.7
630-678	Complications of pregnancy, childbirth and the puerperium	—	—	—	—	—
680-709	Diseases of the skin and subcutaneous tissue	1	2	3	—	0.3
710-738	Diseases of the musculoskeletal system and connective tissue	15	23	38	0.5	3.2
740-759	Congenital anomalies	49	54	103	1.3	8.6
760-779	Certain causes of perinatal morbidity and mortality	62	31	93	1.2	7.8
780-796	Ill-defined conditions	73	38	111	1.4	9.3
800-999	Accidents, poisonings and violence—					
810-823	Motor vehicle accidents	224	90	314	4.0	26.2
850-877	Accidental poisonings	15	8	23	0.3	1.9
880-887	Accidental falls	33	37	70	0.9	5.8
950-959	Suicide and self-inflicted injury	101	33	134	1.7	11.2
	Other	124	28	152	1.9	12.7
	All causes	4,533	3,366	7,899	100.0	659.9

(a) Per 100,000 of mean population.

The figures in the previous table have been compiled on the basis of the *International Statistical Classification of Diseases, Injuries, and Causes of Death* (Eighth Revision, 1965), operative from 1 January 1968. The term 'cause of death', as used in this table and elsewhere in this Part, means (a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury'.

Infant Deaths. The term 'infant death' refers to a death which occurs before the completion of the first year of life. In the following table, infant deaths registered in Western Australia during each of the five years to 1977 are classified according to age at death.

INFANT MORTALITY—AGES AT DEATH

Year	Days					Total under 28 days	Months			Total under 1 year
	Under 1	1-6	7-13	14-20	21-27		Under 3	3-5	6-11	
MALES										
1973	96	46	12	9	3	166	188	26	27	241
1974	61	39	10	3	1	114	137	16	22	175
1975	60	33	7	1	3	104	125	16	13	154
1976	59	27	4	1	4	95	114	25	14	153
1977	53	28	7	8	6	102	123	20	4	147
FEMALES										
1973	64	20	7	6	1	98	109	28	16	153
1974	55	32	10	1	6	104	123	15	14	152
1975	50	21	7	3	1	82	92	12	13	117
1976	42	23	11	3	2	81	91	13	16	120
1977	38	19	8	6	2	73	82	12	10	104
PERSONS										
1973	160	66	19	15	4	264	297	54	43	394
1974	116	71	20	4	7	218	260	31	36	327
1975	110	54	14	4	4	186	217	28	26	271
1976	101	50	15	4	6	176	205	38	30	273
1977	91	47	15	14	8	175	205	32	14	251

Infant Mortality Rates. The infant mortality rate expresses the relationship between deaths of infants and the live births occurring in a period, and is stated in terms of number of deaths under one year of age per thousand live births.

The rates for Western Australia and for Australia in the period 1926 to 1977 are shown in the following table.

INFANT MORTALITY RATES (a)
WESTERN AUSTRALIA AND AUSTRALIA

Period	Average annual rate		Year	Annual rate	
	Western Australia	Australia		Western Australia	Australia
1926-30	49.27	51.99	1968	20.37	17.78
1931-35	40.81	41.27	1969	21.83	17.92
1936-40	39.70	38.81	1970	21.23	17.88
1941-45	33.30	34.97	1971	19.14	17.29
1946-50	28.15	26.98	1972	15.69	16.72
1951-55	24.41	23.34	1973	19.21	16.49
1956-60	21.42	21.05	1974	16.18	16.14
1961-65	20.73	19.42	1975	13.32	14.27
1966-70	20.25	18.10	1976	13.21	13.83
1971-75	r 16.71	r 16.18	1977	12.15	12.47

(a) Rates prior to 1966 exclude particulars of full-blood Aborigines.

In the first decade of the century, the average annual rate (106.07) in Western Australia was considerably above the Australian average of 86.83, and was the highest of any State. Since then both the Western Australian and the Australian rates have shown a remarkable decrease. In the five years ended 1975, Western Australia's average annual rate was 16.71 compared with the Australian rate of 16.18. The Western Australian rate of 12.15 in 1977 was the lowest ever recorded in this State. By comparison, the figure for Australia for 1977 was 12.47.

Causes of Infant Deaths. The causes of infant deaths registered during the year 1977 are set out in the following table.

INFANT MORTALITY—CAUSES OF DEATH, 1977

International number	Cause of death (a)	Males	Females	Persons
	Causes mainly of prenatal and natal origin—			
740-759	Congenital anomalies	37	39	76
760-769	Attributed to conditions of the mother—			
762	Toxaemia of pregnancy	—	1	1
764-768	Difficult labour	1	—	1
769	Other complications of pregnancy and childbirth	19	8	27
	Other	1	4	5
770	Conditions of placenta	4	2	6
771	Conditions of umbilical cord	—	—	—
774, 775	Haemolytic disease of newborn	1	—	1
776	Anoxic and hypoxic conditions, n.e.c.	24	7	31
777	Immaturity, unqualified	7	5	12
	Other	5	4	9
	Total	99	70	169
	Causes mainly of postnatal origin—			
000-009	Intestinal infectious diseases	3	2	5
038	Septicaemia	—	—	—
320, 036	Meningitis and meningococcal infection	2	1	3
480-486	Pneumonia	—	4	4
911	Inhalation or ingestion of food causing obstruction or suffocation	—	—	—
	Other	43	27	70
	Total	48	34	82
	All causes	147	104	251

(a) Classified in accordance with the *International Statistical Classification of Diseases, Injuries, and Causes of Death* (Eighth Revision), operative from 1 January 1968.

Stillbirths. The infant mortality rate discussed above is that most commonly used, and takes no account of stillbirths. It is informative, however, to examine the occurrence of stillbirths in comparison with infant deaths, as in the next table, which deals with the experience of the five years 1973 to 1977.

**STILLBIRTHS AND INFANT DEATHS
NUMBERS AND MASCULINITY**

Year	Stillbirths				Deaths under 1 year of age			
	Males	Females	Persons	Masculinity (a)	Males	Females	Persons	Masculinity (a)
1973	136	134	270	101.5	241	153	394	157.5
1974	156	118	274	132.2	175	152	327	115.1
1975	124	112	236	110.7	154	117	271	131.6
1976	125	117	242	106.8	153	120	273	127.5
1977	111	79	190	140.5	147	104	251	141.3

(a) Number of males to each 100 females.

The relationship between stillbirths and infant deaths during the same period is further examined in the following table, which shows the numbers of stillbirths and of infant deaths at various ages. The rates shown represent the number of stillbirths, or of infant deaths, per thousand of total births (*i.e.* including stillbirths). The average annual rate for the five-year period ended 1977 was 26.3.

**STILLBIRTHS AND INFANT DEATHS
NUMBERS AND RATES**

Year	Stillbirths	Infant deaths			Stillbirths and infant deaths
		Under 7 days	Under 28 days	Under 1 year	
NUMBER					
1973	270	226	264	394	664
1974	274	187	218	327	601
1975	236	164	186	271	507
1976	242	151	176	273	515
1977	190	138	175	251	441
RATE (a)					
1973	13.0	10.9	12.7	19.0	32.0
1974	13.4	9.1	10.6	16.0	29.3
1975	11.5	8.0	9.0	13.2	24.6
1976	11.6	7.2	8.4	13.0	24.6
1977	9.1	6.6	8.4	12.0	21.2

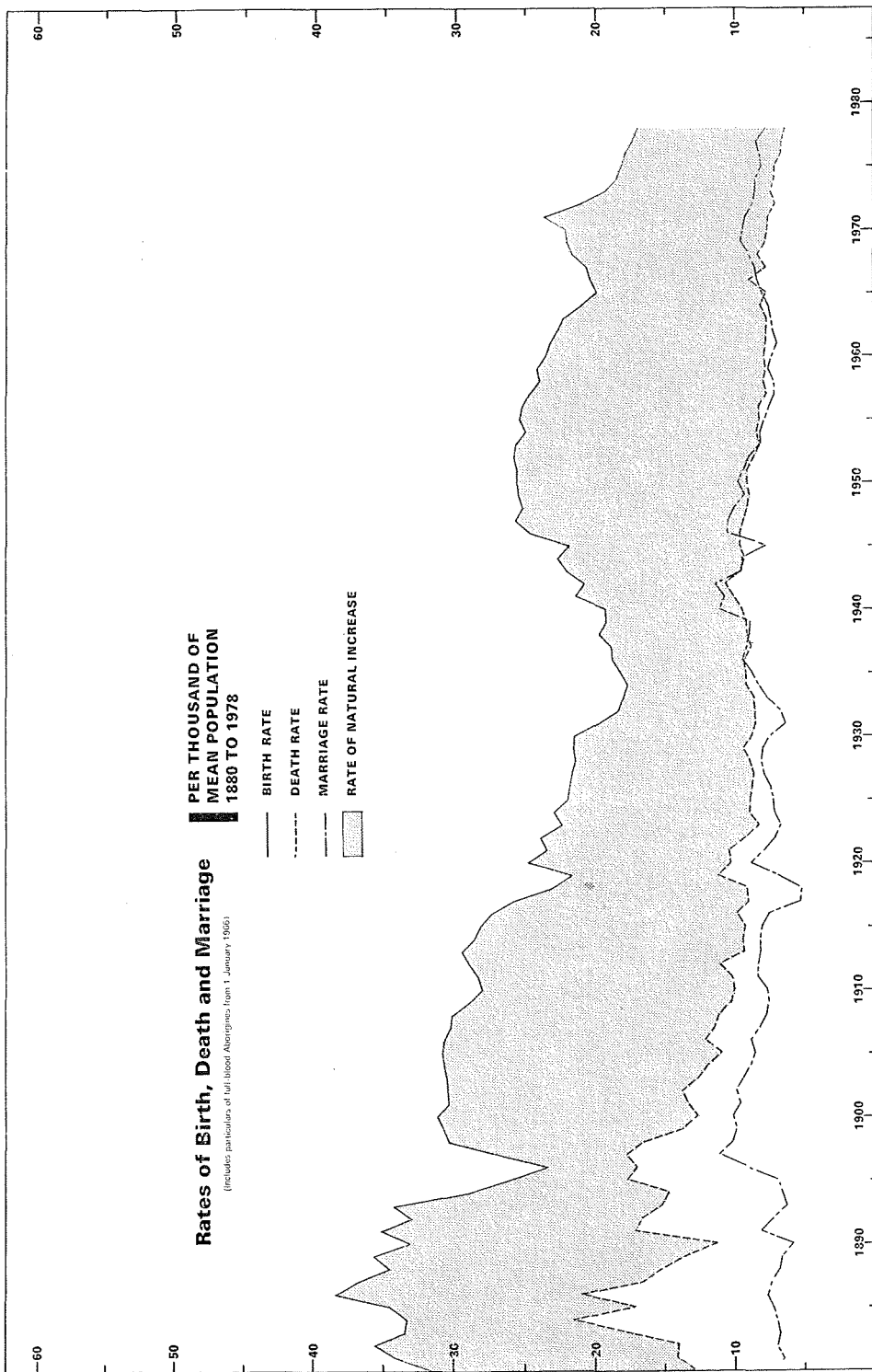
(a) Rate per 1,000 of total births (*i.e.* including stillbirths).

Age-specific Death Rates. The age-specific death rate expresses the number of deaths at specified ages in terms of the population at those particular ages. In the following table, which shows age-specific death rates for Western Australia, the average annual rates for each period relate to deaths in the three years surrounding the date of a Population Census. For census dates see table in Part 1 of this Chapter.

AGE-SPECIFIC DEATH RATES (a) (b)

Age group (years)	1920-22	1932-34	1946-48	1953-55	1960-62	1965-67	1970-72	1975-77
MALES								
Under 1					{ (b) 22.9	(b) 22.1	(b) 20.6	(b) 14.3
1-4	23.9	12.8	9.3	7.0	1.2	1.2	1.2	1.0
5-9	2.2	1.6	0.9	0.7	0.5	0.5	0.5	0.4
10-14	1.4	1.4	0.6	0.5	0.4	0.4	0.4	0.4
15-19	2.4	1.8	1.5	1.6	1.2	1.2	1.4	1.4
20-24	4.0	2.5	2.2	2.0	1.7	1.6	1.8	1.7
25-29	4.1	2.9	2.0	1.9	1.5	1.5	1.5	1.3
30-34	5.4	3.1	2.3	1.8	1.6	1.8	1.6	1.6
35-39	6.4	4.0	2.5	2.2	2.1	2.3	2.2	2.0
40-44	7.9	5.7	4.2	3.2	3.5	3.4	2.9	2.9
45-49	12.1	8.8	6.3	5.8	5.0	5.3	5.5	5.1
50-54	17.2	13.5	11.5	9.0	9.5	9.2	8.3	8.3
55-59	23.8	21.4	17.2	15.8	14.8	16.1	14.7	13.6
60-64	34.2	28.3	26.3	24.8	23.8	25.4	25.1	22.0
65-69	49.5	42.4	40.3	41.5	40.3	41.4	40.6	35.7
70-74	72.2	63.4	61.0	62.9	59.6	63.6	61.5	55.3
75-79	115.6	105.1	98.7	93.8	96.7	96.4	98.2	86.9
80-84	184.5	176.8	149.5	146.9	140.9	146.5	153.1	134.5
85-89	283.5	265.0	222.4	225.7	} 244.5	} 247.4	} 242.9	} 217.0
90 and over	566.7	380.8	376.2	297.4				
FEMALES								
Under 1					{ (b) 19.4	(b) 17.7	(b) 16.6	(b) 11.4
1-4	18.8	8.6	7.9	5.1	1.2	0.8	1.0	0.6
5-9	1.3	1.3	0.5	0.5	0.3	0.3	0.3	0.2
10-14	1.2	1.0	0.6	0.3	0.2	0.2	0.2	0.2
15-19	1.3	1.3	0.7	0.7	0.5	0.4	0.6	0.6
20-24	3.1	1.9	1.2	0.7	0.5	0.7	0.6	0.6
25-29	4.0	2.8	1.5	0.8	0.6	0.7	0.5	0.5
30-34	4.6	3.1	1.6	1.0	0.8	0.8	0.8	0.6
35-39	4.9	4.2	2.6	1.5	1.4	1.4	1.4	1.0
40-44	6.4	5.8	3.1	2.1	2.0	2.1	1.8	1.7
45-49	8.1	6.4	5.1	3.6	3.3	3.3	3.2	2.8
50-54	10.6	9.1	6.8	5.9	5.0	5.3	4.7	4.3
55-59	12.8	10.7	10.1	8.6	7.2	7.6	7.5	6.6
60-64	17.8	17.3	16.1	13.9	11.4	12.6	11.5	10.0
65-69	30.5	29.8	24.6	20.7	19.4	20.7	19.4	17.6
70-74	54.2	44.1	40.8	39.2	35.4	34.6	35.7	27.0
75-79	96.4	74.4	74.2	67.7	60.6	57.8	57.9	50.0
80-84	137.1	121.0	117.6	109.7	101.9	100.6	94.8	88.6
85-89	219.5	192.4	187.5	189.9	} 191.5	} 182.4	} 194.7	} 181.0
90 and over	478.3	397.2	273.8	285.9				
PERSONS								
Under 1					{ (b) 21.2	(b) 19.9	(b) 18.7	(b) 12.9
1-4	21.4	11.4	8.6	6.1	1.2	1.0	1.1	0.8
5-9	1.8	1.4	0.7	0.6	0.4	0.4	0.4	0.3
10-14	1.3	1.2	0.6	0.4	0.3	0.3	0.3	0.3
15-19	1.9	1.5	1.1	1.2	0.8	0.8	1.0	1.0
20-24	3.5	2.2	1.7	1.4	1.2	1.2	1.2	1.1
25-29	4.0	2.8	1.7	1.4	1.1	1.1	1.0	0.9
30-34	5.0	3.1	1.9	1.4	1.2	1.3	1.2	1.2
35-39	5.7	4.1	2.5	1.8	1.8	1.9	1.8	1.5
40-44	7.2	5.2	3.7	2.7	2.8	2.8	2.4	2.3
45-49	10.4	7.7	5.7	4.8	4.2	4.3	4.4	4.0
50-54	14.6	11.5	9.2	7.6	7.4	7.3	6.6	6.4
55-59	19.6	16.6	13.8	12.3	11.4	12.1	11.1	10.1
60-64	27.9	23.4	21.4	19.3	17.8	19.3	18.3	15.8
65-69	41.7	37.0	32.6	30.9	29.1	30.8	29.9	26.3
70-74	64.3	55.3	50.8	50.4	46.5	47.2	47.7	40.2
75-79	106.7	91.1	86.6	79.8	76.3	74.1	74.0	65.1
80-84	162.6	149.7	133.2	125.9	118.0	118.3	116.3	104.4
85-89	252.0	222.9	204.1	205.8	} 210.7	} 203.8	} 210.2	} 191.9
90 and over	528.3	389.2	312.3	290.4				

(a) Average annual number of deaths at the specified ages during each three-year period per 1,000 of population in the corresponding age group at the relevant census. Figures for 1960-62 and earlier exclude particulars of full-blood Aborigines; those for 1965-67 and later relate to total population, i.e. including Aborigines. (b) For age *Under 1*, figures for 1960-62 and later represent infant deaths per 1,000 live births registered.



Australian Life Tables. It has been the practice at each census from 1911 onwards to prepare Life Tables representative of the mortality experience of Australia. The mortality of the Australian population for the thirty years from 1881 to 1910 inclusive was investigated in 1911 by the Australian Statistician. Tables were compiled for each State and for Australia as a whole in respect of each sex for each of the decennial periods 1881 to 1890, 1891 to 1900, and 1901 to 1910. At the Census of 1921, Life Tables were prepared by the Australian Statistician from the recorded census population and the deaths in the three years 1920 to 1922. Tables based on data derived from later censuses have been compiled by the Commonwealth Actuary.

The expectation of life of males and females at various ages as revealed by these investigations is shown in the following table.

EXPECTATION OF LIFE (a)—AUSTRALIA: 1881-90 TO 1970-72
(Years)

Age last birthday (years)	1881-90	1891-1900	1901-10	1920-22	1932-34	1946-48	1953-55	1960-62	1965-67	1970-72
MALES										
0	47·20	51·08	55·20	59·15	63·48	66·07	67·14	67·92	67·63	67·81
5	52·86	55·61	57·91	60·43	62·57	63·77	64·32	64·77	64·36	64·52
10	48·86	51·43	53·53	56·01	58·02	59·04	59·53	59·93	59·50	59·66
15	44·45	46·98	49·03	51·44	53·36	54·28	54·72	55·07	54·63	54·78
20	40·58	42·81	44·74	46·99	48·81	49·64	50·10	50·40	49·98	50·19
25	37·10	38·90	40·60	42·70	44·37	45·04	45·54	45·80	45·40	45·64
30	33·64	35·11	36·52	38·44	39·90	40·40	40·90	41·12	40·72	40·94
35	30·06	31·34	32·49	34·20	35·46	35·79	36·25	36·45	36·04	36·23
40	26·50	27·65	28·56	30·05	31·11	31·23	31·65	31·84	31·44	31·61
45	23·04	23·99	24·78	26·03	26·87	26·83	27·18	27·38	26·99	27·12
50	19·74	20·45	21·16	22·20	22·83	22·67	22·92	23·13	22·76	22·87
55	16·65	17·08	17·67	18·51	19·03	18·84	19·00	19·18	18·83	18·92
60	13·77	13·99	14·35	15·08	15·57	15·36	15·47	15·60	15·27	15·35
65	11·06	11·25	11·31	12·01	12·40	12·25	12·33	12·47	12·16	12·21
70	8·82	8·90	8·67	9·26	9·60	9·55	9·59	9·77	9·52	9·51
75	6·72	6·70	6·58	6·87	7·19	7·23	7·33	7·47	7·33	7·29
80	5·11	5·00	4·96	5·00	5·22	5·36	5·47	5·57	5·51	5·52
85	3·86	3·79	3·65	3·62	3·90	3·84	4·01	4·08	4·07	4·13
90	2·91	2·91	2·64	2·60	2·99	2·74	2·93	3·02	3·05	3·15
95	2·16	2·16	1·88	1·86	2·11	1·93	2·10	2·29	2·33	2·60
100	1·32	1·29	1·18	1·17	1·10	—	—	—	1·82	2·25
FEMALES										
0	50·84	54·76	58·84	63·31	67·14	70·63	72·75	74·18	74·15	74·49
5	56·00	58·64	60·80	63·64	65·64	67·91	69·61	70·78	70·64	70·97
10	51·95	54·46	56·39	59·20	61·02	63·11	64·78	65·92	65·75	66·08
15	47·54	49·97	51·86	54·55	56·29	58·27	59·90	61·01	60·84	61·17
20	43·43	45·72	47·52	50·03	51·67	53·47	55·06	56·16	56·00	56·35
25	39·67	41·69	43·36	45·71	47·19	48·74	50·24	51·32	51·17	51·51
30	36·13	37·86	39·33	41·48	42·77	44·08	45·43	46·49	46·34	46·67
35	32·58	34·14	35·37	37·28	38·37	39·46	40·67	41·70	41·56	41·88
40	29·08	30·49	31·47	33·14	34·04	34·91	36·00	36·99	36·85	37·16
45	25·56	26·69	27·59	28·99	29·74	30·45	31·44	32·38	32·26	32·55
50	22·06	22·93	23·69	24·90	25·58	26·14	27·03	27·92	27·83	28·10
55	18·64	19·29	19·85	20·95	21·58	22·04	22·81	23·63	23·58	23·82
60	15·39	15·86	16·20	17·17	17·74	18·11	18·78	19·51	19·52	19·74
65	12·27	12·75	12·88	13·60	14·15	14·44	15·02	15·68	15·70	15·90
70	9·70	9·89	9·96	10·41	10·98	11·14	11·62	12·19	12·23	12·39
75	7·24	7·37	7·59	7·73	8·23	8·32	8·69	9·16	9·22	9·36
80	5·27	5·49	5·73	5·61	6·01	6·02	6·30	6·68	6·72	6·88
85	3·90	4·12	4·19	4·06	4·30	4·32	4·52	4·79	4·85	5·03
90	2·98	3·07	2·99	2·91	3·05	3·08	3·24	3·48	3·33	3·73
95	2·25	2·18	2·10	2·07	2·00	2·14	2·31	2·59	2·66	2·81
100	1·37	1·23	1·24	1·24	1·02	—	—	—	2·04	2·13

(a) Figures for years prior to 1965-67 refer to population exclusive of full-blood Aborigines.

MARRIAGES

The number of marriages registered in Western Australia in each of the ten years 1968 to 1977 is shown in the following table. Marriages celebrated by ministers of religion are distinguished from those celebrated by civil officers, and the proportions of the total number of marriages which were celebrated by each category of celebrant are also shown.

MARRIAGES REGISTERED

Year	Marriages celebrated by—		All marriages	Proportion celebrated by—	
	Ministers of religion	Civil officers		Ministers of religion	Civil officers
				per cent	per cent
1968	6,810	1,276	8,086	84·22	15·78
1969	7,463	1,530	8,993	82·99	17·01
1970	7,473	1,754	9,227	80·99	19·01
1971	7,478	1,904	9,382	79·71	20·29
1972	7,230	1,890	9,120	79·28	20·72
1973	7,075	2,027	9,102	77·73	22·27
1974	7,137	2,158	9,295	76·78	23·22
1975	6,673	2,353	9,026	73·93	26·07
1976	6,316	3,201	9,517	66·37	33·63
1977	5,869	4,194	10,063	58·32	41·68

The following table gives details of the average age and of the marital status of bridegrooms and brides in each of the five years to 1977.

AVERAGE AGES OF BRIDEGROOMS AND BRIDES

Year	Average age of bridegrooms (years)				Average age of brides (years)			
	Bachelors	Widowers	Divorced	Total	Spinsters	Widows	Divorced	Total
1973	24·34	58·51	38·26	26·61	21·56	50·95	35·15	23·69
1974	24·46	56·48	38·31	26·71	21·63	48·96	35·28	23·80
1975	23·96	57·02	37·78	26·52	21·35	49·45	34·68	23·70
1976	24·45	58·40	37·99	27·75	21·66	50·26	34·34	24·83
1977	25·09	57·32	38·40	28·60	22·20	48·83	34·50	25·66

Marriage Rates. The average annual marriage rates per thousand of mean population for Western Australia and for Australia in each five-year period from 1926 to 1975, as well as the rates for each of the years from 1968 to 1977, are shown in the following table.

MARRIAGE RATES (a)
WESTERN AUSTRALIA AND AUSTRALIA

Period	Average annual rate		Year	Annual rate	
	Western Australia	Australia		Western Australia	Australia
1926-30	7·80	7·52	1968	8·83	8·85
1931-35	7·58	7·16	1969	9·41	9·16
1936-40	9·49	9·35	1970	9·28	9·26
1941-45	9·74	9·94	1971	9·00	9·09
1946-50	10·01	9·77	1972	8·52	8·65
1951-55	8·44	8·29	1973	8·35	8·42
1956-60	7·36	7·50	1974	8·32	8·14
1961-65	7·43	7·63	1975	7·87	7·55
1966-70	8·87	8·81	1976	8·13	7·90
1971-75	8·40	8·36	1977	8·41	7·45

(a) Rates prior to 1966 exclude particulars of full-blood Aborigines. Rates for years prior to 1976 are based on final census results; those for 1976 and later are subject to revision.

Religious and Civil Marriages. *The Marriage Act 1961* (Commonwealth) provides that marriages may be celebrated either by ministers of religion registered for the purpose with the Registrar of Ministers of Religion in each State or Territory, by the Registrar-General, his Deputy or other State officers appointed under the Registration of Births, Deaths and Marriages Act (State), or, since 1973, by other persons authorised by the Commonwealth Attorney-General.

The following table, which relates to marriages registered in Western Australia during the period 1973 to 1977, shows the numbers and proportions celebrated by ministers of the principal religious denominations and by civil officers.

RELIGIOUS AND CIVIL MARRIAGES

Category of authorised celebrant	1973	1974	1975	1976	1977	
					Number	Per cent of total
Ministers of religion—						
Registered ministers of recognised religious denominations (a)—						
Church of England in Australia	2,435	2,381	2,159	1,852	1,766	17.55
Church of Jesus Christ of the Latter Day Saints	16	20	21	24	16	0.16
Churches of Christ in Australia	171	231	182	206	219	2.18
Congregational Union of Australia (b)	115	88	96	98	56	0.56
Jehovah's Witnesses	53	44	57	55	41	0.41
Jewry	16	27	11	12	10	0.10
Lutheran Church	42	41	46	44	48	0.48
Orthodox Church (c)	105	93	97	96	68	0.68
Roman Catholic Church	2,268	2,289	2,165	2,097	1,904	18.92
Seventh-day Adventist Church	33	39	39	44	39	0.39
The Baptist Union of Australia	138	141	134	144	166	1.65
The Methodist Church of Australasia (b)	973	956	880	827	475	4.72
The Presbyterian Church of Australia (b)	490	481	462	402	243	2.41
The Salvation Army	58	60	54	65	74	0.74
Uniting Church in Australia (b)	—	—	—	—	532	5.29
Other	128	150	234	304	183	1.82
Total	7,041	7,041	6,637	6,270	5,840	58.03
Other ministers of religion	34	96	36	46	29	0.29
Total	7,075	7,137	6,673	6,316	5,869	58.32
Civil officers—						
Registrar-General, etc.	} (d) 2,027	(d) 2,158	{ 1,941 412	2,047 1,154	1,656 2,538	16.46 25.22
Other persons						
Total	2,027	2,158	2,353	3,201	4,194	41.68
Total marriages	9,102	9,295	9,026	9,517	10,063	100.00

(a) Under authority of the Marriage Act. (b) The Uniting Church in Australia was formed in June 1977 by the union of all the Methodist Churches, and most of the Congregational and Presbyterian Churches. (c) Includes denominations grouped under this heading in the proclamation made under the Marriage Act. (d) Separate details not available.

DIVORCE

The *Family Law Act 1975* (Commonwealth), which came into operation on 5 January 1976, repeals the Matrimonial Causes Act and makes new provisions relating to divorce. It also establishes the Family Court of Australia.

In Western Australia, jurisdiction relating to the *Family Law Act 1975* (Commonwealth) is vested in the Family Court of Western Australia constituted by the *Family Court Act, 1975-1978* (State).

The Family Law Act provides that an application by a party to a marriage for a decree of dissolution of the marriage shall be based on the ground that the marriage has broken down irretrievably. A decree of dissolution is made if, and only if, the Court is satisfied that the parties separated and thereafter lived separately and apart for a continuous period of not less than twelve months immediately preceding the date of the filing of the application for dissolution of marriage, provided that the Court is satisfied that there is no reasonable likelihood of cohabitation being resumed.

The Family Court of Western Australia which commenced operation on 1 June 1976 also exercises jurisdiction in matters concerning the adoption of children, and the guardianship, custody or maintenance of children.

In the following table particulars are given of the duration of marriage, *i.e.* the interval between marriage and the time of dissolution, for marriages dissolved during the five years 1973 to 1977.

DISSOLUTIONS OF MARRIAGE—DURATION OF MARRIAGE

Year of dissolution of marriage	Marriages dissolved after a duration of—							Total marriages dissolved
	Under 5 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30 years and over	
1973	165	430	285	200	151	105	88	1,424
1974	176	561	378	234	176	139	97	1,761
1975	220	699	466	334	255	159	107	2,240
1976	676	1,540	878	622	469	356	277	4,818
1977	641	1,198	772	498	380	271	215	3,975

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CHAPTER V—SOCIAL CONDITIONS

Part 1—Education

PRIMARY, SECONDARY AND TECHNICAL EDUCATION

In Western Australia, education at primary and secondary levels is provided at government schools administered and staffed by the Education Department and at non-government schools, most of which are conducted by the principal religious bodies. Reference to the Technical Education Division of the Education Department will be found later in this Part.

Primary and Secondary School Enrolments

The following tables give a classification according to age of pupils enrolled at government and non-government schools on 1 August in the years shown.

GOVERNMENT AND NON-GOVERNMENT SCHOOLS
PUPILS CLASSIFIED ACCORDING TO AGE (a)

Age last birthday (b) (years)	Government schools (c)					Non-government schools				
	1974	1975	1976	1977	1978	1974	1975	1976	1977	1978
Under 6	7,712	7,838	8,504	8,694	8,045	1,508	1,524	1,493	1,533	1,338
6	17,972	19,247	19,429	21,337	20,782	3,221	3,396	3,409	3,524	3,508
7	17,602	18,506	19,612	19,986	21,655	3,201	3,216	3,358	3,384	3,566
8	17,546	18,020	18,694	19,995	20,180	3,384	3,350	3,196	3,439	3,497
9	17,616	17,758	18,567	19,121	20,205	3,437	3,382	3,350	3,298	3,402
10	18,122	17,921	18,023	18,540	19,119	3,396	3,442	3,380	3,402	3,413
11	18,698	18,333	17,969	18,171	18,563	3,601	3,532	3,569	3,552	3,683
12	17,946	18,484	17,902	17,754	17,801	4,003	4,093	4,155	4,113	4,110
13	17,331	17,800	18,068	17,862	17,170	4,635	4,554	4,625	4,512	4,601
14	16,507	17,281	17,568	17,873	17,548	4,335	4,445	4,544	4,579	4,537
15	12,147	13,215	13,887	14,228	14,560	3,670	3,811	4,039	4,065	4,135
16	6,454	7,181	7,509	7,709	8,074	2,717	2,865	2,889	3,087	3,117
17	2,996	3,207	3,526	3,556	3,630	1,566	1,638	1,669	1,637	1,784
18 and over	265	233	299	282	317	114	125	134	132	153
Total	188,914	195,024	199,557	205,108	207,649	42,788	43,373	43,810	44,257	44,844

(a) Excludes children attending pre-school centres and children in pre-school grades at primary schools. (b) At 1 August. Children may commence school at the beginning of the year in which they attain the age of 6 years. Except in special circumstances, attendance is compulsory from the age of 6 years and upward to the end of the year in which the child attains the age of 15 years. (c) Includes special schools and classes. Excludes Technical Schools and Colleges. Excludes also part-time students enrolled in the Western Australian Correspondence School.

GOVERNMENT AND NON-GOVERNMENT SCHOOLS
PUPILS CLASSIFIED ACCORDING TO AGE AND SEX: AUGUST 1978 (a)

Age last birthday (b) (years)	Government schools (c)			Non-government schools			All schools (c)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Under 6	4,126	3,919	8,045	625	713	1,338	4,751	4,632	9,383
6	10,746	10,036	20,782	1,718	1,790	3,508	12,464	11,826	24,290
7	11,238	10,417	21,655	1,743	1,823	3,566	12,981	12,240	25,221
8	10,450	9,730	20,180	1,745	1,752	3,497	12,195	11,482	23,677
9	10,462	9,743	20,205	1,648	1,754	3,402	12,110	11,497	23,607
10	9,964	9,155	19,119	1,675	1,738	3,413	11,639	10,893	22,532
11	9,650	8,913	18,563	1,794	1,889	3,683	11,444	10,802	22,246
12	9,293	8,508	17,801	1,987	2,123	4,110	11,280	10,631	21,911
13	8,932	8,238	17,170	2,234	2,367	4,601	11,166	10,605	21,771
14	9,065	8,483	17,548	2,134	2,403	4,537	11,199	10,886	22,085
15	7,549	7,011	14,560	1,939	2,196	4,135	9,488	9,207	18,695
16	3,936	4,138	8,074	1,466	1,651	3,117	5,402	5,789	11,191
17	1,829	1,801	3,630	857	927	1,784	2,686	2,728	5,414
18 and over	184	133	317	68	85	153	252	218	470
Total	107,424	100,225	207,649	21,633	23,211	44,844	129,057	123,436	252,493

For footnotes, see previous table.

School censuses are conducted annually at or about the beginning of August in all States and the internal Territories of Australia. The Western Australian Correspondence School, special schools and classes, schools in institutional homes, hospitals and similar establishments, and pre-school centres are included in the census. Institutions such as business colleges and coaching establishments are excluded.

THE EDUCATION DEPARTMENT

The Education Department is responsible for the organisation and management of the State Government's education programme and is controlled by a Director-General of Education responsible to the Minister for Education. During 1976 the administrative structure of the Department was changed from four Divisions (Primary, Secondary, Technical and Special Services) to four Directorates (Schools, Educational Services, Staffing, and Planning) and a Technical Education Division. Special Branches attached to relevant Directorates are concerned with such activities as physical education (including swimming instruction), music, drama, art and crafts, visual education, publications, guidance, library services, curriculum development, planning, buildings, and educational research. In addition there is provision for a number of other services which are concerned with particular aspects of the education and welfare of school children, including the School Medical and Dental Services conducted in collaboration with the Department of Public Health.

Primary and Secondary Schools

A year of free, voluntary pre-primary education for children of the age of five years is being progressively introduced into government primary schools. Instruction in the primary school is provided over a seven-year period. A child who makes normal progress completes the course at the age of twelve years and may then enter high school. A Senior High School provides tuition in five years of secondary study leading to the Certificate of Secondary Education. A High School gives instruction in the first three years of the secondary school curriculum culminating in an Achievement Certificate. A District High School is one which provides primary schooling and the first three years of secondary schooling. At some centres where there is no high school, post-primary subjects are taught at the primary school.

The Education Act provides for a Board of Secondary Education for the purposes of approving courses of study and the certification of student achievement in secondary education in Western Australia.

The Achievement Certificate describes the achievement of a student in the first three years of secondary schooling and is issued at the end of Year 10, or earlier if the student leaves school in Years 8 or 9 or before completing Year 10. Each full year's achievement is recorded.

The Certificate of Secondary Education (formerly the Leaving Certificate) is issued to students at the end of Year 12. Certification is based on school assessment moderated by and combined with either a Board-supervised test or the Tertiary Admissions Examination as appropriate to each subject.

Primary and Secondary Curriculum

In primary schools the subjects taught are English, mathematics, social studies, science, physical education, handicrafts, music, art and, in some cases, foreign languages. The teaching of science aims at a better understanding of the child's physical environment. The course is adapted to the conditions of the particular neighbourhood, and so varies between town and country areas. In musical expression, choral singing receives most attention, although school orchestras are being developed in some primary and high schools. Advisory teachers, working from regional offices under the direction of the regional superintendents and the specialist superintendent, assist teachers in handicrafts, physical education, art, music, speech, drama and science.

At the post-primary level, every student is required to take instruction in English, mathematics, science, and social studies, as well as one or more subjects chosen from a range of optional studies.

Education in government schools is secular in character but periods are set aside during which representatives of various religious denominations may attend to give religious instruction. In addition, instruction in scripture stories is given by class teachers.

The following table shows the number of schools staffed and controlled by the Education Department, the number of teachers employed, and the number of pupils classified according to year of study, for each of the years 1974 to 1978.

The figures shown under the heading 'On special duties' represent teachers engaged in activities associated with the Special Branches of the Department.

GOVERNMENT SCHOOLS

Particulars	At 1 August—				
	1974	1975	1976	1977	1978
NUMBER OF SCHOOLS					
Primary schools	508	513	519	524	533
District high schools	49	50	52	52	52
High schools	13	13	11	11	12
Senior high schools	51	53	58	61	62
Total	621	629	640	648	659
NUMBER OF TEACHERS (a)					
Engaged in teaching duties	8,477	9,446	9,930	10,372	10,951
On special duties	197	272	341	354	449
On leave	96	77	139	115	142
Total	8,770	9,795	10,410	10,841	11,542
	Males	4,103	4,467	4,733	4,981
	Females	4,667	5,328	5,677	6,275
Total	8,770	9,795	10,410	10,841	11,542
NUMBER OF PUPILS (b)					
Grade of education—					
Primary	129,545	132,204	134,822	139,536	142,184
Secondary—					
Years 8, 9 and 10	47,921	50,192	51,538	52,017	51,338
Years 11 and 12	11,090	12,305	12,917	13,309	13,858
Ungraded pupils in special classes	358	323	280	246	269
Total	188,914	195,024	199,557	205,108	207,649
	Males	98,591	101,523	103,816	106,155
	Females	90,323	93,501	95,741	98,953
Total	188,914	195,024	199,557	205,108	207,649

(a) Includes persons teaching pre-primary grades. Excludes persons teaching part-time. (b) Excludes part-time students enrolled in the Western Australian Correspondence School.

Audio-visual Materials, Radio and Television

Extensive use is made of audio-visual technology, most schools being equipped with projectors of several types, tape-recorders, radios, television sets and sound-reproduction systems. Most secondary schools have video-recording equipment, and this has also been supplied to remote and other disadvantaged schools. The Audio-Visual Education Branch, which operates through a number of decentralised outlets supplies a wide variety of learning materials both of its own production and obtained from commercial sources. The Australian Broadcasting Commission co-operates with the Education Department in providing an extensive range of suitable radio and television broadcasts.

Student Counselling and Vocational Guidance

Guidance officers of the Directorate of Educational Services are available to discuss with parents the most suitable courses of study for their children and vocational guidance is given to high school students. In addition, cases of handicapped or educationally retarded children are investigated and appropriate courses of education recommended.

Special Schools and Classes

The Directorate of Schools provides many kinds of assistance for physically and mentally handicapped children. A Kindergarten and Infant School for Deaf Children is maintained, as well as a Deaf School for older pupils. Special classes are organised for the blind and for the mentally handicapped, and instruction is given to patients at the Princess Margaret Hospital for Children and at other hospitals. The Department co-operates with welfare organisations, such as the Spastic Welfare Association and the Slow Learning Children's Group, by making teachers and support staff available to them.

Correspondence Tuition

The Western Australian Correspondence School provides tuition by correspondence for children living in remote areas or unable to attend school for other reasons. The service extends also to post-primary students in the smaller country schools, to sick and invalid children, and to some adults in country areas. Adults enrol mainly in order to meet the training requirements for some occupations, or to improve their general education. At 1 August 1978, full-time students enrolled in the Correspondence School comprised 417 primary and 178 secondary students.

Schools of the Air are conducted through the radio network of the Royal Flying Doctor Service from bases at Carnarvon, Derby, Kalgoorlie, Meekatharra and Port Hedland to supplement tuition provided by the Correspondence School.

The Isolated Students Matriculation Scheme provides correspondence tuition in Years 11 and 12 for students in remote areas.

Education of Aborigines

Children of Aboriginal descent are admitted to ordinary government schools and are educated, as far as is practical, under similar conditions to other children. In schools with a preponderance of Aborigines, attention is directed to the framing of special courses, such as vocationally-orientated programmes for older students, the production of learning materials, the provision of supplementary funding and assistance of an advisory nature. These services are largely implemented through the Department's Regional Offices in liaison with the Aboriginal Education Branch of the Department which is available to assist in the education of all Aboriginal children. A pre-primary section for Aboriginal children is administered by the Early Childhood Branch in liaison with the Aboriginal Education Branch. In August 1978 there were 9,955 children of Aboriginal descent at government primary and secondary schools and 1,670 at non-government schools.

Instruction for adult Aborigines is available under the Adult Aboriginal Education programme conducted by the Technical Education Division.

Agricultural Education

Agricultural education is provided at certain high schools. Residential accommodation is available at the Narrogin Agricultural Senior High School, the Harvey Agricultural Senior High School and the Agricultural District High Schools at Cunderdin and Denmark. The two-year curriculum is designed as a continuation of general education to standards equivalent to those of other types of schools. Vocational agriculture subjects are studied under the auspices of the Board of Secondary Education towards the Certificate of Secondary Education. The aim is to produce young men capable of becoming leaders in rural communities as well as being successful farmers with an appreciation of the value of scientific methods in agriculture. To be eligible for selection, students must have

successfully completed Year 10 and gained a satisfactory report from their previous school concerning their participation in various school activities. Although some preference is given to students who can demonstrate likely ownership-access to farming land, this is not essential. A new 32-bed dormitory at the Cunderdin School has been designed to accommodate both boys and girls.

Day instruction in agricultural subjects is provided at Esperance, Kelmscott, Merredin and Mount Barker Senior High Schools, at Margaret River High School and at the District High Schools of Kojonup, Morawa, Northampton, Wyalkatchem and at the town wing of the Narrogin Agricultural Senior High School. In Years 9 and 10 agriculture is taught as an optional subject within the Achievement Certificate and in Years 11 and 12 as the unit Agricultural Studies accredited for the Certificate of Secondary Education.

Every school providing agricultural instruction has agricultural land attached to it. Advisory committees appointed by the Minister in each school offer advice concerning management and operation.

Diploma and certificate courses in various aspects of agriculture are provided by the Technical Education Division by means of class tuition, or by correspondence through the Technical Extension Service.

In addition to the activities of the Education Department in the field of agricultural education, facilities are also provided by Muresk Agricultural College, a department of The Western Australian Institute of Technology.

Technical Education

The Technical Education Division of the Education Department offers technician-level courses, apprenticeship and pre-apprenticeship training, general studies programmes (including courses for students preparing for public and other external examinations), and adult education (including classes designed as leisure-type studies).

The Technical Education Division provides instruction in ten 'areas of study', namely Agriculture; Apprenticeships and Post-apprenticeship Courses; Art; Building and Architecture; Engineering (including Aeronautical and Marine); General and Social Studies; Health and Psychology; Home Economics; Management, Business and Commercial Studies; and Mathematics and Science. The Division has also become closely associated with industry in training mature age persons who have, through advancing and changing technology, become redundant in their chosen field.

Institutions under the control of the Technical Education Division at 31 December 1978 comprised fifteen technical colleges (Albany, Balga, Bentley, Bunbury, Carlisle, Claremont, Eastern Goldfields, Fremantle, Geraldton, Leederville, Midland, Mount Lawley, Perth, Wembley, and the Technical Extension Service), eleven evening technical schools with full-time officers in charge, ninety-one technical centres and thirty-eight Adult Aboriginal Education Centres. The Division has a Counselling Service which is available to advise students in selecting a course, to assist them in their studies, and to provide consultant services to industry and commerce on staff selection and training.

Technician-level studies are usually designed as diploma or certificate courses, for which the minimum entry requirement is the satisfactory completion of three years of secondary education or its accepted equivalent. Although these courses were originally on the basis of part-time study, a number are now also available by full-time study, and other part-time courses at these levels are being progressively redesigned on a full-time, or partially full-time, basis. This means that an increasing number of subjects in these courses are becoming available to part-time students who can obtain day release from their employers to attend classes. Diploma and certificate courses are conducted, wholly or partly, at technical colleges, and subjects in the early stages of a number of courses are also available at some technical education centres.

Programmes of study are available for students wishing to undertake examinations organised by other examining bodies including a number of Commonwealth Government and State Government Departments.

Vocational courses, including apprenticeship training, may be taken at metropolitan colleges and at the Albany, Bunbury, Eastern Goldfields and Geraldton Technical Colleges. In addition, there are many courses and subjects which help students to develop useful and interesting leisure-time activities.

The Technical Education Division has a number of evening technical centres in the metropolitan area and in country towns. These centres, which are located in government school buildings, offer those subjects for which there is sufficient local demand and for which suitable facilities and staff are available. The subjects provided fall into the categories of general education, including public examination and pre-diploma subjects, accounting, business studies and commercial subjects, and leisure-type activities.

Details of teaching positions and student enrolments in the five years 1974 to 1978 are given in the next table.

TECHNICAL EDUCATION

Particulars	1974	1975	1976	1977	1978
COLLEGES (a)					
Number of—					
Colleges (b)	6	6	14	14	15
Teaching positions (c)—					
Full-time	566	615	936	1,038	1,133
Part-time	862	1,219	1,985	2,122	2,113
Student enrolments	38,220	40,572	61,209	62,020	63,429
SCHOOLS (d)					
Number of—					
Schools (b)	8	8	....	10	11
Teaching positions (c)—					
Full-time	205	244	....	16	11
Part-time	418	740	....	762	821
Student enrolments	16,497	20,046	....	22,886	25,709
CENTRES					
Number of—					
Centres (b)	92	92	101	90	91
Teaching positions (c)—					
Full-time	27	23	21	12	5
Part-time	958	1,390	1,512	1,005	1,054
Student enrolments	29,918	30,130	36,066	20,275	18,402
OTHER SERVICES (e)					
Number of—					
Services (b)	2	3	3	3	3
Teaching positions (c)—					
Full-time	39	36	41	30	37
Part-time	76	256	282	196	275
Student enrolments	1,956	3,324	3,352	3,730	4,989
TOTAL					
Number of—					
Colleges, schools, centres, and other services (b)	108	109	118	117	120
Teaching positions (c)—					
Full-time	837	918	998	1,096	1,186
Part-time	2,314	3,605	3,779	4,085	4,263
Total	3,151	4,523	4,777	5,181	5,449
Student enrolments—					
Males	47,586	50,922	51,728	53,820	54,156
Females	39,005	43,150	48,899	55,091	58,373
Total	86,591	94,072	100,627	108,911	112,529

(a) Includes Technical Extension Service. See also footnote (d). (b) At 31 December. (c) At 1 July. A teacher may occupy teaching positions at more than one institution; the number of individual teachers is not available. (d) In 1976 all technical schools were renamed colleges; however, in 1977 certain technical centres were renamed Evening Technical Schools. (e) Adult Aboriginal Education Centres, Counselling Service, and teachers in administrative positions. Excludes Youth Education Classes.

The Technical Extension Service, through its correspondence courses, caters for a wide range of instruction for students who are unable to attend formal classes because of remoteness or individual limitations such as physical disability. In larger country centres, correspondence instruction is supplemented by the provision of study groups which students may attend for one period a week to do their correspondence work in the local school under the supervision of a teacher who is able to assist in interpretation of material and in the presentation of answers. The technical aspects of this instruction are the responsibility of specialist tutors employed in the Service.

The Technical Education Division collaborates with two Commonwealth Government authorities, the Department of Immigration and Ethnic Affairs and the Department of Education, in providing courses in the English language for adult migrants. The Division conducts an Adult Aboriginal Education programme which, although designed mainly to develop literacy, also conducts classes in community obligations, home skills, employment skills and leisure-time activities.

PRE-SCHOOL EDUCATION

The *Education Act Amendment Act, 1977*, which came into operation on 1 January 1978, repeals the *Pre-School (Education and Child Care) Act, 1973-1975*. The Act authorises the transfer to the Minister for Education of the property, rights, obligations and liabilities formerly vested in the Western Australian Pre-School Board established under the *Pre-School (Education and Child Care) Act, 1973-1975*, now repealed.

A new Branch of the Education Department, the Early Childhood Branch, has been created by the amalgamation of personnel, resources and services of the former Western Australian Pre-School Board and the Pre-primary Section of the Education Department.

The new Branch is responsible for the co-ordination of early childhood services, the overall administration of pre-primary centres attached to Government primary schools and for maintaining staff and advisory services to pre-school centres which remain in the control of local parent committees.

The *Education Act, 1928-1977*, as amended, requires that every person conducting a pre-school centre shall hold a permit issued by the Minister for Education and that every authorised pre-school centre shall be subject to inspection by an officer of the Education Department.

Pre-primary and pre-school centres, attendance at which is optional, are established by the Education Department and by local groups respectively.

PRE-SCHOOL CENTRES

Particulars	At 1 August 1978
Number of centres—	
Pre-primary	291
Pre-school	261
Independent pre-schools	20
Non-government schools	19
Total	591
Number of staff—	
Trained teachers	673
Trained aides, assistants	154
Untrained assistants	667
Total	1,494
Number of children—	
Pre-primary centres	10,182
Pre-school centres	13,504
Independent pre-schools	1,442
Non-government schools	139
Total	25,267

NON-GOVERNMENT SCHOOLS

The non-government schools, which are conducted mainly by religious organisations, provide education from pre-school level to the end of the secondary school course, equivalent to the final year in the government high schools. The curriculum at the primary and secondary levels is substantially the same as that in the government schools.

Schools, Teachers and Pupils

The following table gives details of the number of schools, teachers and pupils in non-government primary and secondary schools, according to denomination of school, as at 1 August 1974 to 1978.

NON-GOVERNMENT PRIMARY AND SECONDARY SCHOOLS					
Particulars	At 1 August—				
	1974	1975	1976	1977	1978
NUMBER OF SCHOOLS					
Denomination of school—					
Church of England	10	10	10	10	9
Methodist	3	3	3	3	3
Presbyterian	2	2	2	2	2
Roman Catholic	157	156	149	146	144
Other denominations	11	9	9	10	10
Undenominational	9	11	14	17	19
Total	192	191	187	188	187
NUMBER OF TEACHERS (a)					
Denomination of school—					
Church of England	277	269	264	275	283
Methodist	126	126	137	134	142
Presbyterian	103	103	102	109	115
Roman Catholic	1,222	1,326	1,409	1,494	1,553
Other denominations	48	47	50	53	53
Undenominational	32	45	55	62	68
Total	1,808	1,916	2,017	2,127	2,214
NUMBER OF PUPILS					
Denomination of school—					
Church of England	4,284	4,231	4,231	4,183	4,196
Methodist	2,136	2,130	2,157	2,186	2,251
Presbyterian	1,534	1,507	1,561	1,605	1,675
Roman Catholic	32,987	33,609	33,691	33,997	34,339
Other denominations	1,106	1,087	1,120	1,114	1,173
Undenominational	741	809	1,050	1,172	1,210
Total	42,788	43,373	43,810	44,257	44,844
Grade of education—					
Primary	24,680	24,788	24,678	24,851	25,104
Secondary—Years 8, 9 and 10	12,956	13,222	13,538	13,721	13,930
Years 11 and 12	5,152	5,363	5,594	5,685	5,810
Total	42,788	43,373	43,810	44,257	44,844
Males	20,524	20,824	21,005	21,328	21,633
Females	22,264	22,549	22,805	22,929	23,211

(a) Excluding persons on leave without pay and persons teaching part-time.

POST-SECONDARY EDUCATION COLLEGES

The Western Australian Teacher Education Authority established in terms of the *Teacher Education Act, 1972-1978* had the responsibility of providing teacher education in Western Australia. The Authority consisted of a Council and five constituent colleges.

The *Colleges Act, 1978* which came into operation on 1 January 1979 repealed the *Teacher Education Act*, disbanded the Western Australian Teacher Education Authority and re-established the five constituent colleges as independent self-governing institutions subject to the authority of the Western Australian Post-Secondary Education Commission.

The Act provides for the Minister for Education to establish new multi-level colleges and to authorise existing colleges to provide advanced education, technical education and education at other levels in a number of approved fields.

The main functions of the colleges, as set out in the Act, are to provide post-secondary education and to encourage its development and improvement; to aid the development of knowledge and its practical applications to industry, commerce and the community; to contribute to the general cultural development of their local communities and to encourage community use of their facilities; to foster the general welfare and development of all enrolled students; to promote and encourage consultation with other institutions in the interests of economy and mutually beneficial relationships; and to provide the facilities to carry out these functions.

Churchlands College

Churchlands College was established in 1972 and offers courses in Teacher Education and Business Studies. The following courses were available in 1979:

Graduate Diploma	....	....	Mathematics Education (Primary), Music Education (Primary), Remedial Education
Bachelor's Degree	....	....	Business (Accounting, Administration, Financial, Management and Economics), Education (Early Childhood, Primary)
Diploma	....	....	Teaching (Early Childhood, Primary)

In 1978 there were 2,165 students enrolled at the College in full-time and part-time courses.

Claremont Teachers College

Claremont Teachers College was established in 1902 as the State's first teachers college. In recent years it has been able to diversify and in 1979 it offered the following courses:

Graduate Diploma	....	....	Education (Primary), Reading Education, Speech and Drama
Bachelor's Degree	....	....	Education (Primary)
Diploma	....	....	Teaching (Primary)
Associate Diploma	....	....	Health Education

There were 930 students enrolled in full-time and part-time courses in 1978.

Graylands Teachers College

Graylands Teachers College was established in 1955, at a site only 2.2 km from Claremont Teachers College. Plans to relocate the College never came to fruition and in August 1977 the State Government accepted a recommendation of the Western Australian Post-Secondary Education Commission that the College be phased out by the end of 1979 and that the College's resources, staff and student places be absorbed by the other primary colleges, particularly Churchlands and Mount Lawley.

In 1978 there were 327 students at the College, all of whom were enrolled in the Diploma of Teaching (Primary) course.

Mount Lawley College

Mount Lawley College was established in 1970 and in 1979 offered the following courses:

Graduate Diploma	....	....	Art Education (Primary), Educational Technology, Intercultural Studies (Aboriginal Studies, Ethnic Studies, Migrant Studies), Language Studies (Language Arts, Modern Language Education, Teaching English as a Second Language), Physical Education (Primary), Special Education
Bachelor's Degree	....	....	Education (Primary)
Diploma	....	....	Teaching (Primary)

The number of enrolments in full-time and part time-courses in 1978 was 1,885.

Nedlands College

Formerly the Western Australian Secondary Teachers College, the College was established in 1967 to provide teacher education for students who proposed to teach in secondary schools. In 1979 the College offered the following courses:

Graduate Diploma	....	....	Education (Secondary), Recreation
Bachelor's Degree	....	....	Education (Secondary)
Diploma	....	....	Recreation, Teaching (Secondary)
Associate Diploma	....	....	Library Media, Recreation

Some students enrolled at the College are also enrolled in courses at The University of Western Australia. The total number of enrolments at the College in 1978 was 1,963.

THE WESTERN AUSTRALIAN INSTITUTE OF TECHNOLOGY

The Western Australian Institute of Technology is a college of advanced education, established in terms of the *Western Australian Institute of Technology Act, 1966-1974* as an autonomous body under the control of a governing council. The main functions of the Institute, as set out in the Act, are to provide facilities for higher specialised instruction and to advance training in the various branches of technology and science; to aid the advancement, development and practical application to industry of science or any techniques; and to encourage and provide facilities for the development and improvement of tertiary education whether on a full or part-time basis to meet the needs of the community.

Buildings for the Institute were commenced in 1963 on a site of about 109 hectares at Bentley, approximately eleven kilometres from the Perth city centre, and the initial group of buildings was officially opened on 17 August 1966. The administration and associated buildings were officially opened on 11 October 1968.

Finance

Details of the income and expenditure of The Western Australian Institute of Technology in each year from 1973 to 1977 are given in the following table.

THE WESTERN AUSTRALIAN INSTITUTE OF TECHNOLOGY—FINANCE (\$'000)

Particulars	1973	1974 (a)	1975	1976	1977
INCOME					
Income for specific capital purposes (b)—					
Australian Government grants	2,488	5,888	6,815	1,924	3,680
State Government grants	1,459	13	460	—	—
Total	3,947	5,901	7,275	1,924	3,680
Income for other purposes—					
Australian Government grants	4,964	16,920	24,029	26,719	29,195
State Government grants	7,319	87	105	—	—
Donations and endowments	25	14	11	26	128
Student fees (a) (c)	1,229	—	—	—	—
Other	897	1,319	1,542	1,247	1,810
Total	14,434	18,340	25,687	27,992	31,133
TOTAL INCOME	18,381	24,241	32,962	29,916	34,813
EXPENDITURE					
Salaries and wages	9,123	11,589	16,504	18,228	20,892
Library	204	266	479	320	451
Buildings, grounds and equipment	3,870	6,678	6,617	1,937	3,673
Minor equipment	563	958	799	973	1,438
Sundry auxiliary expenditure	3,376	4,410	6,453	7,413	8,673
TOTAL EXPENDITURE	17,136	23,901	30,852	28,871	35,127

(a) The Australian Government assumed full financial responsibility for tertiary education with effect from 1 January 1974 and tuition fees were abolished. State Government grants shown for 1974 and 1975 represent amounts outstanding from previous years or grants made for specific purposes such as research. (b) Income received specifically for new buildings, major alterations and additions to buildings, installation of services, purchase of land and buildings and major equipment. (c) Excludes fees collected on behalf of student organisations.

Courses

The Institute conducts regular courses leading to an associate diploma, diploma, bachelor's degree, graduate diploma or master's degree qualification. The courses vary in duration, requiring up to four years of full-time study or the part-time equivalent. The normal entrance requirement for undergraduate courses is that a student shall have attained an aggregate of scaled marks exceeding a determined minimum in the Tertiary Admissions Examination. The aggregate is calculated on the basis of scaled marks gained in five subjects, one of which must be English or English Literature. Other avenues for admission include selection on the basis of school assessment, certain qualifications obtained through the Technical Education Division, or other qualifications equivalent to Tertiary Admission Examination standards. Special provisions exist by means of a Mature Age Scheme for admitting those over the age of twenty-one years who do not meet the normal entrance requirements.

The teaching work of the Institute is organised under eight Schools namely Applied Science, The Arts and Design, Business and Administration, Engineering and Surveying, Health Sciences, Mining and Mineral Technology, Social Sciences, and Teacher Education.

The Institute offered degrees for the first time in 1973 and it currently offers degrees in most areas of study. A range of graduate diploma programmes, and masters' degrees are currently on offer in the Business, Chemistry, Health Science, Metallurgy, Physics, Pharmacy, Science Education, and Surveying and Mapping disciplines.

School of Mines of Western Australia

The School of Mines of Western Australia was established at Coolgardie in 1902 and was transferred to Kalgoorlie in the following year. Control of the School of Mines, formerly part of the Department of Mines, passed to The Western Australian Institute of Technology in January 1969 and now forms the nucleus of the School of Mining and Mineral Technology established in 1975. Towards the end of 1978, the State Government accepted the recommendation of the Western Australian Post-Secondary Education Commission to maintain and further develop the School of Mines at Kalgoorlie as part of the newly created Federation of Colleges, involving a co-operative enterprise between the School of Mines of Western Australia and the Eastern Goldfields Technical College. The College will be developed on and around the present School of Mines site and the separate parts of the College will retain identification with the parent organisations, *i.e.* the School of Mines with the Institute, and the Technical College with the Technical Education Division.

Undergraduate courses are available in Accounting, Engineering (Civil, Electrical, Mechanical, Mining), Metallurgy (extractive), Mine Surveying, Mine Ventilation and Mining Geology. These courses extend over three or four years of full-time study or the part-time equivalent. An associate diploma course in Mining and Mineral Technology extending over two years of full-time study, or the part-time equivalent, is also provided. The total number of students enrolled in 1978 was 318.

Through the Kalgoorlie Metallurgical Laboratory, the School undertakes metallurgical investigations as well as assays for gold or for other metals. Free assays and mineral determinations are made available for *bona fide* prospectors.

The School has a geological museum which is open to the public and contains rocks and minerals from many parts of Australia and elsewhere.

Muresk Agricultural College

Muresk Agricultural College, situated about thirteen kilometres south of Northam in the Avon valley, was established by the Department of Agriculture in 1926. Control of the College was transferred to The Western Australian Institute of Technology from the Department of Agriculture in January 1969.

The College offers two tertiary level courses. One leads to an Associate Diploma in Agriculture. It is of two years' duration and is fully residential. The other, a full-time degree course of three and a half years' duration, was offered for the first time in 1977.

These courses are designed to give a sound scientific, technical and managerial training suitable for those wishing to become farm owners or managers, or to work in industries servicing agriculture. The subjects studied are Plant Sciences and Husbandry, Animal Sciences and Husbandry, Agricultural Engineering, Farm Management, Soil Science, Humanities and Practical Farm Work. Instruction is given by means of lectures, assignments, laboratory and workshop practical work, demonstrations, tutorials, day tours to farms and research stations, extended tours into the agricultural areas, and practical farming on the College estate and on a nearby project farm.

The estate of some 900 hectares is devoted to mixed farming and provides the students with an opportunity to gain a considerable amount of practical experience by observation, demonstration and actual participation in a wide variety of farming activities. Use is made of the College facilities for various research projects.

Numerous short courses are held at the College, including in-service training schools for personnel of the Department of Agriculture and for field and service staff of agricultural firms.

The number of students enrolled at the College in 1978 was 190.

Teachers, Students, and Courses Completed

The following table gives particulars of teaching staff in each of the years 1974 to 1978. The number of students taking and completing courses is also shown.

THE WESTERN AUSTRALIAN INSTITUTE OF TECHNOLOGY

Particulars	1974	1975	1976	1977	1978
NUMBER OF TEACHING STAFF (a)					
Full-time—					
School and department heads	26	35	37	36	38
Senior lecturers	105	122	129	122	143
Lecturers	247	258	278	295	273
Assistant lecturers, tutors, demonstrators, etc.	60	59	88	81	100
Total, Full-time	438	474	532	534	554
Part-time (b)	83	115	139	115	98
NUMBER OF STUDENTS IN APPROVED COURSES (a)					
Full-time	3,670	4,290	4,775	4,776	4,921
Part-time—					
Internal	4,668	4,251	4,983	5,093	5,022
External	889	1,079	1,086	1,217	1,252
Total	9,227	9,620	10,844	11,086	11,195
Males	6,650	6,565	7,126	7,139	7,012
Females	2,577	3,055	3,718	3,947	4,183
Total	9,227	9,620	10,844	11,086	11,195
NUMBER OF STUDENTS WHO COMPLETED COURSES					
Field of study—					
Agriculture	18	15	33	30	
Applied science	107	79	94	104	
Art and design	62	72	80	73	
Building, surveying, architecture	91	83	54	121	
Commercial and business studies	358	352	342	346	n.y.a.
Engineering and technology	146	149	142	123	
Liberal studies	224	236	335	339	
Para-medical	134	173	217	253	
Teacher education	46	105	146	229	
Total	1,186	1,264	1,443	1,618	1

(a) At 30 April.

(b) Expressed on the basis of full-time staff equivalents.

THE UNIVERSITY OF WESTERN AUSTRALIA

University education first became available in Western Australia in 1898, with the formation of the Extension Committee of the University of Adelaide by which facilities were provided for external studies in courses for degrees in Arts and Science. The first step towards the establishment of a university in Western Australia was taken in 1904, when a University Endowment Act providing for the incorporation of a trust to administer funds for the purpose was passed by the State Parliament. Following a favourable report made by a Royal Commission under the chairmanship of Dr (later Sir Winthrop) J. W. Hackett, the University was established by the University of Western Australia Act of 1911. Teaching began in 1913 in subjects related to the Faculties of Arts, Science and Engineering. Additional Faculties established since that time are those of Law (1927), Agriculture (1936), Dental Science (1946), Education (1947), Economics (1954), Medicine (1956) and Architecture (1966). The Faculty of Economics was reconstituted as the Faculty of Economics and Commerce in 1961.

Matriculation Requirements

A candidate for matriculation is required to take subjects at the Tertiary Admissions Examinations selected in accordance with the Matriculation Regulations, and to obtain an aggregate of marks not less than a minimum determined by the University. The marks included in the aggregate of a full-time student must have been obtained in a single year, while those included in the aggregate of a part-time student must have been obtained during a period of not more than three consecutive years.

Matriculant status may be granted to an applicant who has satisfied the examination requirements of another university in Australia, New Zealand or the United Kingdom, or of any other university recognised by The University of Western Australia, qualifying him for matriculation.

The regulations also provide that a person over the age of twenty-one years who has not qualified for matriculation may be admitted provisionally to a degree course if he is able to demonstrate that, by reason of his education, aptitude or intelligence, there is a reasonable prospect of his being able to assimilate and benefit from the course. Some faculties use the University's Mature Age Examination (which consists of English or English Literature and one other approved subject in the Tertiary Admissions Examination), while other faculties accept other evidence.

Degrees

Degrees are granted in the Faculties of Agriculture, Architecture, Arts, Dental Science, Economics and Commerce, Education, Engineering, Law, Medicine and Science.

Courses for the pass degrees of Bachelor of Arts, Bachelor of Economics, Bachelor of Commerce, Bachelor of Physical Education and Bachelor of Science extend over a period of not less than three years; pass and honours courses for the degrees of Bachelor of Music, Bachelor of Music Education, Bachelor of Education, Bachelor of Engineering, Bachelor of Science in Agriculture and Bachelor of Science Education, over not less than four years; and those for the degrees of Bachelor of Dental Science and Bachelor of Architecture, over not less than five years. The course for the degree of Bachelor of Jurisprudence extends over a period of not less than three years, following successful completion of the first year of a course in any other faculty, and that for the degree of Bachelor of Laws over a period of not less than one further year. Honours degree courses in Arts, Commerce, Economics, Education, Music, Physical Education and Science are usually of four years' duration. The course in the Faculty of Medicine for the degrees of Bachelor of Medicine and Bachelor of Surgery extends over six years. The medical and dental courses may be interrupted to permit selected students to take a one-year course for the honours degree of Bachelor of Medical Science or Bachelor of Science in Dentistry respectively. The course for the degree of Bachelor of Psychology occupies not less than one year after completion of three years of a course for the degree of Bachelor of Arts or Bachelor of Science. The course for the postgraduate degree of Bachelor of Social Work extends over a period of not less than two years after successful completion of a first degree course.

Other degrees conferred by the University are those of Master of Arts and Doctor of Letters, Master of Music, Master of Music Education and Doctor of Music, Master of Psychology, Master of Laws and Doctor of Laws, Master of Education, Master of Physical Education, Master of Economics, Master of Commerce, Master of Business Administration, Master of Industrial Relations, Master of Japanese Studies, Master of Science and Doctor of Science, Master of Science Education, Master of Engineering Science, Master of Engineering and Doctor of Engineering, Master of Science in Agriculture and Doctor of Science in Agriculture, Master of Science in Natural Resource Management, Master of Dental Science and Doctor of Dental Science, Master of Surgery and Doctor of Medicine, Master of Architecture, Master of Building Science and Master of Social Work. The degree of Doctor of Philosophy is given for research in all faculties.

Diploma Course

In addition to the above degree courses, a postgraduate Diploma in Education course is available.

University Government

The original Act provided that the Senate and Convocation should constitute the governing authority with power to make statutes for 'the management, good government and discipline of the University'.

The Senate consists of twenty-five members, of whom six are appointed by the Governor, six are elected by Convocation, four are elected by the full-time teaching staff, two are elected by students, three are *ex officio* members (the Vice-Chancellor of the University, the Director-General of Education or his appointee and the President of the Guild of Undergraduates), and four are co-opted members. Convocation consists of graduates of the University and such other persons as are eligible for membership under the provisions of the University of Western Australia Act.

Since an amendment to the Act in 1944 the Senate alone has been the governing authority and is responsible, subject to the Act and the statutes, for the entire control and management of the University. Statutes approved by the Senate are submitted to Convocation for its consideration, and although Convocation may suggest amendments the Senate is not bound to accept them. The Act requires that statutes shall be submitted to the Governor for approval, after which they have the force of law.

The Chancellor is the titular head of the University. He is elected annually by the Senate from among its members and presides over its meetings. The Vice-Chancellor is the chief executive officer of the University and is appointed by the Senate for a period not exceeding ten years, at the end of which term he is eligible for reappointment. At meetings of Convocation the chairman is the Warden who is elected annually by Convocation from among its members.

The Guild of Undergraduates is constituted under the Act as a voluntary association of the University students 'for furthering of their common interests, and shall be the recognised means of communication between the students and the governing authority of the University'. The government of the student body is vested in the Guild Council, to which members are elected in accordance with regulations made by the Guild.

Student Fees, Allowances and Scholarships

The Royal Commission appointed to inquire into the establishment of a University recommended that teaching should be free and suggested that 'if fees are found to be necessary, they should be on the lowest possible scale'. This policy was adopted and tuition fees were not charged, except in the case of a limited number of students, until 1962 when fees were introduced to assist in meeting the increasing costs of operation resulting from a rapidly growing student enrolment and to enable the University to take full advantage of financial aid available under Commonwealth legislation. The Australian Government assumed full financial responsibility for tertiary education with effect from 1 January 1974 and tuition fees were abolished. However, all students of the University must pay an annual amenities and services fee.

Financial assistance is given to students by the Australian Government under the Tertiary Education Assistance Scheme and by means of postgraduate awards, to which reference is made later in this Part. In addition, the University makes awards, from its own funds, of research studentships for postgraduate study which are competed for by students holding no other award and having an Honours degree of second class (Division A), or higher, standard. Graduates may also apply for Hackett Studentships for overseas study which, in addition to other financial benefits, carry a travel grant. Some large private industrial concerns also make annual awards for study at postgraduate level.

Finance

The following table relates to the income and expenditure of The University of Western Australia in each year from 1973 to 1977.

UNIVERSITY OF WESTERN AUSTRALIA—FINANCE (a)
(\$'000)

Particulars	1973	1974	1975	1976	1977
INCOME					
Income for specific capital purposes (b)—					
Australian Government grants	1,618	1,770	2,694	775	775
State Government grants	179	704	672	(c) —13	—
Total	1,797	2,474	3,366	762	775
Income for other purposes—					
Australian Government grants	8,286	23,586	28,287	32,285	35,900
State Government grants	7,771	272	469	209	690
Donations and endowments	1,993	1,483	1,695	2,066	2,517
Student fees (d)	3,556	28	27	28	28
Other	890	1,924	2,424	2,959	3,813
Total	22,496	27,293	32,902	37,547	42,948
TOTAL INCOME	24,293	29,767	36,268	38,309	43,723
EXPENDITURE					
Teaching and research	14,035	17,655	23,117	25,942	29,284
Administration and general overhead	2,057	2,619	3,585	3,862	4,131
Libraries	1,275	1,686	2,305	2,355	2,636
Buildings, premises, grounds	3,909	5,281	6,880	r 4,447	4,069
Sundry auxiliary expenditure	1,903	1,059	1,279	r 1,568	1,781
TOTAL EXPENDITURE	23,179	28,300	37,166	r 38,174	41,901

(a) The Australian Government assumed full financial responsibility for tertiary education and abolished student fees with effect from 1 January 1974. State Government grants and student fees shown since 1974 represent grants made for specific purposes such as research and charges incurred by students such as late enrolment fees. (b) Income received specifically for new buildings, major alterations and additions to buildings, installation of services, purchase of land and buildings and major equipment. (c) Minus sign (—) indicates unexpended funds returned. (d) Excludes fees collected on behalf of student organisations; see also footnote (a).

Colleges and Hall of Residence

There are five residential colleges within the University. Three of the colleges take both men and women students; these are Kingswood and St Columba Colleges, both conducted by the Uniting Church of Australia, and St Thomas More College, a foundation of the Roman Catholic Church. St George's College is conducted by the Anglican Church for men students, and St Catherine's College is an undenominational college for women students.

Currie Hall is an undenominational hall of residence for men and women students.

Tuition

In addition to the normal lectures and tutorials for full-time students, courses for part-time students are offered in the Faculties of Arts, Education, and Economics and Commerce. Certain subjects may be taken at institutions affiliated with the University. These are The Western Australian Institute of Technology, and teachers colleges at Churchlands, Claremont, Graylands, Mount Lawley and Nedlands.

Staff, Students and Students Completing Courses

The following table gives particulars of teaching staff and students in each of the years from 1974 to 1978. The number of students taking and completing courses during each of these years is also shown. Information in greater detail is available from the publications *University Statistics: Part 1—Students* (Catalogue No. 4208.0) and *Part 2—Staff and Libraries* (Catalogue No. 4209.0), which are issued annually by the Australian Statistician, Canberra.

UNIVERSITY OF WESTERN AUSTRALIA

Particulars	1974	1975	1976	1977	1978
NUMBER OF STAFF (a)					
Teaching—					
Full-time—					
Professors	56	60	67	74	72
Associate professors, readers	67	67	64	70	72
Senior lecturers	172	185	194	189	199
Lecturers (b)	136	150	160	170	170
Senior tutors, demonstrators (c)	90	96	108	100	108
Demonstrators, tutors, teaching fellows	44	50	41	36	33
Total	565	608	634	639	654
Part-time (d)—					
Lecturing	10	11	12	11	10
Tutoring/demonstrating	72	79	88	80	83
Total (d)	82	90	100	91	94
Research—					
Full-time	37	31	76	99	98
Part-time (d)	—	—	—	—	—
Other—					
Full-time	1,342	1,441	1,420	1,412	1,428
Part-time (d)	112	100	95	27	62

NUMBER OF STUDENTS (a)					
Internal—					
Full-time	6,033	6,279	6,364	6,640	6,597
Part-time	3,535	3,444	3,403	3,167	3,118
External	396	353	37	58	41
Total	9,964	10,076	9,804	9,865	9,756
Males	6,495	6,493	6,256	6,184	6,020
Females	3,469	3,583	3,548	3,681	3,736
Total	9,964	10,076	9,804	9,865	9,756

NUMBER OF STUDENTS WHO COMPLETED COURSES (e)					
Field of study—					
Agriculture, forestry	39	25	26	14	36
Architecture, building	19	11	21	14	9
Dentistry	16	18	18	27	22
Economics, commerce, government	205	199	210	257	254
Education	319	325	374	348	352
Engineering, technology	113	130	121	103	112
Fine arts	8	8	5	7	10
Humanities	374	387	451	444	439
Law	76	74	140	186	176
Medicine	67	78	98	87	97
Natural sciences	295	356	332	293	337
Social and behavioural sciences	38	76	69	75	88
Total	1,569	1,687	1,865	1,855	1,932

(a) At 30 April. (b) Prior to 1977, includes teaching registrars. (c) Prior to 1977 includes assistant lecturers. (d) Figures for part-time staff have been converted to a full-time equivalent on the basis of 250 hours per annum for lecturers, 700 hours per annum for tutors and demonstrators and 35 hours per week for all other staff. (e) Year ended 30 June.

Research

More than \$4.8 million was spent on research at the University during 1978. This sum comprised funds provided by the Australian Government through the Universities Commission, grants from agencies such as the Australian Research Grants Committee and the National Health and Medical Research Council, and bequests and benefactions from private industry and members of the public. Of the total figure, over \$1.6 million was applied to general support of research activities and \$3.2 million to particular research projects financed by outside agencies. Salaries of staff engaged in research and the overheads involved are not included in these figures.

For the most part the research undertaken is 'pure' research, that is, research aimed simply at deepening and broadening man's knowledge of himself and his world: this is a fundamental and normal activity of a university which can very often lead to significant practical applications.

More detailed information on research activities appears in the University's annual *Report on Research*.

Extension Service

The Adult Education and Extension Committee was established by the Senate of the University in 1968 as a result of the reorganisation of the former Adult Education Board which had been created by the University in 1928. In 1972 the Committee was renamed the Extension Committee and more emphasis is now placed on University extension activities. The policies of the Committee are implemented by the Director of the Extension Service. The headquarters of the organisation are at the University.

The Extension Service is responsible for general courses for adults at university level, for postgraduate and refresher courses and for certain cultural activities. It works in close liaison with university departments and faculties and with professional organisations in the community. The Extension Service also conducts conferences, symposia, seminars and residential schools.

Classes are conducted at the University, and various other activities are arranged in both the metropolitan and country areas. These are generally non-vocational in character. An annual Summer School is also held at the University.

MURDOCH UNIVERSITY

Murdoch University is established under the provisions of the *Murdoch University Act, 1973-1978*, which came into operation on 1 July 1973. The University is named in honour of the distinguished Australian essayist and biographer, Sir Walter Murdoch (1874-1970), foundation Professor of English at The University of Western Australia (1912-1939) and later Chancellor (1943-1948). A ceremony to mark the inauguration of the University was held on 17 September 1974, the centenary of his birth.

Admissions. The first nineteen postgraduate students were accepted in 1974 and some 600 undergraduate and forty postgraduate students were accepted in 1975. This intake level has been maintained in subsequent years. The University has a flexible policy concerning admissions. In determining the eligibility of a prospective student, consideration is given to examination results, information obtained from school reports, the results of selection tests and interviews with applicants. However, in some courses, particularly in the physical and biological sciences and in mathematics, some prior knowledge of certain subjects is considered necessary.

Schools of Study. The University is organised on the basis of schools of study which have both academic and administrative responsibilities. The following initial schools have been established: Education; Environmental and Life Sciences; Human Communication; Mathematical and Physical Sciences; Social Inquiry; and Veterinary Studies.

Programmes of Study. Degree programmes being offered in 1979 are in Applied Veterinary Medicine, Biology, Chemistry, Chinese Studies, Communication Studies, Economics, Energy and Resources, Environmental Science, General Studies, History, Mathematics, Mineral Science, Physics, Population and World Resources, Psychology, Social and Political Theory, South-east Asian Studies, Teacher Education, Veterinary Biology, and Comparative Literature.

Undergraduates proceeding to a degree must participate in one of three 'trunk' courses: Structure, Thought and Reality; World in Transition; Energy and Life Systems. In addition to a trunk course, students are given the opportunity to explore areas outside their specific interests. Students are not required to settle the selection of their degree programmes until the end of their first year.

Awards. Studies in appropriate programmes will lead to pass or honours degrees in Arts, Education, Psychology, Science, and Veterinary Medicine and Surgery.

The higher degrees offered by the University are the research degrees of Master of Philosophy and Doctor of Philosophy. Course-work masters' degrees are offered in Applied Psychology, Education and Environmental Science.

Courses for the degree of bachelor are of the following duration: for the ordinary degree of Bachelor of Arts, Bachelor of Science or Bachelor of Psychology three years, and for the corresponding honours degree four years; for Bachelor of Education four years; and for Bachelor of Veterinary Medicine and Surgery five years.

The University also offers two one-year diploma programmes for graduates, one in Mineral Science and the other in Education.

External Studies. Special provision has been made for external students, and a substantial and innovative programme of external studies is being developed. External tuition is the responsibility of staff of the schools of study, but the external studies programme as a whole is co-ordinated by a Director of External Studies.

Beginning in 1975 with a small pilot scheme, Murdoch University in 1976 assumed full administrative responsibility for all university external studies in Western Australia. The external studies programmes are equally available to residents in the Perth metropolitan area, to those living outside Perth including interstate and overseas.

Research. In addition to moneys from the University's recurrent budget, finance for research amounting to \$500,000 was received in 1978 from various government authorities and private organisations. Current research projects include solar energy; the solvation of ions aimed at use in the processing of minerals; trace element nutrition of the Western Australian sand plain flora; the regulation of the development of mammalian embryos prior to implantation; heavy metals in fish in the Swan River and Cockburn Sound; anxiety in high school students; neurological research; and investigation of old people at risk. The Australian Research Grants Committee has provided \$200,000 for research in the physical sciences, chemical sciences, biological sciences, veterinary studies and social inquiry during 1979. The National Health and Medical Research Council and the Educational Research Development Committee have also provided substantial grants for 1979-80.

The Mineral Chemistry Research Unit at Murdoch University, established in 1974, received further grants from the Government of Western Australia to permit the continuance of research into minerals processing and other fields of chemistry. The University has recently received substantial funding for solar energy research from both State and Federal sources.

University Government. The governing body of the University is the Senate. It consists of twenty-three members, comprising the Chancellor, the Vice-Chancellor, the Director-General of Education or his deputy, the President of the Students' Guild, three members of the academic staff, two students elected by the students, six members appointed by the Governor, two persons who are not Members of Parliament nominated by the Premier and the Leader of the Opposition, three persons elected by Convocation, and three co-opted

members. The Murdoch University Act provides that the Senate shall establish an Academic Council, its principal functions being 'the discussion and submission to the Senate of opinions and recommendations on academic policy, academic development, the admission of students, instruction, studies and examinations, research, the admission to degrees, the discipline of the University and any other matters which in the opinion of the Academic Council are relevant to the objects of this Act'.

Development of Site. The University site comprises 230 hectares of undulating land south of the Swan River about thirteen kilometres from the Perth city centre and eight kilometres from Fremantle. An area of approximately 175 hectares was formerly part of the Somerville Pine Plantation and was given to Murdoch University by the University of Western Australia.

The major buildings erected during the first triennium were the first stage of the Veterinary School and four main buildings which are grouped around an open court in an elevated position in the northern part of the site. These buildings comprise the Library and Lecture Block, the East Academic Building (physical sciences), the West Academic Building (humanities), and the Student and Staff Amenities Building. Eight hectares have been grassed for playing fields in the south-west part of the site, and thirty-two hectares in the south-east are being developed as a veterinary farm and holding area.

In the twelve months to the end of 1978 the University more than doubled its physical size with the completion of the Biological Sciences Building, Environmental Sciences Building, West Academic II wing and the second stage of the Veterinary School.

EXPENDITURE ON EDUCATION BY STATE AND LOCAL AUTHORITIES

The following table shows the amounts expended on education by State and local authorities during the five-year period ended 30 June 1977.

State and local authorities comprise the State government, statutory authorities, boards, commissions and corporations, and incorporated bodies in which the State government or its agencies have a controlling interest (other than financial enterprises) together with municipal governments constituted under local government legislation.

STATE AND LOCAL AUTHORITIES: OUTLAY ON EDUCATION (a) (\$'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Transportation of students (b)	4,106	5,155	6,580	8,124	9,540
Primary and secondary education—					
Current	76,114	93,263	133,827	173,430	210,994
Capital	15,141	18,969	32,511	33,724	29,983
University education—					
Current	13,551	19,265	29,164	33,926	44,550
Capital	4,238	4,594	7,753	5,112	7,406
Vocational and other higher education—					
Current	29,352	41,730	61,624	76,472	91,679
Capital	6,429	7,977	10,499	10,782	9,491
Other education programmes—					
Current	1,892	2,256	5,807	r 9,116	10,060
Capital	75	927	2,485	r 4,356	1,797
Unallocated (including general administration)—					
Current	3,195	4,713	7,414	r 8,316	5,972
Capital	—	—	110	144	368
Total	154,093	198,849	297,774	r 363,502	421,840
Current	128,210	166,382	244,416	r 309,384	372,795
Capital	25,883	32,467	53,358	r 54,118	49,045

(a) Includes expenditure from Australian Government Grants for education.

(b) Current expenditure.

Financial Assistance for Schools and Students

The State Government provides financial aid to non-government schools by means of a direct annual grant in respect of each pupil enrolled. The value of the grant is 25 per cent of an amount estimated to be the average cost of educating a pupil in govern-

ment schools, less the assessed value of goods and services supplied or paid for by the Minister for Education in relation to a pupil. Separate rates apply to primary and secondary schools.

Subsidies are provided to non-government schools for the installation of swimming pools, and assistance is given by way of reimbursement of interest paid, up to a prescribed maximum rate, on moneys borrowed for expenditure on new residential accommodation and classrooms.

At the beginning of the 1976 school year, the State Government introduced a living-away-from-home allowance to supplement the isolated children's allowance paid by the Australian Government. The allowance of up to \$150 per annum ensures a combined minimum payment of \$650 per annum for a child who is obliged to live away from home to attend school.

Text books are issued free of charge to primary school children. An annual text book subsidy of \$10 is paid in respect of each student in Years 8 to 10, \$35 in Year 11 and \$20 in Year 12.

All these forms of assistance to students are granted without the application of a means test.

School Book Assistance is available to indigent parents who have children in Years 8 to 10. This scheme aims to assist parents who are unable to meet the cost of their children's books. Parents of students receiving assistance under this scheme are not eligible for the text book subsidy.

AUSTRALIAN GOVERNMENT ASSISTANCE FOR EDUCATION

Although education is primarily the responsibility of the States, the Australian Government provides moneys for the financing of educational institutions and the assistance of students.

Finance for Institutions

Details of amounts paid by the Australian Government in respect of Western Australia during the five-year period ended 30 June 1978 are given in the following table.

AUSTRALIAN GOVERNMENT ASSISTANCE FOR EDUCATION WESTERN AUSTRALIA (\$'000)

Nature of assistance	1973-74	1974-75	1975-76	1976-77	1977-78
Assistance of a revenue nature—					
Universities	14,610	27,978	32,891	43,218	46,463
Colleges of advanced education (a)	17,247	32,359	36,522	46,242	48,080
Technical education	974	2,168	3,322	3,606	4,521
Schools	6,389	17,184	23,194	33,521	35,293
Child migrant education (b)	157	229	233	2	41
Aboriginal education	732	1,582	1,979	2,035	2,184
Pre-schools and child care	r 389	r 2,328	r 4,579	r 5,287	6,247
Educational research	26	33	59	70	75
Total	r 40,524	r 83,859	r 102,779	r 133,981	142,904
Assistance of a capital nature—					
Universities	4,581	7,714	5,094	7,398	7,664
Colleges of advanced education (a)	7,222	7,281	7,344	5,074	5,198
Technical education	1,311	587	2,876	3,690	2,993
Schools	6,810	15,789	10,565	6,999	16,713
Child migrant education (b)	100	89	(c) — 9	—	—
Aboriginal education	505	799	25	119	61
Pre-schools and child care	r 256	r 2,280	r 1,877	r 481	197
Total	r 20,785	r 34,539	r 27,771	r 23,761	32,826
GRAND TOTAL	r 61,309	r 118,398	r 130,550	r 157,742	175,730

(a) Including teachers colleges.

(b) From January 1976 administered by the Schools Commission.

(c) Minus sign (—) indicates an amount allocated but subsequently returned.

Grants to the States for education began with contributions towards the recurrent expenditures of universities in 1951-52. Some account of the legislation authorising payment of grants by the Australian Government appears in *Western Australian Year Book*, No. 12—1973 (pages 182-4) and earlier issues. In December 1973 the Schools Commission was established by the *Schools Commission Act 1973* to administer programs of assistance to primary and secondary schools in the States and Territories. The *Tertiary Education Commission Act 1977* established the Tertiary Education Commission as a replacement for three former Commissions—the Universities Commission, the Commission on Advanced Education and the Technical and Further Education Commission—to administer the programs of assistance for tertiary education throughout Australia. Further information on these Commissions and the programs of assistance can be found in the Budget Paper *Payments to or for the States, the Northern Territory and Local Government Authorities* published by the Australian Government.

An offer by the Australian Government to assume full financial responsibility for tertiary education from 1 January 1974 was accepted by the States at the Premiers' Conference in June 1973. (At the same time it was agreed that appropriate offsets would be made in the general purpose funds provided by the Australian Government to the States.)

Until December 1973, the Australian Government continued to make grants to the States for universities, colleges of advanced education, teachers colleges and pre-school teachers colleges on the basis of the existing 'matching' arrangements with the States. These arrangements provided for grants for recurrent expenditure to be made by the Australian Government on the basis of \$1 for each \$1.85 of State grants and student fees combined. Grants for capital expenditure were made on a \$1 for \$1 basis with moneys spent by the States for this purpose.

The inclusion of teachers colleges and pre-school teachers colleges in the arrangements for other tertiary institutions resulted from a decision that assistance would be provided to these colleges from 1 July 1973 on the same basis as to universities and colleges of advanced education. Previously, assistance had been granted for teachers colleges and pre-school teachers colleges under the States Grants (Teachers Colleges) Acts of 1967 and 1970 and the *States Grants (Pre-School Teachers Colleges) Act 1968*. Grants under these Acts were provided to the States for constructional work and equipping of teachers colleges and to expand the capacity of pre-school teachers colleges. Grants for teachers colleges under these arrangements ceased on 30 June 1973 and those for pre-school teachers colleges at the end of 1973.

Assistance for Students

As part of the arrangements whereby the Australian Government assumed full financial responsibility for tertiary education, tuition and related fees in universities, colleges of advanced education, teachers colleges and technical colleges were abolished.

Tertiary Education Assistance Scheme. A system of tertiary allowances authorised in terms of the *Student Assistance Act 1973* came into operation at the beginning of 1974. Under this scheme full-time Australian students enrolled in an approved course at a university, college of advanced education, teachers college, technical college or agricultural college and some non-government business college courses may apply for a living allowance subject to a means test. Dependants' allowances are also payable. Students who qualify for the payment of a living allowance are entitled to two other types of benefit, an incidentals allowance and a fares allowance.

Aboriginal Study Grants Scheme. The Aboriginal Study Grants Scheme provides assistance on a full-time or part-time basis to Aboriginal students who have left school and are undertaking further education such as business college courses, courses in creative arts and culture, and courses in domestic crafts, as well as more formal tertiary and post-secondary courses. Allowances for dependants, text books and equipment, travel, clothing and other items are also payable. Part-time students receive an allowance to meet expenses associated with their course and for those students who undertake their courses by correspondence, assistance with travel and accommodation costs at residential schools is also provided. For both full-time and part-time students, all compulsory fees are met.

Aboriginal Overseas Study Awards Scheme. The Aboriginal Overseas Study Awards Scheme was introduced in 1975 to enable leaders or potential leaders of the Aboriginal community who already have considerable experience in their occupational or professional fields to add to their skills and experience by means of short-term programmes of study, observation and discussion overseas. Allowances payable include: travelling allowance, fares allowance, equipment allowance and additional allowances if the award holder's normal income is discontinued.

Postgraduate Awards. Holders of postgraduate awards are paid allowances to assist them to study for higher degrees at universities or colleges of advanced education. Dependents' allowances and establishment allowances may also be payable.

Secondary Education. The Secondary Allowances Scheme assists families with limited financial resources to maintain children at school for the final two years of secondary education. Benefits are subject to a means test.

The Adult Secondary Education Assistance Scheme provides benefits comparable to those available under the Tertiary Education Assistance Scheme to adult students undertaking full-time studies in the final year of secondary schooling.

Aboriginal Secondary Grants Scheme. The Aboriginal Secondary Grants Scheme provides financial assistance to encourage Aboriginal children to remain at school beyond the normal school leaving age. The Scheme includes all Aboriginal children attending secondary schools and classes, as well as those attending primary school who are aged fourteen years or over. Benefits include a living allowance or assistance with boarding costs, and a contribution towards fees and expenditure on books, uniforms and other school-related expenses.

Migrant Children. The Commonwealth Government provides funds for migrant and multicultural education to government and non-government school authorities in the States under the relevant States Grants (Schools) Acts through the Schools Commission's Programs. Funds may be used for a broad range of activities related to teaching English as a second language including the payment of salaries to special teachers, advisers and ethnic teacher-aides. In 1979 funds were also made available specifically for a Multicultural Education Program which emphasises the teaching of community languages in schools. A contingency program has also been established for refugee children to assist their successful transition into established school programs.

Soldiers' Children Education Scheme. The *Repatriation Act 1920* provides assistance for the education and training of children of ex-servicemen who have died as a result of war service, or are either totally and permanently incapacitated or blind. The allowances paid cover expenditure on fees, books, equipment, fares and other items.

Assistance for Isolated Children Scheme. This scheme of allowances was introduced to assist in the education of children who, because of their geographic isolation, are without reasonable daily access to a government school providing courses at the appropriate level. Benefits payable in respect of children living away from home to attend school comprise: boarding allowances (partly subject to means test) and, in cases of particular hardship, a special supplementary allowance. For isolated children who study at home by correspondence there is an allowance free of means test. Assistance is also made available where a family, in preference to boarding the children away from home, sets up a second home to enable the children to attend school on a daily basis.

THE WESTERN AUSTRALIAN POST-SECONDARY EDUCATION COMMISSION

The *Western Australian Post-Secondary Education Act, 1970-1976* establishes the Western Australian Post-Secondary Education Commission. The Commission, which replaced the Western Australian Tertiary Education Commission, is a statutory corporate body established and financed by the Western Australian Government to provide advice to the Gov-

ernment, post-secondary education institutions in Western Australia, and the Commonwealth Tertiary Education Commission concerning the planning, co-ordination, development and financing of post-secondary education. The Commission's responsibilities relate to the two Universities (Murdoch University and The University of Western Australia), The Western Australian Institute of Technology, the post-secondary education colleges established under the *Colleges Act, 1978* and the technical colleges and centres of the Education Department.

The legislation provides that the Commission shall consist of fifteen members, comprising a full-time Chairman and chief executive officer, appointed by the Governor on the recommendation of the Minister for a term not exceeding seven years; the Director-General of the Education Department, or his nominee; and thirteen other persons appointed by the Governor on the recommendation of the Minister for a term not exceeding four years, but with eligibility to hold uninterrupted office for two consecutive terms. Of these thirteen persons, one shall be selected for his knowledge of and interest in teacher education and two each shall be selected for their knowledge of and interest in (a) university education and research, (b) advanced education and (c) technical and further education. The remaining six members shall be selected for their knowledge of and interest in community affairs in the city and country, employment problems, secondary education or government.

The Commission's role includes such aspects as formation of State views on the promotion, development and co-ordination of post-secondary education; establishment and location of, and acquisition and reservations of sites for, new post-secondary education institutions; advising Commonwealth education commissions on levels of financial support; assessment of proposals for the establishment of new courses of study; accreditation of new and existing courses; advising institutions on salaries and other conditions of employment; and rationalisation of criteria for entrance to the institutions.

Tertiary Admissions Examination Committee. The Tertiary Admissions Examination Committee comprises members nominated by government and non-government schools, the Education Department and tertiary educational institutions. The Committee administers the Tertiary Admissions Examination, which replaced the Leaving Examination, abolished at the end of 1974.

The Tertiary Admissions Examination is used for admission purposes by The University of Western Australia, Murdoch University, The Western Australian Institute of Technology and the post-secondary colleges established under the *Colleges Act, 1978*. The examination is based on syllabuses in approved subjects. Joint Syllabus Committees have been established by the Board of Secondary Education and the Tertiary Admissions Examination Committee for each subject area designed to be accepted both for Board of Secondary Education certification and for examination for tertiary admission.

Chapter V—continued

Part 2—Arts, Science and Recreation

PUBLIC LIBRARIES

The Library Board of Western Australia

The Library Board of Western Australia is constituted under the provisions of the *Library Board of Western Australia Act, 1951-1974*. It was set up as an independent statutory authority in 1952.

The Board consists of twelve members. The Director-General of Education is an *ex officio* member. The remaining eleven members are appointed by the Governor, five being nominated by the Minister and the other six selected by the Minister. Of these six members, one represents the Library Association of Australia, Western Australian Branch, and the other five represent local government interests throughout the State.

The Board's main responsibilities are to advise the Minister and local authorities on matters of general policy relating to libraries and to administer the funds made available by Parliament for the State library and information service.

THE LIBRARY BOARD OF WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Expenditure—					
Salaries and wages	\$ 781,532	1,125,315	1,423,862	1,672,991	1,967,960
Books, periodicals and binding	\$ 699,472	855,223	1,181,408	1,630,825	1,791,413
Other	\$ 148,375	189,042	223,248	287,000	376,406
Total	\$ 1,629,379	2,169,580	2,828,518	3,590,816	4,135,779
Number of—					
Full-time staff (a)—					
Qualified librarians	45	49	51	57	62
Student librarians and cadets	18	15	16	17	15
Other	100	115	126	134	139
Total	163	179	193	208	216
Associated public libraries (a)—					
Perth Statistical Division	36	37	38	39	41
Other statistical divisions	109	113	114	120	124
Total	145	150	152	159	165
Books—					
Reference and Central Music Library stock—					
Bound volumes (a)	279,445	286,124	293,450	(b) 302,357	(b) 311,258
Periodical and serial titles received	8,650	8,772	9,145	9,634	10,288
Music scores	14,984	15,816	16,951	17,576	18,508
Circulation library stock—					
Books processed for circulation	143,435	160,090	159,781	194,212	209,472
Net additions to stock	69,093	71,077	62,846	95,416	86,714
Stock (a)	929,116	1,000,193	1,063,039	1,158,416	1,244,269
Received and dispatched in the exchange programme with local libraries	396,514	431,430	469,930	502,878	554,156
Inter-library requests received	70,599	78,982	82,478	85,559	93,452

(a) At 30 June.

(b) From 1976-77 includes government legal deposit publications.

The State library service comprises: The State Reference Library of Western Australia, which includes the State archives; the Central Music Library; the State Bibliographical Centre; and local public libraries throughout the State. These units are co-ordinated by the Board to provide an integrated and comprehensive library and information service throughout the State.

The State Reference Library of Western Australia

The origins of the State Reference Library date from 1886 when the Government resolved to establish a library to mark the Golden Jubilee of Queen Victoria. In 1911 this library became the Public Library of Western Australia and is now The State Reference Library of Western Australia.

The State Reference Library differs from other libraries in that its function is not principally to supply books but to provide information in answer to inquiries. It handles over a hundred serious or research inquiries per day, and for this purpose is divided into five specialised subject units arranged in three Divisions, each of which has staff experienced in the subject matter concerned.

The West Australian History Division, more commonly known as the Battye Library covers all aspects of the history and development of Western Australia. It has a very large collection of historical documents and papers, including the State archives (see below). It also has the latest information on State developments. It receives the *Government Gazette of Western Australia* on the day of issue, all Royal Commission and similar reports on the day that they are tabled in Parliament, proposed amendments to town planning schemes as soon as they are issued, and all current Western Australian publications received under copyright.

The Commerce and Technology Division provides the business community, the home hobbyist or the tradesman with the latest technical information and also makes available older material of research value and general works intended for the non-specialist. It comprises the Library of Business, Science and Technology and the Information Centre. The Centre is intended to provide immediate answers to questions, mainly in the commercial field. It has telephone directories, business directories, gazetteers, newspapers and similar material from many parts of the world.

The Humanities Division covers a wide field in the arts and social sciences, and includes comprehensive sets of the official publications of the Australian Government, State Governments, and selected overseas governments.

The State Reference Library is equipped with microfilm, microfiche, photocopy and tape-recording apparatus. Photocopies of material are available to the extent permitted by the *Copyright Act* 1968 (Commonwealth), on payment of an appropriate fee.

In addition to providing reference facilities in the metropolitan area, the service of the Library extends throughout the State, through the agency of a local public library whenever possible, or by correspondence direct to country inquirers not in contact with a local library.

The State Archives. Under legislation passed in 1974 the Board has responsibility for the control and custody of all State archives. These include the records not only of the Government but also of all local authorities and all other bodies established under statute. So long as they are in current use they remain the responsibility of the department or body concerned, but when they cease to be in current use they become the responsibility of the Board and their destruction is prohibited without the approval of the Board. The State archives form part of the West Australian History Division and are available for public use in the Battye Library.

The Central Music Library

The Central Music Library, situated in the State Reference Library building, is the principal music library of the State. It offers a full reference service in the field of music, and scores are available on loan. Facilities are also available for listening to musical recordings. Books and journals dealing with electronic and similar aspects of music are held in the Library of Business, Science and Technology.

The State Bibliographical Centre

The function of the State Bibliographical Centre is to encourage and facilitate co-operation between all libraries in Western Australia, so that the total resources in the State may be made as widely available as possible to all library users.

The Centre operates the Request and Information Service provided by the Board for all public libraries, organises inter-library loans for, or between, any other approved libraries in the State or elsewhere, and offers bibliographical assistance to any library and to users of the State Reference Library. For these purposes it is equipped with catalogues of the whole stock of the Library Board and with union catalogues of both books and journals in over 200 other libraries ranging from those of the University of Western Australia to highly specialised collections held by private concerns or government departments. It also has a large range of published bibliographies from many parts of the world. The Centre is connected by telex to all major libraries of the world.

Local Public Libraries

The books in all public libraries in the State are supplied by the Board and remain its property. Books are supplied on a minimum basis of 1·1 volumes per head of the population served by the library concerned. It is the intention of the Board to raise this ratio to 1·25, and this has been achieved in about two-thirds of the libraries in the State. At least one-quarter of the books in each library are withdrawn each year and replaced by a corresponding number of other volumes.

Any non-fiction book in the State-wide stock is available at any public library if requested by a reader. A printed catalogue of the entire stock is supplied free to every library each year. In the metropolitan area the Board provides a delivery van service to libraries.

Prior to dispatch, all books supplied to public libraries are fully catalogued and prepared for use by the Board, which also maintains central stock and location records.

As far as possible, selection of books for each library is carried out by the local librarian but the Board's staff makes the selection for those libraries which are unable to do so.

The Board is not responsible for the provision of local premises nor the employment of local staff, which are provided by the local authority concerned. However, professional advice on library design is available to architects and local authorities.

Of the 138 local authorities in Western Australia, all but three have established one or more public libraries or are in process of doing so.

THE WESTERN AUSTRALIAN MUSEUM

The Western Australian Museum has developed from two earlier collections. One of these, the museum of the Swan River Mechanics' Institute, was founded by public subscription in 1860, and the other, the Geological Museum at Fremantle, was started in 1881. In 1889 the contents of the Geological Museum were moved to the former Perth Gaol and a Curator was appointed in 1891. In the following year the museum of the Swan River Mechanics' Institute was purchased, and the collections combined to form the Public Museum which, in 1897, became known as the Western Australian Museum. The former Perth Gaol is still part of the Western Australian Museum; it has been renovated, and was re-opened to the public for display purposes in December 1976.

Under the provisions of the *Museum Act, 1969-1973*, The Western Australian Museum is governed by seven Trustees appointed by the Governor. The staff is grouped functionally within Divisions of Human Studies, Natural Science and Professional Services, and an administrative unit.

The headquarters of The Western Australian Museum and its principal display galleries are situated in Perth. A branch was established at Fremantle in 1970 and another branch was opened at Albany in 1975. The branches are governed by Committees of Management appointed by the Trustees. The Fremantle Branch contains maritime and historical displays, and the Albany Branch has displays relating to the environment, exploration and early settlement of the region.

The work of the Museum is concerned mainly with natural sciences and human studies. Emphasis in both display and research is on the fauna and the human population, past and present, of Western Australia. Research within the Division of Natural Sciences is related specifically to marine fauna, mammals, birds, reptiles, insects and fossils of the State. The Division of Human Studies is concerned with Aboriginal archaeology

and rock art, prehistoric archaeology, Aboriginal material culture, social history, maritime history, underwater archaeology, industrial and agrarian technology, and arms and armour. The Division of Professional Services co-ordinates the work of departments responsible for display, material restoration and conservation, children's educational services, publications, assistance to municipal museums and the research library.

The *Museum Act, 1969-1973* allows the Trustees to assist in establishing and maintaining municipal museums. The Museum's role is mainly to assist by making available the expertise of its own staff in advising on the maintenance of collections, restoration of objects and on museum design, and by depositing objects for display in recognised museums.

The Museum is an active educational instrument. Members of the scientific staff lecture in University Extension programmes and in the various departments of tertiary education organisations. Children's centres, staffed by Museum teachers provided by the Education Department, are open during school holidays at Perth and Fremantle. Regular classes for primary schools are held during school terms and special visits are arranged for secondary schools at both museums. In addition special visits at both museums, as well as at Albany, are made by children from schools not included in the regular series. Children voluntarily participate in quizzes and other exercises designed for vacation activities.

In connection with its work of education, research and conservation, the Museum is often called upon to act in an advisory capacity to government departments. In particular, senior staff serve on committees formed for the purpose of protection of the heritage, the environment and wildlife. The Museum is assisted in certain fields by Honorary Associates of the Western Australian Museum, some of whom serve on its advisory committees.

Under the provisions of the *Aboriginal Heritage Act, 1972* the Museum is responsible for administering the work of the Aboriginal Cultural Material Committee. The Act requires that the Registrar of Aboriginal Sites, the principal executive officer of the Committee, shall be a member of the staff of the Museum. The main function of the Committee is to evaluate, record and preserve Aboriginal sites and specific traditional Aboriginal artefacts within Western Australia.

THE WESTERN AUSTRALIAN MUSEUM (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Expenditure—					
Salaries and wages	\$ 763,555	1,169,945	1,232,034	1,565,150	1,814,443
Other	\$ 270,824	274,350	710,524	741,398	1,050,101
Total	\$ 1,034,379	1,444,295	1,942,558	2,306,548	2,864,544
Square metres of—					
Display area (b)	3,050	3,050	3,290	3,830	3,830
Storage area (b)	3,400	3,444	3,527	3,527	3,527
Total	6,450	6,494	6,817	7,357	7,357
Number of—					
Staff (b)—					
Full-time—					
Professional	41	46	48	49	50
Technical	44	58	48	51	48
Administrative and clerical	23	24	26	28	28
Attendant-receptionist	23	23	34	36	36
Honorary	1	3	7	4	4
Total	132	154	163	168	166
Man-days spent on field work	1,673	1,543	2,456	4,268	4,298
Visits by school parties	875	1,672	1,917	1,836	1,668
Children attending in school parties	33,389	51,522	65,128	52,407	49,908
Children attending vacation activities	12,900	7,600	10,326	9,543	11,169
Total visitors' attendances (c)	247,054	227,028	234,861	289,850	335,496

(a) Including Fremantle Branch, opened October 1970, and Albany Branch, opened September 1975.

(b) At 30 June.

(c) Including attendances of school children.

By a decision of the High Court in March 1977, provisions of the *Maritime Archaeology Act, 1973* dealing with maritime archaeological material lying in waters adjacent to the coast of Western Australia, or derived from such sources, were superseded by the *Historic*

Shipwrecks Act 1976 (Commonwealth). However, the provisions of the Commonwealth Act have permitted the Museum to continue its maritime archaeology programme and to undertake inspection and control of wrecks scheduled in the Act. There are currently forty-six wrecks scheduled; these are essentially those previously protected by the *Maritime Archaeology Act, 1973*.

Under the provisions of the *Museum Act, 1969-1973* all meteorites are declared to be the property of the Crown and are vested in the Museum.

THE WESTERN AUSTRALIAN ART GALLERY

The Western Australian Art Gallery is under the control of a Board of seven members appointed by the Governor under the provisions of the *Art Gallery Act, 1959-1978*.

The Gallery occupies part of a building shared with the Museum. The lower gallery is used mainly for the display of touring interstate and overseas exhibitions. Works from the permanent collection are exhibited in the upper gallery, while the print room is used to house and exhibit the collection of prints and drawings. Displays are changed regularly in order that the public may become familiar with the Gallery's collection, only a fraction of which can be shown at any one time. Important pieces of sculpture are on display in both galleries and in an exterior courtyard designed for this purpose.

The Art Gallery staff are located in an administrative centre in the renovated premises of the former Criminal Investigation Branch building. In addition to normal administrative requirements this building houses conservation laboratories, a reference library and an air-conditioned theatre for film showings, lectures, etc. as well as providing facilities for the Art Gallery Society.

THE WESTERN AUSTRALIAN ART GALLERY

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Expenditure—					
Salaries and wages	\$ 142,086	218,554	277,477	373,200	389,606
Acquisition of exhibits	108,685	78,414	95,753	217,766	467,206
Special exhibitions	14,632	21,057	23,781	47,419	56,367
Printing	7,811	8,103	9,118	25,222	34,693
Other	41,115	61,093	(a)654,372	(b) 308,491	(c)2,218,845
Total	\$ 314,329	387,221	(a)1,060,501	(b) 972,098	(c)3,166,717
Number of—					
Staff (d)—					
Full-time—					
Professional	7	12	11	9	12
Administrative and clerical	5	6	6	9	12
Other	14	14	17	20	19
Honorary	3	3	2	2	1
Total	29	35	36	40	44
Exhibits for display (d)—					
Oil paintings	565	581	602	617	682
Water colour paintings	222	225	236	248	429
Drawings	484	489	505	549	1,164
Engravings, prints, woodcuts	1,515	1,640	1,702	1,742	1,989
Sculptures	76	77	80	83	101
Ceramics	450	467	470	473	480
Jewellery and miniatures	44	44	44	45	45
Other	383	436	458	465	466
Total	3,739	3,959	4,097	4,222	5,356
Special exhibitions	8	8	9	7	10
Visitors' attendances	109,857	114,378	118,704	100,670	111,661

(a) Includes an amount of \$555,934 representing the cost of renovating and equipping the new administration centre. (b) Includes an amount of \$194,678 being balance of cost of renovating and equipping the new administration centre. (c) Includes progress payments on construction of new gallery, \$1,763,886 and loan redemption payments of \$272,675. (d) At 30 June.

A new art gallery under construction in an area bounded by Roe Street and Beaufort Street connects with the Administration Centre. The design of the new gallery is based on an hexagonal form to allow maximum flexibility in the use of exhibition areas. The exhibition area of 3,493 square metres comprises four major galleries for the display of

art works from the permanent collection and touring exhibitions, an ethnic gallery, a smaller prints and drawings gallery and study area, a general purpose hall for lectures, musical recitals, films, etc. as well as a bookshop, restaurant and information/reading room.

The Gallery continues to service country and north-west areas with touring exhibitions of art works from the collection, accompanied by Education Officers. A branch gallery is maintained at the Cultural Centre in Derby, where an exhibition of paintings from the permanent collection is displayed and changed regularly each year.

These activities are supplemented by publications of various kinds which are distributed to schools and other institutions or direct to the public. Colour reproductions of some works in the collection are also available for sale at the Gallery.

The Art Gallery operates a general information service which is widely used, and tours of the Gallery conducted by volunteer gallery guides are organised for groups of adults, students and school-children.

The Director and professional staff are often called upon to judge exhibitions, give public lectures, and sit on various planning and advisory committees.

THE WESTERN AUSTRALIAN ARTS COUNCIL

The Western Australian Arts Council was established by the *Western Australian Arts Council Act, 1973*, operative from 1 December 1973. The Council took over the functions of the Western Australian Arts Advisory Board. In terms of the Act, 'it shall be the general duty of the Council to encourage, foster, and promote the practice and appreciation of the arts in Western Australia'. The Council may make grants, pay subsidies or furnish advances to local authorities, organisations or persons engaged in activities consistent with this duty. Subject to the provisions of the Act, the Council may 'generally do whatever it considers necessary or expedient in order to stimulate artistic or cultural activity'.

The Council is charged with three specific functions: To enhance the standards of performance and execution in all aspects of the arts; to make accessible to the public of Western Australia all forms of artistic and cultural work; and to foster and maintain public interest in the arts and culture of the State.

The Council undertakes these functions through the funding of arts organisations and events which could not operate or take place without financial support; through a training programme throughout the State which includes performances, exhibitions and tutors; and through a development and advisory service which encourages self-help whilst providing assistance from a central source.

Funds available to the Council to enable it to exercise its functions include amounts appropriated by the State Parliament or made available by the Australian Government, amounts borrowed by the Council under the provisions of the Act, and moneys which may be advanced by the Treasurer.

The Council is affiliated with, and receives financial support from, the Arts Council of Australia (Federal Division).

STATE GOVERNMENT OBSERVATORY

The Perth Observatory was originally established, near Kings Park, in 1896; the present buildings, near Bickley in the Darling Range, were officially opened on 30 September 1966.

The astronomical instruments at the Observatory are a photographic refractor of thirty-three centimetres aperture combined with a guiding telescope of twenty-five centimetres aperture, the Hamburg Observatory's nineteen-centimetre meridian transit telescope, the Lowell sixty-centimetre reflector, and a forty-centimetre reflector constructed by the Physics Department of the University of Western Australia.

The photographic refractor is used for investigations of stellar motions based on measurements of old (1900-1920) and recent photographs; for the recovery of minor planets which have been unobserved for several years; for positional observations of comets, which

are used in investigations of comet orbits; and for securing photographs, to a faint magnitude limit, of significant areas of the southern sky, which may be used in the future in determinations of stellar motions.

From late in 1967 to the end of 1971, a team of astronomers from the Hamburg (West Germany) Observatory carried out a programme of observations of the positions of reference stars in the southern hemisphere. Their automated meridian transit telescope is now on indefinite loan to the Perth Observatory. From the end of 1972 to the middle of 1976, a Perth team using the Hamburg equipment carried out sixty thousand observations within the frame of an international programme to improve and extend the fundamental catalogue of star positions. A further programme, with emphasis on observing supporting stars in the southern hemisphere, is in progress. These observations will be used to determine a reference frame of faint stars by means of which the absolute positions of galaxies in the southern hemisphere can be determined. In this way it will be possible to relate the present fundamental system of star positions to an extragalactic reference frame. The preparation of a new observing list is now in progress comprising all FK4 stars, reference stars for the Perth Astrogaphic catalogue, stars of astrophysical interest and radio stars. The inclusion of radio stars in this new observing programme is of some importance allowing a tie between the optical and radio frame of reference.

The sixty-centimetre reflecting telescope was installed at the beginning of April 1971. It was originally used for observation in the International Planetary Patrol Program, which was financed by the National Aeronautics and Space Administration of the United States of America and conducted by the Lowell Observatory, of Flagstaff, Arizona, U.S.A. This programme involved the photography of the planets Mars, Jupiter, Saturn and, occasionally, Venus. Several different observatories, well distributed in longitude, participated using identical cameras and optical systems. Each planet was photographed systematically through four standard colour filters throughout the period during which it was available. The purpose of this programme was to set up an extensive library of photographs for the study of temporal variations in the atmospheres and surface features of these planets.

The telescope is also equipped with a photo-electric photometer to measure brightness of celestial objects and was used in 1973 to record a series of mutual occultations and eclipses between the four major satellites of Jupiter. This photometer has also been used for investigations of the variations in brightness of stars, planets, satellites and asteroids. In 1978 a photomultiplier with a thermoelectric refrigerated chamber and R and I filter was purchased with the emphasis to extend the existing standard UVB photoelectric colour system to UVRI.

The forty-centimetre University telescope is intended for joint use with researchers from the University of Western Australia mainly for direct photography in the Newtonian and Cassegrain focus, but also for photometry and spectroscopy in the Cassegrain mode. Additionally, this instrument was equipped in 1977 with a two-channel fast photometer to be utilised for accurate timing of star occultations by the moon, and other events requiring high time resolution. The events are recorded on a two-channel tape-recorder for further evaluation.

The computer facilities of the Perth Observatory have improved greatly in the last two years. Beside the GIER computer left behind by the Hamburg Southern Expedition an IBM 1620 computer was transferred from the W.A. University. In addition two computers, a PDP 11/10 and a Radio Shack TRS 80, have been purchased. The acquisition of data from the 4 telescopes via recorders or direct on line is now possible. Video cameras are also employed to search and blink the photographic plates as well as to record the information on video tape.

The policy of the Perth Observatory is strongly directed towards providing collaboration in the area of astrometric research with other observatories and research groups. It maintains the time service for the State, and provides an astronomical information service for educational and general interest inquiries. It is open to visitors daily, except Saturdays, at 3 p.m.

STATE GOVERNMENT CHEMICAL LABORATORIES

In 1922 the various chemical services of the State Government were amalgamated to form the Government Chemical Laboratories, primarily for the performance of chemical work required by government departments. In addition, the Laboratories serve government instrumentalities and semi-government authorities and undertake some chemical work for the general public. The activities of the Laboratories are organised under eight Divisions, the separate functions of which are described briefly in the following summary.

The *Agriculture Division* does analytical work, on soils, for basic research, the effect of fertilisers, cultivation methods and crop rotation; on plants, as fodders for livestock and also to assess the nutritional requirements of plants with particular reference to the use of fertilisers and the correction of trace element deficiencies; on fertilisers and manures generally; and on animal tissues for diagnostic purposes. Samples of many kinds are analysed to determine the effects of pollution on agricultural and native plants and on stock, and to determine the level of potential pollutants in raw materials and finished products.

The *Engineering Chemistry Division* is concerned mainly with research into the utilisation of the State's natural resources, particularly fuel and mineral resources. Investigations are carried out on specific technological problems at the request of government departments, industry, or individual sponsors, or are initiated from within the Division. Facilities are available for physical and chemical testing of coals and other fuels and for experimental work on most aspects of fuel utilisation, ore dressing, chemical engineering and metallurgical processing. Technical advice is also given on these topics.

The *Food and Industrial Hygiene Division* deals with chemical analyses in the fields of food, pesticides, industrial hygiene and general analytical chemistry. Examinations are performed to ensure conformity to standards of quality prescribed by legislation, as well as analyses for traces of pesticide residues and other contaminants. Industrial hygiene analyses and field investigations of working conditions and potential health hazards are also performed.

The *Industrial Chemistry Division* provides, for Government, industry and the public generally, a source of technical information and advice on matters relating to industry and its products. It also advises on the potential of new methods or improvements in existing processes, and undertakes related experimental investigations.

The *Kalgoorlie Metallurgical Laboratory* carries out research in mineral beneficiation and ore treatment for mining companies and prospectors. Assays and mineral analyses are done in the course of this work and also on separate samples.

The *Mineral Division* is basically concerned with studying and recording the mineralogy of the State. This is done by physical and chemical examination of mineral and rock specimens obtained from departmental and other sources and by the maintenance of a reference collection of minerals from most known occurrences within Western Australia. A service to government authorities (particularly other branches of the Department of Mines) is maintained by examination of samples and provision of advice on mineralogy and inorganic chemistry generally. In some circumstances this service is extended to the mining industry, prospectors and the general public.

The *Forensic Chemistry Division* undertakes most of the forensic chemical investigations in the State. The major part of its activities comprises toxicological examinations concerning deaths involving drugs or poisons, analysis of blood for alcohol level, identification and analysis of illicit drugs, and the scientific testing of exhibits to assist in criminal investigations. Testing of specimens, related to the control of doping of trotting horses and greyhounds, is also carried out.

The *Water Division* analyses waters from all parts of the State for Government and the public and makes recommendations on their suitability for specific purposes. Most of the work is done on behalf of the Metropolitan Water Supply, Sewerage, and Drainage Board and the Public Works Department, to ensure that water supplies under their control comply with the accepted standards of water for human consumption. The Division also investigates problems associated with water distribution and industrial use,

including cooling and heating waters and liquid wastes where corrosion, scaling or pollution are involved and, in addition, carries out surveys of industrial effluents and the pollution of river and ocean waters.

Details of the operations of the Government Chemical Laboratories are published in the Annual Report of the Director.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

Under management arrangements introduced in December 1978, research conducted by the Commonwealth Scientific and Industrial Research Organization (CSIRO) is carried out within five Institutes; Earth Resources, Biological Resources, Animal and Food Sciences, Industrial Technology and Physical Sciences. Each Institute consists of several Divisions. Of these Divisions, two, Land Resources Management and Mineralogy, have their headquarters in Perth, while several other Divisions utilise laboratories or field stations in Perth and in other parts of Western Australia.

Institute of Earth Resources

Division of Land Resources Management. The Division of Land Resources Management is developing principles for managing Australia's land resources in a way that is consistent both with efficient productivity and the conservation of those resources. The research programme involves multi-disciplinary studies in which economic and social aspects of land management are recognised as being as important as biophysical aspects. Equally important is the development of methods for processing and communicating data to assist land-use decision making.

The Division has a national responsibility, and research programmes are being developed to investigate a number of resource management situations throughout Australia. The Division has branch laboratories at Alice Springs (Northern Territory), and Deniliquin (New South Wales).

Research on water supply and land use in the Darling Range and elsewhere in the south-west of Western Australia is one of the Division's main programmes. Widespread removal of native vegetation has resulted in salt (which has accumulated over thousands of years deep in the soil profile) being discharged into streams and groundwater. Some major rivers, and a good deal of agricultural land, are consequently in poor condition. Practices which will increase total evapotranspiration from farmlands and so reduce water and salt movement into streams are being developed and tested. The primary objective is to attack the salinity problem on farms so as to reclaim salt land and reduce stream salinity.

The Division's research into rural lands recognises that these lands are an extremely important national resource, producing food and fibre for Australian consumers, as well as for export. Their management for efficient production and stability involves biological, economic and social factors within the context of climatic and market risks. The programme uses a three-pronged approach—research at the regional level, the farm level, and on plants, animals, and nutrients.

Forested lands, which surround many of Australia's major cities, supply not only timber but also vital domestic and industrial water supplies, recreational opportunities and animal habitats. The Division is investigating the management of forested lands in relation to the multiple demands made on them and some of the hazards they are subject to, such as jarrah dieback disease.

Australia's rangelands (the arid and semi-arid grazing lands) constitute a large area of low rainfall and include major parts of five mainland States. Some vegetation types are badly degraded, others less so. Low or unpredictable rainfall is the overriding restriction, and maintenance or restoration of stability and productivity is the principal objective of the Division's work. Extensive grazing is the most likely continuing use of the rangelands. Other alternatives for particular areas include use by Aborigines, the establishment of national parks, tourism and mining.

Resource and regional management is a multi-disciplinary programme which covers biophysical, economic and social aspects of land resource management. The programme is initially focussing on 'System 6' in Western Australia, the area of land which extends from the Moore River in the north to the Blackwood River in the south, and inland over the Darling Range. Over 80 per cent of the population of Western Australia live in 'System 6', and most of the State's resource and regional management problems and conflicts occur in it.

One of the Division's most recently developed programmes concerns ecosystem assessment, or the measuring and recording of ecosystem variables. When dealing with land resources, it is necessary to have regular and accurate measurements of the condition, abundance and possible trends of change in status of various resource components. Application of the principles of physics and electronics and communications engineering will be investigated, involving imagery from ground, aircraft and satellite vehicles, on-site data logging equipment, and radio telemetry.

Division of Mineralogy. The Division of Mineralogy is concerned with research bearing on the discovery and definition of Australian mineral resources. Its work deals mainly with the chemical and physical nature of geological processes of mineral formation and alteration.

Under two main programmes, mineralisation and exploration, studies are in progress on processes of ore genesis, particularly with respect to base metal ores, on supergene alteration of these ores, on the geochemical and petrological evidence for defining areas of differing crustal development in the Archaean of Western Australia, and on improving techniques and interpretation of surface geochemical exploration in deeply-weathered arid terrain.

Institute of Biological Resources

Division of Entomology. A research group is studying the role of native and introduced dung beetles in burying accumulations of cattle dung and in reducing the abundance of the dung breeding bushfly in the south-west of Australia. Studies on the ecology of the bushfly will provide an estimate of the effectiveness of beetles introduced from overseas in reducing numbers of flies, as new beetles become established in different areas and their populations build up.

Jarrah, an important forest tree in Western Australia is attacked by the larva of a small moth, Jarrah Leaf Miner. Long-term ecological studies of factors affecting the abundance of the pest and that of its natural enemies have shown that outbreaks of the Leaf Miner are more likely to occur in situations where part clearing, thinning and burning have made the forests more attractive to the moths. The findings are consistent with the historical records showing that outbreaks first occurred in the coastal jarrah affected by settlement in the early 1900s and spread to the inland forest between Mount Barker and Manjimup in the 1950s. The effect of the current forest management on the outbreaks is being evaluated.

Division of Tropical Crops and Pastures. The Division of Tropical Crops and Pastures is responsible for the operation of the Kimberley Research Station which is situated near Kununurra on the banks of the Ord River in the far north of Western Australia.

The principal objectives of the Station's research are to define the factors and to understand the processes involved in efficient crop and animal production in the Ord Irrigation Area and in similar environments in northern Australia. High-yielding varieties of grain sorghum are being bred; studies are being undertaken with rice to overcome a nutritional problem associated with the alkalinity of the soil; a programme of research into grain legumes for human and livestock feed is proceeding with priority on soybeans; studies on water use by grain legumes are also being undertaken; irrigated pastures based on pangola grass and the tree legume, leucaena are being assessed under grazing with cattle; the potential for improving dry land pastures in the East Kimberley region is being investigated; and work is proceeding on the production of the vegetable fibre crop, kenaf and certain species of legume suitable for a paper pulp industry.

Division of Forest Research. This Division is represented in the State by a Regional Station located at Kelmscott, with a staff of ten members. Since its inception at Dwellingup in 1949 the station work has centred on jarrah dieback disease, its ecology, rate of spread and soil microbial relationships, and the susceptibility of native and introduced species to infection and the extent of damage caused to them.

Division of Wildlife Research. The Division of Wildlife Research has a research group at Helena Valley, working on the higher vertebrates (more particularly mammals and birds). Investigations cover not only species of economic importance but also native fauna generally.

Studies of the behaviour and ecology of seven species of cockatoos are proceeding. The ecology and behaviour of the Emu and the Noisy Scrub Bird have been the subject of recent studies and certain aspects of the biology of these birds, as well as the effect of Silveryeyes on vineyards, are still being investigated.

Division of Fisheries and Oceanography. The Division of Fisheries and Oceanography is currently conducting a study of the coastal reef ecology off south-western Australia. Part of this study includes a detailed investigation of the biology of the Western Rock Lobster. In co-operation with the Western Australian Department of Fisheries and Wildlife a population study of the Australian Salmon is being made.

Institute of Animal and Food Sciences

Division of Animal Production. The Division of Animal Production has established a Trace Element Unit in Western Australia, as part of its mineral programme. Research under this programme covers a wide range of activities aimed at understanding the nutritional and physiological limitations of wool and meat production and at providing new and improved techniques relevant to livestock production. In mineral nutrition research, emphasis is now upon sub-optimal production by animals rather than upon clinical deficiency conditions. The Unit also serves to provide a link between the livestock industry and the Division's research workers throughout Australia.

Division of Food Research. The Meat Research Laboratory of the Division of Food Research has an extension officer located in the laboratories of the Western Australian Department of Agriculture at South Perth. He is a member of the Meat Laboratory's Industry Section which is responsible for service, investigation, liaison and extension work in meatworks and meat processing establishments, to ensure that the results of investigations by the Commonwealth Scientific and Industrial Research Organization are made known and to encourage their application by the meat industry. The extension officer services processing plants in Western Australia and the Northern Territory and gives a limited extension liaison service to other food processing industries.

Division of Animal Health. The Melbourne Laboratory of the Division of Animal Health has set up a branch laboratory in the Institute of Agriculture at the University of Western Australia to investigate reproductive losses in sheep in Western Australia, with particular reference to pathological aspects of clover disease and possible infectious causes of infertility.

Institute of Industrial Technology

Division of Chemical Technology. The Division of Chemical Technology was responsible for the invention and development of the Sirotherm and Sirofloc water desalination and purification processes. At the Metropolitan Water Supply Board's treatment works at Mirrabooka a Sirofloc pilot plant, designed by the Division and built and operated by the Australian Mineral Development Laboratories (AMDEL), is producing purified water from turbid bore water containing colour and contaminants such as hydrogen sulphide and organically bound iron. Design and construction of a 35 megalitre per day Sirofloc plant for the purification of municipal water supplies will begin shortly at Mirrabooka. This follows from the Commonwealth Department of Productivity's invitation to private industry, through the Australian Industrial Research and Development

Incentives Board, to assist Government in the development of the new treatment system. A Sirotherm pilot plant has been operating in Perth since 1975 where potable water has been produced from brackish bore water.

Division of Building Research. The Division of Building Research is investigating the problems of living in remote communities and as part of this programme the Division is working in a number of mining towns in the tropical region of the State. The aim of the research is to demonstrate ways in which conditions can be created to attract people to settle in the towns and be content to remain. The research involves assessment of the attitudes of residents and mine workers to the living and working conditions existing in new and longer-established towns, such as Shay Gap, Leeman, Port Hedland, South Hedland and Newman. Some of the towns present marked contrasts in town planning approaches and in housing styles. Others involve the mine workers in commuting over considerable distances between town and mine site. In one aspect of the study the reaction of mining town residents to imminent closure of the mine and town is being assessed.

The findings of previous research by the Division have been presented to the planners of the new mining town of Leinster.

Institute of Physical Sciences

Division of Mathematics and Statistics. The Division of Mathematics and Statistics is concerned with the mathematical analysis of scientific problems and the application of statistical methods to areas of interest in the applied and biological sciences. Its officers also act in an advisory capacity to other research workers in the State on matters relating to mathematical methods, as well as the design of experiments and the analysis and interpretation of statistical data.

Division of Computing Research. The Division of Computing Research provides a computing service for research workers in other Divisions. Computing equipment consists of a node computer connected to a Cyber 76 computer in Canberra by means of a telephone line leased from the Australian Telecommunications Commission. The node computer provides a remote batch service and an interactive service for eleven consoles.

DEPARTMENT OF AGRICULTURE

Reference to the scientific work of the Department of Agriculture appears in the section *The Department of Agriculture* in Chapter VIII, and also in Chapter VII, Parts 1 and 2.

BOTANIC GARDEN

The Botanic Garden was established in Kings Park in 1962 and is under the control of the Kings Park Board (see following section *Public Parks and Reserves*). The Botanic Garden is the counterpart of The Western Australian Museum in the botanical field and complements the State Herbarium by maintaining collections of living plants for scientific and educational purposes. Its official objects are to foster public interest in the conservation and cultivation of the Western Australian flora; to contribute to public education in this field; to become a centre for botanical and horticultural research in the flora of Western Australia; and to provide a major tourist attraction. The education centre established in the Park caters for more than ten thousand school children each year.

The Garden, which was officially opened in October 1965, extends over thirty-four hectares, made up of the Western Australian collection (seventeen hectares), Californian, South African and Mediterranean collections (three hectares), and an arboretum of native trees (fourteen hectares). The indigenous flora of the State is represented in the Western Australian collection by approximately 1,200 species. Trees grown as specimens in the arboretum are mainly those which are native to the southern half of the State.

Parties from the Botanic Garden are regularly in the field for the collection of propagating material. Special attention is devoted to the preservation of rare species or species threatened with extinction. Seed of native plants collected is distributed from sur-

plus stocks to botanical institutions throughout the world. A seed list, which normally offers from 1,000 to 1,300 species, is published annually, and more than 10,000 packets of seed are distributed each year.

Experimental work in propagation of native plants is carried out and a Wildflower Exhibition is held in the Park each spring. Lectures are given by members of the staff to interested societies and to students engaged in related courses of study. The public may also, by arrangement, consult the Horticultural Adviser particularly for advice on the cultivation of native plants. Facilities are provided for the employment and training of students enrolled in the three-year course for the Certificate in Horticulture, which is conducted by the Technical Education Division of the Education Department.

PUBLIC PARKS AND RESERVES

It is within the power of the Governor to dispose of, in any manner which serves the public interest, lands which are vested in the Crown and, in terms of this authority, Crown land is frequently reserved by order of the Governor for a variety of public purposes. Some of this land is reserved for public recreation and amusement, national and other public parks, or flora and fauna sanctuaries and the reserves are controlled by statutory bodies, the more important of which are dealt with in this section.

NATIONAL PARKS AUTHORITY OF WESTERN AUSTRALIA PARKS AND RESERVES VESTED IN THE AUTHORITY AT 30 JUNE 1979

National Park or Reserve	Area	National Park or Reserve	Area
	hectares		hectares
Alexander Morrison	8,501	Matilda Bay Reserve	25
Araluen-Canning Dam Reserve	20	Millstream	435
Avon Valley	4,377	Moore River	17,543
Badgingarra	13,121	Nambung	17,487
Boorabbin	26,000	Nowergup Lake Fauna Sanctuary	117
Cape Arid	259,808	Neerabup	1,077
Cape Le Grand	31,390	Pemberton	2,912
Cape Range	50,581	Penguin Island Reserve	13
Charles Gardner Flora Reserve	583	Porongurup	2,359
Chichester Range	150,609	Porongurup Range Reserve (a)	61
Collier Range	555,914	Rudall River	1,569,459
D'Entrecasteaux	1,704	Scott	1,729
Drovers Cave	2,681	Serpentine	635
Drysdale River (a)	435,590	Sir James Mitchell	1,087
East Perth Cemetery Reserve	5	Stirling Range	115,671
Fitzgerald River	242,727	Stokes	10,667
Frank Hann	49,877	Tathra	4,323
Geikie Gorge	3,136	Torndirrup	3,913
Geekabee Hill Flora Reserve	4	Tunnel Creek (a)	92
Goongarrie	49,878	Walpole-Nornalup	18,100
Gooseberry Hill	33	Walyunga	1,790
Greenmount	56	Watheroo	44,324
Haddleton Flora Reserve	713	William Bay	1,879
Hamersley Range	590,176	Windjana Gorge	2,134
Hassell	1,279	Wolf Creek Crater (a)	1,459
John Forrest	1,577	Yalgorup	11,384
Kalamunda	375	Yanchep	2,799
Kalbarri	186,097	Yanchep Flora Reserves	113
Leeuwin-Naturaliste	9,689	Zuytdorp	8,500
Lesmurdie Falls.....	56		
Total area of National Parks and Reserves (b)			4,518,644

(a) Not officially named at 30 June 1979.

(b) Excludes a number of small reserves, totalling 19 hectares, not listed above.

The *National Parks Authority Act, 1976*, which came into operation on 1 August 1976 provides for the vesting and management of certain areas as National Parks or Reserves, for the conservation of the natural environment, the preservation and enhancement of natural

beauty, and the provision of access and facilities for public recreation. The Act constitutes a National Parks Authority of Western Australia of nine members and provides for the appointment of a Director of National Parks. Under the legislation, areas of the State formerly controlled by the National Parks Board, established under the *Parks and Reserves Act, 1895-1978*, became the responsibility of the National Parks Authority.

Members of the National Parks Authority of Western Australia, appointed by the Governor, comprise a President, nominated by the Minister; the holders (or their nominees) of the offices of the Conservator of Forests, the Director of Fisheries and Wildlife, the Director of the Department of Tourism and the Surveyor General; and four persons nominated by the Minister to represent the interests of the public with respect to primary industry, local government matters and conservation or community service matters relevant to the concept of National Parks.

The *National Parks Authority of Western Australia* controlled forty-six National Parks and a number of other reserves at 30 June 1979, totalling in all about 4.5 million hectares in area. Flora and fauna are protected and firearms prohibited in all National Parks and Reserves controlled by the Authority. Picnic, recreational, camping and caravan facilities are available in certain parks and reserves.

The *King's Park Board* administers an area of almost 403 hectares close to the centre of Perth. Part of this area was dedicated in 1872 'for the purpose of a public park and recreation ground' and was enlarged in 1890. Beautification commenced in 1896 under the presidency of Sir John Forrest, and the name was changed in 1901 from Perth Park to The King's Park in honour of the accession of King Edward VII. In addition to its original function as park and recreation ground, The King's Park (now referred to as Kings Park) has over the years gradually developed two other important functions, as a National Shrine and as a Botanical Reserve. In the former case it houses the State's most important monuments and commemorative features of a military and historical nature. A memorial to the South African war was built in 1901, and the State War Memorial to the fallen of both world wars was erected on a commanding position on Mount Eliza in 1929 and extended in 1952. 'Honour Avenues' of trees dedicated to individual fallen servicemen were planted in 1919 and later, and another avenue commemorates the State Centenary of 1929. There are smaller memorials erected by individual regiments or other military units, and a number of monuments to important historical personages.

The concept of the botanical reserve grew from the fact that four-fifths of the Park's area remained undeveloped under a natural bushland which contained many native wildflowers. Increasing urbanisation and the loss of natural sites in and close to Perth made the retention of this bushland area a matter of scientific and aesthetic value. This function was strengthened from 1962 onwards by the establishment in the Park of a botanic garden and arboretum of thirty-four hectares for the cultivation and display of Western Australian native plants. (See preceding section *Botanic Garden*.)

Recent developments have continued to contribute to the Park's aesthetic and recreational functions. A fully-equipped modern restaurant was erected in 1956, close to such features as a floral clock, a wishing well, a giant karri log and an observation platform. There are several public barbecue sites and many kilometres of pedestrian paths and tracks. The original twenty hectares of lawns and shrubberies have been materially extended by the Botanic Garden development. Four new lawns have been added within the Garden, one of which encircles a landscaped water garden with four pools, two cascades and a waterfall, one pool featuring an illuminated fountain dedicated to the pioneer women of the State. Nearby the Women's Commemorative Pavilion and Wall records 150 years of achievement of women in Western Australia and provides a venue for band concerts. A pioneer women's roll is housed in the Administrative Centre. A picnic lawn, refreshment kiosk, and children's nature playground have been established around an artificial lake at the western end of the park and linked to older-developed areas by a mile-long vista leading to a viewing tower. The lawns and pine plantations near the Subiaco entrance have been reshaped as a family recreation area with a variety of play equipment, barbecues, and a small amphitheatre for outdoor performances.

The *Zoological Gardens Board* administers the Zoological Gardens at South Perth, an area of eighteen hectares of animal enclosures, lawns and gardens. The Zoological Gardens were established in October 1898 for the collection and display of mammals, birds, reptiles and fish from all parts of the world, but specialising in Australian, and particularly Western Australian, fauna. The Zoo is open to the public every day of the year. During the year ended 30 June 1978, 116 species of mammals, 269 species of birds and 37 species of reptiles were exhibited. In this period 360,126 people paid for admission and, in addition, 5,000 disadvantaged children and adults were admitted free. A new exhibit, the Grundt Memorial Nocturnal House, was inaugurated on 15 November 1977.

The *Rottnest Island Board* administers as a tourist and holiday resort a reserve comprising almost the whole of Rottnest Island, which is situated about eighteen kilometres west of Fremantle. There are two settlements. One at Thomson Bay contains 172 cottages and bungalows to let, a hotel, lodge, camping areas and all services. Recreational facilities include a golf course, tennis courts, bowling green and a riding school. A second settlement is under construction at Geordie Bay—Longreach and by 1981 it will provide an additional seventy cottages, thirty-six of which have been completed. This settlement will be self-contained and provide all back-up facilities. The coastline is ringed by a road system with access to the various swimming and fishing areas. There is a land-backed wharf and three jetties in Thomson Bay and jetties at Geordie Bay and Green Island. Special features of the island include the marsupial known as the Quokka and the Rottnest Island Daisy. The island is served daily by air and sea transport. Visitors to the island in 1977-78 totalled 240,000.

Caves Reserves. Extensive limestone caves have been discovered at several places in the south-west part of the State. Some of them, between Cape Naturaliste and Cape Leeuwin and at Yanchep, have been developed for public inspection and certain areas of the surrounding land have been reserved, notably at Yanchep, Yallingup, Margaret River and Augusta.

Local Government Reserves. Many local authorities hold land for recreational purposes, the areas having been either Crown land vested in the Council, acquired by way of purchase, or received under private bequest. Included in these local government reserves are areas required to be surrendered to the Crown by private owners, when subdividing land into residential lots in order to provide recreation areas for the holders of lots in the subdivision. The reserves are frequently developed as public parks or to provide facilities for sports or camping.

SPORT AND RECREATION

The Department for Youth, Sport and Recreation which became operative on 1 January 1979 is responsible to the Minister for Recreation for matters relating to recreation, sport and youth.

The Department replaced the Youth, Community Recreation and National Fitness Council, a statutory authority established in 1973.

The *Youth, Sport and Recreation Act, 1978* establishes a Youth, Sport and Recreation Advisory Committee.

In terms of the Act the Committee shall consist of seven members: one *ex officio* member, namely the Permanent Head of the Department; and six other members, appointed by the Governor, shall be persons from the community nominated for appointment by the Minister for their knowledge, experience or association with the administration or development of recreation, local government, sport and youth.

The role of the committee is to encourage community participation in recreation including sporting and youth activities.

The Department for Youth, Sport and Recreation makes recommendations to the Minister for Recreation concerning government grants to local government authorities and community groups for capital works; for special development projects; for training

courses for coaches, leaders, officials and administrators; for salary subsidies to sporting and youth associations; for travel subsidies for selected persons travelling to national championships; for the purchase of items of equipment and for the establishment of regional and specialised equipment hire centres.

The Department has appointed community recreation officers to local government authorities to assist them in providing for the leisure needs of the community. These officers also participate in the planning of new, and management of existing, local government recreational resources and provide an information exchange service to ensure optimum use of facilities. Over thirty local government authorities are serviced by this scheme.

Camps which provide low cost accommodation and recreation facilities for youth, sporting, recreational organisations and family groups are fully operative at Quaranup near Albany, at the historic old hospital at York, eighty kilometres east of Perth, at Sorrento on the coast north of Perth, at Point Peron on the coast south of Fremantle, at Bickley east of Perth in the Darling Range, at Guildford near Perth Airport, at Point Walter on the Swan River, at Wellington Mills near Collie, at Myalup near Harvey and at Balingup. At Sorrento further development is going ahead and recent additions include a ranch house catering and dining area and six dormitory blocks to accommodate 126 people.

The Department conducts training courses, education programmes and seminars for people working in a voluntary capacity in youth, sport and recreation. In addition, the Department administers the Duke of Edinburgh's Award Scheme in Western Australia.

The Department has an extensive equipment hire centre at its headquarters at Perry Lakes Stadium, west of Perth, and a comprehensive selection of films, books, leaflets and other resource material is kept to assist people providing or conducting, recreation programmes. A technical advice service is available to local government authorities, sporting and recreation organisations and private developers.

The national, active recreation campaign entitled 'Life. Be in it.', launched in all states in November 1977, is conducted in Western Australia through the Department for Youth, Sport and Recreation. The campaign, which is funded by the Commonwealth Government, aims to encourage wider community participation in all forms of leisure activity and early indications are that a measure of success is being achieved.

Chapter V—continued

**Part 3—Health Services, Hospitals, and Care
of the Aged and Disabled**

The Australian Government and State Government health authorities, together with Boards of Health under local government administration, co-operate in maintaining health services and in the prevention and control of infectious diseases in Western Australia.

NATIONAL HEALTH SERVICES

National Health Services are provided under the *National Health Act 1953*, the *Nursing Homes Assistance Act 1974* and the *Health Insurance Act 1973* which are administered, subject to the direction of the Minister for Health, by the Department of Health, with a Director-General as its Administrative Head. In each State there is a Director of Health, responsible to the Director-General. Benefits authorised by the National Health Act and the Nursing Homes Assistance Act are paid from the National Welfare Fund, to which reference is made in Chapter VI, Part 1—*Public Finance*. Expenditure under the Health Insurance Act is a charge on the Consolidated Revenue Fund.

National Health Benefits

The Health Insurance Act established the Australian Health Insurance Program (Medibank) which came into operation on 1 July 1975. This program provided medical benefits, hospitalisation without charge in standard wards of public hospitals and free out-patient treatment.

From 1 October 1976 the *Health Insurance Levy Act 1976* imposed a levy on taxable incomes as a contribution to the health costs of standard Medibank beneficiaries. Exemption from payment of the levy could be obtained by insuring for basic medical and hospital benefits with a registered health insurance organisation.

Under amendments to the *Health Insurance Act 1973* and the *National Health Act 1953* effective from 1 November 1978 the compulsory health insurance levy was abolished and there is no obligation for persons to carry medical insurance. The Commonwealth provides a universal medical benefit of 40 per cent of a scheduled fee. Accommodation in standard wards of public hospitals with treatment by doctors engaged by the hospital is still available free of charge.

Private insurance for additional hospital and medical benefits is of course still available.

In Western Australia during the year ended 30 June 1978 medical benefits amounting to \$24·14 million were paid by the Health Insurance Commissioner in respect of 2·541 million services.

Hospitals

The provision of finance for hospitals is based on agreements made under the *Health Insurance Act 1973* between the Commonwealth and State Government. The agreements operating from 1 October 1976 contain the following main points: recognised hospitals are to provide free accommodation and treatment to certain categories of patients and to make charges, at agreed rates, in respect of other categories of patients; doctors treating patients receiving free accommodation and treatment are to be paid by hospitals on certain agreed bases; and the Commonwealth Government is to meet 50 per cent of approved net operating costs of State hospital systems, expressed in aggregate budgets jointly formulated and approved.

The following table shows health cash benefits to persons in Western Australia in recent years.

AUSTRALIAN GOVERNMENT HEALTH CASH BENEFITS
TO OR FOR PERSONS IN WESTERN AUSTRALIA
(\$'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Hospital and clinical services—					
Hospital benefits for pensioners	2,175	2,332	2,276	606	..
Hospital benefits, n.e.c.	7,509	7,451	8,818	6,257	1,225
Nursing home benefits	9,375	11,440	14,665	18,772	22,228
Tuberculosis campaign—Allowances	46	39	56	77	62
Rehabilitation of ex-servicemen	n.a.	11	29	17	30
Medibank—Private hospital daily bed payments .....	..	..	..	5,175	5,993
Other health services—					
Medical benefits for pensioners	2,207	2,495	3,539	372	..
Medical benefits, n.e.c.	13,750	13,983	15,898	5,737	74
Pharmaceutical benefits for pensioners	3,758	4,429	5,310	7,104	7,609
Pharmaceutical benefits, n.e.c.	5,748	7,318	8,834	9,999	8,185
Milk for school children	1,086	..	..	..	..
Medibank—Medical benefits .....	..	..	..	42,067	35,702
Domiciliary care	100	550	762	847	912
Assistance to aged persons—					
Age pensions	64,896	83,580	118,492	156,447	183,519
Delivered meals	50	123	145	130	208
Personal care	278	528	883	1,160	1,403
Telephone concessions	310	388	509	730	846
Assistance to incapacitated and handicapped persons—					
Invalid pensions	11,292	14,431	20,320	27,066	33,666
Sheltered employment allowances	170	265	575	980	1,250
Handicapped children's benefits	42	47	309	985	1,062
Rehabilitation services	529	652	907	472	1,219
Assistance to unemployed and sick persons—					
Unemployment benefits	6,253	5,020	19,753	33,824	42,958
Sickness benefits	1,840	2,805	4,415	6,190	6,814
Special benefits	279	489	776	1,238	1,370
Structural adjustment assistance .....	..	..	252	91	1
Other	-	-	-	-	2
Assistance to ex-servicemen—					
War and service pensions and allowances	22,855	27,554	36,996	43,677	52,519
Other benefits	196	331	345	297	263
Assistance to widowed and deserted spouses—					
Widows' pensions	10,064	13,409	18,459	24,809	27,700
Assistance to families and children—					
Family allowance	21,407	19,009	19,084	22,737	89,514
Maternity allowances	680	626	659	632	645
Supporting mothers' benefits .....	..	4,729	8,102	12,547	15,588
Orphans' pensions .....	..	20	76	101	93
Other social security and welfare programmes					
.....	176	187	228	313	321
Total	187,071	224,241	311,472	431,456	542,981

Nursing Home Benefits

From 1 October 1977 changes to the *National Health Act 1953* provided for a basic Commonwealth nursing home benefit for uninsured patients. At the same time, insured patients in nursing homes became entitled to receive the same level of benefit payable by the registered hospital benefit organisations. Also from that date the supplementary nursing home benefit for extensive care patients was increased from \$3.00 to \$6.00 per day.

Certain charitable and non-profit organisations conducting nursing homes are eligible to participate in an alternative subsidy scheme which provides for deficit funding under the *Nursing Homes Assistance Act 1974*.

Domiciliary Nursing Care Benefit

Domiciliary nursing care benefit is paid to assist in meeting the cost of home nursing for aged persons who are chronically ill and are being cared for in the private home of a relative or other approved person. The benefit applies to a patient who has attained the age of sixty-five years, has a continuing need for nursing care, and is receiving such care given by or under the supervision of a registered nurse.

Pharmaceutical Benefits

All persons receiving treatment by a registered medical practitioner are entitled to receive benefits through approved pharmaceutical chemists or, in certain circumstances, medical practitioners.

The drugs and medicinal preparations available as pharmaceutical benefits are determined by the Minister on the advice of the Pharmaceutical Benefits Advisory Committee.

Tuberculosis Medical Services and Allowances

From 1949-50, under the provisions of the *Tuberculosis Act* 1948, the Australian Government reimbursed each State for approved expenditures incurred in the diagnosis, treatment and control of tuberculosis. The incidence of tuberculosis has been brought under control in Australia, and Commonwealth assistance under this programme ceased as from 31 December 1976, the costs incurred by recognised hospitals in treating tuberculosis patients being included within the scope of the Commonwealth/State cost sharing agreement.

Provision is made in the Act for allowances to be paid to sufferers from tuberculosis and their dependants. There is a means test which does not, however, apply to persons aged seventy years and over. The allowances are determined by the Director-General of Health, subject to the direction of the Minister. In certain circumstances, additional benefits may be paid in the form of a mother's or guardian's allowance or supplementary assistance.

STATE GOVERNMENT HEALTH SERVICES

The principal Statute relating to the provision and regulation of health services in Western Australia is the *Health Act, 1911-1978*, which is administered, subject to the control of the Minister, by a Commissioner of Public Health and Medical Services. The Act is comprehensive in scope and confers on the Commissioner the powers necessary for the prevention and control of infectious diseases; the enforcement of sanitation, building and pure foods standards; the control of nuisances and offensive trades; the regulation of the sale of pesticides and the manufacture of therapeutic substances; and the registration of private hospitals and the licensing of maternity homes. Other Acts under Public Health administration are the Anatomy Act, the Clean Air Act, the Cremation Act, the Noise Abatement Act, the Poisons Act and the Radiation Safety Act.

The Department of Public Health maintains a pathology laboratory service which provides diagnostic medical laboratory services to government non-teaching hospitals, charitable institutions and such general practitioners as elect to use it. It also shares with the Department of Medicine of the University of Western Australia much of the diagnostic medical laboratory of the Queen Elizabeth II Medical Centre. A range of reference laboratories is available, some of which serve the whole of Western Australia. A public health epidemiological service is provided for the State; nutritional, health and other surveys are undertaken; and forensic pathology work is done for the Police Department and Crown Law Department.

The Health Education Council is established as a statutory body under the provisions of the *Health Education Council Act, 1958-1975*. The Council conducts publicity campaigns and public lectures on matters affecting public health, including home accidents, handling of poisons, poliomyelitis and diphtheria immunisation and the control of flies and mosquitoes.

The Cancer Council of Western Australia is constituted under the provisions of the *Cancer Council of Western Australia Act, 1958-1964* as a statutory body with the functions of co-ordinating, promoting and subsidising research into the cause, diagnosis, prevention and treatment of cancer.

The Western Australian Government subsidises the cost of dental care for pensioners and persons on low incomes who are treated at the Perth Dental Hospital and at clinics in some major country centres. Co-operating dental practitioners assist the subsidy programme in other areas.

Infectious Diseases

The *Health Act, 1911-1978* provides for the compulsory notification of infectious diseases and for the application of preventive measures. For the purposes of the Act, infectious diseases are those which are specified in the Act, as well as any other diseases which may, from time to time, be declared. The occupier of premises where such a disease occurs is required to notify the local authority forthwith. The medical practitioner who attends a person suffering from an infectious disease must, on the day on which he becomes aware of the nature of the disease, notify the occupier and also the local authority and the Commissioner of Public Health.

On the appearance of any epidemic, endemic or contagious disease, the local authority is required to notify the Commissioner immediately and to report periodically on the disease. The Act provides for the disinfection and cleansing of premises and for the disinfection and destruction of bedding, clothing or other articles which have been exposed to infection. The Commissioner may require any person suspected to be suffering from, or to be a carrier of, an infectious disease to submit to medical examination.

The following table shows, for Western Australia, the number of cases notified during the years 1973 to 1977 for those diseases notifiable in all, or nearly all, States and Territories of Australia. In May 1965 the National Health and Medical Research Council at its Fifty-ninth Session proposed a basic list of diseases to be notifiable in each State and Territory and this table is based upon that proposal. The table does not include all diseases which are notifiable in Western Australia.

Leprosy and trachoma are endemic among the Aborigines of the Kimberley Division in the far north of the State, and cases are, with few exceptions, confined to the Aboriginal population. The Department of Public Health and the Northern Territory Medical Service co-operate in the control of these diseases.

NOTIFIABLE DISEASES (a)—NUMBER OF CASES NOTIFIED (b)

Disease	1973	1974	1975	1976	1977
Brucellosis	1	2	1	-	-
Diphtheria	5	-	-	-	-
Infectious hepatitis	165	247	258	272	211
Leprosy (c)	13	17	15	20	17
Leptospirosis	3	1	2	1	-
Paratyphoid fever	1	-	-	1	1
Poliomyelitis	-	-	-	-	-
Tetanus	-	-	-	-	1
Tuberculosis	146	137	166	110	155
Typhoid fever	-	1	-	-	-
Typhus (all forms)	-	-	-	-	-

(a) See letterpress immediately preceding table. (b) Figures exclude cases where the original diagnosis was subsequently disproved. No cases of cholera, plague, smallpox or yellow fever were notified during the period. (c) Aborigines account for practically all of these cases; see letterpress immediately preceding table.

The Commissioner of Public Health may compel any person believed to be suffering from venereal disease to undergo examination by a medical practitioner. Any person who is aware or suspects that he is suffering from venereal disease is required to consult a medical practitioner and, if found to be infected, must continue treatment until a certificate of cure is issued. Free treatment is available at public hospitals. In 1977, 1,371 cases of gonorrhoea and 279 of syphilis were notified to the Department.

The State Government conducts a tuberculosis control programme throughout the State. This includes the provision of services for diagnosis and treatment as well as preventive measures. Under the *Health Act, 1911-1978*, all persons in Western Australia may be required to undergo X-ray examinations, which are conducted by mobile units of the Chest and Tuberculosis Services and at the Perth and Fremantle Chest Clinics.

Health Services for Children

In addition to measures provided for immunisation against infectious diseases, the Community and Child Health Services and Dental Health Services assist in maintaining the general health of children in Western Australia.

Child Health Centres have been established throughout the State to advise mothers concerning the care of infants and pre-school children. Screening services for detecting metabolic, hearing, visual and other physical or behavioural disorders are available. Expectant mothers are also assisted and those in isolated areas who are unable to attend a Centre may receive advice by letter under a Correspondence Nursing Scheme. It is estimated that over 90 per cent of infants in the State are taken to a Centre at least once in the first year of life. Child Health Sisters also visit remote areas of the State and interview mothers who are normally dependent on advice given by correspondence.

CHILD HEALTH CENTRES

Particulars	1974	1975	1976	1977	1978
Expenditure (a)—					
Salaries and wages \$'000	785	1,114	1,218	2,515	2,925
Other \$'000	92	151	180	361	402
Total \$'000	877	1,265	1,398	2,876	3,327
Number of—					
Staff (b)—					
Medical officers	2	2	2	1	2
Nurses	116	117	120	122	139
Total	118	119	122	123	141
Child health centres (b)	93	93	r 205	207	208
Mobile clinics (b)	5	5	7	7	7
Total	98	98	108	214	215
Attendances at centres—					
Individual infants	43,129	46,359	46,240	47,752	49,544
Total attendances	245,631	263,163	274,535	276,787	287,742
Home visits by nurses	34,386	37,641	40,100	40,636	40,310

(a) Year ended 30 June.

(b) At 31 December.

The School Health Section of the Community and Child Health Services provides a complete health appraisal of each child during the first year at pre-school, day-care centre or school. Subsequent screening for visual and hearing problems is carried out on two further occasions during school life. School Health Nurses are based at high schools and other groups of schools and provide counselling, first aid and health education services in addition to screening.

Medical assessment by multi-disciplinary teams is offered for children with physical, mental or learning handicaps and is available on the request of either teacher, guidance officer or parent. The Child Development Centre offers similar services at specialist level for handicapped children.

The Community Health Section offers preventive health services to disadvantaged groups within the community. This Section has brought a much higher standard of both preventive and therapeutic health care to children of the Aboriginal community and other minority groups through collaboration with the Child Health and School Health Sections, and with hospitals throughout the State.

Under the School Dental Services scheme preventive dentistry centres, staffed by school dental therapists trained at the Public Health Department's School of Dental Therapy, are progressively being established throughout the State. Dental therapists, under the direction of dental officers, also provide free dental care for pre-school and primary school children, and in country areas not served by private practitioners school dental officers provide a service for adults as well as for children.

OTHER HEALTH SERVICES

Quarantine

The *Quarantine Act* 1908 provides for the quarantine of humans, animals and plants. Human quarantine is concerned primarily with the procedures necessary to exclude quarantinable diseases, namely smallpox, plague, cholera, yellow fever, typhus fever,

lassa fever, Marburg virus disease and such other diseases as may be declared under the Quarantine Act. Animal quarantine regulates the importation of animals and animal products from overseas, and plant quarantine the importation of all plants and plant products, with the object of excluding plant diseases, insect pests and weeds. In respect of interstate movements of animals and plants, the Quarantine Act becomes operative only when it is considered that Australian Government action is necessary for the protection of any State or States, and in general the control of interstate movements of animals and plants is the responsibility of State Governments. The administration of the Quarantine Act is a function of the Commonwealth Department of Health.

Royal Flying Doctor Service of Australia

The Royal Flying Doctor Service of Australia is a non-profit organisation financed by grants from the Australian and State Governments and by private donations. The principal function of the Service is to provide aerial medical services for residents in remote areas. Isolated townships, mining centres and sheep and cattle stations are usually equipped with two-way radio sets and, by this means, are linked with bases where doctors are available for radio consultation in the event of sickness or accident. In serious cases a doctor flies to the patient, who may then be flown to hospital for treatment. The Service provides, through the Australian Department of Health, standard medical chests with directions for the use of the drugs and medical supplies which they contain.

The radio network of the Royal Flying Doctor Service is regularly used in the work of Schools of the Air conducted by the Education Department, and also for the transmission and receipt of telegrams. In addition, it may be used, as the need arises, in connection with flood relief, in searching for lost parties and in co-ordinating movements of livestock.

The following table gives particulars of the operations of the Western Australian Section of the Service during the five years ended June 1978.

ROYAL FLYING DOCTOR SERVICE OF AUSTRALIA
OPERATIONS OF WESTERN AUSTRALIAN SECTION

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Expenditure (operational) \$'000	443	591	796	1,086	1,454
Number of—					
Medical flights	1,297	1,333	1,477	1,693	1,988
Miles flown	739,833	803,686	969,356	1,019,094	1,219,562
Patients transported	2,161	2,467	2,745	2,787	3,302
Patients attended	12,840	13,991	15,825	16,021	16,578
Radio and telephone consultations	1,763	1,676	1,761	1,812	1,033

Miscellaneous Health Services

Other expenditure by the Australian Government on health services includes the cost of district health laboratory services, the free supply of certain prophylactic materials and biological products (e.g. poliomyelitis vaccine), the supply and maintenance of hearing aids for children and pensioners, subsidies to various voluntary organisations conducting home nursing services that are assisted by the State Governments or local government authorities, the supply of artificially produced radio-active isotopes to private medical practitioners and hospitals for medical treatment purposes, and expenses in connection with the blood fractionation plant of the Commonwealth Serum Laboratories.

HOSPITALS OTHER THAN MENTAL HOSPITALS

Australian Government Hospitals

The Repatriation General Hospital at Hollywood and the Edward Millen Hospital at Victoria Park provide free treatment for certain recipients of pensions payable under the Repatriation Act and for their dependants. Free treatment is also available to some other categories of former members of the defence forces and their dependants.

State Government and Government-assisted Hospitals

The *Hospitals Act, 1927-1976* is administered, subject to the direction of the Minister for Health, by the Medical Department. For administrative purposes, a hospital under the direct control of the Medical Department is classified as 'departmental' and is financed from State funds. A hospital classified as a 'Board' hospital has its own board of management and is subsidised by the State Government.

The principal government and government-assisted hospitals in the metropolitan area are the Royal Perth Hospital, Fremantle Hospital, Sir Charles Gairdner Hospital, King Edward Memorial Hospital for Women, Princess Margaret Hospital for Children, the Home of Peace for the Chronic Sick, the Perth Dental Hospital, and Mount Henry Hospital and Sunset Hospital for long-term patients. Outside the metropolitan area the principal hospitals are located in the regional centres of Albany, Bunbury, Carnarvon, Derby, Geraldton, Kalgoorlie, Narrogin and Port Hedland.

Details of the activities of departmental and Board hospitals during the five years ended 30 June 1978 are given in the following table.

DEPARTMENTAL AND BOARD HOSPITALS (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Expenditure—					
Capital funds....	\$'000 15,840	26,756	33,938	34,652	34,220
Hospital Fund—					
Establishment and domestic (b)....	\$'000 9,826	15,583	21,765	26,264	29,496
Salaries and wages	\$'000 77,827	110,632	139,707	166,057	187,282
Other	\$'000 26,291	30,815	52,620	67,191	72,430
Tuberculosis	\$'000 734	873	1,160	—	—
Total	\$'000 130,519	184,660	249,191	294,164	323,428
Number of—					
Hospitals (c)—					
Departmental	49	49	50	49	49
Board	53	55	57	58	58
Total	102	104	107	107	107
Beds (d)—					
Departmental	3,346	3,382	3,400	3,567	3,573
Board	4,213	4,458	4,584	4,614	4,603
Total	7,559	7,840	7,984	8,181	8,176
Staff (c)—					
Medical	507	625	759	843	842
Nursing	6,405	6,986	7,339	7,717	7,870
Other	6,835	7,546	7,809	8,246	8,783
Total	13,747	15,157	15,907	16,806	17,495
In-patients—					
At beginning of year	5,127	5,433	5,706	6,235	6,153
Admissions	182,979	194,412	206,550	217,667	228,892
Discharges	179,291	190,798	202,581	214,408	225,697
Deaths	3,382	3,341	3,440	3,341	3,355
At end of year	5,433	5,706	6,235	6,153	5,803
Average daily number resident	5,390	5,498	5,716	5,731	5,827
Out-patients—					
Individuals	563,658	665,398	818,752	1,002,010	n.y.a.
Treatments....	1,400,938	1,465,253	1,731,752	1,766,256	2,707,298

(a) Includes particulars of the Perth Dental Hospital, and Mount Henry Hospital and Sunset Hospital for long-term patients. (b) Maintenance of equipment, furnishings and minor repairs. (c) At 30 June. (d) At 31 July.

As previously indicated, the control of tuberculosis is carried out under the direction of the Commissioner of Public Health. The principal institution for the treatment of tuberculosis is the Sir Charles Gairdner Hospital at Nedlands.

Leprosy, which is confined almost entirely to the far north of the State, is treated at a leprosarium at Derby in the Kimberley Division.

Private Hospitals and Nursing Homes

In addition to the government hospitals there are a number of private general and maternity hospitals, which are registered and inspected by the Department of Public Health. The principal private hospitals are those established by religious bodies in the metropolitan area and the main country towns. These include the Hospitals of Saint John of God at Subiaco, Rivervale, Bunbury, Geraldton and Kalgoorlie; Saint Anne's, Mount Lawley; Bethesda Hospital, Claremont and Saint Joseph's Hospital, Bicton.

At 1 October 1978 there were 116 private hospitals and nursing homes in Western Australia with a total bed capacity of 5,843 at that date.

MENTAL HEALTH SERVICES

The *Mental Health Act, 1962-1976*, which consolidates and amends the law relating to the treatment of mental disorders, came into operation on 1 July 1966. The Mental Health Services established under the Act are administered, subject to the control of the Minister for Health, by the Director of Mental Health Services. The Director must be a psychiatrist and is appointed by the Governor. Institutions authorised by the Act include approved hospitals for the treatment of mental illness, out-patient and child guidance clinics, day care facilities, training centres, hostels, sheltered workshops and domiciliary services for psychiatric patients and for the intellectually handicapped.

The Act provides for the admission of patients to hospitals approved for the purpose, either on referral by a medical practitioner or by order of a Justice of the Peace supported by the referral of a medical practitioner. A person so received into a hospital must be examined within seventy-two hours by the superintendent or another psychiatrist, and admission as a patient is dependent upon the result of the examination. Unless found to be in need of treatment, the person is required to leave the hospital. Special provisions exist for the detention for observation or treatment of persons admitted by order of a court or from a prison. The Act also provides for voluntary admissions. A person not less than eighteen years of age may be granted admission on his own request. Younger persons may be admitted on the application of a parent or guardian.

The following table shows particulars concerning the various mental health service units operated by the Mental Health Services authority during the year ended 30 June 1978.

MENTAL HEALTH SERVICES—YEAR ENDED 30 JUNE 1978

Particulars	Approved hospitals	Rehabilitation units	Hostels	Training centres	Out-patient clinics (a)
Expenditure—					
Salaries and wages \$'000	14,220	609	5,680	4,279	3,355
Other \$'000	2,981	180	987	643	498
Total \$'000	17,201	789	6,667	4,922	3,853
Number of (b)—					
Units	4	3	20	3	21
Beds	1,087	..	541	160	..
Staff—					
Medical	33	—	—	2	24
Nursing and attendants	799	—	439	279	68
Other	513	66	152	123	144
Total	1,345	66	591	404	236
Patients at beginning of year	2,148	462	412	191	..
Admissions	1,518	226	1,236	522	(c) 81,290
Discharges (d)	1,662	233	1,155	564	..
Patients at end of year	2,004	455	493	149	8,409

(a) Includes day-patient centres not elsewhere included. (b) At 30 June. (c) Figures for 'Outpatient clinics' refer to number of attendances. (d) Includes deaths.

Except in the case of a person admitted by order of a court or from a prison, a patient may be released on leave or discharged by the hospital superintendent. A Board of Visitors or the Supreme Court of Western Australia may also, after due consideration,

order the release of a patient. Where application for the discharge of a voluntary patient is made either by the patient himself or, in the case of a patient under the age of eighteen years, by the parent or guardian at whose request the patient was admitted, he must be discharged within seventy-two hours.

Establishments designated as approved hospitals within the meaning of the Act are Graylands Hospital, Swanbourne Hospital, Lemnos Hospital and Heathcote Hospital.

The Australian Government is empowered by the *Mental Health and Related Services Assistance Act 1973* to provide financial assistance to States, local governing bodies and voluntary organisations in respect of services or facilities in relation to mental illness, mental disability, alcoholism and drug dependence. The Act came into operation on 27 November 1973 and replaces the *States Grants (Mental Health Institutions) Act 1964* which expired on 30 June 1973.

CARE OF AGED AND DISABLED PERSONS

Part 4 of this Chapter gives particulars of pensions, allowances and some other benefits available to aged and disabled persons under the provisions of the Social Services Act and the Repatriation Act. Forms of assistance extended to such persons by other Commonwealth Acts are dealt with below.

Aged or Disabled Persons Homes Act

The *Aged or Disabled Persons Homes Act 1954* incorporates the *Aged Persons Homes Act 1954* and extends its provisions to include disabled persons. The purpose of the legislation is to enable the Australian Government to give financial assistance to religious, charitable and other organisations in providing accommodation for the aged or disabled. The Act is administered, subject to any directions of the Minister, by the Director-General of Social Security.

AGED OR DISABLED PERSONS HOMES GRANTS WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Grants approved (a)—					
Number	25	32	5	7	14
Persons accommodated—					
Type of accommodation—					
Self-contained	419	511	108	36	72
Hostel	144	183	—	—	10
Nursing	89	96	—	85	—
Total persons	652	790	108	121	82
Amount	\$'000 3,480	\$'000 7,431	\$'000 1,335	\$'000 1,933	\$'000 978

(a) A supplementary grant may be approved in a year subsequent to the year when the original grant was approved. In this table each supplementary grant has been included in the year in which the additional amount was actually approved.

For the purposes of the Act, the term 'aged person' means a man aged sixty-five years or over or a woman aged sixty years or over and includes the spouse of the aged person; 'disabled person' means a person who has attained the age of sixteen years and who is permanently blind or permanently incapacitated for work but does not include the spouse of that person unless the spouse is also disabled. Grants are made to organisations 'to encourage and assist the provision of suitable homes for eligible persons, and in particular homes at which eligible persons may reside in conditions approaching as nearly as possible normal domestic life . . .'. The legislation authorises grants to eligible organisations to be applied towards the cost of erecting or purchasing approved homes to be used permanently for the accommodation of aged or disabled persons. To be eligible for assistance an organisation must be one which is carried on otherwise than for the purpose of profit or gain to its individual members, and may be a religious, charitable or benevolent

organisation, an organisation of former members of the defence forces, an organisation approved by the Governor-General, or a local governing body. An organisation conducted or controlled by the Australian Government or a State Government is not eligible for assistance. Grants are made from moneys appropriated by the Parliament from the Consolidated Revenue Fund and from 20 May 1976 were made on the basis of \$2 for each \$1 raised by the organisation. There is a maximum subsidy limit based on the number of persons to be housed in the new accommodation.

On 20 May 1976 the Commonwealth Government announced a three-year programme to provide funds for the establishment of accommodation for aged people. The programme is designed to give organisations, where projects have been approved, the opportunity to proceed with planning, and in some instances construction, on the basis of a forward subsidy commitment by the Government.

Personal Care Subsidy. An amendment to the Aged Persons Homes Act operative from 10 October 1969 provided for payment of a Personal Care Subsidy to approved homes in respect of residents eighty years of age or over. A further amendment in December 1974, extended the subsidy to certain residents who had not attained eighty years of age. Homes eligible for the subsidy are those where residents are provided with all meals and where staff is employed to assist residents who need help with bathing, dressing, personal laundry and the cleaning of their rooms, and those who need help with medication.

The *Aged or Disabled Persons Homes Act 1954* authorises the payment of subsidy at the rate of \$15 per week in respect of each person residing in approved premises who has attained the age of eighty years or is receiving approved personal care services. Payments are made from the National Welfare Fund.

PERSONAL CARE SUBSIDY—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of approved premises (a)....	46	52	55	61	63
Number of qualified residents (a)....	820	1,267	1,478	1,801	1,906
Amount of subsidy paid	\$ 527,840	\$ 883,260	\$ 1,159,980	\$ 1,402,380	\$ 1,420,020

(a) At 30 June.

Homeless Persons Assistance Act

The *Homeless Persons Assistance Act 1974*, which came into operation on 13 December 1974, authorises the Australian Government to make grants to charitable and other organisations providing temporary accommodation and personal services for the homeless. Grants may be made in respect of the acquisition of land, buildings and furniture; the rent of premises; the salaries of social welfare workers (including social workers, welfare officers, psychologists and occupational therapists); and the provision of meals.

The *Homeless Persons Assistance Amendment Act 1978* which received assent on 29 September 1978, extended the prescribed period for a further twelve months, with the probability of review at the end of that period. Funds were made available on the basis of existing approvals.

The following table gives particulars of grants made to organisations in Western Australia in the period to 30 June 1978.

HOMELESS PERSONS ASSISTANCE GRANTS WESTERN AUSTRALIA

Particulars	1974-75 (a)	1975-76	1976-77	1977-78
Building projects	\$ 9,660	\$ 60,092	\$ 57,280	\$ 483,997
Rent of premises	2,730	11,787	29,916	42,908
Furniture and equipment	20,301	3,162	26,492	5,651
Staff salaries .....	.....	5,459	11,566	18,254
Food and accommodation	11,550	33,506	39,784	58,797
Meals for non-residents	2,418	7,620	10,869	11,124
Total	46,659	121,626	175,907	620,731

(a) Part year only.

Aged Persons Hostels Act

The *Aged Persons Hostels Act* 1972 is administered, subject to any directions of the Minister, by the Director-General of Social Security. The Act authorises the Australian Government to assist in the provision of additional hostel-type accommodation for aged persons by making grants to organisations which satisfy certain conditions related to existing accommodation. The first grants in respect of organisations in Western Australia were approved during the year ended 30 June 1974. The Act expired on 27 November 1975 but amendments allowed an extension of time for the completion of projects approved in principle. No new grants were made in 1975-76 but capital grants totalling \$338,435 were provided in that year in respect of projects approved in 1974-75. The *Aged Persons Hostels Amendment Act* 1976, which came into operation on 20 September 1976 preserves the rights of organisations which had been accepted during the time period of the original Act but had been deferred during 1975-76.

AGED PERSONS HOSTELS GRANTS WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of grants	2	4	—	10	5
Persons accommodated—					
Hostel beds	19	93	—	168	129
Staff beds	1	9	—	9	6
Total	20	102	—	177	135
	\$	\$	\$	\$	\$
Amount of grants—					
Capital grants	156,000	1,315,090	(a)338,435	2,944,883	2,297,992
Furnishing grants	5,000	25,500	—	44,250	36,750
Total	161,000	1,340,590	338,435	2,989,133	2,334,742

(a) Approved in 1974-75.

Delivered Meals Subsidy Act

The *Delivered Meals Subsidy Act* 1970 is administered, subject to any directions of the Minister, by the Director-General of Social Security. Its purpose is to enable help to be given to approved organisations to establish, maintain, expand and improve services for the delivery of meals to aged and invalid persons. To qualify for approval, an organisation must conduct a regular service delivering meals wholly or mainly to aged or invalid persons in their homes.

The Act authorises payment of subsidy at the rate of 25 cents per meal, which is increased to 30 cents if the meal includes fresh fruit or fruit juice. Payments are made from the National Welfare Fund.

Handicapped Persons Assistance Act

The *Handicapped Persons Assistance Act* 1974, which repeals the *Handicapped Children (Assistance) Act* 1970 and parts of the *Sheltered Employment (Assistance) Act* 1967 consolidates and extends the Australian Government's programmes of assistance to voluntary organisations concerned with the welfare of handicapped persons. The main provisions of the repealed legislation are continued and expanded by the provisions of the *Handicapped Persons Assistance Act*. The Act is administered, subject to any directions of the Minister, by the Director-General of Social Security.

The Act provides that grants may be made to eligible organisations which are deemed by the Minister to provide 'prescribed services' for disabled persons. Prescribed services which may be approved for the purposes of the Act include training, activity therapy, sheltered employment, residential accommodation, holiday accommodation, recreational facilities and rehabilitational facilities. Assistance may be provided towards meeting the cost of purchase or construction of premises to provide the prescribed services. The Act allows the payment of subsidy in respect of residential accommodation to be extended to

include accommodation for disabled persons capable of engaging in normal employment. Subsidies may also be approved to help meet expenditure on building maintenance, rental of premises, equipment, and the salaries of certain staff involved in providing prescribed services. The Act also authorises the payment to organisations of a training fee for each person who, after being employed for six months or longer in a sheltered workshop, has spent at least twelve months in normal employment.

On 7 November 1976 the Minister for Social Security announced details of a Commonwealth three-year programme designed to provide new facilities for mentally and physically handicapped people, and to provide continuing support for existing facilities which cater for handicapped people.

The handicapped children's benefit, formerly payable in terms of the National Health Act, is continued under the provisions of the *Handicapped Persons Assistance Act 1974*. A handicapped child is defined as a person under sixteen years of age who is suffering from a physical or mental disability. An eligible organisation which provides approved residential accommodation for handicapped children is entitled to receive benefit in respect of each such child at the rate of \$5.00 for each day on which accommodation is provided for the child.

The following table shows the number and amount of grants approved during the four years ended 30 June 1978.

**HANDICAPPED PERSONS ASSISTANCE GRANTS
WESTERN AUSTRALIA**

Particulars	1974-75		1975-76		1976-77		1977-78	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Grants approved for—		\$		\$		\$		\$
Residential accommodation	—	—	2	198,937	5	114,664	2	721,196
Non-residential buildings....	5	19,464	8	950,446	6	624,387	—	—
Equipment	205	210,997	221	387,289	169	408,363	156	359,468
Maintenance	3	8,365	5	15,801	1	1,840	2	4,214
Training fee	3	1,500	1	500	9	4,500	4	2,000
Salary subsidy	189	460,470	86	202,981	142	455,351	38	290,433
Rent	1	7,776	2	6,628	7	47,679	2	3,808
Total	406	708,572	325	1,762,582	339	1,656,784	204	1,381,119

Sheltered Employment Allowances

Sheltered employment allowances, which were introduced in terms of the *Social Services Act 1967*, enable invalid pensioners and certain other disabled persons to earn an income from sheltered employment and at the same time to be eligible to receive a special allowance which, in the case of an invalid pensioner, replaces the pension.

Other Forms of Assistance

The *States Grants (Paramedical Services) Act 1969* authorises the Australian Government to share with a State on a \$1 for \$1 basis the cost of approved paramedical services, such as chiropody, occupational therapy, physiotherapy and speech therapy, provided wholly or mainly for aged persons in their homes. Payments are made from the Consolidated Revenue Fund and the maximum annual expenditure authorised by the Act is \$250,000, of which \$19,000 is payable to Western Australia. In the period to 30 June 1978, no grant had been made to Western Australia.

Under the *States Grants (Home Care) Act 1969* the Australian Government shares with a State on a \$2 for \$1 basis the cost of approved housekeeping or other domestic services provided wholly or mainly for aged persons in their homes. It also shares with a State the cost of providing approved senior citizens' centres, on a \$2 for \$1 basis up to a maximum of two-thirds of the capital cost of the centres, as well as paying two-thirds of the salary of a welfare officer engaged in the co-ordination of home care services and associated with a senior citizens' centre. Grants to Western Australia were first made in the year 1970-71.

The following table shows particulars of grants made during the five years ended 30 June 1978.

HOME CARE SERVICES GRANTS—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
	\$	\$	\$	\$	\$
Amount of grants paid for—					
Home care services	22,500	115,981	84,817	57,333	56,000
Senior citizens' centres	123,148	28,206	343,855	406,400	348,473
Welfare officers	15,182	14,865	41,831	56,199	55,990
Total	160,830	159,052	470,503	519,932	460,463

The *States Grants (Dwellings for Aged Pensioners) Act 1969* authorised the Australian Government to share with a State on a \$1 for \$1 basis the cost of providing self-contained dwellings at reasonable rentals for certain recipients of an age pension payable under the Social Services Act or a service pension under the Repatriation Act. The Act enabled expenditure by the Australian Government, during the five-year period to 30 June 1974, of an amount of \$25 million, Western Australia's share being \$1.75 million. Grants were financed from the Consolidated Revenue Fund. Payments to Western Australia comprised \$700,000 in 1970-71, \$224,555 in 1971-72, \$518,815 in 1972-73 and \$306,630 in 1973-74. The *States Grants (Dwellings for Pensioners) Act 1974* authorises the continuation of the scheme for a period of three years from 1 July 1974 and extends its provisions to include certain additional classes of pensioner. The *States Grants (Dwellings for Pensioners) Amendment Act 1977*, which came into operation on 1 July 1977 provides for the continuance of the scheme to 30 June 1978. The Act enables the expenditure from the Consolidated Revenue Fund of the sum of \$30 million, of which \$2.1 million is allocated to Western Australia. Grants received by Western Australia amounted to \$197,950 during 1974-75, \$614,380 in 1975-76, \$1,288,000 in 1976-77 and \$700,000 in 1977-78.

Chapter V—continued

Part 4—Social Benefits, Pensions and Welfare Services

NOTE. The conditions relating to payment of the several benefits dealt with in this Part are described as they existed at 1 January 1979. The information given is intended to serve only as a general guide to the main provisions relating to social security and repatriation benefits provided by the Australian Government and relief payments made by the State Government. Information relating to health services and benefits is shown in Part 3.

The Australian Government's social security programme is designed to provide protection against economic hardship caused by events such as loss of earnings by reason of age, invalidity, sickness or unemployment, or the death or the absence of a supporting male as a result of desertion or long-term separation. Another aim of the system is to help parents with the expenses associated with the bearing and rearing of children. It is designed also to compensate veterans for disabilities caused by war service and to assist the dependants of those who died as a result of war service.

This assistance may take the form of (a) financial aid to or for institutions, organisations or authorities or (b) regular cash payments to or on behalf of individuals, which may be either selective benefits (*i.e.* subject to an income test) such as age and invalid pensions and widows' pensions, or universal benefits (*i.e.* free of income test). In addition, there is provision for a wide range of welfare services for people with special needs (*e.g.* invalids and other persons may be trained so that they can re-enter paid employment).

Pensions and other benefits provided under the Social Services Act and health services provided under the National Health Act are financed from the National Welfare Fund. Other payments from the fund include allowances to sufferers from tuberculosis. The fund receives each year by transfer from the Consolidated Revenue Fund an amount equal to the payments made. Other income of the National Welfare Fund is derived from interest on investments. Details of expenditure in Western Australia since the fund was established in 1943 are given in the *Statistical Summary* following Chapter X.

Disability pensions, service pensions, and allowances provided under the Repatriation Act and services provided under the Health Insurance Act are financed from the Consolidated Revenue Fund.

The State Government makes certain payments for the relief of persons in necessitous circumstances which in most cases supplement benefits provided by the Australian Government (see letterpress *State Relief Payments* near the end of this Part).

BENEFITS PAYABLE UNDER SOCIAL SERVICES ACT

Rates of Benefit

The following table shows the maximum weekly rates applying to age and invalid pensions, sheltered employment allowances, widows' pensions, supporting parents' benefits, and unemployment and sickness benefits. The rates shown apply also to service pensions.

MAXIMUM WEEKLY RATES OF BENEFIT
($\$$)

Pension, benefit or allowance	Rate current at—				
	November 1976	May 1977	November 1977	May 1978	November 1978
Single (<i>i.e.</i> unmarried) rate—					
Aged 16 or 17 years (<i>a</i>)	36·00	36·00	36·00	36·00	36·00
Aged 18 years or more	43·50	47·10	49·30	51·45	53·20
Married rate (combined)	72·50	78·50	82·20	85·80	88·70
Each dependent child, including student child (<i>b</i>)	7·50	7·50	7·50	7·50	7·50
Guardian's (or mother's) allowance (<i>c</i>)—					
Where there is a child aged under 6 years or an invalid child requiring full-time care	6·00	6·00	6·00	6·00	6·00
Other cases	4·00	4·00	4·00	4·00	4·00
Supplementary assistance (<i>d</i>)	5·00	5·00	5·00	5·00	5·00

(*a*) Rate applies to recipients of unemployment and sickness benefits only. (*b*) See letterpress *Student Children* in this Part. (*c*) Guardian's allowance payable to unmarried pensioner recipient of sheltered employment allowance having the care of one or more dependent children, including student children. Mother's allowance payable to Class A widow pensioner or recipient of supporting parent's benefit. (*d*) Payable where pensioner or beneficiary is wholly or substantially dependent on the pension or benefit and is paying rent or lodging charges.

Age and Invalid Pensions and Allowances

AGE AND INVALID PENSIONS—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of pensioners at 30 June—					
Age—					
Males	24,150	26,489	28,282	29,127	32,578
Females	51,974	53,342	55,805	57,343	61,913
Persons	76,124	79,831	84,087	86,470	94,491
Invalid—					
Males	6,102	6,676	7,730	8,674	9,076
Females	4,304	4,285	4,535	4,589	4,577
Persons	10,406	10,961	12,265	13,263	13,653
	\$'000	\$'000	\$'000	\$'000	\$'000
Amount paid during year (<i>a</i>)—					
Age pensions	83,580	118,492	156,447	183,519	216,111
Invalid pensions	14,431	20,320	27,066	33,666	39,321
Total	98,011	138,812	183,513	217,185	255,432

(*a*) Includes amounts paid to benevolent homes for maintenance of pensioners and to pensioner inmates of these homes. Includes also allowances and supplementary assistance.

Age Pensions. Age pensions are payable, subject to residence qualification, to women aged sixty years or more and men aged sixty-five years or more. A period of ten years' continuous residence in Australia is usually necessary. There is an income test which does not, however, apply to persons aged seventy years or more, although payment at a rate higher than the May 1978 free of means test level is subject to an income test. The means test was abolished in September 1973 in respect of persons aged seventy-five years or more and in May 1975 for those aged seventy to seventy-four years.

Wife's pension, subject to an income test, is payable to an age pensioner's wife who does not qualify for an age pension, invalid pension or service pension in her own right.

Additional payments are made to pensioners with dependent children. These additional payments are subject to an income test. Supplementary assistance is payable, subject to a special income test, to pensioners who are required to pay rent, lodging or board and lodging charges. On the death of one of a married pensioner couple, the surviving member may become entitled to receive, for up to six fortnightly instalments, the equivalent of the two pensions that would have been paid if the spouse had not died. Single age pensioners with a dependent child or children are also eligible for guardian's allowance (in place of mother's allowance).

Invalid Pensions. Invalid pensions are payable to persons aged not less than sixteen years who, while resident in Australia, become either permanently incapacitated for work to the extent of at least 85 per cent or permanently blind. Pensions are subject to an income test except in the case of those who are permanently blind. No qualifying period of residence in Australia is necessary unless the incapacity occurred outside Australia, in which case the residence qualification is the same as that for an age pension.

A wife's pension is payable to the wife of an invalid pensioner if she is not eligible for age pension, invalid pension or service pension in her own right. Invalid pensioners are eligible for the same additional payments as age pensioners and the rates of benefit are the same.

Sheltered Employment Allowances

Sheltered employment allowances are payable to disabled persons who are qualified to receive an invalid pension or who would become so qualified if they ceased to be provided with sheltered employment. The allowance is subject to the same means test as that which applies to the invalid pension, and the rates of benefit are the same.

Details of sheltered employment allowances for the five years ended 1977-78 are given in the following table.

SHELTERED EMPLOYMENT ALLOWANCES—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of (a)—					
Workshops paying allowances	8	11	11	12	11
Employees receiving allowances	232	432	420	481	504
	\$'000	\$'000	\$'000	\$'000	\$'000
Expenditure on allowances	265	575	980	1,250	1,493

(a) At 30 June.

Funeral Benefits

A funeral benefit up to a maximum of \$20 is payable to any person liable for the funeral costs of an age or invalid pensioner. A higher benefit, up to a maximum of \$40, is payable to an age, invalid or widow pensioner liable for the funeral costs of a spouse, a child, or of another such pensioner.

Widows' Pensions and Allowances

Pensions are payable to widows, subject to an income test. No period of residence is necessary if a woman and her husband were residing permanently in Australia when she became a widow. In other cases, five years' continuous residence immediately preceding lodgment of claim is necessary but this requirement is waived in the case of a woman widowed overseas who returns to Australia, provided she had resided continuously in Australia for ten years at any time.

WIDOWS' PENSIONS—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of pensions current at 30 June—					
Class A pensioners	4,683	4,930	5,058	5,230	5,535
Class B pensioners	4,067	4,493	4,957	5,442	5,948
Class C pensioners	13	19	12	19	11
Total	8,763	9,442	10,027	10,691	11,494
	\$'000	\$'000	\$'000	\$'000	\$'000
Amount paid during year (a)	13,409	18,459	24,809	27,700	32,290

(a) Includes allowances and supplementary assistance.

There are three classes of widow pensioners: Class A—a widow with one or more dependent children in her care; Class B—a widow without dependent children who is at least fifty years of age, or is not less than forty-five years of age when her Class A pension ceases because she no longer has a dependent child in her care; and Class C—a widow

without dependent children who is in necessitous circumstances at the time of her husband's death or within twenty-six weeks thereafter. For all classes, the term 'widow' includes a woman who was the common-law wife of a man for at least three years immediately before his death. For Classes A and B, the term includes a wife who has been deserted for six months, a divorcee, a woman whose husband has been imprisoned for six months, or a woman whose husband is in a mental hospital.

Widow pensioners are eligible for supplementary assistance, additional payments for dependent children, and mother's allowance (in place of guardian's allowance) at the same rates and subject to the same conditions as age and invalid pensioners.

Supporting Parents' Benefit

The supporting parents' benefit is designed to assist an unmarried parent or a parent who is a separated *de facto* husband or wife, *de facto* husband or wife of a prisoner, a separated husband or wife, or a sole parent supporting a child for any other reason.

There is usually a waiting period of six months and during this period a claimant may be eligible to receive State Government assistance; see the section *State Relief Payments* near the end of this Part.

Unemployment, Sickness and Special Benefits

Unemployment and sickness benefits are available, subject to a means test, to persons who have suffered loss of income because they are unemployed or are temporarily incapacitated for work. There is a waiting period of seven days before benefits are paid. Where a claimant for unemployment benefit does not lodge a claim immediately after becoming unemployed, the waiting period of seven days may commence in the week before the claim is made if the Director-General is satisfied that for each day in that week the person was capable of undertaking and willing to undertake suitable work and had taken reasonable steps to obtain work. A special benefit may be paid in the waiting period of seven days if the claimant is suffering hardship or in certain cases payment of unemployment benefit can be advanced.

A special benefit may be paid to a person ineligible for a pension or for an unemployment or sickness benefit, if he is unable to earn a sufficient livelihood for himself and his dependants and is suffering hardship.

UNEMPLOYMENT, SICKNESS AND SPECIAL BENEFITS—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Unemployment benefit—					
Number admitted to benefit during year	25,405	69,285	84,625	75,059	85,822
Average number on benefit at end of each week	2,863	9,317	13,598	15,706	20,470
Number on benefit at end of year—					
Males	2,077	6,802	9,499	12,895	17,934
Females	952	4,209	5,055	6,047	7,686
Persons	3,029	11,011	14,554	18,942	25,620
Sickness benefit—					
Number admitted to benefit during year	10,897	12,004	15,211	14,589	13,582
Average number on benefit at end of each week	1,319	1,766	2,034	2,388	2,487
Number on benefit at end of year—					
Males	1,210	1,531	1,838	2,063	2,007
Females	296	319	481	487	497
Persons	1,506	1,850	2,319	2,550	2,504
Special benefit (a)—					
Number admitted to benefit during year	1,399	1,591	4,261	3,782	4,306
Average number on benefit at end of each week	328	408	529	536	670
Number on benefit at end of year—					
Males	47	92	163	251	304
Females	346	359	343	346	373
Persons	393	451	506	597	677
Benefits paid during year—					
Unemployment	\$'000	\$'000	\$'000	\$'000	\$'000
Unemployment	5,020	19,753	33,824	42,958	59,324
Sickness	2,805	4,415	6,190	6,814	7,585
Special (a)	489	776	1,238	1,370	2,074
Total (a)	8,314	24,944	41,252	51,142	68,983

(a) Excludes special benefits to migrants in accommodation centres.

To be eligible for unemployment or sickness benefit, a person must be at least sixteen years of age and under sixty, in the case of a female, or under sixty-five, in the case of a male. The claimant must also have lived in Australia for at least a year immediately before applying for benefit, or have the intention of remaining in Australia permanently.

Except for unmarried beneficiaries under eighteen years of age the rates of benefit are the same as for the basic pension. A beneficiary with a dependent child or children is eligible for an additional benefit for each dependent child. After having received benefit for six consecutive weeks, a sickness beneficiary is also eligible, subject to a special means test, to receive supplementary assistance if paying rent or lodging charges. This assistance is not payable to a beneficiary who is in hospital and who has no dependants.

Rehabilitation Service

The Commonwealth Rehabilitation Service is designed to restore disabled persons as fully as possible to physical, mental, social and vocational usefulness. Treatment and training are available free of charge to a person with a physical or mental disability who is eligible in terms of the Social Services Act and for whom there are reasonable prospects of his engaging in a suitable vocation. Eligible persons include persons receiving or claiming benefits and persons who have attained the age of fourteen years and who, without that treatment or training would be likely to become qualified to receive pensions on attaining the age of sixteen years.

The following table shows, for Western Australia, the number accepted for rehabilitation, the number placed in employment and expenditure of the rehabilitation service over the five years 1973-74 to 1977-78.

REHABILITATION SERVICE—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number accepted for rehabilitation—					
Invalid pensioners	30	34	23	31	13
Unemployment and sickness beneficiaries	157	179	205	301	382
Other	37	72	42	86	178
Total	224	285	270	418	573
Number placed in employment—					
Invalid pensioners	14	13	14	16	9
Unemployment and sickness beneficiaries	141	91	110	131	183
Other	29	26	30	24	27
Total	184	130	154	171	219
Expenditure	\$'000 662	\$'000 914	\$'000 1,171	\$,000 1,225	\$'000 1,453

Family Allowances

Family allowances are payable to persons having the care of children under sixteen years of age or student children aged sixteen years but under twenty-five years who are receiving full-time education at a school, college or university and are not in employment or engaged in work on their own account. (Family allowances were previously referred to as child endowment and student endowment.)

Family allowances are usually paid to the mother and to be eligible for endowment she must reside, or intend to reside, permanently in Australia and have the care of one or more children. Special conditions apply if the person does not intend to reside permanently in Australia. Family allowances paid on behalf of student children are subject to an income test based on student income.

An approved institution is qualified to receive \$5 per week in respect of each child in its care.

FAMILY ALLOWANCES—WESTERN AUSTRALIA (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Endowed families at 30 June—					
Number of claims in force in respect of—					
Children under 16 years of age	156,901	162,198	165,731	} 176,870	180,009
Student children	15,963	16,767	17,700		
Number of endowed children—					
Children under 16 years of age	339,031	345,272	348,083	} 374,175	375,734
Student children	17,490	18,797	20,000		
Average number of endowed children per claim—					
Children under 16 years of age	2.16	2.13	2.10	} 2.12	2.09
Student children	1.10	1.12	1.13		
Approved institutions at 30 June—					
Number of endowed child inmates—					
Children under 16 years of age	4,373	4,430	4,915	} 2,171	1,811
Student children	95	127	151		
Total number of endowed children at 30 June—					
In families	356,521	364,069	368,083	374,175	375,734
In institutions	4,468	4,557	5,066	2,171	1,811
Total	360,989	368,626	373,149	376,346	377,545
Amount paid during year (a) (b)	\$'000 19,009	\$'000 19,084	\$'000 (c)(d)22,737	\$'000 89,201	\$'000 90,809

(a) Includes payments to institutions. (b) A number of endowments are paid every 12 weeks. During two years in every three, there are four such payments each year, and five in the third year. (c) Expenditure in this year includes five 12-weekly payments; see footnote (b). (d) New rates and conditions were effective from 15 June 1976. See letterpress preceding table.

Handicapped Child's Allowance

The handicapped child's allowance is payable to parents or guardians of a physically or mentally handicapped child under sixteen years or a student child aged sixteen years but under twenty-five years engaged in full-time study, who is cared for at home and is in need of constant care and attention. An allowance of \$15 per week is payable free of means test in respect of a severely handicapped child. A lower rate, determined by the income level of the parent or guardian and the amount of special expenses incurred in caring for the child, is payable if the disability is classified as substantial but less than severe.

Double Orphan's Pension

Conditions relating to payment of double orphan's pension are generally similar to those applying to family allowances. For the purposes of the Social Services Act a double orphan is a child aged under sixteen years, or a student child aged sixteen but under twenty-five years, both of whose parents are dead or one of whose parents is dead and the whereabouts of the other unknown. The benefit extends also to a child whose only surviving parent is serving a prison sentence of not less than ten years or is a patient in a mental hospital or similar institution and is likely to remain so for an indefinite period. The pension, which is additional to family allowances, is paid at the rate of \$11 per week and is not subject to a means test. It may be paid to a person, institution or authority and is to be applied to the maintenance, training and advancement of the child. The pension is not payable in the case of a child in respect of whom a war orphan's pension is being paid in terms of the Repatriation Act.

Student Children

The *Social Services Act* 1973, which came into operation on 16 March 1973, defines a student child as being a person who is wholly or substantially dependent on a pensioner or beneficiary and who ' (a) has attained the age of sixteen years; (b) is receiving full-time education at a school, college or university; and (c) is not in receipt of an invalid pension '. Payments on account of student children which, prior to the operation of the Act, ceased when the student reached the age of twenty-one years were thus extended without limitation in respect of age. This extension of benefit applies to student children of age, invalid and widow pensioners, of recipients of supporting parent's benefit, and of unemployment and sickness beneficiaries. However, the age limit of twenty-five years continues to apply to the payment of family allowances on account of student children.

Payment of Benefits outside Australia

Reciprocal arrangements in respect of payment of age and invalid pensions, widows' pensions, unemployment and sickness benefits and family allowances have been in force between the Governments of Australia and New Zealand since 1 July 1949 and between Australia and the United Kingdom since 7 January 1954.

The *Social Services Act (No. 3) 1972* provided for the continued payment of a pension, subject to certain conditions, if a pensioner left Australia to reside in any other country with which appropriate reciprocal arrangements had been made. The *Social Services Act (No. 2) 1973*, which came into operation on 8 May 1973, repeats this provision and enables age and invalid pensions (including wives' pensions) and widows' pensions, which were granted in Australia, to continue to be paid in any country where the pensioner may choose to live. A person receiving a supporting parent's benefit may continue to be paid the benefit outside Australia so long as he or she remains a supporting parent.

BENEFITS PAYABLE UNDER REPATRIATION ACT

Disability Pensions and Allowances

In general, disability pensions and associated benefits are payable to a veteran and/or his dependants where the veteran has died or been incapacitated as a result of service in the 1914-1918 War, the 1939-1945 War, or certain subsequent operations of a war-like nature. In addition, members of the Regular Defence Force who have had at least three years' service terminating on or after 7 December 1972 (or a lesser period if discharged on medical grounds) may also be eligible for repatriation pensions if incapacity resulted from that service. Dependants of deceased servicemen may also qualify for benefit.

For veterans, basic eligibility varies according to the nature of service. Broadly, for those with 'active service', incapacity or death resulting from any occurrence during war service may be accepted. The criterion applying to 'home service' is more restricted, in that incapacity or death must have arisen out of, be attributable to, or have been aggravated by, that service.

Pensions in the categories available to veterans and their dependants (see below) are also payable to eligible members of the Regular Defence Force and their dependants.

Pensions for Veterans. Pensions are paid to eligible veterans in three main categories: the Special Rate (known as the T.P.I.) pension, payable to a veteran who, as a result of war service, is blind, or is totally and permanently incapacitated so that he is unable to earn more than a negligible percentage of a living wage; the Intermediate Rate, payable to a veteran who, because of the severity of his incapacity accepted as related to war service, can work only part-time or intermittently and, in consequence, cannot earn a living wage; and the General Rate, payable to a veteran who has an incapacity accepted as related to war service but is not, because of that incapacity, prevented from being able to work full-time. General Rate pensions payable range from 10 per cent to 100 per cent of the maximum rate, according to the assessed degree of incapacity.

Pensions for Dependants. Dependants' pensions are paid to the wives of incapacitated veterans and to dependent children. Such persons are paid at rates varying with the assessed degree of the particular veteran's incapacity. When the death of a veteran has been accepted as related to his war service, his widow qualifies for the war widow's rate of pension and for associated benefits, while his children receive pensions at 'orphan' rates and other benefits. If a veteran's death has not been accepted as related to war service, but at the time of death he was receiving, or is later adjudged to have been eligible to receive, a pension at the Special Rate (or one of certain other rates) his dependants qualify for pensions as if his death had been accepted as due to war service.

Allowances. Several allowances are provided to supplement disability pensions. These allowances vary according to the type or severity of disablement and the special needs of the pensioner. They include attendant's allowance, sustenance allowance, loss of earnings allowance, recreation transport allowance and domestic allowance.

An education allowance is paid in respect of children of special rate pensioners and children of veterans who died as a result of war service.

Attendant's allowance is paid at either of two rates to certain classes of severely disabled veterans, including the war-blinded, the paralysed and some double amputees. Sustenance allowance is payable for treatment before 5 October 1978 or continuing treatment which began prior to 5 October 1978 at either of two rates to a veteran who is prevented from following his usual occupation because he is undergoing medical treatment. The lower rate is paid where out-patient treatment is received for a period not exceeding twenty-eight days, and the sum of sustenance allowance and any disability pension being paid is equal to the General (100 per cent) Rate disability pension. The higher rate is equal to, or sufficient to bring any disability pension payable up to, the Special (T.P.I.) Rate, and is payable in respect of in-patient treatment for disablement accepted as related to service, or convalescence immediately following that treatment or out-patient treatment for a continuous period in excess of twenty-eight days. Loss of earnings allowance is payable to a veteran who has lost salary or wages because he has been undergoing medical treatment which commenced on or after 5 October 1978. The rate payable is equal to, or sufficient to bring any disability pension payable up to the Special Rate and is usually payable following treatment of service-related disabilities. However, under special circumstances it may also apply following treatment of non service-related disabilities. Recreation transport allowance may be paid at either of two rates for recreation purposes to certain classes of seriously disabled veterans. Domestic allowance is payable to a war widow in addition to her pension if she has attained the age of fifty years, or is permanently unemployable, or has a dependent child who is under the age of sixteen years or is undertaking approved full-time education or training and is not receiving an adequate living wage.

Amounts payable in respect of disability pensions and allowances between November 1975 and November 1978 are shown in the next table.

DISABILITY PENSIONS AND ALLOWANCES—RATES OF BENEFIT
(\$)

Pension or allowance	Rate current at—				
	November 1976	May 1977	November 1977	May 1978	November 1978
	per week	per week	per week	per week	per week
Disability pensions—					
Veterans—					
Special (T.P.I.) rate	83.25	90.15	94.40	98.55	101.90
Intermediate rate	57.35	62.10	65.00	67.85	70.15
General rate	31.45	34.05	35.65	37.20	38.45
Wife	4.05	4.05	4.05	4.05	4.05
Each dependent child	1.38	1.38	1.38	1.38	1.38
War widow	43.50	47.10	49.30	51.45	53.20
War orphan—					
Where father dead	10.45	10.45	10.45	10.45	10.45
Where both parents dead	20.90	20.90	20.90	20.90	20.90
Allowances—					
Payments for certain amputations and/or loss of vision	2.55	2.55	2.55	2.55	2.55
	to	to	to	to	to
	51.80	56.10	58.75	61.35	63.45
Attendant's allowance—					
Higher rate	24.90	24.90	24.90	24.90	24.90
Lower rate	14.70	14.70	14.70	14.70	14.70
Sustenance allowance—					
Higher rate	83.25	90.15	94.40	98.55	101.90
Lower rate	31.45	34.05	35.65	37.20	38.45
Domestic allowance	12.00	12.00	12.00	12.00	12.00
Recreation transport allowance—	per month	per month	per month	per month	per month
Higher rate	36.00	36.00	36.00	36.00	36.00
Lower rate	18.00	18.00	18.00	18.00	18.00

Particulars of disability pensions in Western Australia for the five years 1973-74 to 1977-78 are given in the following table.

DISABILITY PENSIONS—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of pensions current at 30 June—					
Incapacitated veterans	17,026	16,737	16,428	16,104	15,594
Dependants of incapacitated veterans	21,654	20,958	20,202	19,450	18,531
Dependants of deceased veterans	4,100	4,026	3,963	3,878	3,867
Miscellaneous (a)	27	26	26	27	38
Total	42,807	41,747	40,619	39,459	38,030
Amount paid in pensions during year (b)	\$'000 17,363	\$'000 21,845	\$'000 23,118	\$'000 25,587	\$'000 28,728

(a) Pensions payable under Seamen's War Pensions and Allowances Act and 'Act of grace' pensions.
(b) Includes widows' allowances.

Service Pensions and Allowances

Service pension is payable, subject to an income test similar to that applied to age and invalid pensions, to a veteran who served in a theatre of war and who has attained the age of sixty years or is permanently unemployable. It is payable to a female veteran who served in a theatre of war or embarked for service abroad and has attained the age of fifty-five years or is permanently unemployable.

A service pension is therefore a broad equivalent of an age or invalid pension. The advantages to the recipient are the availability of pension five years earlier and access to a wide range of medical treatment services in the repatriation system. Service pensioners are eligible for the same range of pensions and allowances as age pensioners and the rates of benefit are the same.

SERVICE PENSIONS (a)—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of pensions current at 30 June—					
Veterans	7,983	8,502	9,377	10,308	11,094
Dependants of—					
Living service pensioners.....	2,187	2,799	3,619	4,548	} 5,827
Deceased service pensioners	492	505	468	469	
Miscellaneous (b)	7	8	8	13	10
Total	10,669	11,814	13,472	15,338	16,931
Amount paid in pensions during year	\$'000 10,191	\$'000 15,149	\$'000 20,560	\$'000 26,933	\$'000 33,785

(a) Including pensions in respect of female veterans. (b) 'Act of grace' pensions.

Student Children

Prior to amendments made to the Repatriation Act in 1973, benefits and allowances payable in respect of student children, *i.e.* dependent persons receiving full-time education at a school, college or university, ceased when the student reached the age of twenty-one years. Subsequent amendments continue payment until the student reaches the age of twenty-five years.

Payment of Benefits outside Australia

The *Repatriation Act (No. 2) 1973*, which came into operation on 8 May 1973, authorises the payment of a service pension in any country in which the pensioner may choose to live. This provision had previously applied only to disability pensions.

DEPARTMENT FOR COMMUNITY WELFARE, WESTERN AUSTRALIA

The *Community Welfare Act, 1972*, which came into operation on 1 July 1972, established the Department for Community Welfare. The *Child Welfare Act Amendment Act (No. 2), 1972* abolished the former Child Welfare Department and transferred its functions to the Department for Community Welfare. The *Aboriginal Affairs Planning Authority Act,*

1972 repealed the *Native Welfare Act, 1963*. The welfare functions of the former Department of Native Welfare were transferred to the Department for Community Welfare with effect from 1 July 1972.

The functions of the Department for Community Welfare, as defined in the *Community Welfare Act, 1972*, are: ' (a) to promote individual and family welfare in the community; (b) to prevent the disruption of the welfare of individuals and families in the community, and to mitigate the effects of any disruption; (c) to co-ordinate, assist and encourage the provision of social welfare services to the community, and for that purpose to confer and collaborate with other bodies and instrumentalities who offer, or may offer, a social welfare service; (d) to conduct, promote and encourage research into the problems of community welfare; (e) to conduct, promote and encourage programmes of training or rehabilitation, or which are otherwise of a nature that is concerned with the advancement of the welfare of particular individuals or groups in the community who are disadvantaged; (f) to consider and initiate, or to assist in, the provision and development of new or additional welfare services, whether of a general or specific nature, for individuals or groups within the community who are needy or disadvantaged; (g) to encourage the development of the greatest possible degree of service and administration at the local level, and to emphasise the value of preventive measures; (h) to provide assistance, where the Minister considers it to be necessary, when the welfare of any individual, family or group is threatened or in jeopardy; (i) to provide and, where appropriate, to manage facilities, which may include land, buildings and specialized appliances, for specific purposes consistent with the objects of this Act; (j) generally, to administer and give effect to the provisions of this Act and to carry out such other functions as may be prescribed, or as the Minister may direct.'

The Acts administered by the Director of the Department for Community Welfare, subject to any direction of the Minister, are the Community Welfare Act, the Child Welfare Act, the Welfare and Assistance Act, the Adoption of Children Act, and the Guardianship of Children Act.

STATE RELIEF PAYMENTS

Under the provisions of the *Welfare and Assistance Act, 1961*, the State Government, through the Department for Community Welfare, extends financial assistance to indigent persons not immediately eligible for benefits paid by the Australian Government under its social security programme. These relief payments are made primarily to ensure that dependent children do not suffer hardship from the indigence of parents or guardians. Those assisted include deserted wives, unmarried mothers, families where the husband is unable to provide adequate support because of sickness, unemployment, age or imprisonment, and other special cases.

Other aid provided by the State for persons in need includes free travel for country people requiring medical treatment in the metropolitan area and a contribution towards the cost of school uniforms for children of women receiving financial assistance. In certain circumstances, the burial of indigent persons is arranged at State expense.

Deserted wives and unmarried mothers applying to the Department for assistance are given advice concerning the legal redress available to them and it is usual for application to be made to the Family Law Court or a Children's Court for an order requiring the husband or the father to provide maintenance. Court orders are enforceable throughout Australia and in certain overseas countries.

Under the *States Grants (Deserted Wives) Act 1968* the Australian Government shares on a \$1 for \$1 basis with the States the cost of helping certain mothers of families without a breadwinner where the mother is ineligible for a Class A widow's pension or the supporting parent's benefit. The main groups of mothers assisted are deserted wives, wives of prisoners, and unmarried mothers. Assistance is provided during the first six months after the birth of a child or the date of separation. After the first six months, a woman may qualify for either a Class A widow's pension or a supporting parent's benefit.

The grant by the Australian Government to a State is equal to half the cost of the approved assistance paid by the State to each eligible person but may not exceed half the amount that would have been payable to such a person under the Social Services Act had she been eligible for a Class A widow's pension.

The Department for Community Welfare also provides non-continuous assistance to destitute persons in emergency circumstances or whilst awaiting payment of Commonwealth social security benefits.

The following table shows the maximum weekly rates of allowances and benefits paid in terms of the Welfare and Assistance Act and the Child Welfare Act.

STATE GOVERNMENT RELIEF AND WELFARE PAYMENTS (a)
MAXIMUM WEEKLY RATES
(\$)

Allowance or benefit	Rate current at—				
	30 November 1976	31 May 1977	30 November 1977	31 May 1978	30 November 1978
Woman not receiving Australian Government assistance	43.50	47.10	49.30	51.45	53.20
Additional payments in respect of dependent children—					
First child	11.50	11.50	11.50	11.50	11.50
Second and each subsequent child	7.50	7.50	7.50	7.50	7.50
Supplementary allowances—					
Child aged under 6 years or invalid child aged under 16 years	2.00	2.00	2.00	2.00	2.00
Rent allowance	5.00	5.00	5.00	5.00	5.00
Unemployment and sickness benefits (b)—					
Married person	8.25	8.25	8.25	8.25	8.25
Dependent spouse	3.00	3.00	3.00	3.00	3.00
Each dependent child up to and including the seventh	1.50	1.50	1.50	1.50	1.50
Wards of the State—					
Foster children in families—					
Each child	17.00	18.75	18.75	18.75	18.75
Additional payment for each high school child	3.00	3.25	3.25	3.25	3.25
In institutions—					
Each child	17.00	18.75	18.75	18.75	20.25
Additional payment for each high school child	3.00	3.25	3.25	3.25	3.50
Allowance for each high school child (c)—					
At first year level	1.50	2.00	2.00	2.00	2.00
At second year level	1.50	2.00	2.00	2.00	2.00
At third year level	1.50	2.00	2.00	2.00	2.00
At fourth and fifth year levels	2.00	3.00	3.00	3.00	3.00
Foster child (d) (e)—					
In institution	15.00	18.75	18.75	18.75	20.25
In private home	15.00	18.75	18.75	18.75	18.75

(a) Payments made in terms of the Welfare and Assistance Act and the Child Welfare Act. (b) Paid only in respect of the first week of unemployment or sickness, during which period benefits are not payable under the Social Services Act (Commonwealth).

(c) Applies to all wards, whether accommodated in institutions or living as foster children in families. (d) Foster child not being a ward of the State. (e) Separate rates for foster children in institutions or private homes have applied from October 1978.

FAMILIES GRANTED STATE GOVERNMENT FINANCIAL ASSISTANCE

Category	Number of new applications received				
	1973-74	1974-75	1975-76	1976-77	1977-78
Deserted wives	2,821	3,278	3,372	3,856	4,366
Husbands imprisoned	332	320	264	234	203
Emergency assistance (including husband sick or unemployed)	4,111	10,250	9,867	r 9,710	14,218
Unmarried mothers	664	617	644	623	692
Separated husbands	192	48	53	64	95
Other	—	—	28	121	102
	8,120	14,513	14,228	r 14,608	19,676

CHILD WELFARE

Under the provisions of the *Child Welfare Act, 1947-1977* the State Government, through the Department for Community Welfare, is responsible for the care of wards and children placed under control and supervision or released on probation by Children's Courts. For the purposes of the Act, a child is defined as 'any boy or girl under the age of eighteen years'. Fit and proper persons may be licensed to care for children and are subject to supervision

by the Department. Other functions of the Department are the arranging of legal adoptions and the control of children employed in street trading and in public entertainment. A provision of the Child Welfare Act vests in the Department the right to decide which centre or facility or what form of treatment is appropriate to the needs of a child committed by a Children's Court to the care of the Department for treatment, discipline and training.

Children's Courts established at Perth, Fremantle, Midland and Rockingham, and at most country towns throughout the State have jurisdiction in all cases where children under eighteen years of age are involved whether as offenders or as being neglected or destitute. The Courts also have jurisdiction to deal with adults committing certain specified offences against children. The public may be excluded from Court hearings and names of juvenile offenders are withheld from publication unless with the express authority of the Court. Adults charged with certain indictable offences against children may forgo the right to trial by jury and agree to be dealt with summarily by Children's Courts. This power to exercise summary jurisdiction is designed to eliminate as far as possible the necessity for children to appear in open courts as witnesses in cases dealing with sex offences. A Children's Court may commit such offenders for sentence by the Supreme Court of Western Australia or The District Court of Western Australia.

Children guilty of minor offences may be cautioned, fined, bound over, placed on probation, or the charge may be dismissed without a conviction being recorded. A Court may declare a child to be neglected or destitute and may order the child to be committed to the care of the Department for Community Welfare or released on probation. Children found guilty of offences punishable by imprisonment may be committed to the care of the Department, released on security given by parents, or released on probation under the supervision of the Department. Those guilty of less serious or first offences are generally placed in the care of their parents or suitable guardians under appropriate supervision by officers of the Department for Community Welfare. Further reference to Children's Courts appears in the section *Law Courts* in Part 6 of this Chapter.

Supervision of Children. A child committed to the care of the Department for Community Welfare or to the custody of the Director of the Department for Community Welfare becomes a ward of the Department. A ward may be placed in a Departmental centre or facility, boarded out with a relative or other approved person, paroled or placed in suitable employment. The Director of the Department for Community Welfare has authority to place wards of working age in employment or apprenticeship. The *Immigration (Guardianship of Children) Act 1946* (Commonwealth) provides that the Minister for Immigration shall be the guardian of migrant children under the age of twenty-one years who are not in the care of a parent or other relative. In Western Australia this function is exercised, under delegation, by the Director of the Department for Community Welfare.

Departmental Expenditure. The following table gives details of annual expenditure of the Department for Community Welfare during the five-year period ended 30 June 1978.

DEPARTMENTAL EXPENDITURE
(\$'000)

Nature of expenditure	1973-74	1974-75	1975-76	1976-77	1977-78
Administration	1,346	1,644	2,057	2,473	2,747
Field services	2,427	3,280	4,690	5,640	6,631
Departmental institutions	3,546	4,987	6,178	7,033	7,948
Maintenance of children	2,178	2,457	2,803	2,970	2,969
Adoption of children	142	145	54	20	(a)
Financial assistance (b)	1,400	1,590	2,098	2,623	6,127
Unemployment relief	66	156	131	166	282
Community Welfare assistance	795	1,072	680	896	969
Reserves (Aboriginal housing)	261	394	322	1,079	1,061
Residential Child Care	-	-	-	-	1,246
Total expenditure	12,162	15,726	19,012	22,901	29,981
Total revenue	588	991	1,640	2,058	5,274
Net expenditure	11,574	14,734	17,372	20,843	24,707

(a) Included under Maintenance of children. (b) Assistance to women with dependent children and to the infirm.

Maintenance of Children. The Department for Community Welfare makes payments at the rates shown in the table in the section, *State Relief Payments* to foster-parents and institutions having State wards in their care. The British Government pays \$2·50 per week for each British migrant child in an institution or boarded out and the State Government pays an additional amount of 60 cents per week for the first twelve months after arrival. A further grant of \$1 per week for each child maintained is paid to the institutions by the State Lotteries Commission. Where an institution refuses assistance from the Commission on religious or moral grounds the State Government may grant an equivalent allowance to the institution for each ward maintained. All institutions and foster-parents having the care of children receive Commonwealth family allowances.

Parents or step-parents are required to contribute towards the maintenance of wards in institutions or boarded out.

Day Care Centres. Any person who provides day-to-day care of children under the age of six years must have a licence issued by the Department for Community Welfare in accordance with regulations which specify standards relating to premises, furnishings, equipment, staffing and the general conduct of centres. An advisory service is provided by the Department to assist those wishing to establish centres, and to ensure that the regulations are observed and that good standards of child care are maintained.

The Australian Government, under the provisions of the *Child Care Act 1972*, provides financial assistance to certain non-profit organisations for the establishment and operation of child care centres primarily for the children of working or sick parents or of parents who for other reasons are unable to care for them during the day. Capital grants are payable to eligible organisations for the purchase, erection, extension or alteration of buildings (including land cost) for use as a child care centre. Recurrent grants are payable to encourage the employment of qualified staff and to enable the centres to offer reduced fees in respect of children from families in financial need. The Act also provides for grants to be made available to suitable bodies for research and evaluation of matters relating to child care.

Institutions. The State Government subsidises homes for children in Western Australia. Most of these centres and facilities are conducted by religious organisations. All institutions having the care of wards (including migrant children) or private children under six years of age are subject to the supervision of the Department for Community Welfare.

CHILDREN IN DEPARTMENTAL INSTITUTIONS (a)

Institution	At 30 June—				
	1974	1975	1976	1977	1978
Bridgewater Care and Assessment Centre, Applecross	60	61	32	64	72
Hillston Farm School, Stoneville	81	81	69	62	27
Longmore Remand and Assessment Centre, Bentley	69	53	97	60	63
McCall Treatment Centre, Cottesloe	12	17	11	14	17
Mount Lawley Reception Home	28	31	50	20	28
Nyandi, Bentley	28	17	40	11	16
Riverbank, Caversham	45	36	32	24	21
Total	323	296	331	255	244

(a) See letterpress *Department for Community Welfare* earlier in this Part.

Departmental institutions provide short-term accommodation for children in need of care and children awaiting proceedings in Children's Courts; assessment facilities for children coming into the care of the Department; treatment centres in the nature of reformatories; and hostel accommodation. Children aged from three years to eighteen years are provided for. Wards under three years of age requiring short-term care are placed by arrangement at Ngal-a Mothercraft Home and Training Centre, South Perth.

Adoption of Children. All children eligible for adoption in Western Australia come under the guardianship of the Director of the Department for Community Welfare. A person

wishing to adopt a child may apply direct to the Department or through a solicitor. Each applicant must be assessed by the Department for suitability, and an order for the legalisation of an adoption must be obtained from a Judge of the Supreme Court of Western Australia.

Employment of Children. The *Child Welfare Act, 1947-1977* provides the conditions under which children may engage in street trading. Male children under twelve and female children under school leaving age are not permitted to engage in street trading.

The Department is authorised under the Act to carry out any investigations necessary, relative to children engaged in public performances and ensuring their safety and welfare.

Chapter V—continued

Part 5—Housing and Building

HOUSING AND THE CENSUS

NOTE. Before an amendment to the Australian Constitution in 1967, it was provided by Section 127 that 'in reckoning the numbers of the people of the Commonwealth, or of a State or other part of the Commonwealth, aboriginal natives shall not be counted,' and accordingly dwellings occupied solely by full-blood Aborigines were excluded from published tables relating to the Census of Population and Housing.

This provision was deleted following a referendum held on 27 May 1967. The enabling Act, the Constitution Alteration (Aboriginals) 1967 came into operation on 10 August 1967. As a result of this amendment, such dwellings are included in the statistics derived from the 1971 and later Censuses, which therefore relate to all dwellings.

The definitions given below are relevant when considering data derived from the Census of Population and Housing.

OCCUPIED DWELLING. For the purpose of the Census of Population and Housing an occupied dwelling is any habitation occupied on census night by a household group living together as a domestic unit, and may comprise the whole of a building or only part of it. The term has therefore a very wide reference and includes, in addition to houses and flats, a great variety of dwellings ranging from a single-roomed shack to a multi-roomed hotel or institution.

UNOCCUPIED PRIVATE DWELLING. An unoccupied private dwelling is defined as a structure built specifically for private living purposes and capable of being lived in, though unoccupied at the time of the census. The term includes vacant dwellings available for sale or renting; dwellings such as week-enders or holiday homes which were not occupied on census night; dwellings normally occupied but whose occupants were temporarily absent on the night of the census; newly-completed dwellings whose owners or tenants had not entered into occupation on census night; and dwellings described as 'to be demolished', 'condemned', 'exhibition home', etc. The total number of unoccupied dwellings does not, therefore, represent the number of vacant houses and flats available for sale or renting.

PRIVATE DWELLINGS comprise the following classes:

PRIVATE HOUSE, which includes separate houses; semi-detached houses; attached houses; terrace houses; and villa units.

SELF-CONTAINED FLAT. A self-contained flat is part of a house or other building which can be completely closed off and which has its own cooking and bathing facilities. Home units are included in this class.

OTHER FLAT is part of a house, flat or other premises which is not self-contained.

OTHER PRIVATE DWELLINGS include sheds, tents, garages, caravans, houseboats, etc. occupied on a permanent or semi-permanent basis.

Dwellings at Censuses from 1901

The number of unoccupied dwellings shown for censuses prior to 1971 include both private and non-private dwellings, while those for the 1971 and 1976 Censuses refer to private dwellings only.

DWELLINGS—CENSUSES, 1901 TO 1976 (a)

Census date	Occupied dwellings				Unoccupied dwellings
	Private		Non-private	Total	
	Number	Average number of inmates			
1901—31 March	(b) 46,436	(c) 3·35	2,070	48,506	2,263
1911— 3 April	(d) 66,553	(e) 3·68	2,317	68,870	3,158
1921— 4 April	70,185	4·11	3,363	73,548	3,274
1933—30 June	100,441	3·95	3,137	103,578	4,029
1947—30 June	122,078	3·73	2,689	124,767	2,606
1954—30 June	159,496	3·64	3,327	162,823	6,614
1961—30 June	191,616	3·59	2,701	194,317	13,705
1966—30 June	222,416	3·53	3,285	225,701	17,965
1971—30 June	284,359	3·38	2,486	286,845	(f) 28,274
1976—30 June	336,768	3·18	2,337	339,105	(f) 34,064

(a) Figures for censuses prior to 1966 exclude dwellings occupied solely by full-blood Aborigines; those for 1966 and later relate to all dwellings. (b) Comprises 17,702 dwellings of calico, canvas, and hessian, with an average of 2·10 inmates, and 28,734 other dwellings with an average of 4·12 inmates. (c) See note (b). (d) Comprises 14,216 dwellings of calico, canvas, and hessian, with an average of 1·93 inmates, and 52,337 other dwellings with an average of 4·16 inmates. (e) See note (d). (f) Unoccupied private dwellings only.

The following table gives particulars of the numbers of occupied dwellings at the Censuses of 1971 and 1976, together with the total numbers of persons enumerated.

Between the Censuses of 1971 and 1976, the numbers of occupied dwellings in the State increased by 18·2 per cent. The number of persons enumerated in private dwellings showed an increase of 11·2 per cent.

OCCUPIED DWELLINGS AND PERSONS ENUMERATED
CENSUSES, 1971 AND 1976

Particulars	Census, 30 June—					
	1971		1976			
	Number	Per cent of total	Number	Per cent of total	Increase since 1971	
Number					Per cent	
Occupied dwellings—						
Private	'000		'000		'000	
Non-private	284·4	99·1	336·8	99·3	52·4	18·4
	2·5	0·9	2·3	0·7	—0·1	—6·0
Total, Occupied dwellings	286·8	100·0	339·1	100·0	52·3	18·2
Persons enumerated in—						
Private dwellings	962·2	93·4	1,070·1	93·5	107·9	11·2
Non-private dwellings	(a) 65·6	(a) 6·4	71·5	6·2	..	..
Migratory population (b)	2·6	0·2	(a) 3·2	(a) 0·3	..	..
Total population	1,030·5	100·0	1,144·9	100·0	114·4	11·1

(a) Includes campers-out. (b) Comprises persons (both passengers and crew) who, at midnight on census night, were enumerated on board ships in Western Australian ports, or ships which had left an Australian port before census night for a next port of call in Western Australia. It includes also those who were enumerated on long-distance trains, motor coaches or aircraft.

Occupied Private Dwellings

Number of Rooms. The following table shows details of the number of rooms in occupied private dwellings at the Census of 30 June 1976.

OCCUPIED PRIVATE DWELLINGS
NUMBER OF ROOMS (a): CENSUS, 30 JUNE 1976

Number of rooms (a)	Separate house			Other (b)		
	Perth Statistical Division	Rest of State	Total	Perth Statistical Division	Rest of State	Total
1	40	78	118	426	542	968
2	206	326	532	3,330	940	4,270
3	1,256	1,246	2,502	11,628	1,730	13,358
4	12,912	7,384	20,296	21,088	3,028	24,116
5	62,266	27,994	90,260	11,826	2,838	14,664
6	58,294	20,566	78,860	4,450	1,296	5,746
7	32,632	10,114	42,746	1,556	508	2,064
8 or more	22,594	7,472	30,066	1,042	520	1,562
Not stated	582	244	826	2,420	1,394	3,814
Total	190,782	75,424	266,206	57,766	12,796	70,562

(a) Includes kitchen, bathroom and permanently enclosed sleep-out, but does not include toilet, pantry, laundry, storeroom, hall or corridor. (b) Includes flat, home unit, mobile home (not in caravan park), improvised dwelling and private boarding house.

Number of Bedrooms. The next table shows details of the number of bedrooms in occupied private dwellings at the Census of 30 June 1976.

OCCUPIED PRIVATE DWELLINGS
NUMBER OF BEDROOMS (a): CENSUS, 30 JUNE 1976

Number of bedrooms (a)	Separate house			Other (b)		
	Perth Statistical Division	Rest of State	Total	Perth Statistical Division	Rest of State	Total
None (c)	88	92	180	492	560	1,052
1	1,936	1,260	3,196	14,844	2,092	16,936
2	25,512	10,988	36,500	25,192	3,954	29,146
3	120,612	44,286	164,898	12,808	3,626	16,434
4	36,794	15,296	52,090	1,598	820	2,418
5	4,378	2,598	6,976	308	202	510
6 or more	880	660	1,540	104	148	252
Not stated	582	244	826	2,420	1,394	3,814
Total	190,782	75,424	266,206	57,766	12,796	70,562

(a) Includes permanently enclosed sleep-out. (b) Includes flat, home unit, mobile home (not in caravan park), improvised dwelling and private boarding house. (c) Includes one-room flat and bed-sitting room.

Unoccupied Private Dwellings

For dwellings not occupied on the night of the census, collectors were required to determine as many particulars as possible and, where the information was available, to enter on the census schedule the reason why the dwelling was unoccupied. The following table shows details of unoccupied private dwellings at the Census of 30 June 1976.

UNOCCUPIED PRIVATE DWELLINGS—CENSUS, 30 JUNE 1976

Reason for being unoccupied	Perth Statistical Division	Rest of State	Total
For sale	1,114	398	1,512
To let, not holiday home	2,788	1,354	4,142
New, awaiting occupancy	1,588	442	2,030
Vacant for repair etc.	684	590	1,274
Holiday home	1,894	5,392	7,286
Condemned for demolition	362	602	964
Resident temporarily absent	6,874	3,732	10,606
Other, n.e.i.	1,576	3,122	4,698
Not stated	828	724	1,552
Total	17,708	16,356	34,064

Geographical Distribution of Dwellings

Statistical Divisions. The following table shows the numbers of occupied and unoccupied dwellings in each statistical division of Western Australia at the Censuses of 1971 and 1976.

The former grouping of municipal districts on the basis of climatological and geographical characteristics was revised with effect from 1 January 1976 to take into account also social and economic criteria. (The statistical divisions and their component local government areas are shown in lists at the end of Chapter III.)

Between the Censuses of 1971 and 1976 the number of dwellings in Western Australia rose by 18·4 per cent. The number in the Perth Statistical Division increased by 23·3 per cent, compared with an increase of 7·8 per cent in the rest of the State. Other divisions showing an increase were Pilbara, 35·0 per cent; South-West, 13·2 per cent; Lower Great Southern, 6·9 per cent; Midlands, 4·5 per cent; Central, 3·2 per cent; and South-Eastern, 3·0 per cent. Divisions showing a decrease were Upper Great Southern, 2·4 per cent and Kimberley, 10·8 per cent.

DWELLINGS IN STATISTICAL DIVISIONS—CENSUSES, 1971 AND 1976

Statistical division	Census, 30 June 1971 (a)		Census, 30 June 1976			
	Total occupied dwellings	Un-occupied private dwellings	Occupied dwellings			Un-occupied private dwellings
			Private	Non-private	Total	
Perth Statistical Division	203,007	13,696	248,548	856	249,404	17,708
Other divisions—						
South-West	22,184	5,412	24,940	208	25,148	6,092
Lower Great Southern	10,635	1,829	11,290	128	11,418	1,908
Upper Great Southern	6,532	1,160	6,500	101	6,601	908
Midlands	13,928	2,633	13,834	211	14,045	3,260
South-Eastern	10,850	1,216	10,634	210	10,844	1,580
Central (b)	11,361	1,619	11,502	239	11,741	1,652
Pilbara	5,488	583	7,198	238	7,436	760
Kimberley	2,860	126	2,322	146	2,468	196
Total	83,838	14,578	88,220	1,481	89,701	16,356
WESTERN AUSTRALIA	286,845	28,274	336,768	2,337	339,105	34,064

(a) The 1971 Census figures have been adjusted to provide figures on the basis of the boundaries of local government areas at 30 June 1976.

(b) Includes Houtman Abrolhos (unincorporated).

Australian States. The following table gives the numbers of dwellings recorded in each of the Australian States and in Australia as a whole at the Census of 30 June 1976.

DWELLINGS—AUSTRALIAN STATES: CENSUS, 30 JUNE 1976

Type of dwelling	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia (a)
Occupied dwellings—							
Private	1,491,826	1,121,578	598,140	390,514	336,768	121,832	4,140,521
Non-private	7,175	4,726	4,286	1,739	2,337	741	21,543
Total, Occupied dwellings	1,499,001	1,126,304	602,426	392,253	339,105	122,573	4,162,064
Unoccupied private dwellings	152,960	119,592	62,686	39,768	34,064	15,786	431,200
Total dwellings	1,651,961	1,245,896	665,112	432,021	373,169	138,359	4,593,264

(a) Includes Northern Territory (22,885 occupied private dwellings and 2,292 unoccupied dwellings) and Australian Capital Territory (56,978 occupied private dwellings and 4,052 unoccupied dwellings).

GOVERNMENT AND GOVERNMENT-SPONSORED HOUSING

The State Housing Commission

The State Housing Commission was established in January 1947 under the State Housing Act of 1946 to replace the Workers' Homes Board which had been created in 1912 to 'erect and dispose of workers' dwellings, and to make advances to people of

limited means to provide homes for themselves'. The Act confers on the Commission the legal authority formerly vested in the Board and has as its objects 'the improvement of existing housing conditions' and 'the provision of adequate and suitable housing accommodation for persons of limited means and certain other persons not otherwise adequately housed'. The legislation is comprehensive in scope, providing for the erection of homes for workers, the making of advances to workers for the purchase of homes, the erection of homes for letting on a weekly rental basis, the acquisition and development of land, the clearing of slums, the erection of hostels and the planning of community facilities.

The Commission consists of seven members of whom one must be the person occupying the office of General Manager of the Commission, one an officer of the State Public Service, one a representative of the building trades unions, one a registered builder (or a person qualified to be so registered), one a woman, one a discharged member of the Forces, and one a person with a wide knowledge of and experience in housing conditions in the State. The functions of the Commission include the State-wide provision of low-cost housing for purchase or rental by families of low and moderate income, under the authority of the State Housing Act and of the Housing Agreement (Commonwealth and State) which, on 1 July 1978, replaced the *Housing Agreement Act 1973*; the administration of the Building Societies Act and the Housing Loan Guarantee Act; the construction and maintenance of dwellings on behalf of the Government Employees' Housing Authority and the Industrial and Commercial Employees' Housing Authority. Tables showing the operations of the Commission are shown later in this Part.

State Housing Act. Under the authority of the *State Housing Act, 1946-1975*, the State Housing Commission uses funds provided by the State Government to build dwellings for sale and to lend money for home building. Eligibility for assistance is restricted to persons with income below a prescribed amount, which varies according to changes in industrial awards affecting the earnings of a tradesman, but outside the Perth metropolitan region the Minister may allow assistance to a family having a higher income. There was no allocation of funds under this Act in 1976-77.

Commonwealth and State Housing Agreements. The final draft of an agreement on housing between the Australian Government and State Governments was prepared at the Conference of Premiers in August 1945 and was later ratified by Commonwealth and State legislation. The Commonwealth and State Housing Agreement Act, passed by the State Parliament in 1945, enabled Western Australia to participate in the Agreement, the purpose of which was to provide homes quickly, primarily for persons at the lower income levels, by standardisation of design and erection in large groups. The Agreement provided a broad basis of collaboration between the Commonwealth and the State with the Commonwealth providing advances of money, general direction on policy and co-ordination of effort and the State undertaking the actual site acquisition and planning, the construction of the dwellings, the selection of tenants and the detailed administrative work.

Further details of the 1945 Agreement are given on page 203 of the *Western Australian Year Book*, No. 8—1969 and in earlier issues.

With the expiry of the 1945 Agreement, the Commonwealth Parliament in 1956 passed the Housing Agreement Act providing 'financial assistance to the States for the purpose of housing' for a period of five years ending on 30 June 1961. The complementary State legislation authorising the State Government to enter into the Agreement was the Commonwealth and State Housing Agreement Act of 1956.

The 1956 Agreement required that, for the first two years of its operation, at least 20 per cent of the money allocated to the State was to be advanced to building societies and other approved institutions for lending to private persons for the building or purchase of homes, the proportion to be increased to not less than 30 per cent during the remainder of the period. The balance of the allocation was to be used by the State for the erection of houses for either rental or sale. The Commonwealth was entitled to specify that of this balance a portion not exceeding 5 per cent in any one year should be set aside for the erection of houses for serving members of the defence forces. The Commonwealth provided supplementary advances to the State equal to the amounts set aside for this purpose.

On the introduction of the 1956 Agreement, the State Housing Commission adopted the policy of offering for sale before occupancy one-half of the total number of houses built, the remainder being made available on a rental basis. The proportion was subsequently varied several times.

Under the provisions of Commonwealth and State legislation passed in 1961 the period of operation of the Commonwealth and State Housing Agreement was extended for a further five years to 30 June 1966. The 1961 Agreement incorporated all the main features of the earlier arrangement, with only minor modifications.

In terms of the *Housing Agreement Act 1966* (Commonwealth) and the *Commonwealth and State Housing Agreement Act, 1966* (State) the operation of the Agreement, with minor amendments, was extended until 30 June 1971 and it has not been renewed.

Although Agreements subsequent to that of 1945, and which were effective until 30 June 1971, made no provision for rebates to tenants unable to pay the full rental, the State Government continued the system during the period.

New arrangements were introduced from 1 July 1971 under the authority of the *States Grants (Housing) Act 1971*, which considerably altered the principles of the previous Agreements.

Under this legislation the States continued to determine the amount from their annual Loan Council borrowing programmes to be allocated to housing. Instead, however, of this amount being advanced to the States at a concessional rate of interest (as was the case under previous Agreements), the Commonwealth was to make cash grants of \$2.75 million a year payable for thirty years in respect of each year's housing programme over the period 1971-72 to 1975-76.

Certain conditions attached to payment of the grants which were to be shared among the States in proportions specified in the Act. Western Australia's share was 11.4 per cent or \$313,500 per annum over the period nominated, which became the years 1971-72 and 1972-73 in terms of the *States Grants (Housing) Act 1971-1973*. This Act continued the provision for payment of a rental assistance grant to help the States meet the cost to them of reducing the rents of housing authority dwellings for families considered to have insufficient means to pay the rents ordinarily required by the authority. The grant of \$1.25 million was payable to the States in each of the five years 1971-72 to 1975-76, a total of \$6.25 million. Payment was in specified proportions, Western Australia's share being 11.5 per cent or \$143,750 per annum.

Housing Assistance Act. The *Housing Assistance Act 1978* was enacted to continue the provisions of housing assistance after the termination of the *Housing Agreement Act 1973*. The provisions of the new Act are to be operative for three financial years ending on 30 June 1981.

Except in specified circumstances the provisions of this agreement supersede the provisions of earlier housing agreements.

A significant difference in this new agreement is that housing authorities may no longer assist purchasers under vendor finance as was previously permitted. Instead, assistance is to be extended through terminating building societies, co-operative housing societies or such other lending institutions, including permanent building societies, as may be agreed upon between the Commonwealth and State Ministers.

The allocation of financial assistance between rental housing and home finance may be varied but in respect of the financial year commencing on 1 July 1980 the amount provided for home purchases must be not less than 40 per cent of the total advances.

A further significant difference is that the interest rate to be applied to purchasers shall be not less than 5 per cent per annum until the end of the first financial year that occurs wholly after the loan is made. The rate will then be increased by $\frac{1}{2}$ per cent per annum in each subsequent year until a rate equivalent to 1 per cent per annum below the long term bond rate is reached, after which it will be varied according to any variation which occurs in the long term bond rate.

A separate agreement between the Australian Government and the States has been entered into covering the provision of housing for serving members of the armed forces. Under this agreement the Commonwealth provides, by way of repayable advances, all the funds required and the States are not required to set aside part of their housing allocation for this purpose.

States Grants (Dwellings for Pensioners) Act. Under the provisions of the *States Grants (Dwellings for Aged Pensioners) Act* 1969, which expired on 30 June 1974, the Commonwealth made available to the States a grant totalling \$25 million over a period of five years for the construction of self-contained dwellings for single aged pensioners. Western Australia received a total of \$1.75 million over the period and under this scheme the Commission built 28 units in 1969-70, 76 units in 1970-71, 12 units in 1971-72, 106 in 1972-73, 59 in 1973-74, and 16 in 1974-75.

The scheme was renewed and eligibility conditions widened to include invalid pensioners, Class B widow pensioners and service pensioners, in addition to aged pensioners, under the provisions of the *States Grants (Dwellings for Pensioners) Act* 1974. The Australian Government advanced interest-free non-repayable grants to the States totalling \$30 million over the three years 1 July 1974 to 30 June 1977. The Act provided that Western Australia would receive annual payments of \$700,000 during the period. Under the renewed scheme the Commission built 16 units in 1974-75, 64 units in 1975-76, 78 units in 1976-77 and 52 units in 1977-78.

Under provisions of the *States Grants (Dwellings for Pensioners) Act* 1974 the operation of the 1974 Act was extended to 30 June 1978. Grants to the States were increased by a further \$10 million, of which Western Australia received \$700,000.

On expiry at 30 June 1978 the Act was not renewed but provision of assistance to a broader range of persons in receipt of pensions, benefits or allowances under the *Social Services Act* 1947 was incorporated in the *Housing Assistance Act* 1978.

A specific annual allocation is not provided for but annual financial assistance is determined and authorised by the Commonwealth Minister.

Aboriginal Housing. The Commonwealth Government provides annual grants for the housing of Aboriginal people. These grants are subject to a Statement of Purpose and, although no Agreement or Act currently exists, it is expected that such an Agreement or Act will be introduced in the future.

Other Functions. The State Housing Commission conducts certain other housing schemes and has completed, or is currently engaged on, other specific projects on behalf of the State Government. Under a 'Departmental Homes' scheme, which commenced in 1952-53, 2,771 houses were built in the period to 30 June 1978 for Government Departments and semi-government authorities. A Government Employees' Housing Scheme was introduced in 1958-59 and, up to 30 June 1978, had provided 1,202 rental houses in country areas. (See also the section *Government Employees' Housing Authority* on the following page.) The Commission has also undertaken the erection of flats for occupation by widows and by aged women pensioners, as well as cottage flats for aged married couples. Design and supervisory services have been made available free of cost to several private charitable organisations which are developing pensioner housing schemes financed jointly by these organisations and the Australian Government under the *Aged Persons Homes Act* 1954 (Commonwealth). The Commission has also been made responsible from time to time for special housing schemes for industry or major developmental projects.

Operations of The State Housing Commission

In this section, a summary of the activities of The State Housing Commission is given. The second table below shows the number of housing units completed by the Commission in various categories during each year from 1973-74 to 1977-78. It also shows the numbers of housing units in connection with which the Commission provided design and supervisory services free of cost to private charitable organisations.

THE STATE HOUSING COMMISSION
REVENUE, EXPENDITURE AND FUNDS EMPLOYED
 (\$'000)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Revenue—					
Rentals	11,558	13,185	17,060	19,586	24,337
Profit on sale of—					
Houses and land	3,059	4,626	8,489	9,889	9,310
Sundry assets	15	25	50	34	30
Interest—					
Home purchase	5,001	5,360	5,542	6,012	5,800
Other	1,073	786	1,655	2,189	2,379
Recoup of management expenses	325	654	1,033	1,470	2,363
Fees and miscellaneous	715	933	1,341	1,601	2,262
Total, Revenue	21,746	25,569	35,170	40,781	46,481
Expenditure—					
Interest—					
Loan capital	9,330	10,323	11,726	12,244	12,617
Debentures	1,546	1,679	1,949	2,059	2,127
Amortisation	1,282	1,374	1,539	3,750	4,578
Management expenses	4,963	6,843	7,728	8,717	9,763
Rental outgoings	5,746	7,805	9,227	11,939	15,516
Other	13	17	20	58	57
Total, Expenditure	22,880	28,041	32,189	38,767	44,658
Surplus	(a) 1,134	(a) 2,472	2,981	2,014	1,823
Funds employed at 30 June—					
Loan indebtedness—					
Government advances	274,650	292,369	323,478	355,844	392,044
Debenture issues	25,211	26,604	28,666	29,192	29,876
Commonwealth special grants	6,728	6,849	7,387	8,596	9,142
Accumulated surpluses and reserves	37,404	35,646	37,685	40,563	43,954
Total, Funds employed	343,993	361,468	397,216	434,195	475,016

(a) Deficit.

THE STATE HOUSING COMMISSION—DWELLINGS CONSTRUCTION

Category	1973-74	1974-75	1975-76	1976-77	1977-78
Housing units (a) completed—					
State Housing Act	440	373	377	160	251
Commonwealth and State Housing Agreements (b)	1,172	494	387	655	995
Aboriginal Housing	135	119	50	64	39
Departmental Homes	80	42	34	34	38
Government Employees' Homes	88	53	113	79	197
Shire Building Scheme (c)	3	9	11	—	11
Defence Service Homes	—	—	—	—	—
Dwellings for Aged Pensioners (d)	59	16	64	78	52
Other (e)	—	7	24	13	17
Total	1,977	1,113	1,060	1,083	1,600
Other activities (f)	6	37	74	16	7

(a) Comprises number of houses and number of individual units in other dwellings. (b) See letterpress at the beginning of this section. (c) For local government employees. (d) Constructed under the provisions of the *States Grants (Dwellings for Aged Pensioners) Act 1969* and the *States Grants (Dwellings for Pensioners) Act 1974*. (e) Comprises houses built by the Commission in terms of the *Industrial and Commercial Employees' Housing Act, 1973-1977* and Project Development (Special Agreements Scheme) and other schemes. (f) The figures shown represent housing units built by charitable organisations in connection with which the Commission provided design and supervisory services.

Government Employees' Housing Authority

The Government Employees' Housing Authority is established under the provisions of the *Government Employees' Housing Act, 1964-1973* to provide adequate and suitable housing accommodation for employees of State Government Departments to which the Act applies.

The Authority is empowered to enter into an agreement with the State Housing Commission whereby the Commission shall act as its agent upon such terms as may be mutually agreed upon by the Authority and the Commission.

Industrial and Commercial Employees' Housing Authority

The Industrial and Commercial Employees' Housing Authority is established under the provisions of the *Industrial and Commercial Employees' Housing Act, 1973-1977* with power to raise funds to provide adequate and suitable housing accommodation for essential industrial or commercial employees outside the metropolitan region.

The Authority is empowered to enter into arrangements and agreements with the State Housing Commission upon such terms as may be mutually agreed upon by the Authority and the Commission. Under this scheme 4 units were completed during 1975-76, 13 during 1976-77 and 17 in 1977-78.

Rural Housing Authority

The Rural Housing Authority is established under the provisions of the *Rural Housing (Assistance) Act, 1976-1978* to assist farmers seeking finance to purchase or build a suitable dwelling on their farm or to effect additions to or modernisation of an existing dwelling on their farm.

The Authority consists of four Members of whom one must be a person experienced in the planning, provision and management of housing throughout the State, one who is or has been employed or engaged in a senior capacity by a lending institution involved in making loans to persons engaged in primary industry in the State, one a person who is or has been engaged in the rural industry within the State and one an officer of the State Treasury Department.

The Authority is empowered to authorise approved lending institutions to make advances under State Government indemnities to approved farmers, to make direct loans of Authority funds to approved farmers, to raise funds for the purposes of the Act and to advance low-interest money to an approved lending institution.

Eligibility for Authority assistance is restricted to persons whose sole or principal activity is the carrying on of farming operations on their holding. Farmers applying for assistance must satisfy the Authority that the house for which the assistance is required is for himself and his dependants.

Defence Service Homes

Under the *Defence Service Homes Act 1918* the Australian Government provides assistance in acquiring a home to persons who satisfy the eligibility conditions set out in the Act.

An amendment to the Act in 1978 continues and expands the categories of persons who are eligible for such assistance, including regular servicemen whose period of service commenced on or after 17 August 1977, and extending the provisions for widows to include, in specified circumstances, de facto widows.

The maximum amount of loan is \$15,000 and the rate of interest 3.75 per cent for amounts up to and including \$12,000. Where the advance exceeds \$12,000, the rate of interest charged on the excess (up to the maximum of \$3,000) is 7.25 per cent.

A summary of the operations in Western Australia of the Defence Service Homes Scheme for the five years 1973-74 to 1977-78 is given in the following table.

DEFENCE SERVICE HOMES SCHEME—OPERATIONS IN WESTERN AUSTRALIA

Year	Homes provided during year				Total homes provided from inception to end of year	Annual expenditure	Installments paid	Loans repaid
	By erection	By purchase	By discharge of mortgage	Total				
1973-74	No. 67	No. 577	No. 136	No. 780	No. 30,698	\$'000 9,500	\$'000 9,115	No. 894
1974-75	225	763	257	1,245	31,943	15,251	9,287	701
1975-76	210	647	202	1,059	33,002	16,005	12,190	1,086
1976-77	345	191	198	734	33,736	11,798	12,694	1,002
1977-78	318	267	132	717	34,453	11,126	12,159	904

The Defence Service Homes Corporation is responsible for the administration of the Defence Service Homes Scheme in Western Australia.

State Housing Death Benefit Scheme Act. The *State Housing Death Benefit Scheme Act, 1965-1975* establishes, with effect from 20 February 1965, a scheme to provide benefits for the families of purchasers of dwellings who die leaving unpaid the whole or part of a liability to the State Housing Commission under a contract of sale or mortgage. The benefit is applied to the credit of the deceased purchaser's account, and the instalments payable during the unexpired term of the loan are reduced accordingly.

From the inception of the scheme in 1965-66 to 30 June 1978, 372 claims have been admitted and a total of \$303,307 paid in the form of assistance to purchasers.

Additional details of the scheme are given on page 204 of the *Western Australian Year Book*, No. 8—1969 and in earlier issues.

Housing Loan Guarantee Act

The purposes of the *Housing Loan Guarantee Act, 1957-1973* are to encourage, through provisions for guarantees and indemnities, the building and the purchasing of new houses. Under this Act, the Government provides guarantees to lenders of funds to building societies and other approved financial organisations making advances to persons desiring to purchase or build their own home on low deposits.

The maximum rate of interest which an approved institution may charge on a loan to a borrower is $10\frac{1}{4}$ per cent (31 December 1978). Loans may be made up to 70 per cent of the value of the house and land or a specified sum, whichever is the lesser amount. In respect of the metropolitan region, the maximum loan permitted is \$28,000, and outside the metropolitan region but south of the 26th parallel it is \$29,000. For a new house situated north of the 26th parallel and in the North-West or Eastern Land Divisions, the maximum loan is \$45,500 and in the Kimberley Land Division, \$46,500.

Complementary action has been taken by the Commonwealth in establishing the Housing Loans Insurance Corporation to foster high-ratio loans (see following section).

Housing Loans Insurance Scheme

The Housing Loans Insurance Corporation was established by the *Housing Loans Insurance Act 1965* (Commonwealth) to insure approved lenders against losses arising from the making of housing loans. The Corporation consists of a chairman (who is also managing director) and a deputy chairman (who is also deputy managing director) both being full-time members, and three part-time members, all of whom are appointed by the Governor-General.

Operations of the Housing Loans Insurance Corporation were confined to the insurance of first and second mortgage home ownership loans until June 1977, when an amendment to the Act provided for the Corporation to insure also loans for the purchase of land, for rental accommodation, and for project housing.

On home-ownership loans the Corporation charges a single premium at the outset of the loan. The premium rate varies with the ratio of the loan amount to the value of the property, and the average premium is about \$7 per \$1,000 of loan.

The Housing Loans Insurance Corporation is the largest mortgage insurer in both Australia and Western Australia and to 30 June 1978 had insured loans in Western Australia amounting to \$874 million. Details of the operations of the Corporation for the five years ended 1977-78 are given in the following table.

HOUSING LOANS INSURANCE CORPORATION
LOANS INSURED IN WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Loans insured No.	3,653	4,401	9,657	9,138	7,993
Amount of loans insured \$'000	53,109	72,293	199,687	189,947	202,827

Homes Savings Grants

The *Homes Savings Grant Act 1964* (Commonwealth), which came into operation on 28 May 1964 and will remain in force to permit payment of grants to persons who contracted to buy or build their own homes no later than 31 December 1976, was designed to 'assist young married persons, and young widowed and divorced persons with dependent children, to purchase or build their own homes'.

The Act provides for the payment to eligible persons of a grant of \$1 for every \$3 saved for a home by one or both of the marriage partners. The grant takes the form of a gift free of tax and is payable in respect of a house, a home unit or a flat. The maximum benefit is \$750 payable on savings of \$2,250 which must be 'acceptable' savings within the meaning of the Act.

Many of the provisions of this scheme were continued, but eligibility conditions widened, under the provisions of the *Homes Savings Grant Act 1976* (Commonwealth), which came into operation on 1 January 1977. Limitations in respect of marital status and age and the necessity for migrants to have lived in Australia for three years have been removed. The maximum grant payable was raised from \$750 to \$2,000 and the value limitation of \$22,500 on the cost of a home, including the cost of land, no longer applies. The minimum savings period was reduced from three years to twelve months. The Act provides that savings periods shall commence on or after 1 January 1976 and, consequently, during 1977 the maximum grant payable was \$667. Grants of up to \$1,333 were payable in 1978 and the full \$2,000 grant will be available from 1979.

Grants under the 1964 Act were financed from the National Welfare Fund and the first payments were made during the year ended 30 June 1965. Expenditure on grants in Western Australia amounted to \$1,492,968 in 1974-75; \$1,119,878 in 1975-76; \$429,823 in 1976-77; and \$95,003 in 1977-78. Grants paid under the 1976 Act, funded by way of annual appropriation, amounted to \$430,850 for the period 1 January 1977 to 30 June 1977; and \$2,679,264 in 1977-78.

CONTROL OF BUILDING

Each of the local government authorities as constituted under the provisions of the *Local Government Act, 1960-1978* has power to exercise general control over the erection of buildings in its own district. The powers of local government authorities to control building derive from the Town Planning and Development Act and the Local Government Act.

The *Town Planning and Development Act, 1928-1978* gives local authorities the right to make by-laws covering such aspects of town planning as the purchase or reservation of land for thoroughfares, the density of dwelling accommodation per hectare, the classification of areas for residential, commercial, industrial and recreational use, the prescription of building standards, and the general planning of new subdivisions. Town planning measures proposed by a local authority are subject to the approval of the Minister for Town Planning, who has the advice of a Town Planning Commissioner and a Town Planning Board.

The *Local Government Act, 1960-1978* contains provisions for the control of building which are compatible with those exercised under the Town Planning and Development Act but are in a more detailed form. The Uniform Building By-laws have been applied to most local government areas, and the erection of all buildings must be carried out in compliance with these by-laws. The Local Government Act provides that no new building or the alteration of an existing building may be begun before the plans have been approved by the local authority. The Governor may by Order, at the request of a local authority, suspend the operation of this provision in its district. Generally, in remote parts of the State prior approval of plans is required only in the case of building in town-site areas. Where any local authority refuses to approve plans, the Act provides that an appeal may be made to the Minister for Local Government, who has the power to modify or reverse the decision of the local authority. The decision of the Minister is final and not subject to appeal. Other appeals or matters in dispute in relation to the control of building may be determined only by two referees, one of whom is appointed by the Governor and the other by the local authority concerned.

BUILDING OPERATIONS

Since the end of the second World War, the Australian Statisticians have undertaken a quarterly collection of statistics of building operations. The first of these collections in Western Australia related to the quarter ended 30 September 1945.

Statistics of various series for Western Australia *ab initio* appeared in Part XII of the *Statistical Register of Western Australia* for 1965-66. Current data are given in the quarterly statement *Building Operations* and in the annual publication *Statistics of Western Australia—Building and Housing*.

The survey covers the activities of building contractors who undertake the construction of new buildings; the building operations of Australian Government, State Government, semi-government and local government authorities; and work performed by owner-builders.

The statistics in this section relate only to the erection of buildings as distinct from the construction of railways, bridges, earthworks, etc.

A building is classified as 'private' or 'government' according to ownership at date of commencement. Thus 'government' includes buildings erected for Australian Government, State Government, semi-government and local government authorities, either by contractors or by day labour, whether these buildings are for their own use or for rental or sale after completion. Houses erected for particular persons under government-sponsored home building schemes or with government financial assistance are classified as 'private'.

NUMBER OF NEW HOUSES AND NEW OTHER DWELLINGS COMPLETED—OWNERSHIP

Year	Private (a)			Government (a)			Total		
	New houses	New other dwellings	Total new dwellings	New houses	New other dwellings	Total new dwellings	New houses	New other dwellings	Total new dwellings
1973-74	11,238	2,711	13,949	1,279	835	2,114	12,517	3,546	16,063
1974-75	10,148	2,827	12,975	846	473	1,319	10,994	3,300	14,294
1975-76	11,187	2,561	13,748	893	387	1,280	12,080	2,948	15,028
1976-77	14,468	5,556	20,024	687	596	1,283	15,155	6,152	21,307
1977-78	11,398	4,044	15,442	1,287	637	1,924	12,685	4,681	17,366

(a) See letterpress immediately preceding table.

VALUE OF BUILDING COMPLETED—CLASS OF BUILDING (a)
(\$'000)

Class of building	1973-74	1974-75	1975-76	1976-77	1977-78
New dwellings—					
New houses—					
Material of outer walls—					
Brick, concrete and stone	141,168	143,304	194,520	325,652	286,093
Brick veneer	19,009	34,918	29,507	38,450	57,675
Timber	196	317	892	1,648	4,492
Asbestos-cement	15,564	19,228	27,581	27,593	24,441
Other	474	838	1,257	1,648	6,058
Total, New houses	176,410	198,605	253,756	394,991	378,760
New other dwellings	32,828	38,882	43,989	113,875	98,949
Total, New dwellings	209,238	237,487	297,745	508,866	477,709
Alterations and additions (b) to dwellings	2,763	4,427	8,714	15,405	21,496
Other building—					
Hotels, etc.	8,213	9,904	7,461	6,222	5,984
Shops	17,852	16,655	17,154	22,464	35,490
Factories	23,430	18,216	22,387	26,640	34,611
Offices	19,034	18,443	45,695	43,533	18,166
Other business premises	12,859	16,574	12,066	31,916	22,883
Education	21,846	39,965	58,285	29,497	46,109
Religion	1,760	2,031	1,465	1,458	4,002
Health	15,456	17,341	26,562	27,589	33,237
Entertainment and recreation	5,368	13,020	9,399	8,992	8,645
Miscellaneous	13,346	17,958	26,826	28,123	24,920
Total, Other building	139,163	170,105	227,299	226,433	234,046
TOTAL, ALL BUILDING	351,164	412,020	533,757	r 750,705	733,251

(a) See letterpress immediately following table.

(b) Valued at \$10,000 and over.

In the previous table the value of building completed, classified according to the function each building is intended to serve, is shown for the period 1973-74 to 1977-78. The values shown for each class of building exclude the value of land and represent the estimated value of the building on completion. A 'house' refers only to a single self-contained, detached dwelling unit occupying a separate titled block of land, while 'other dwellings' includes flats and other multi-unit dwelling types previously classified to houses (e.g. duplex or triplex houses, town houses, terrace houses, etc.).

From 1 July 1975, the collection covers all new dwellings irrespective of value, new other building jobs valued at \$10,000 and over, and alterations and additions (both to dwellings and other building) valued at \$10,000 and over. Prior to 1 July 1975 the collection covered new dwellings and new other building jobs valued at \$2,000 and over, and alterations and additions (to both dwellings and other building) valued at \$10,000 and over. In the previous table, the value of new dwellings is shown separately from alterations and additions to dwellings, whereas for other building, new building and alterations and additions are shown together.

As an indication of the distribution of building activity throughout the State, the number of houses completed in each statistical division for the period 1974-75 to 1977-78 is shown in the next table.

NUMBER OF NEW HOUSES COMPLETED IN STATISTICAL DIVISIONS

Statistical division (a)	1974-75	1975-76	1976-77	1977-78
Perth Statistical Division	7,827	9,053	11,755	9,092
Other divisions—				
South-West	879	1,026	1,293	1,274
Lower Great Southern	268	256	327	419
Upper Great Southern	155	136	149	142
Midlands	392	452	372	349
South-Eastern	327	221	200	273
Central	375	458	619	437
Pilbara	722	408	370	624
Kimberley	49	70	70	75
Total	3,167	3,027	3,400	3,593
WESTERN AUSTRALIA	10,994	12,080	15,155	12,685

(a) Statistical divisions and their component local government areas were revised with effect from 1 January 1976 (see maps at the end of Chapter III). Details of the number of new houses completed prior to this date have been recalculated on the new area basis.

VALUE OF WORK DONE ON BUILDING (\$'000)

Class of building	1973-74	1974-75	1975-76	1976-77	1977-78
New dwellings—					
New houses	193,054	193,894	286,442	402,296	364,661
New other dwellings	34,233	33,650	64,802	113,146	92,399
Total, New dwellings	227,287	227,544	351,243	515,442	457,060
Alterations and additions (a) to dwellings	2,951	5,562	8,432	16,264	22,562
Other building—					
Hotels, etc.	8,385	10,659	5,557	6,870	6,281
Shops	15,014	17,520	19,185	23,762	41,573
Factories	26,822	18,687	23,625	42,325	43,322
Offices	31,572	39,274	28,744	18,598	22,704
Other business premises	14,938	19,643	17,320	34,935	31,206
Education	27,758	48,481	44,590	32,285	47,868
Religion	1,698	2,017	1,699	1,635	4,051
Health	15,119	28,788	26,472	32,388	39,267
Entertainment and recreation	8,891	10,274	9,084	9,248	9,236
Miscellaneous	16,463	22,088	26,927	24,885	40,654
Total, Other building	166,660	217,429	203,203	226,932	286,164
TOTAL, ALL BUILDING	396,898	450,535	562,878	758,638	765,785

(a) Valued at \$10,000 and over.

A further measure of building activity is that of 'value of work done' which is the estimated value of work actually carried out on buildings during the period. For any building, the sum of these values obtained during its construction equals the value of the building on completion. The figures in the previous table include estimates for the value of work done on owner-built houses.

Employment in Building

Details of building employment are given in the following table. The figures shown relate to persons working on the jobs of contractors who undertake the erection of new buildings and on the jobs of government authorities which erect new buildings on their own account. They include persons actually engaged on alterations, additions, repairs, and maintenance when these jobs are undertaken by such contractors and authorities. The figures also include the number of persons working on new private buildings (other than houses) erected without the services of a contractor responsible for the whole job.

Informants are asked to supply details of all persons employed on their jobs *on a specified day*, including working principals, men working as or for sub-contractors, and men temporarily laid off on account of weather. Because of the intermittent employment of various types of sub-contractors on any particular job, it is sometimes difficult for informants to provide precise particulars of the number of sub-contractors and sub-contractor employees working on their jobs on the specified day. This factor may cause some understatement in the figures shown in the table. In other cases, because of frequent movement between jobs of some types of tradesmen (such as electricians) who may work on several jobs on the one day, some duplication may occur.

The figures *exclude* persons working on owner-built houses, and employees of building firms which undertake only alterations, additions, repairs, and maintenance.

EMPLOYMENT IN BUILDING (a)

Classification	End of June—				
	1974	1975	1976	1977	1978
Occupational status—					
Contractors	800	759	902	1,019	991
Sub-contractors	3,993	2,963	4,390	4,986	5,022
Wage earners	14,509	12,959	12,611	12,604	10,286
Total	19,302	16,681	17,903	18,609	16,299
Occupation—					
Carpenters	4,406	4,028	3,888	4,108	3,555
Bricklayers	3,070	2,336	3,244	3,195	2,626
Painters	1,675	1,480	1,446	1,443	1,342
Electricians	1,502	1,354	1,303	1,563	1,421
Plumbers	1,853	1,582	1,545	1,715	1,575
Builders' labourers	2,647	2,108	2,159	2,323	1,782
Other	4,149	3,793	4,318	4,262	3,998
Total	19,302	16,681	17,903	18,609	16,299

(a) See letterpress immediately preceding table.

DWELLINGS COMPLETED IN AUSTRALIA

The following table shows the numbers of new houses and new other dwellings completed in each of the Australian States and Territories during the year 1977-78. In Western Australia the number of new houses and new other dwellings completed per thousand of mean population was 14.35 compared with 8.61 in the rest of Australia and 9.11 in Australia as a whole.

The total number of new dwellings completed in Western Australia per thousand of mean population showed a decrease compared with the previous year when the figures were 18.01 for this State, 9.64 in the rest of Australia and 10.35 in Australia as a whole. The Western Australian rates were higher than any of the other Australian States.

NEW HOUSES AND NEW OTHER DWELLINGS COMPLETED
AUSTRALIAN STATES AND TERRITORIES: 1977-78

State or Territory	New houses	New other dwellings (a)	Total new dwellings (a)		
			Total number completed	Proportion of Australian total (per cent)	Per thousand of mean population
New South Wales	26,150	7,660	33,810	26.23	6.79
Victoria	26,470	7,020	33,490	25.97	8.81
Queensland	19,180	4,760	23,940	18.57	11.12
South Australia	9,000	2,680	11,680	9.06	9.10
Western Australia	12,680	4,680	17,370	13.47	14.35
Tasmania	2,830	1,050	3,880	3.01	9.42
Northern Territory	1,250	260	1,510	1.17	13.79
Australian Capital Territory	2,550	700	3,250	2.52	15.33
AUSTRALIA	100,120	28,820	128,940	100.00	9.11

(a) Individual living units.

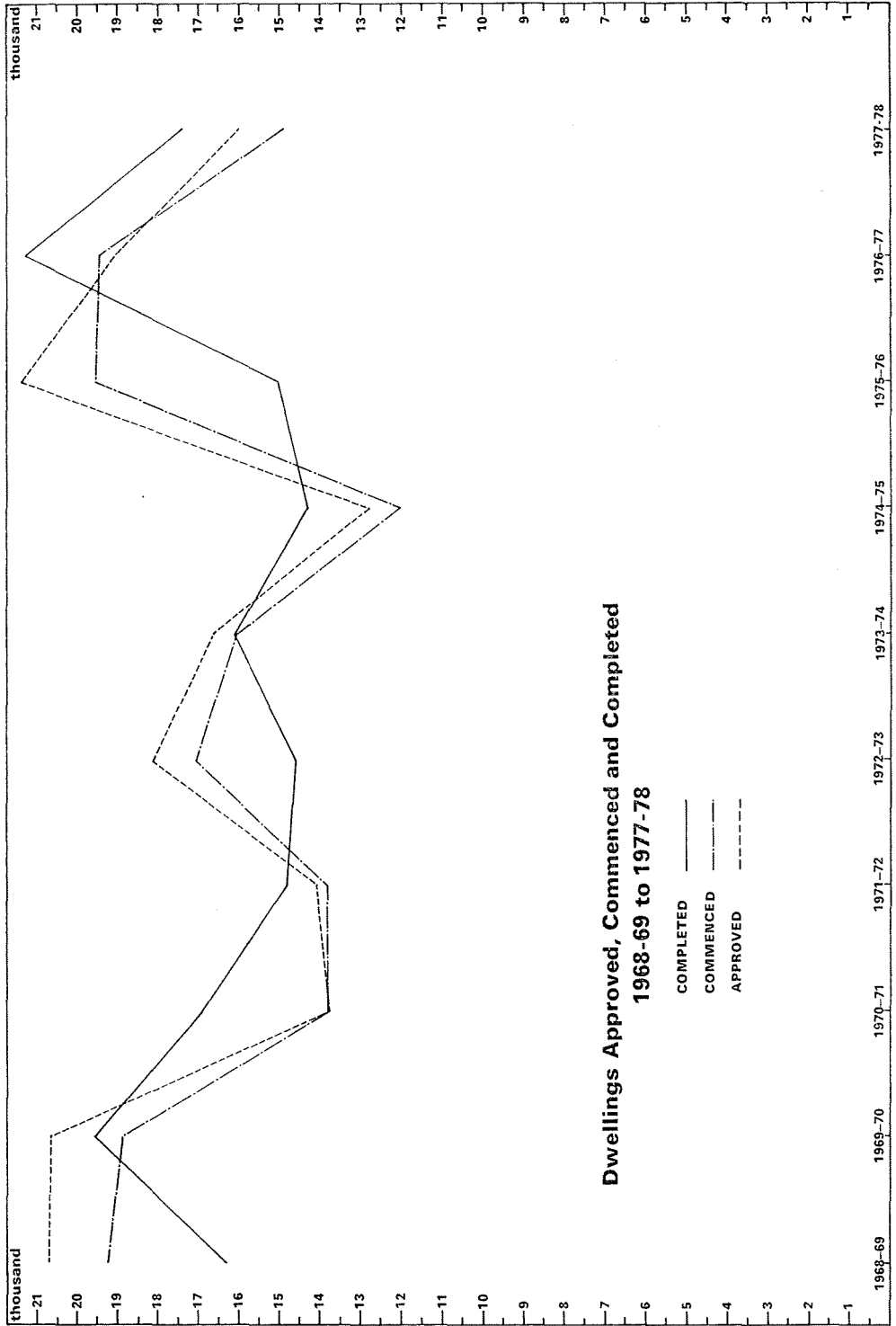
CONSTRUCTION (OTHER THAN BUILDING) OPERATIONS

The first of the collections of statistics of Construction (other than building) operations in Western Australia related to the half-year ended June 1973. The collection was expanded to a quarterly basis beginning with the September quarter 1976 and relates to the construction of roadworks, railways, bridges, hydraulic reticulation, etc. as distinct from the erection of buildings.

NUMBER AND VALUE OF CONSTRUCTION (OTHER THAN BUILDING)
PRIME CONTRACTS BY STAGE OF CONSTRUCTION

Period	Commenced		Completed		Under construction		Work done during period	Work yet to be done
	Number	\$m	Number	\$m	Number	\$m	\$m	\$m
1973-74	91	55	82	55	132	216	79	102
1974-75	169	148	109	66	223	376	137	159
1975-76	120	110	162	168	173	351	135	132
1976-77	167	111	129	102	362	739	107	385
1977-78	254	296	226	149	528	1,163	238	626

The survey covers the activities of private contractors undertaking construction (other than building) prime contracts valued at \$100,000 or more at commencement of the contract. Construction undertaken by government authorities involving their own work forces, and construction on their own account by enterprises in the private sector, are excluded.



Chapter V—continued

Part 6—Law, Order and Public Safety

The law in force in Western Australia is contained in The Statutes of Western Australia, comprising legislation passed by the Western Australian Parliament and certain Imperial Acts which have been adopted, and in the Commonwealth Acts in so far as they apply to Western Australia. Under the Constitution of the Commonwealth of Australia, 'when a law of a State is inconsistent with a law of the Commonwealth, the latter shall prevail, and the former shall, to the extent of the inconsistency, be invalid'.

The Legal Profession

The Barristers' Board, constituted under the *Legal Practitioners Act, 1893-1978*, comprises the Attorney-General as chairman; the Solicitor-General; all Queen's Counsel permanently residing and practising in the State; and seven practitioners of at least three years' standing and practice in the State, elected annually by the practitioners on the roll of the Supreme Court residing and practising in the State.

The Board has the power to regulate and control the examination and admission of articulated clerks, and the examination of all candidates for admission as practitioners. The certificate of the Board is necessary before any person may be admitted to practice. An applicant for admission having qualifications acquired outside Western Australia must satisfy the Board that he possesses qualifications substantially equivalent to those required for the admission of persons who qualify in Western Australia.

The Crown Law Department

The Crown Law Department is administered, subject to the control of the Attorney-General, by the Under Secretary for Law. The Department is responsible for the Supreme Court Central Office, the District Court Registry, the Family Court Registry, Court Offices throughout the State (except Children's Courts), the Crown Solicitor's Office, the Office of Titles, the Public Trust Office, the Corporate Affairs Office, and the Probation and Parole Service. The Department, in addition to administering the Acts which come under the portfolio of the Attorney-General, conducts Crown legal business and, when required, acts for and advises all other State Government Departments and instrumentalities.

Law Reform Commission of Western Australia

The Law Reform Commission of Western Australia was established by the *Law Reform Commission Act, 1972-1978* which came into force on 19 January 1973. It succeeded the Law Reform Committee which had been in existence since 1968. The Commission at present has three members: a legal practitioner in practice on his own account; a member of the Law School of the University of Western Australia; and a legal officer of the Crown Law Department. However, pursuant to an amendment to the Act made in 1978, two full-time members will be appointed. These will be in addition to the three part-time members.

The Commission examines proposals for review of aspects of the law referred to it by the Attorney-General. It may also submit to him proposals for review. The Commission usually issues a working paper discussing the issues involved and invites comments from interested persons.

During the year ended 30 June 1978 the Commission issued working papers on legal capacity of minors; admissibility in evidence of computer generated records and other documents; review of the Justices Act, part 1—Appeals; liability of highway authorities; review of bail procedures; review of the Fatal Accidents Act.

Parliamentary Commissioner for Administrative Investigations

The *Parliamentary Commissioner Act, 1971-1976*, which came into operation on 12 May 1972, provides for the appointment of a Parliamentary Commissioner for Administrative Investigations with the powers of a Royal Commission as specified in the *Royal Commissions Act, 1968*. The first Commissioner was appointed on 24 April 1972.

The Commissioner (commonly known as the ombudsman) is empowered to investigate administrative actions taken by or on behalf of certain government authorities. The Act applies to all Departments of the Public Service, excluding officers of the establishment of the Governor and of the Agent General for Western Australia (London), to all local government authorities, and to other specified authorities. It does not apply to the Supreme Court of Western Australia, The District Court of Western Australia, other courts of law in the State, a Judge of the Supreme Court or of the District Court, a commissioner of any court, a stipendiary magistrate, a coroner, the Auditor-General, the Parliamentary Privileges Act, or any decision of the Cabinet or of a Minister of the Crown.

LAW COURTS

The principal courts operating in Western Australia are the High Court of Australia, the Supreme Court of Western Australia, The District Court of Western Australia, the Family Court of Western Australia, the Magistrates' and Coroners' Courts and the Licensing Court of Western Australia. In Chapter X, Part 1, reference is made to the Federal Court of Australia, the Australian Conciliation and Arbitration Commission, the Western Australian Industrial Appeal Court, and The Western Australian Industrial Commission.

High Court of Australia

The High Court of Australia is the Federal Supreme Court and its powers are defined in the Commonwealth of Australia Constitution Act and in the *Judiciary Act 1903*. The High Court consists of a Chief Justice and six other Justices. Sittings are held in the capital city of each State as occasion may require. The High Court exercises both original and appellate jurisdiction, acting as a court of appeal for Australia.

An appeal may lie from a judgment of the High Court of Australia to the Judicial Committee of the Privy Council in London. However, the *Privy Council (Limitation of Appeals) Act 1968* (Commonwealth) limits the matters which may be the subject of special leave of appeal from a decision of the High Court. The Act provides, in part, that leave of appeal 'may be asked only in a matter in which the decision of the High Court was a decision that (a) was given on appeal from a decision of the Supreme Court of a State given otherwise than in the exercise of federal jurisdiction; and (b) did not involve the application or interpretation' of the Australian Constitution, or of a Commonwealth law (including any ordinance, rule, regulation or by-law made under such a law).

Supreme Court of Western Australia

The Supreme Court of Western Australia, as constituted under the *Supreme Court Act, 1935-1978*, consists of a Chief Justice and such other Judges, not exceeding six in number, as may from time to time be appointed. The jurisdiction of the Court in both civil and criminal matters is exercised by a single Judge, sitting alone or with a jury, unless it is provided that an action must be brought before a Full Court. Criminal cases are heard before a jury. Criminal sittings of the Supreme Court are held at Perth each month from February to December, and also in January if the Chief Justice so directs. Civil sittings and Full Court sittings are held at times fixed by the Court from year to year. There are regular sittings at Albany, Bunbury, Geraldton and Kalgoorlie, and at other country centres as required.

Any two or more Judges together comprise a Full Court except that when sitting as a court of criminal appeal there must be an uneven number of Judges. Appeals are heard against judgments of the Supreme Court and the District Court as well as against decisions of the magistrates in lower courts.

Appeal from a judgment of the Supreme Court of Western Australia lies to the High Court of Australia, subject to the provisions of the *Judiciary Act 1903* (Commonwealth), and may also be made direct to the Privy Council.

The District Court of Western Australia

The District Court of Western Australia is constituted under the provisions of the *District Court of Western Australia Act, 1969-1978* and consists of a Chairman of Judges and such other Judges as may from time to time be appointed. The Act, which came into operation on 1 April 1970, repeals the *Courts of Session Act, 1921*. The jurisdiction of the Court is exercised by a Judge sitting alone or with a jury. Criminal cases must be heard before a Judge and jury. Criminal sittings of the District Court are held at Perth each month from February to December, five times a year at Albany, Bunbury, Geraldton and Kalgoorlie, and at five other centres when required. Civil sittings are held concurrently with criminal sittings in Perth, and immediately following the criminal sittings at other centres except at Bunbury where special civil sittings are held four times a year.

Civil jurisdiction exists broadly up to a maximum of \$20,000, and criminal jurisdiction in respect of indictable offences except those for which the maximum penalty exceeds fourteen years' imprisonment.

Appeals from a District Court Judge lie, in the civil jurisdiction, to the Full Court of the Supreme Court and, in the criminal jurisdiction, to the Court of Criminal Appeal.

The Family Court of Western Australia

The Family Court of Western Australia which came into operation on 1 June 1976 is constituted under the provisions of the *Family Court Act, 1975-1978*. The Court consists of a Chairman of Judges and such other Judges as may from time to time be appointed. The jurisdiction of the Court is exercisable by one Judge.

The Court has throughout the State the federal jurisdiction with which it is invested by the *Family Law Act 1975* (Commonwealth) and non-federal jurisdiction conferred on it by, or under any Act of the State.

Appeals in respect of federal jurisdiction matters lie to the Full Court of the Family Court of Australia; and appeals in respect of non-federal jurisdiction matters lie to the Full Court of the Supreme Court of Western Australia.

Magistrates' and Coroners' Courts

In addition to their usual functions, magistrates act as coroners and mining wardens where required. Two or more Justices of the Peace sitting together in petty sessions may deal with cases which could be decided by a magistrate sitting alone.

COURTS OF PETTY SESSIONS. Courts of Petty Sessions, which are established in terms of the *Justices Act, 1902-1977*, are held at centres of population throughout the State. Minor offences are dealt with summarily, but a person charged with an indictable offence may be committed to a higher court for trial or sentence if there is sufficient evidence to justify this course.

CHILDREN'S COURTS. The *Child Welfare Act, 1947-1977* provides for the establishment of Children's Courts, and the appointment of special magistrates, to deal with offenders under the age of eighteen years and to hear certain specified cases of offences against children. Certain cases of offences concerning children may be remanded for hearing or committed for sentence before the Supreme Court. The public may be excluded from Children's Court hearings and names of juvenile offenders are withheld from publication unless with the express authority of the Court. Children's Courts operate in Perth, and at other centres as required. Further reference to Children's Courts appears in the section *Child Welfare* in Part 4 of this Chapter.

LOCAL COURTS. Local Courts, which are established in terms of the *Local Courts Act, 1904-1976*, are held throughout the State to determine minor civil issues, largely the recovery of small debts. Jurisdiction is limited in most cases to claims not exceeding \$3,000.

CORONERS' COURTS. The powers of coroners are derived from the *Coroners Act, 1920-1974*. Coroners' Courts may be held to inquire into the circumstances of sudden or unnatural deaths or the cause and origin of fires. A coroner may charge a person with a major offence and commit him for trial at a higher court.

Licensing Court of Western Australia

The Licensing Court of Western Australia is established under the provisions of the *Liquor Act, 1970-1978*. The Court comprises three members, including a chairman, appointed by the Governor. Except as otherwise provided by the Act, the Court may be constituted, and its jurisdiction may be exercised, by any two members. The Court has exclusive jurisdiction to hear and determine all applications under the Liquor Act in respect of licences, provisional certificates and permits relating to the sale, supply and consumption of liquor. Appeal against a direction, determination or order of the Court lies to the Supreme Court, but only where the appeal involves a question of law.

Small Claims Tribunals

The *Small Claims Tribunals Act, 1974-1978* provides for the establishment of Small Claims Tribunals and the appointment of referees to deal with claims involving an amount less than \$500 or less than such other sum as may be prescribed. A Tribunal is constituted by a referee sitting alone and may be constituted at any place in the State. Settlements or orders made by a referee are final and binding on all parties to a proceeding.

COURT PROCEEDINGS

Higher Courts

The term *Higher Courts* refers to courts presided over by a Judge. The general jurisdiction of the higher courts includes appeals from the lower courts, cases of crime committed from lower courts, and civil cases. Under the *Bankruptcy Act 1966* (Commonwealth) the Supreme Court of Western Australia is invested with jurisdiction in bankruptcy. Prior to the constitution of the Family Court of Western Australia which came into operation on 1 June 1976 the Supreme Court was also vested with jurisdiction in divorce and related matters under the *Matrimonial Causes Act 1959* (Commonwealth) and the *Family Law Act 1975* (Commonwealth).

Civil Proceedings

Particulars of civil cases, with the exception of bankruptcy cases, dealt with by the courts in the five years ended 31 December 1977 are shown in the following table. Bankruptcy cases dealt with by the courts are for the five years ended 30 June 1977.

CIVIL PROCEEDINGS

Particulars	1973	1974	1975	1976	1977
SUPREME COURT OF WESTERN AUSTRALIA—					
Bankruptcy (a)—					
Number of—					
Petitions—					
Filed	383	309	353	211	201
Withdrawn or dismissed or lapsed	11	14	13	14	15
Sequestration orders—					
On debtors' petitions	346	275	314	181	176
On creditors' petitions	18	25	22	20	4
Assignments and arrangements without sequestration	108	69	71	57	35
Assets and liabilities—					
Under sequestration orders—					
Assets	\$'000 3,498	921	1,508	667	556
Liabilities	\$'000 3,693	3,288	7,627	2,676	2,491
Under assignments and arrangements without sequestration—					
Assets	\$'000 2,017	1,177	1,092	1,355	1,447
Liabilities	\$'000 3,381	1,642	2,264	3,209	1,679
Divorce (b)—					
Number of—					
Petitions filed	1,880	2,232	2,707	(c)	(c)
Decrees granted	1,428	1,761	2,241	1,774	203

For footnotes, see end of table.

CIVIL PROCEEDINGS—*continued*

Particulars	1973	1974	1975	1976	1977
SUPREME COURT OF WESTERN AUSTRALIA—<i>cont.</i>—					
Other proceedings—					
Number of—					
Writs commencing actions	1,089	951	1,153	1,401	919
Judgments—					
With trial	81	79	63	50	83
Without trial	277	170	127	156	97
Amounts awarded	3,316	4,466	4,534	4,273	10,246
DISTRICT COURT OF WESTERN AUSTRALIA—					
Number of—					
Writs commencing actions	3,021	4,366	4,391	4,664	2,719
Judgments—					
With trial	157	177	115	126	190
Without trial	1,476	1,789	1,957	2,222	2,147
Amounts awarded	5,227	6,806	8,750	9,871	11,140
LOCAL COURTS—					
Number of—					
Plaints entered	66,193	68,013	62,561	56,542	56,182
Verdicts for plaintiffs	26,392	24,421	23,865	19,839	19,443
Amounts awarded	4,342	5,224	4,705	4,191	6,378
CORONERS' COURTS—					
Number of inquests—					
On persons	164	162	222	212	187
On fires	13	11	7	39	
FAMILY COURT OF WESTERN AUSTRALIA (<i>d</i>)—					
Number of—					
Applications filed—					
Dissolution of marriage	..	..	..	2,634	3,950
Other	..	..	..	3,752	6,758
Decrees made—					
Dissolution of marriage	..	..	..	2,861	3,772
Other	..	..	..	2,261	5,504

(a) Figures relate to year ended 30 June; for further details see Chapter VI, Part 2. (b) For further details see Chapter IV, Part 2. (c) Petitions transferred to Family Court of Western Australia. (d) Commenced operation on 1 June 1976. See footnote (c).

CONVICTIONS IN COURTS

Number of Convictions

It is important to bear in mind when considering the particulars shown in the following tables that the figures relate to the *number of convictions* recorded and not to the *number of persons* convicted. Thus, where a person is convicted on more than one count each conviction so recorded has been included in the statistics.

HIGHER COURTS AND MAGISTRATES' COURTS—NUMBER OF CONVICTIONS

Class of offence	1973	1974	1975	1976	1977
HIGHER COURTS					
Offences against the person—					
Murder	6	6	5	9	5
Attempted murder	—	4	2	2	—
Manslaughter	7	28	15	24	11
Negligent driving causing death	3	5	6	9	4
Sex offences	21	48	56	57	25
Assault	30	36	42	71	63
Other	9	14	16	24	19
Total	76	141	142	196	127
Offences against property—					
Breaking, entering and stealing	301	231	354	148	417
Stealing, receiving	127	151	r 187	r 253	352
Other	54	75	r 101	r 115	62
Total	482	457	642	516	831
Forgery and offences against the currency	21	16	51	7	27
Offences against good order	29	41	34	66	129
Other offences	46	25	12	33	40
GRAND TOTAL	654	680	881	818	1,154

HIGHER COURTS AND MAGISTRATES' COURTS
NUMBER OF CONVICTIONS—*continued*

Class of offence	1973	1974	1975	1976	1977
MAGISTRATES' COURTS (a)					
Offences against the person—					
Sex offences	251	239	218	170	175
Assault	1,727	1,851	1,945	2,067	2,056
Other	1	7	9	27	33
Total	1,979	2,097	2,172	2,264	2,264
Offences against property—					
Breaking, entering and stealing	4,551	4,441	4,242	4,421	3,570
Unlawfully on premises	738	798	548	555	653
Stealing, receiving	8,778	8,372	7,084	7,425	7,478
Unlawfully using motor vehicles	2,839	3,042	2,806	2,684	2,583
Willful damage	1,241	1,469	1,341	1,514	1,358
Other	102	83	71	76	106
Total	18,249	18,205	16,092	16,675	15,748
Forgery and offences against the currency	387	306	262	557	378
Offences against good order—					
Drunkenness	15,104	16,142	12,096	10,237	10,289
Disorderliness	4,574	4,458	4,586	4,536	4,788
Vagrancy	474	588	481	353	176
Escaping legal custody	299	297	329	443	401
Offences against police	1,470	1,781	1,917	2,217	2,016
Other	579	732	927	1,175	1,395
Total	22,500	23,998	20,336	18,961	19,065
Other offences—					
Breach of—					
Traffic Act (b)	46,468	52,607	59,852	50,932	44,176
Liquor laws	1,530	1,735	1,861	2,189	1,979
Health laws	243	337	280	213	147
Gaming	530	442	381	702	707
Industrial offences	58	28	69	69	22
Maintenance offences	1,791	1,705	1,640	(c) 22	(c) 141
Taxation offences	1,964	1,893	2,553	1,454	2,532
Other offences	6,273	6,058	5,980	8,517	7,664
Total	58,857	64,805	72,616	64,098	57,368
GRAND TOTAL	101,972	109,411	111,478	102,555	94,823

(a) Including Children's Courts. (b) Excludes minor traffic offences not subject to court process.
(c) Offences heard under *Family Law Act* 1975, operative from 5 January 1976, are not included.

Summary of Convictions in Courts

The following table gives a summary of convictions in courts in Western Australia during each of the five years to 31 December 1977 together with an analysis, according to class of offence, of convictions recorded during the year ended 31 December 1977.

HIGHER COURTS AND MAGISTRATES' COURTS—NUMBER OF CONVICTIONS

Particulars	Higher Courts			Magistrates' Courts		
	Males	Females	Total	Males	Females	Total
Year—						
1973	636	18	654	89,023	12,949	101,972
1974	651	29	680	95,687	13,724	109,411
1975	803	78	881	98,578	12,900	111,478
1976	768	50	818	90,900	11,655	102,555
1977	1,119	35	1,154	n.a.	n.a.	94,823
1977						
Class of offence—						
Against the person	117	10	127	|	|	2,264
Against property	816	15	831	|	|	15,748
Forgery, etc.	27	—	27	n.a.	n.a.	378
Against good order	122	7	129	|	|	19,065
Other offences	37	3	40	|	|	57,368
Total	1,119	35	1,154	n.a.	n.a.	94,823

Regulations under the Traffic Act (now repealed) allowed fines to be imposed without court action for minor traffic offences. These provisions are continued under the *Road Traffic Act, 1974-1978*. Similar provisions apply under parking facilities legislation and municipal by-laws. These minor offences (which are, of course, excluded from the tables relating to court convictions) numbered 211,913 in 1973, 271,266 in 1974, 265,096 in 1975, 315,953 in 1976 and 306,885 in 1977.

LIQUOR LICENCES

The following table shows the number of liquor licences of the several types in force in Western Australia under the provisions of the *Liquor Act, 1970-1978*.

LIQUOR LICENCES IN FORCE

Type of licence (a)	At 30 June—				
	1974	1975	1976	1977	1978
Australian wine	23	21	20	15	13
Brewer's	4	4	4	4	5
Cabaret	27	27	27	27	28
Canteen	27	28	30	33	34
Club	280	286	296	307	312
Hotel	471	459	400	386	383
Limited hotel	22	24	24	25	25
Packet	11	11	11	11	14
Restaurant	88	101	109	117	134
Store	282	296	300	316	325
Tavern	19	47	131	158	170
Theatre	3	4	3	3	4
Wholesale	59	60	59	58	65
Winchouse	15	18	15	13	12
Total	1,331	1,386	1,429	1,473	1,524

(a) As described in the *Liquor Act, 1970-1978*.

By a provision of the *Government Railways Act, 1904-1978*, The Western Australian Government Railways Commission is authorised to lease railways premises for the sale of refreshments, subject to the provisions of the *Liquor Act, 1970-1978*.

A licence applying to premises at Perth International Airport is issued in terms of the *Airports (Business Concessions) Act 1959* (Commonwealth).

POLICE

The Western Australian Police Force comprises five main branches under the direction of the Commissioner of Police. The Commissioner is appointed by the Governor under the provisions of the *Police Act, 1892-1978* and is responsible to the Minister for Police.

For the administration of the Uniformed Branch, the State is divided into three metropolitan regions, four metropolitan divisions and eight country regions, each under the direction of a commissioned officer. At 30 June 1978 there were, in addition to the Uniformed Branch, a number of specialised branches and sections, including the Criminal Investigation Branch, the Liquor and Gaming Branch, the Firearms Branch, the Traffic Patrol, the Prosecuting Branch, the Public Relations and Lecturing Branch, the Communications and Scientific Branch, the Training Branch, the Recruiting Branch, the Planning and Research Section, the Electronic Data Processing Section, and Police and Citizens' Youth Clubs.

The Uniformed Branch comprises the main body of the Police Force and is responsible for the routine maintenance of law and order throughout the State. Where required, officers of the Branch act as Clerks of Courts and perform special duties for other government authorities.

The Women Police, previously employed mainly on duties concerning women and children, are now integrated into the force to allow them to participate in all facets of police duties. At 30 June 1978 seventy women police officers were employed.

The Criminal Investigation Branch is centred in Perth, with several sub-branches in the metropolitan area and the principal country towns. The Branch is primarily concerned with the investigation of serious crimes and the apprehension of offenders. In October 1976 the Commercial Agents Squad was formed for the investigation of matters relating to land agents, auctioneers, money-lenders, inquiry agents, employment brokers, debt collectors and security guards. This Squad is comprised of plain-clothed general duties officers attached to the Criminal Investigation Branch.

The Communications and Scientific Branch is responsible for the police radio-communications network and for matters relating to fingerprints, photography, criminal records, ballistics, bomb disposal, handwriting and document examination, and various technical and scientific aids to investigation.

The Liquor and Gaming Branch is concerned mainly with the enforcement of the liquor laws and laws for the suppression of vice and gaming.

The Firearms Branch is responsible for the licensing of firearms throughout the State.

The Traffic Patrol assists the Road Traffic Authority in the administration and enforcement of traffic laws.

The Planning and Research Section is responsible for the carrying out of surveys of the Police Force with regard to resources, in order to determine the requirements for the present and future in relation to buildings and equipment, and the most effective deployment of personnel.

The Prosecuting Branch conducts police prosecutions in Children's Courts and Courts of Petty Sessions in the metropolitan area, at Bunbury, Geraldton, Kalgoorlie and Port Hedland and, when required, at other centres.

The Public Relations and Lecturing Branch is responsible for maintaining a satisfactory relationship with the public and the news media, and for co-operation with the civil emergency services. Lectures are given to children and students from kindergarten to tertiary education level and also to minor offenders against the traffic and liquor laws.

Police and Citizens' Youth Clubs are established by the Police Department to provide recreational facilities for young people and to give them an appreciation of civic responsibilities.

POLICE FORCE—NUMBER AND CLASSIFICATION (a)

Date and classification	Branch and number of officers							
	General Uniformed Branch	Women Police	Criminal Investigation Branch	Liquor and Gaming Branch	Firearms Branch	Traffic Patrol	Other Branches	Total (a)
At 30 June—								
1974	1,307	37	189	37	12	284	114	1,980
1975	1,320	38	210	42	16	387	161	2,174
1976	1,252	35	239	45	17	503	191	2,282
1977	1,265	33	283	46	12	491	209	2,339
1978—								
Superintendent	20	|	4	1	1	2	4	32
Senior Inspector	18	|	3	—	—	6	3	30
Inspector	15	(b)	5	—	—	7	4	31
Sergeant	255	|	124	7	4	100	79	569
Constable	976	|	199	40	6	428	173	1,822
Total	1,284	..	335	48	11	543	263	2,484

(a) In addition to the numbers shown there were, at 30 June 1974, a Commissioner of Police, a Deputy Commissioner, an Assistant Commissioner, and a Chief Superintendent; from 30 June 1975 there were a Commissioner of Police, a Senior Assistant Commissioner, three Assistant Commissioners, and a Chief Superintendent. (b) The Women Police ceased operation as a separate branch on 8 August 1977.

PRISONS

Under the provisions of the *Prisons Act, 1903-1978*, the Director of the Department of Corrections is responsible, subject to the control of the Minister, for the administration of prisons in Western Australia. In addition there is a police gaol at East Perth administered jointly by the Department of Corrections and the Police Department.

The principal institution is Fremantle Prison and there are regional prisons at Albany, Broome, Geraldton, Kalgoorlie, Roebourne and Wyndham. Barton's Mill Prison, Brunswick Junction Prison, Bunbury Rehabilitation Centre, Karnet Rehabilitation Centre, Pardelup Prison Farm and Wooroloo Training Centre are minimum security institutions. Bandyup Women's Training Centre, situated at West Swan about twelve miles from Perth, is a medium security institution. There is a male Work Release Hostel at West Perth to which a small female Work Release Hostel at Highgate is annexed administratively.

The following table shows the number of receivals for penal imprisonment in gaols in Western Australia during each of the five years to 30 June 1978. It is important to note that the figures relate to *receivals* and not to *distinct persons*, i.e. a prisoner has been counted once for each time he or she was received.

PENAL IMPRISONMENT—NUMBER OF RECEIVALS (a)

Institution	Year ended 30 June—									
	1974		1975		1976		1977		1978	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Prisons—										
Fremantle (b)	1,728	..	1,789	..	1,344	..	1,129	..	1,062	..
Albany	230	2	128	..	225	1	97	..	79	..
Bandyup Training Centre ....	..	234	..	155	..	204	..	127	..	120
Broome	232	26	153	25	169	10	475	80	367	74
Brunswick Junction	113	..	146	..	106	..	38	..	35	..
Bunbury Rehabilitation Centre (c) ....	..	..	34	..	218	..	129	..	85	..
Byford Inebriates Centre (d)	78	..	39	..	..	..	..	..	..	..
Geraldton	390	19	450	15	471	13	349	27	259	13
Kalgoorlie	677	205	573	131	316	32	349	47	369	49
Roebourne (e) ....	..	..	..	..	204	29	268	111	287	135
Wooroloo Training Centre	614	..	531	..	403	..	259	..	244	..
Wyndham (f) ....	..	..	133	25	180	20	238	70	221	32
Total	4,062	486	3,976	351	3,636	309	3,331	462	3,008	423
Police gaols	1,680	566	1,555	577	504	213	106	4	17	..
GRAND TOTAL	5,742	1,052	5,531	928	4,140	522	3,437	466	3,025	423

(a) Excludes imprisonment for debt and receivals of persons on remand. (b) Includes figures for Barton's Mill Prison, Karnet Rehabilitation Centre and Pardelup Prison Farm. (c) Prior to 1975 included in figures for Fremantle Prison. (d) Closed 1 June 1975. (e) Opened 12 March 1976. (f) Replaced the Wyndham police gaol on 4 March 1975.

Fremantle Prison is divided into separate sections for prisoners on remand or awaiting trial, juvenile prisoners, and other sentenced prisoners. There are workshops where prisoners are employed in bootmaking, carpentry, printing, tailoring, tinsmithing and welding, making cement products, and in arts and crafts work. Prisoners also work in the cookhouse and bakehouse. A school is conducted by teachers supplied by the Education Department, and tuition by correspondence is also available.

Farming is carried on at Pardelup Prison Farm, Karnet Rehabilitation Centre and Wooroloo Training Centre, and inmates receive instruction in animal husbandry, market gardening, and the operation and maintenance of farm machinery. Bunbury Rehabilitation Centre, which is a medium security prison, places emphasis on educational courses and vocational training for younger prisoners. Albany Regional Prison, which is also medium security, accommodates both prisoners from the surrounding area and long-term prisoners. Brunswick Junction Prison is used primarily for short-term offenders from the surrounding area and Wooroloo Training Centre caters for short-term prisoners from the Metropolitan area as well as some long-term prisoners. Barton's Mill Prison is used primarily for long-term prisoners and is a minimum security prison. The remainder of the prisons in the State cater primarily for prisoners from the area where they are located although some long-term prisoners occasionally serve part of their sentence at such institutions.

Work Release prisoners are located either at the institution at which they are serving their sentence or are transferred to West Perth Work Release Hostel or Fremantle Work Release Hostel in the case of males and to Highgate Annexe in the case of females.

The police gaol at East Perth holds prisoners awaiting trial and some short-term prisoners. In addition, provision is made for holding some prisoners with very short sentences at police lock-ups throughout the State.

The following table shows the number of prisoners, excluding trial and remand prisoners and debtors, in gaols in Western Australia at 30 June in each year from 1974 to 1978.

PRISONERS IN GAOL

Institution	At 30 June—									
	1974		1975		1976		1977		1978	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Prisons—										
Fremantle	349	—	346	—	348	—	395	—	396	—
Albany	60	—	33	—	38	—	48	—	57	—
Bandyup	—	27	—	24	—	35	—	29	—	37
Barton's Mill (a)	45	—	17	—	—	—	—	—	55	—
Broome	41	4	24	—	33	—	40	3	22	—
Brunswick Junction	16	—	18	—	23	—	15	—	22	—
Bunbury	47	—	56	—	37	—	63	—	62	—
Byford (b)	25	—	—	—	—	—	—	—	—	—
Geraldton	70	—	58	—	55	2	90	2	75	—
Kalgoorlie	28	1	39	1	26	1	36	2	40	—
Karnet	65	—	59	—	65	—	71	—	79	—
Pardelup	36	—	29	—	30	—	27	—	50	—
Roebourne (c)	—	—	—	—	25	2	23	3	28	2
West Perth (d)	—	—	24	—	29	—	32	—	29	6
Woorloo	61	—	71	—	103	—	103	—	108	—
Wyndham (e)	—	—	20	1	10	—	24	2	30	—
Total	843	32	794	26	822	40	967	41	1,053	45
Police gaols	32	8	35	12	11	—	22	2	22	—
GRAND TOTAL	875	40	829	38	833	40	989	43	1,075	45

(a) Closed 31 October 1975, re-opened 31 October 1977.
(d) Opened 19 October 1974.

(b) Closed 1 June 1975.

(c) Opened 12 March 1976.

PROBATION AND PAROLE SERVICE

The Probation and Parole Service, a branch of the Crown Law Department, is constituted under the provisions of the *Offenders Probation and Parole Act, 1963-1977*.

The Act establishes a Parole Board of seven members comprising a Judge of the Supreme Court as chairman, the Director of the Department of Corrections, and three men and two women appointed by the Governor. Female prisoners are dealt with by a board comprising five of the Parole Board members.

The Act requires that where a person is sentenced to imprisonment for twelve months or longer the court shall, unless special circumstances make it inappropriate, fix a minimum term during which the convicted person is not eligible to be released. The court is given discretionary power to fix a minimum term where the sentence is for less than twelve months. Provision is made for remission of up to three days per month on the minimum term, as a reward for good conduct or industry. Where no minimum term has been fixed, remission of up to 25 per cent of the sentence may be allowed for diligence and good conduct.

The Parole Board is empowered to release on parole a prisoner who has served a minimum term fixed by a court, or a prisoner being detained at the Governor's pleasure.

The Governor may, on the recommendation of the Parole Board, direct the release on parole of a prisoner sentenced to imprisonment for life, a prisoner undergoing a sentence of imprisonment for life commuted from a sentence of death, or an unconvicted person

held in custody during the Governor's pleasure following acquittal because of unsoundness of mind. The Parole Board is required to submit to the Minister, at prescribed intervals, a report and a recommendation concerning such prisoners.

Parole officers establish contact with prospective parolees during their imprisonment, prepare a case history of each prisoner for the information of the Parole Board, and supervise paroled persons during the parole period.

The following table gives particulars of the operations of the Probation and Parole Service during the five-year period ended 30 June 1978.

PROBATION AND PAROLE SERVICE

Particulars	Year ended 30 June—				
	1974	1975	1976	1977	1978
PROBATION					
Number of persons—					
Under supervision at beginning of period	1,260	1,400	1,361	1,492	1,616
Admitted to probation during period	757	766	950	1,080	1,066
Under supervision during period	2,017	2,166	2,311	2,572	2,682
Cancellation of probation	89	67	137	227	225
Completion of probation	528	738	682	729	792
Under supervision at end of period	1,400	1,361	1,492	1,616	1,665
PAROLE					
Number of persons—					
Under supervision at beginning of period	542	560	589	551	522
Released on parole during period	482	486	399	397	355
Under supervision during period	1,024	1,046	988	948	877
Cancellation of parole	172	153	165	146	123
Completion of parole	292	304	272	280	257
Under supervision at end of period	560	589	551	522	497

PUBLIC SAFETY

National Safety Council

The National Safety Council of Western Australia was founded in January 1946 following discussions among office bearers and senior officials of the Royal Automobile Club of Western Australia and police and education authorities about the creation of an organisation for the prevention of accidents.

Although the Council has been primarily concerned with road traffic safety and training courses associated with it, a Home Safety Division was established in 1963 and a Water Safety Division in 1965 and these also conduct a wide range of practical training courses. An Industrial Safety Division was also formed but now operates as a separate organisation although it is affiliated with the Council.

The National Safety Council of Western Australia is the State member division of the National Safety Council of Australia and is also represented on the Federal Publicity Advisory Committee on Education in Road Safety.

The Council aims at the prevention of accidents by the co-ordination of the efforts of relevant organisations and by an educational programme in accident prevention techniques. It pursues its objectives through the voluntary service of executive members, the financial support of the Government, and the staff and facilities of the Safety Instructional Centre at Mount Lawley. This Centre, situated on about seven and one-quarter hectares of land close to Perth, comprises a complete road system and a comprehensive office complex including a projection theatre and lecture rooms.

Fire Protection

Western Australian Fire Brigades Board. The *Fire Brigades Act, 1942-1978* constitutes the Western Australian Fire Brigades Board of ten members. The Board comprises two members appointed by the Governor, one of whom is president of the Board; three members elected by the insurance companies carrying on business in the State; one member elected by the Council of the City of Perth; three members elected by other local government authorities; and one member elected by the registered volunteer fire brigades. The general duties of the Board are to take, superintend and enforce all necessary steps for the prevention and extinguishing of fires and the protection of life and property from fire, and the control of all fire brigade premises and of all fire brigades.

The number of fire calls received in the metropolitan fire district and other fire districts in each of the five years 1973-74 to 1977-78 is given in the following table.

WESTERN AUSTRALIAN FIRE BRIGADES BOARD—CALLS RECEIVED										
Year	Number of fire calls							Number of calls for special services	Total calls	
	False alarms	Fires causing negligible damage	Other fires causing damage estimated at—							
			Less than \$250 (a)	\$250 (a) to \$10,000	\$10,000 to \$250,000 (b)	More than \$250,000 (b)				
METROPOLITAN FIRE DISTRICT (c)										
1973-74	2,062	3,066	117	366	21	—	3	440	6,072	
1974-75	2,112	2,912	119	405	23	—	3	454	6,028	
1975-76	2,403	3,120	267	208	7	—	5	428	6,438	
1976-77	2,567	2,607	589	463	45	—	3	403	6,677	
1977-78	2,864	2,923	516	511	51	—	1	416	7,282	
OTHER FIRE DISTRICTS										
1973-74	206	1,094	41	172	17	—	1	100	1,631	
1974-75	199	1,452	52	235	23	—	3	93	2,057	
1975-76	226	1,371	120	112	11	—	1	103	1,944	
1976-77	266	1,206	279	270	31	—	1	97	2,150	
1977-78	274	1,140	176	235	30	—	—	97	1,952	
WESTERN AUSTRALIA										
1973-74	2,268	4,160	158	538	38	—	1	540	7,703	
1974-75	2,311	4,364	171	640	46	—	6	547	8,085	
1975-76	2,629	4,491	387	320	18	—	6	531	8,382	
1976-77	2,833	3,813	868	733	76	—	4	500	8,827	
1977-78	3,138	4,063	692	746	81	—	1	513	9,234	

(a) \$200 prior to 1976-77.

(b) \$200,000 prior to 1976-77.

(c) As defined in the Fire Brigades Act.

Fifteen permanent and two volunteer brigades operate in the metropolitan fire district centred on the City of Perth. Permanent brigade personnel serve with volunteer brigade personnel in five large country centres, and volunteer brigades provide town fire protection at seventy-nine other centres. At 30 June 1978, the Board had 799 employees and there were 2,071 volunteer brigade officers and firemen.

Bush Fires Board. The Bush Fires Board, which is constituted under the *Bush Fires Act, 1954-1977*, consists of sixteen members appointed by the Governor on the recommendation of the Minister. It comprises the Under Secretary for Lands as chairman; six persons nominated by the Country Shire Councils' Association of W.A.; and one person nominated by each of the following: the Minister for Forests, the Minister for Agriculture, The Western Australian Government Railways Commission, the Fire and Accident Underwriters' Association of Western Australia, the Commissioner of Police, the Associated Sawmillers and Timber Merchants of Western Australia, the State Regional Director of the Bureau of Meteorology, the Western Australian Wildlife Authority and

the National Parks Authority of Western Australia. The principal functions of the Board are to administer the Bush Fires Act; to report to the Minister on methods of preventing or extinguishing bush fires; to recommend the prohibited and restricted burning times to be declared for the whole or any part of the State for any yearly period; to carry out such fire prevention measures as it considers necessary; to carry out research in connection with fire prevention and control; to conduct publicity campaigns for the purpose of improving fire prevention measures; and to provide training facilities for volunteers.

The Board operates through its staff of liaison officers based in country centres. These officers promote fire protection by the exercise of co-ordination, liaison and advisory functions.

Local authorities throughout the State handle local administration of the Bushfires Act.

CHAPTER VI—FINANCE

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CHAPTER VI—FINANCE

Part 1—Public Finance

COMMONWEALTH-STATE FINANCIAL RELATIONS

Financial Agreement 1927. Under the terms of the Financial Agreement, the Australian Government took over from the States their public debts existing at 30 June 1927 and assumed responsibility for all future loan raisings by the Australian and State Governments. The Australian Government also agreed to contribute annually for a period of fifty-eight years from 1 July 1927 an amount of \$15,169,824 towards the interest payable on the States' debts, Western Australia's share of this amount being \$946,864.

Sinking Funds established by the Financial Agreement between the Australian Government and the States were designed to redeem the States' debts as follows: (a) debt existing at 30 June 1927, in a period of fifty-eight years thereafter; (b) debt incurred after 30 June 1927 (except debt for the purpose of redemptions or conversions or the financing of revenue deficits), in a period of fifty-three years from the date of creation of the debt; (c) debt incurred to finance revenue deficits for the years 1929-30 to 1934-35, in a period of thirty-nine years from 30 June 1944; and (d) debt incurred to finance other revenue deficits, in a period of approximately seventeen years from the date of its creation.

These Sinking Funds are under the control of the National Debt Commission. Receipts of the Funds consist mainly of contributions from the Consolidated Revenue Funds of the Australian and State Governments. The Australian Government and the States make annual contributions towards the redemption of debt existing at 30 June 1927 and subsequent debt created over the period 1 July 1927 to 30 June 1975.

Contributions made by the Australian Government and the States in respect of the States' debts are not accumulated but must be applied by the National Debt Commission, whenever expedient, to the redemption and repurchase of loan securities. Under the provisions of the Financial Agreement, repurchased or redeemed securities must be cancelled, and the debts of the States are reduced accordingly.

Financial Agreement 1976. The *Financial Agreement Act 1976* amended the Financial Agreement of 1927 by establishing a new scale of sinking fund contributions in respect of State debt. Under provisions of the Act, Western Australia provided an amount of \$13·6 million and the Commonwealth an amount of \$33·7 million in respect of the year 1977-78. The Act, which applied retrospectively to 30 June 1975 also provided for the transfer of \$1,000 million of State debts to the Commonwealth with effect from 30 June 1975. The amount of debt transferred under this amendment in respect of Western Australia was \$96·1 million.

The Australian Loan Council. The Australian Loan Council was established by the Financial Agreement Act of 1928 to co-ordinate the public borrowings of the Australian and State Governments. The Council has as its Chairman the Prime Minister of Australia, or a Minister nominated by him, and the other members are the Premiers of the States or, in the absence of a Premier, a Minister nominated by him. The Commonwealth and each State submits to the Council a programme of its desired loan raisings during each financial year, including the amount of any revenue deficit to be funded. The Australian Government's borrowings for defence purposes are expressly excluded from its submissions to the Council. If the Council decides that the total amount of the loan programme for a year cannot be borrowed at reasonable rates and conditions, it decides the amount to be borrowed during the year, and may by unanimous decision allocate this amount between

the Commonwealth and the States. Where the members fail to arrive at a unanimous decision the Commonwealth is entitled to a maximum of one-fifth of the total sum to be borrowed. Of the balance, each State is entitled to an amount in the proportion which its net loan expenditure during the preceding five years bears to the aggregate for all the States.

Financial Assistance Grants. Annual Financial Assistance Grants were made to every State from 1959-60 to 1975-76. In addition to the annual Financial Assistance Grants, special revenue assistance has been provided in some years and details of these and other payments are shown in the next table under the heading *General Purpose Grants*.

At a series of Premiers' Conferences held in February, April and June 1976 it was announced that the Financial Assistance Grants referred to in the preceding paragraph were to be replaced by arrangements under which each State would receive a share of Commonwealth personal income tax collections. An outline of the new arrangements is given below under the heading *Personal Income Tax Entitlements*.

Personal Income Tax Entitlements. Reference has been made above to the replacement of Financial Assistance Grants to the States by a new scheme of personal income tax sharing. The *States (Personal Income Tax Sharing) Act 1976* which repealed the *States Grants Acts of 1973, 1974 and 1975* operated with effect from the year commencing 1 July 1976 and for subsequent years. The Act provided for the States to share 33·6 per cent of personal income tax collected by the Commonwealth in each year. Each State's share was to be determined according to its estimated population at 31 December of the relevant financial year, after 'weighting' that population according to the financial ratios which applied between the States in 1975-76. It was further provided that the States' entitlements in any year be not less than in the previous year. In addition, for a period of four years ending 30 June 1980, entitlements were not to be less in a year than the amount which would have been available in that year by the financial assistance grants authorised by the *States Grants Act 1973*. The Act also provided that the Commonwealth Government should consult with the State Governments before 30 June 1981 concerning the need for changes in the provisions of the Act.

Following agreement reached at the October 1977 Premiers' Conference the *States (Personal Income Tax Sharing) Act 1976* was amended by the *States (Personal Income Tax Sharing) Amendment Act 1978*. Subject to the guarantee arrangements contained in the principal Act, the amending legislation provides that the States' entitlements be \$4,336·1 million for 1977-78, and for subsequent years 39·87 per cent of the net personal income tax collections for the preceding year. In the year 1977-78 Western Australia's share amounted to \$523·2 million. A further amendment provides for periodic reviews by a special division of the Commonwealth Grants Commission of the relativities between the States in their tax sharing entitlements. Further details are given below under the heading *Commonwealth Grants Commission*.

From the Premiers' Conferences held in 1976 and 1977, a further understanding was reached that each State would be able to legislate to impose a surcharge on personal income tax, or grant a rebate on personal income tax. In either case the Commonwealth Government would act as an agent for the State. Enabling legislation was authorised in June 1978 by the *Income Tax (Arrangements with the States) Act, 1978*.

The *Local Government (Personal Income Tax Sharing) Act 1976* provides that from 1976-77 local government will receive 1·52 per cent of personal income tax collections in the previous year. The Act also provides that allocations shall be made as prescribed and have regard to the recommendation of a Local Government Grants Commission which was to be constituted in each State not later than 30 June 1978. Legislation constituting the Western Australian Local Government Grants Commission became effective on 11 May 1978 under the authority of the *Local Government Grants Act 1978*. Western Australia's share for 1976-77 and 1977-78 amounted to \$13·2 million and \$15·5 million respectively and was distributed as recommended by an interim body designated as the Western Australian Local Government Grants Committee. Further details are shown under the heading *Local Government System* in Chapter III.

The Commonwealth Grants Commission. Section 96 of the Commonwealth Constitution provides that the States may be granted financial assistance. In 1933 the Commonwealth Parliament passed the Commonwealth Grants Commission Act establishing a Commission to inquire into and report on applications made by States for grants of financial aid.

AUSTRALIAN GOVERNMENT PAYMENTS TO WESTERN AUSTRALIA
(\$'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
GRANTS					
General Public Services	395	601	659	1,379	1,857
Education—					
Government schools	2,429	7,933	19,984	22,108	22,998
Non-government schools	3,491	5,076	11,624	9,807	14,864
Technical education	1,166	2,285	2,755	6,198	7,296
Universities	8,214	19,191	35,692	37,985	50,616
Colleges of advanced education	7,569	24,469	39,640	43,866	51,316
Aboriginal education	618	1,237	2,381	2,004	2,154
Pre-schools and child care .....	..	645	4,608	6,456	5,744
Other	155	473	1,716	2,126	2,730
Total	23,642	61,309	118,400	130,550	157,718
Health—					
Medibank—					
Public hospital running costs .....	..	..	..	96,745	74,674
Public hospitals .....	..	695	4,326	11,900	12,000
Aboriginal health	930	4,056	6,060	7,368	5,593
School dental scheme .....	..	1,052	2,067	5,126	3,589
Community health .....	..	1,644	4,003	2,877	5,696
Other	1,229	1,360	1,665	1,257	1,576
Total	2,159	8,807	18,121	125,273	103,128
Social Security and Welfare—					
Employment grants	8,901	882	3,400	2,000	—
Regional Employment Development Scheme .....	..	..	5,503	9,123	1
Aboriginal welfare	1,278	2,061	3,124	1,820	1,023
Other	2,350	1,659	1,570	2,936	3,539
Total	12,529	4,602	13,597	15,879	4,563
Housing and Community Amenities—					
Aboriginal housing	4,000	4,000	—	2,882	3,938
Sewerage .....	..	..	3,890	3,875	2,928
Other	859	1,044	3,476	3,109	1,351
Total	4,859	5,044	7,366	9,866	8,217
Recreation and Related Cultural Services .....	..	312	2,898	1,112	1,226
Economic Services—					
Water resources investigations	710	1,300	1,667	1,981	2,000
Rural reconstruction	2,033	1,325	908	1,137	1,036
Roads	43,910	48,285	50,449	62,225	58,053
Urban public transport .....	..	..	2,829	750	1,869
Other	6,657	3,912	2,599	3,582	3,828
Total	53,310	54,822	58,452	69,675	66,786
Other Purposes—					
General Purpose Grants—					
Capital assistance	23,213	25,806	32,179	40,099	42,117
Debt charges assistance	3,317	4,422	5,528	..	..
Financial assistance (a)	196,369	222,388	279,830	363,031	440,800
Interest on State debts	947	947	947	947	947
Local government (Grants Commission) .....	..	..	4,959	7,524	13,162
Sinking fund on State debt	2,715	2,855	2,976	2,800	2,981
Special revenue assistance	—	2,855	7,073	—	—
Natural disaster relief	—	—	—	4,280	1,701
Total	226,561	259,273	333,492	418,681	501,708
GRAND TOTAL	323,455	394,770	552,985	772,415	845,203
Current	231,486	283,575	408,744	603,775	687,806
Capital	91,969	111,195	144,241	168,640	157,397

For footnotes, see end of table.

AUSTRALIAN GOVERNMENT PAYMENTS TO WESTERN AUSTRALIA—*continued*
(S'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
ADVANCES					
Gross Advances—					
Defence (housing for servicemen)	161	191	784	698	1,230
Housing and community amenities—					
Housing assistance	400	13,000	37,440	33,440	35,440
Land acquisition and development in urban areas .....	..	..	9,833	6,121	3,882
Sewerage in principal urban areas .....	..	3,800	11,715	8,680	6,300
Other	—	—	—	—	—
Economic services	9,342	6,815	4,719	6,691	4,839
Other purposes—					
State works programmes (b)	68,503	54,587	68,068	80,197	84,235
Natural disaster relief	—	—	—	67	2,001
Total, Gross Advances	78,406	78,393	132,559	135,894	137,927
Net Advances (c)—					
Defence (housing for servicemen)	125	153	744	655	1,185
Housing and community amenities—					
Housing assistance	400	12,998	37,438	33,438	33,263
Land acquisition and development in urban areas .....	..	..	9,833	6,121	3,882
Sewerage in principal urban areas .....	..	3,800	11,709	8,666	6,243
Other	-1,505	-1,558	-1,678	-1,945	-14
Economic services	7,364	4,725	2,521	4,019	1,566
Other purposes—					
State works programmes (b)	54,749	40,022	52,732	65,366	68,473
Natural disaster relief	—	—	—	67	2,001
Total, Net Advances	61,133	60,140	113,299	116,387	116,599

(a) Including payments in place of Special Grants; see letterpress *The Commonwealth Grants Commission*. (b) Australian Loan Council borrowing. (c) Gross advance less repayments.

In each year from 1934-35, in respect of which the Commission made its first recommendation, Western Australia received a Special Grant until it ceased to be a claimant State from and including the year 1968-69, in accordance with an agreement made between the Commonwealth and the State at a Premiers' Conference in June 1968.

The *Commonwealth Grants Commission Act 1973*, which repealed the *Commonwealth Grants Commission Act 1933* and later amendments, continued the principle of making special assistance available to a State for its own purposes and, in addition, authorised the provision of assistance to a State for local government purposes. Grants to Western Australia, for distribution among local government authorities as recommended by the Grants Commission, amounted to \$4.96 million for the year 1974-75 and \$7.52 million for 1975-76.

From 1976-77, new arrangements operated with the passing of the *Commonwealth Grants Commission Act 1976* and the *Local Government (Personal Income Tax Sharing) Act 1976*. Reference has been made in the preceding section to an amendment contained in the *States (Personal Income Tax Sharing) Amendment Act 1978* which provides for periodic reviews by a special division of the Commonwealth Grants Commission of the relativities between the States in their tax sharing entitlements. In conjunction with this Act, the *Commonwealth Grants Commission Amendment Act 1978* provides for the constitution of a division of the Commission comprising the Chairman and two members of the Commission, in addition to three associate members, one of whom would be nominated by the governments of New South Wales and Victoria and two by the governments of the four remaining States. The factors to be taken into consideration in the conduct of inquiries by the special division of the Commonwealth Grants Commission and the method of its operation are as prescribed by the two Acts mentioned. Further details are shown above under the heading *Personal Income Tax Entitlements*.

Other Financial Assistance. As well as providing general financial assistance to the States by means of grants, the Australian Government allocates to them funds for specific purposes, as shown in the following table which gives details of payments made to Western Australia during the five-year period ended 30 June 1977. Grants in the financial year 1976-77 totalled \$845,203,000 while net advances for the same period amounted to

\$116,599,000. Social service benefits and national health benefits are paid from the National Welfare Fund. In addition, financial assistance for housing and war service land settlement is provided from Loan Fund.

Cash Benefits to or for Persons

The following table gives details of all cash benefits paid during the five-year period ended 30 June 1977. Cash benefits to or for persons in Western Australia increased from \$193,716,000 to \$567,241,000 over the period. Social security and welfare amounted to \$460,960,000 in 1976-77 or 81.3 per cent of the total cash benefits, followed by Health with \$82,020,000 or 14.5 per cent.

AUSTRALIAN GOVERNMENT CASH BENEFITS TO OR FOR PERSONS IN WESTERN AUSTRALIA (a) (\$'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Education—					
Primary and secondary education	1,463	2,723	2,967	2,728	2,770
University education	2,852	4,296	9,509	13,315	16,228
Other higher education	832	1,076			
Other education programmes	1,309	1,684	1,876	2,563	3,021
Total	6,456	9,779	14,352	18,606	22,019
Health—					
Hospital and clinical services—					
Hospital benefits for pensioners	2,175	2,332	2,276	606	..
Hospital benefits n.e.c.	7,509	7,451	8,818	6,257	1,225
Medibank—					
Private hospital daily bed payments	..	..	..	5,175	5,993
Nursing home benefits	9,375	11,440	14,665	18,772	22,228
Other	46	50	85	94	92
Other health services—					
Medibank—					
Medical benefits	..	..	..	42,067	35,702
Medical benefits for pensioners	2,207	2,495	3,539	372	..
Medical benefits n.e.c.	13,750	13,983	15,898	5,737	74
Pharmaceutical benefits for pensioners	3,758	4,429	5,310	7,104	7,609
Pharmaceutical benefits n.e.c.	5,748	7,318	8,834	9,999	8,185
Other	1,186	550	762	847	912
Total	45,754	50,048	60,187	97,030	82,020
Social Security and Welfare—					
Assistance to aged persons—					
Age pensions	64,896	83,580	118,492	156,447	183,519
Other	638	1,039	1,537	2,020	2,456
Assistance to incapacitated and handicapped persons—					
Invalid pensions	11,292	14,431	20,320	27,066	33,666
Other	741	964	1,791	2,437	3,531
Assistance to unemployed and sick persons—					
Unemployment benefits	6,253	5,020	19,753	33,824	42,958
Sickness benefits	1,840	2,805	4,415	6,190	6,814
Other	279	489	1,028	1,329	1,373
Assistance to ex-servicemen—					
War and service pensions and allowances	22,855	27,554	36,996	43,677	52,519
Other benefits	196	331	345	297	263
Assistance to widowed and deserted spouses—					
Widows' pensions	10,064	13,409	18,459	24,809	27,700
Assistance to families and children—					
Child endowment	21,407	19,009	19,084	22,737	89,514
Supporting mothers' benefits	..	4,729	8,102	12,547	15,588
Other	680	646	735	733	738
Other social security and welfare programmes	176	187	228	313	321
Total	141,317	174,193	251,285	334,426	460,960
Economic Services—					
General administration, regulation and research—					
National Employment and Training Scheme	..	..	1,068	3,384	1,514
Other	189	440	552	1,421	728
Total	189	440	1,620	4,805	2,242
Other Purposes—					
Natural disaster relief	—	—	405	33	—
TOTAL, ALL CASH BENEFITS	193,716	234,460	327,850	454,900	567,241

(a) For conditions and rates applying to payment of social service benefits, health benefits, and other forms of assistance, see Chapter V. Because of the administrative arrangements made for the payment of certain benefits it has not been practicable to allocate amounts for those benefits precisely between States. In such cases, estimates have been made.

The main components of cash benefits are hospital, medical, pharmaceutical, sickness and unemployment benefits, child endowment, and widows', age, invalid and repatriation pensions. These are paid from the National Welfare Fund which was established in 1943 by the National Welfare Fund Act. Further reference to the Fund will be found at the beginning of Chapter V, Part 4. Other cash benefits include scholarships and payments to trainee teachers.

STATE GOVERNMENT FINANCE

The tables in the following pages relate to the financial activities of the Government of Western Australia, statutory authorities, boards, commissions and corporations, and incorporated bodies in which the State Government or its agencies have a controlling interest (other than financial enterprises).

The revised series is designed to provide, for the public sector, statistics which complement the accounts for individual sectors provided in the Australian National Accounts. These statistics are intended to consolidate the transactions of the various public authorities and present them so that their economic impact may be assessed; to show the purposes that are being served by government expenditures; and to show the roles of the various levels of government in the undertaking and financing of these expenditures.

Basic principles which have been followed in developing the data for the economic accounts for the public sector are that all public authorities should be included; all funds under the control of those authorities should be analysed; and transfers between funds, accounts and authorities should be eliminated to present tables on a consolidated basis.

In this section of the Year Book the public sector has been taken to comprise general government bodies (excluding local government authorities) and public trading enterprises. Public financial enterprises have been omitted from the consolidated accounts presented here, largely on the ground that combining the income and outlay and capital financing transactions of publicly-owned trading and savings banks, government insurance offices and other public financial institutions with the equivalent transactions of public trading enterprises and general government seems to provide a less meaningful account of public sector activity.

General government bodies are all of the agencies of government not classified as public enterprises, *i.e.* all government departments, offices and other bodies engaged in providing services free of charge or at prices significantly below their cost of production.

Public trading enterprises are government undertakings which aim at covering the bulk of their expenses by revenue from sales of goods and services.

Details of the State Authorities whose accounts have been analysed for the purposes of the statistics presented here may be found in the publication *Statistics of Western Australia—Finance* (Catalogue No. 5101·5), issued by this Office.

The classifications used in the tables are, generally, in accordance with those adopted in the publication *A System of National Accounts*, United Nations, New York, 1968 which is a widely accepted international standard for the classification of government financial transactions. Two of the main classifications used in that publication are classifications by economic type and by purpose.

The economic type classification, in broad terms, is designed to categorise transactions between public authorities and the private sector, and between public authorities where sub-sectors of the public sector have been identified, in a way which facilitates a study of the impact of government transactions on the economy.

The purpose classification scheme is the medium by which outlays with similar objectives are brought together to reveal more fully the broad purposes of public sector spending, and to provide a framework for developing means of assessment of the effectiveness of outlays in achieving government policies. With the classification of outlays by economic type, the purpose classification also facilitates the assessment of the economic impact of identified programmes of expenditure.

Figures for some items published in the public authority finance series may differ from issue to issue as a consequence of reclassification of items and other improvements made in the course of developing the most appropriate presentation of the financial transactions of public authorities.

For further information on the methods and principles used in compiling data for Western Australia, reference may be made to the publication *Statistics of Western Australia—Finance* (Catalogue No. 5101·5), issued by this Office. Reference has been made above to other publications which contain data for other States and for authorities of the Australian Government.

In the following table, it will be seen that the main components of the receipts of Western Australian State Authorities are taxation, grants from the Australian Government, and borrowing and financing transactions. Further details of taxation collections by State Authorities and local government authorities are given later in this Part. Grants made to the State of Western Australia by the Australian Government for the five-year period ended 30 June 1977 appear in the table earlier in this Part.

STATE AUTHORITIES: RECEIPTS ACCORDING TO SOURCE r
(S'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Taxes, fees, fines	124,482	155,010	203,670	260,135	300,183
Income from public enterprises	25,923	24,146	25,019	50,272	25,158
Income from property—					
Interest	14,742	18,682	20,735	15,872	21,219
Land rent	6,027	5,547	4,859	4,523	5,675
Royalties	30,930	37,362	43,604	48,271	57,347
Dividends	2	2	2	2	2
Total, Income from property	51,701	61,593	69,200	68,668	84,243
Grants from the Australian Government—					
For current purposes	231,349	282,874	403,211	595,569	687,932
For capital purposes	98,683	115,125	144,224	169,474	156,386
Total, Grants	330,032	397,999	547,435	765,043	844,318
Financing items—					
Net borrowing—					
Public corporation securities	25,159	25,346	27,347	36,565	41,229
Other general government securities	1,815	2,278	3,164	4,764	5,611
Advances from the Australian Government (net)—					
For loan works purposes	54,749	40,022	52,732	65,366	68,473
Other	6,384	20,118	60,567	51,021	48,126
Net receipts of private trust funds	10,344	11,751	10,383	18,745	25,873
Reduction in cash and bank balances	-19,714	-14,614	26,792	-114,613	-33,824
Reduction in security holdings	-6,388	-8,499	4,195	-12,533	-18,395
Other funds available—					
Depreciation allowances	26,681	28,011	27,379	30,093	32,838
Other	12,536	8,936	4,490	45,287	50,667
Total, Financing items	111,566	113,349	217,649	124,695	220,598
TOTAL FUNDS AVAILABLE	643,704	752,097	1,062,973	1,268,813	1,474,500

The next table shows the outlay by Western Australian State Authorities classified by economic type of transaction. The principal categories of the classification are Final Consumption Expenditure, Gross Capital Formation, Transfer Payments, and Financing Items. (Details of Financing Items appear under this heading in the preceding table and under *Net advances* in the following table.) Over the five years 1972-73 to 1976-77, the total outlay by State Authorities increased from \$643,704,000 to \$1,474,500,000, Final Consumption Expenditure amounting to \$841,242,000 in 1976-77.

Final consumption expenditure refers to expenditure by public authorities (other than those classified as public enterprises) which does not result in the creation of fixed tangible assets or in the acquisition of land, buildings or secondhand goods. It comprises expenditure on wages, salaries and supplements, and on goods and services other than fixed assets and stock. Fees, etc. charged by general government bodies for goods sold and

services rendered are offset against purchases. Net expenditure overseas by general government bodies and purchases from public enterprises are included. All expenditure on defence is classified as final consumption expenditure.

STATE AUTHORITIES: OUTLAY ACCORDING TO ECONOMIC TYPE r
(\$'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Final consumption expenditure—					
General public services—					
General administration n.e.c.	18,833	24,170	32,195	35,618	39,182
Law, order and public safety	32,089	38,243	56,042	69,698	84,100
Education	119,343	158,710	233,890	299,230	363,771
Health	66,173	95,137	143,255	215,357	263,083
Social security and welfare	8,060	7,548	11,437	12,714	14,692
Housing and community amenities	442	847	1,903	3,697	3,441
Recreation and related cultural services	3,893	4,689	6,889	8,737	11,288
Economic services—					
General administration, regulation and research	4,341	5,504	8,040	9,497	10,257
Agriculture, forestry and fishing—					
Soil, water and forest resources management	1,066	1,419	957	2,510	1,245
Services to agricultural and pastoral industries and to fisheries	11,194	12,717	17,888	21,038	23,789
Mining, manufacturing and construction	8,997	7,540	8,858	10,349	10,911
Electricity, gas and water supply services	921	1,122	2,804	4,219	4,737
Transport and communication	1,342	1,757	2,415	2,307	2,617
Other economic services	4,020	4,666	6,889	6,814	7,874
Other purposes	92	87	181	306	255
Total	280,806	364,156	533,643	702,091	841,242
Gross capital formation—					
Increase in stocks	13	2,758	12,640	6,304	1,676
Expenditure on new fixed assets—					
General public services—					
General administration n.e.c.	2,410	4,357	3,844	7,428	7,099
Law, order and public safety	2,943	3,041	5,906	5,606	8,023
Education	25,883	31,918	52,345	53,477	48,654
Health	17,841	20,238	30,983	44,229	45,911
Social security and welfare	1,382	2,178	2,107	1,738	1,271
Housing and community amenities—					
Housing	8,416	16,057	14,830	18,290	41,990
Community and regional development	799	1,179	2,410	1,743	1,257
Protection of the environment	18,779	22,228	34,752	36,500	40,517
Recreation and related cultural services	363	305	1,274	1,937	2,581
Economic services—					
General administration, regulation and research	—	—	—	—	12
Agriculture, forestry and fishing—					
Soil and water resources management	2,467	3,201	1,610	1,616	1,924
Forest resources management	5,221	6,034	8,303	9,454	14,076
Services to agricultural and pastoral industries and to fisheries	1,886	1,547	2,199	1,618	1,960
Mining, manufacturing and construction	1,605	2,844	1,170	294	3,745
Electricity, gas and water supply services—					
Electricity and gas	32,406	38,362	50,483	46,587	51,227
Water	20,921	24,551	27,197	34,307	40,123
Transport and communication—					
Rail transport	16,452	11,429	16,248	23,261	22,688
Sea transport	9,104	9,240	13,286	19,513	10,369
Road transport	52,059	52,656	61,420	68,429	82,936
Urban transit	1,833	1,317	3,222	2,238	4,452
Other economic services	1,422	1,296	2,238	4,317	2,047
Total expenditure on new fixed assets	224,192	253,978	335,827	382,582	432,862
Expenditure on existing assets (net)	7,936	5,081	18,922	3,904	1,950
Total	232,141	261,817	367,389	392,790	436,488
Transfer payments—					
Interest	77,257	86,082	91,189	106,122	123,910
Transfers to persons	17,943	16,317	18,190	18,536	20,722
Subsidies	1,476	1,450	3,668	2,950	3,001
Grants for private capital purposes	871	1,303	3,192	3,352	2,265
Grants to local government authorities	17,458	15,192	22,841	26,806	32,701
Total	115,005	120,344	139,080	157,766	182,599
Net advances—					
To the private sector	15,412	8,185	24,734	17,825	17,428
To public financial enterprises	—24	—323	—17	11	—158
To local government authorities	364	—2,082	—1,856	—1,670	—3,099
Total	15,752	5,780	22,861	16,166	14,171
GRAND TOTAL	643,704	752,097	1,062,973	1,268,813	1,474,500
Current	395,811	484,500	672,723	859,857	1,023,841
Capital	247,893	267,597	390,250	408,956	450,659

Gross capital formation refers to expenditure on new fixed assets whether for additions or replacements, including wages and salaries paid in connection with capital works. Expenditure on new fixed assets for defence purposes is excluded. Expenditure on houses and flats is estimated by deducting the cost of previously-rented dwellings sold to the private sector from the estimated expenditure on construction of dwellings for rental. (The sales value of these previously-rented dwellings is included in private capital expenditure.) Because it has not been possible to make a satisfactory dissection, all expenditure on roads, including maintenance, is classified as capital.

Transfer payments include such items as interest payments on public loans, cash benefits to persons (*i.e.* current transfers to persons from general government in return for which no services are rendered or goods supplied), subsidies paid by public authorities to enterprises, grants to meet part of the cost of private capital expenditure, and grants to local government authorities.

Financing items relate to changes in financial assets and liabilities, and include transactions in securities of all types, borrowing and lending (including repayable advances made by public authorities to other public authorities), trade credit of public trading enterprises, and changes in cash balances.

Public Debt

Under the Financial Agreement of 1927 (as amended) all debt of the Australian and State Governments, with certain minor exceptions, is represented by Australian Government Securities. The information in the following table is derived from the Budget Paper *Government Securities on Issue* published by the Australian Government. The figures do not include government debt not evidenced by the issue of securities, or the debt of other bodies guaranteed by Government.

SECURITIES ISSUED ON BEHALF OF STATE GOVERNMENT

Item	At 30 June—				
	1973	1974	1975	1976	1977
Securities on issue	\$'000 1,029,879	\$'000 1,070,881	\$'000 1,121,640	\$'000 1,090,469	\$'000 1,160,818
Per head of population	\$ 964	\$ 978	\$ 999	\$ 952	\$ 970
Annual interest liability (Australian currency equivalent)	\$'000 56,326	\$'000 62,201	\$'000 71,463	\$'000 77,869	\$'000 87,406
Per head of population	\$ 53	\$ 57	\$ 64	\$ 68	\$ 73

In the table below debt refers to liabilities with an original maturity of twelve months or more incurred in respect of loans and advances received (other than by way of bank overdraft), *less* repayments and redemptions. Current liabilities, such as interest accrued, trade creditors and amounts held in trust are excluded. The figures relate to the debt of those public corporations having power to borrow funds other than from Government.

PUBLIC CORPORATIONS: DEBT (\$'000)

Item	At 30 June—				
	1973	1974	1975	1976	1977
Advances from public authorities	532,471	561,974	619,606	687,352	769,606
Loans	291,524	326,226	360,425	399,731	453,002
Other indebtedness	8,817	8,604	7,753	6,565	10,423
Debt outstanding	832,811	896,805	987,784	1,093,648	1,233,031

The principal governmental bodies whose debt is included in the above table are those concerned with electricity supply, harbour services, housing, metropolitan region planning, transport, water supply and sewerage services.

Figures in both tables are on a gross borrowing basis as they include all transactions associated with borrowing by one level of government on behalf of another, and borrowing between levels of government and between public authorities.

LOCAL GOVERNMENT FINANCE

The financial powers of local government authorities in Western Australia are derived principally from the *Local Government Act, 1960-1978*, the main provisions of which are outlined in Chapter III—*Constitution and Government*.

Receipts and Payments

The table below continues the series published for the first time in the 1977 issue of the Year Book. Further details relating to local government finance in Western Australia are contained in the publication *Statistics of Western Australia—Local Government* (Catalogue No. 1303·5), issued by this Office. A summary of statistics for other States may be found in the publication *Public Authority Finance—State and Local Authorities* (Catalogue No. 5504·0), issued by the Australian Statistician, Canberra.

The following table summarises the receipts and payments (including loan transactions) of local government authorities for the years 1974-75 to 1976-77. Amounts have been shown on a gross basis wherever practicable.

SUMMARY OF LOCAL GOVERNMENT RECEIPTS AND PAYMENTS
(\$'000)

Item	1974-75	1975-76	1976-77
Receipts—			
Rates	49,554	62,439	69,961
Fees and fines	2,236	2,232	2,680
Government grants	30,656	38,174	35,917
Loans raised (a)	21,911	28,106	32,629
Reimbursements—			
Road systems (b)	14,315	16,075	16,514
Other (c)	3,130	5,305	6,614
Other income	26,312	32,481	41,498
Total, Receipts	148,116	184,813	205,813
Payments—			
General public services	24,913	28,520	32,021
Education	1,091	755	540
Health	2,959	3,902	4,645
Welfare	984	1,794	1,813
Housing and community amenities	14,479	20,484	28,149
Recreation and related cultural services	27,099	35,477	36,640
Economic services—			
Road systems	52,005	60,460	66,019
Other	4,768	6,013	6,969
Other purposes—			
Debt redemption	9,176	9,764	11,079
Interest—			
On loans	7,791	9,714	11,999
On overdraft	273	539	560
Loans raised on behalf of State Government (d)	2,376	2,583	3,537
Total, Payments	147,916	180,005	203,971
Comprising: Recurrent payments	57,897	68,539	81,470
Capital payments	90,019	111,466	122,501

(a) Includes loans raised on behalf of State Government authorities; see footnote (d). (b) Mainly reimbursements from the Main Roads Department for work performed on its behalf and from private developers for sub-divisional roads. (c) Includes debt charges in respect of loans raised on behalf of State Government authorities; see footnote (d). (d) In order to facilitate or expedite the performance of certain public works (e.g., water supply and sewerage services) it is sometimes expedient for local government authorities to raise loans on behalf of State Government authorities for such purposes.

Loan Transactions

Under the provisions of the local government legislation, local government authorities are constituted as corporate bodies and are authorised to raise loans for works and undertakings and for the liquidation of existing loan debts. The conditions imposed by the

Local Government Act, 1960-1978 in relation to loan raisings, the levying of loan rates, the expenditure of loan moneys and the repayment of loans are summarised in the section *The Local Government System* in Chapter III under the heading *Financial Provisions*.

Loans are raised mainly from banks, insurance companies and superannuation funds. The State Government exercises a measure of supervision over the loan transactions of local government authorities and, where a loan is repayable in full at maturity, maintains the necessary sinking fund at the Treasury.

Loan receipts and payments of local government authorities in the financial years 1974-75 to 1976-77 are included in the table on the previous page.

The following table shows the aggregate debt outstanding at 30 June of each year during the period from 1973 to 1977 in respect of all local authorities constituted under the Local Government Act. Figures are on a gross borrowing basis as they include all transactions associated with borrowing by one level of government on behalf of another, and borrowing between levels of government.

LOCAL AUTHORITIES: DEBT
(**\$'000**)

Item	At 30 June—				
	1973	1974	1975	1976	1977
Advances from public authorities	603	865	945	1,022	1,342
Loans	101,029	114,828	127,553	145,580	165,290
Other indebtedness	544	365	266	223	901
Debt outstanding	102,176	116,061	128,764	146,825	167,533

TAXATION

Australian Government Taxation

The taxes levied in Western Australia by the Australian Government are listed in the table *Australian Government Taxation, Net Collections in Western Australia* which appears later in this Part. This table shows the net amounts collected in the five years from 1972-73 to 1976-77.

Income Tax. Income tax is by far the most important source of Commonwealth revenue from taxation and accounted for 71.2 per cent of all Commonwealth taxation collections in 1976-77. The tax is levied on the incomes of individuals, companies, partnerships and trusts, and superannuation funds. When considering the figures shown in the tables on the next page the following definitions are relevant, although certain features have been altered by recent legislation.

Assessable income includes all income (other than *exempt income*) derived directly or indirectly from sources in Australia, and in the case of a taxpayer resident in Australia it includes income from sources outside Australia. (The principal items of *exempt income* are disability and service pensions; age and invalid pensions, family allowances, and other payments made in terms of the Social Services Act and the Tuberculosis Act; income from gold mining and some other mining operations; and income received from a scholarship, bursary or other educational allowance.)

Net income comprises assessable income less deductions for expenses incurred in gaining assessable income.

Taxable income is the amount remaining after deducting from assessable income all allowable deductions, which include special deductions and rebates. In 1975-76 concessional deductions could be claimed in respect of education expenses, medical expenses, funeral expenses, life insurance premiums, payments to superannuation funds, and medical and hospital benefit funds, where the total amount exceeded \$1,350 (\$1,525 in 1976-77 and \$1,590 in 1977-78).

Income tax assessments for individuals and for companies for the income year 1975-76 are shown in the next two tables.

**INCOME TAX ASSESSMENTS—INDIVIDUALS (a): WESTERN AUSTRALIA
INCOME YEAR 1975-76 (ASSESSMENT YEAR 1976-77)**

Grade of net income	Number of taxpayers			Net income (b)	Taxable income		Net tax	
	Males	Females	Persons		Total	Average per taxpayer	Total	Average per taxpayer
\$ Under 3,000	7,426	13,677	21,103	\$'000 56,481	\$'000 56,127	\$ 2,660	\$'000 1,660	\$ 79
3,000- 3,499	8,461	13,160	21,621	70,307	69,575	3,218	3,937	182
3,500- 3,999	8,589	13,648	22,237	83,234	82,126	3,693	6,543	294
4,000- 4,499	9,394	12,906	22,300	94,750	93,306	4,184	9,101	408
4,500- 4,999	10,081	12,915	22,996	109,257	107,598	4,679	12,077	525
5,000- 5,499	10,855	11,964	22,819	119,766	117,810	5,163	14,821	650
5,500- 5,999	12,301	11,506	23,807	137,008	134,658	5,656	18,931	795
6,000- 6,499	15,962	13,921	29,883	186,995	183,658	6,146	28,036	938
6,500- 6,999	18,427	11,470	29,897	201,654	197,572	6,608	31,506	1,054
7,000- 7,499	19,600	8,351	27,951	202,572	197,908	7,081	32,647	1,168
7,500- 7,999	19,822	6,038	25,860	200,337	195,327	7,553	33,472	1,294
8,000- 8,499	19,448	4,893	24,341	200,823	195,546	8,034	34,698	1,425
8,500- 8,999	17,873	4,072	21,945	191,887	186,876	8,516	34,513	1,573
9,000- 9,499	15,695	3,054	18,749	173,299	168,718	8,999	32,095	1,712
9,500- 9,999	13,957	2,568	16,525	160,985	156,546	9,473	30,510	1,846
10,000-10,999	23,264	4,174	27,438	287,401	280,271	10,215	57,659	2,101
11,000-11,999	17,453	3,108	20,561	235,748	230,189	11,195	51,144	2,487
12,000-12,999	12,186	2,081	14,267	177,958	174,054	12,200	41,279	2,893
13,000-13,999	8,942	1,478	10,420	140,349	137,490	13,195	34,403	3,302
14,000-14,999	7,149	1,278	8,427	122,029	119,665	14,200	31,365	3,722
15,000-19,999	15,640	3,022	18,662	315,166	308,075	16,508	90,780	4,864
20,000-24,999	4,140	928	5,068	111,725	108,329	21,375	38,961	7,688
25,000-29,999	1,667	384	2,051	55,819	54,040	26,348	22,158	10,804
30,000-49,999	1,480	351	1,831	66,016	64,427	35,187	30,398	16,602
50,000 and over	403	60	463	32,949	31,991	69,095	17,583	37,976
Total	300,215	161,007	461,222	3,734,518	3,651,880	7,918	740,276	1,605

(a) With certain exceptions, an individual was liable to pay tax on income derived in 1975-76 only if the taxable income exceeded \$1,350. (b) Includes income from salary and wages, investments and property, and business and professional activities. (c) Includes items such as commission, bonuses, allowances, directors' fees, and superannuation.

**INCOME TAX ASSESSMENTS—COMPANIES (a): WESTERN AUSTRALIA
INCOME YEAR 1975-76 (ASSESSMENT YEAR 1976-77)**

Grade of taxable income	Taxable companies			Non-taxable companies	
	Number	Taxable income	Net tax	Number	Taxable income (b)
\$ Nil	..	\$'000 ..	\$'000 ..	(c) 7,257	\$'000 ..
1- 1,999	1,646	1,052	416	307	243
2,000- 9,999	1,783	9,533	3,711	339	1,665
10,000- 19,999	1,019	14,605	5,680	115	1,653
20,000- 39,999	903	25,609	10,014	80	2,173
40,000- 99,999	658	40,291	15,603	36	2,022
100,000- 199,999	226	30,749	11,718	12	1,706
200,000- 399,999	146	39,937	15,045	4	957
400,000- 999,999	93	51,754	18,058	1	516
1,000,000-1,999,999	33	49,395	19,166	..	..
2,000,000 and over	19	119,029	49,610	..	..
Total	6,526	381,954	149,020	8,151	10,936

(a) Includes private, public, co-operative, and non-profit companies. (b) A company, other than a non-profit company, is not liable for income tax if its taxable income is less than \$1 or if it is allowed rebates which equal or exceed the tax otherwise payable; a non-profit company is not taxable if the taxable income is \$416 or less. (c) Includes 4,531 companies showing an aggregate loss of \$36.0 million.

**AUSTRALIAN GOVERNMENT TAXATION (a)
NET COLLECTIONS IN WESTERN AUSTRALIA
(\$'000)**

Tax, duty, charge or levy	1972-73	1973-74	1974-75	1975-76	1976-77
Income taxes—					
Individuals (b)	283,229	385,515	589,873	711,869	866,736
Companies (c)	72,001	88,321	109,285	135,467	144,652
Dividend (withholding tax) (d)	553	755	1,029	1,158	1,119
Interest (withholding tax) (d)	987	1,430	1,282	1,796	1,622
Total income taxes	356,770	476,021	701,469	850,290	1,014,129
Estate duty.....	3,934	4,616	3,737	6,169	5,287
Gift duty	780	816	963	1,294	1,314
Customs duties (b)	24,035	30,045	42,867	46,162	61,942
Excise duties	105,165	132,108	147,137	186,073	198,758
Sales tax (b)	46,266	61,469	67,014	86,437	108,314
Primary production taxes	2,657	7,299	16,864	21,111	23,006
Broadcast listeners' and television viewers' licences	5,113	5,393	1,369	..	..
Stevedoring industry charge	2,103	2,352	2,684	5,807	7,646
Pay-roll tax (e)	172	50	22	6	7
Oil pollution levy .....	..	135	207	182	159
Other taxes, fees, fines, etc.	512	622	936	1,045	1,584
Total taxation	547,507	720,926	985,269	1,204,576	1,422,146

(a) Details of the purposes and rates applicable to the main forms of Australian Government taxation are given in *Official Year Book of Australia*: No. 62—1977-78 on pages, 639-41 (customs duties), 587-99 (income tax), and 600-8 (other taxation).
 (b) The amounts shown have been adjusted by offsetting remissions under special circumstances of income tax, customs duties and sales tax.
 (c) Includes payments in the nature of income tax from public enterprises.
 (d) Tax levied in respect of dividends and interest deemed paid or payable to persons not residing in Australia.
 (e) Discontinued as Australian Government tax September 1971; from that date collected by State Government (see *State and Local Authorities Taxation* below).

It is important to note that, although the figures shown in the preceding table represent the amounts of taxes actually collected in Western Australia, they do not necessarily indicate the amounts contributed by the people of the State, as moneys may be collected in one State in respect of goods consumed or assessments made in other States. Further, administrative arrangements for the collection of certain taxes are such that a large proportion of the revenue (or, as in the case of wheat tax, the whole of the revenue) is brought to account in a State other than Western Australia.

State and Local Authorities Taxation

The net amounts collected in Western Australia in the form of State and local authorities taxation in each year from 1972-73 to 1976-77 are shown in the table at the end of this section. Information concerning rates of tax and the relevant legislation is given below.

ESTATE DUTY (PROBATE AND SUCCESSION DUTIES). The *Death Duty Act, 1973-1978* imposes duties on the estates of deceased persons and specifies the rates of duty. Conditions relating to the imposition, assessment, and collection of duties are contained in the *Death Duty Assessment Act, 1973-1978*. Differential rates of duty and amounts of exemption apply according to distinct categories of beneficiary.

LAND TAX. The *Land Tax Assessment Act, 1976* authorises a tax, with certain specified exemptions, on every owner of land, and the rates of tax are prescribed by the *Land Tax Act, 1976*.

LOCAL GOVERNMENT RATES. The *Local Government Act, 1960-1978* empowers municipalities to impose a tax based on a rate in the dollar of the value of all land (except for certain specified exemptions) within the municipality. The method of determining the rate is described in the section *The Local Government System* in Chapter III.

METROPOLITAN REGION IMPROVEMENT TAX. The *Metropolitan Region Improvement Tax Act, 1959-1976* authorises a tax, with certain specified exemptions, on every owner of land within the Metropolitan Planning Region. (The Region is coterminous with the Perth Statistical Division; see maps at the end of Chapter III.) The rate of tax payable for the assessment year 1977-78 was one quarter of a cent for every dollar of the unimproved value of all land chargeable with the tax.

LIQUOR LICENCES. Licences and permits authorising the holder to sell or supply fermented and spirituous liquors are granted under the provisions of the *Liquor Act, 1970-1978*. The Act prescribes the fees payable in respect of liquor licences and permits. The several types of licence for which the Act provides are shown in the table *Liquor Licences in Force* in Chapter V, Part 6. Annual licence fees, except in the case of a vigneron's licence, are assessed as a proportion of the gross amount paid for liquor purchased for licensed premises or, in the case of a wholesale licence and a brewer's licence, the gross amount received for liquor sold. The proportion prescribed by the Act is 8 per cent for a tavern licence or a store licence and 7 per cent for other licences. An additional annual fee of \$60 is payable in respect of a wholesale licence and a brewer's licence. The annual fee payable for a vigneron's licence is \$20.

TOBACCO LICENCES. The *Business Franchise (Tobacco) Act, 1975* provides for the licensing of persons engaged in tobacco wholesaling and retailing. The fee payable for a wholesale tobacco merchant's licence is \$100 plus 10 per cent of the value of tobacco sold in the course of intrastate trade in the assessment year. For a retail tobacconist, the fee is \$10 annually plus 10 per cent of the value of tobacco sold other than tobacco purchased from a wholesaler in the course of intrastate trade.

LOTTERIES PROFITS. The *Lotteries (Control) Act, 1954-1972* empowers the Lotteries Commission to conduct lotteries and other similar devices. To maintain comparability with privately operated lotteries in other States (where profits are taxed) and because the main purpose of the Lotteries Commission is to raise revenue for charitable purposes, the whole of the profit is treated as a tax in accordance with the guidelines provided in the document, *A System of National Accounts* published by the United Nations.

TOTALISATOR AGENCY BOARD BETTING TAX. The *Totalisator Agency Board Betting Tax Act, 1960-1973* imposes a tax on all moneys paid to the Board in respect of bets made through or with the Board. The rate of tax payable at 30 June 1978 was 6 per cent.

TOTALISATOR DUTY AND LICENCES. The *Totalisator Duty Act, 1905-1973* authorises the payment of duty on the takings of totalisators operated by horse-racing clubs and prescribes the rates to be paid. Differential rates apply to totalisators operated within a radius of forty kilometres from the General Post Office, Perth and those situated outside this area. In 1977-78, the principal rates of duty payable in respect of totalisators in the former area were 9 per cent of the gross takings from win and place transactions and 5 per cent of the gross takings from wagering transactions known as 'jack pots', 'quinellas' and 'doubles'; for totalisators outside that area, the rate was 5 per cent for all transactions. The *Totalisator Regulation Act, 1911-1973* provides for the licensing of totalisators operated by horse-racing clubs. Licence fees are prescribed by regulation and are payable annually in respect of the calendar year. For the year 1978 the fee payable was \$2 for each \$2,000 (or part of \$2,000) passing through the totalisator.

BOOKMAKERS BETTING TAX. The *Bookmakers Betting Tax Act, 1954-1970* provides for a tax on money paid or promised as the consideration for bets made by or on behalf of bookmakers. Rates of tax are prescribed as a proportion of the turnover of a racing year (1 August to 31 July). In respect of turnover of the year ended 31 July 1978 the rates applying to on-course transactions were 2 per cent of amounts up to \$100,000 and 2½ per cent of the remainder. For off-course transactions the rate was 2¼ per cent of amounts up to \$50,000, the rate payable on each additional \$50,000 of turnover increasing by ½ per cent up to \$300,000; on turnover exceeding \$300,000 the rate was 3½ per cent.

STAMP DUTIES. The *Stamp Act, 1921-1977* imposes stamp duties and prescribes the rates applying to a great number of transactions relating to a wide range of property, commodities and services.

MOTOR VEHICLE REGISTRATION FEES. The *Road Traffic Act, 1974-1977* provides for the registration of vehicles and prescribes the licence fees to be paid in respect of the several classes of vehicles required to be registered. Fees are based on a combination of power unit and tare weight (except for motor cycles, in respect of which the fee is related to engine capacity). For example, the annual licence fee for a motor car with an engine other than a rotary

type is one dollar and seven cents per power unit and an additional one dollar and seven cents for each fifty-one kilograms of the tare weight. The annual licence fee for a motor cycle is \$9·10 where the engine capacity is 250 cubic centimetres or less, and \$11·70 where the engine capacity is more than 250 cubic centimetres. A recording fee of \$4 is payable for the grant or renewal of any licence for a vehicle, and a fee of \$3 for the transfer of any licence.

MOTOR VEHICLE DRIVERS' LICENCES. The *Road Traffic Act, 1974-1977* authorises the issue of drivers' licences to persons of a minimum age of seventeen years, specifies other conditions to be satisfied, and prescribes the fees to be paid on application for, and issue or renewal of, a licence. The fee payable on application is \$4, and on issue or on renewal, for each period of twelve months, \$7 (or \$1 in the case of a licence to drive a vehicle for the carrying of passengers for reward).

OMNIBUS AND COMMERCIAL VEHICLE LICENCES AND FEES. The *Transport Commission Act, 1966-1976* provides for the licensing of public vehicles in the categories of omnibus, commercial goods vehicle, trailer or semi-trailer, and aircraft, as well as ships engaged in the coasting trade. Licence fees are as determined from time to time by the Commissioner of Transport, subject to certain maximum charges prescribed by the Act. In the case of an omnibus, for example, the fee may not exceed 6 per cent of the gross earnings, or \$10 per annum for each unit of the maximum number of passengers which it is licensed to carry, the basis of assessment being that considered by the Commissioner to be the more appropriate.

TAXI CONTROL BOARD LICENCES. The *Taxi-cars (Co-ordination and Control) Act, 1963-1978*, under which the Taxi Control Board is constituted, requires that taxi-cars operating in the Metropolitan Traffic Area and other areas as declared shall be licensed, and prescribes maximum fees payable. At 31 December 1978 these fees were \$50 on the issue or annual renewal of a licence where the licence is issued for unrestricted operations in the metropolitan area or, in any other cases, \$30. For the transfer of a licence the fee is a percentage, as determined by the Board, (not exceeding 10 per cent) of the market value of the taxi-car licence at the time of transfer.

ROAD MAINTENANCE CONTRIBUTION. The *Road Maintenance (Contribution) Act, 1965-1978* imposes a charge on the operations, subject to specified exemptions, of any commercial goods vehicle having a load capacity of more than 8·13 tonnes. At 31 December 1978 the rate of the charge was 0·17 cents per tonne-kilometre calculated on the basis of the tare weight plus two-fifths of the load capacity. The Act provides that, in specified circumstances, the charge may be levied on vehicles having a load capacity of 8·13 tonnes or less.

MOTOR VEHICLE THIRD PARTY INSURANCE SURCHARGE. The *Motor Vehicle (Third Party Insurance Surcharge) Act, 1962-1973* imposes a surcharge on premiums paid in respect of policies of insurance with The Motor Vehicle Insurance Trust. At 31 December 1978 the rate of the surcharge was \$5 per annum.

PAY-ROLL TAX. Pay-roll tax, which was formerly levied by the Australian Government has been collected by the States since September 1971. In Western Australia the enabling legislation comprises the *Pay-roll Tax Assessment Act, 1971-1977* and the *Pay-roll Tax Act, 1971-1974*. The tax is payable by each employer, with certain specified exceptions, on all wages and salaries paid in excess of \$5,000 per month (\$60,000 per annum). The rate of tax prescribed by the *Pay-roll Tax Act, 1971-1974* is 5 per cent.

CONTRIBUTIONS FROM INSURANCE COMPANIES TO FIRE BRIGADES. The *Fire Brigades Act, 1942-1978* specifies that 75 per cent of the estimated expenditure of the Fire Brigades Board be contributed by insurance companies by way of a compulsory levy which is based on a declared percentage of gross premiums of each insurance company.

OTHER TAXES, FEES, FINES, ETC. Consists of payments to public authorities by individuals and households, private non-profit organisations and corporate or quasi-corporate enterprises. Examples are firearm licences; boat registration fees; statutory levies on public corporations comprising the State Energy Commission, Metropolitan Water Supply, Sewerage, and Drainage Board and the Fremantle Port Authority; and judicial fines.

The following table shows the amounts of estate duty payable from 1 January 1979 on estates of persons dying on or after that date, classified according to the final balance of the estate.

**ESTATE DUTY—AMOUNTS PAYABLE FROM 1 JANUARY 1979
CLASSIFIED ACCORDING TO VALUE OF ESTATE**

Final balance of estate	Where deceased was domiciled in Western Australia at time of death			Where deceased was not domiciled in Western Australia at time of death
	Gross amount payable where estate passes to—			
	Children, etc. (a)	Brothers, sisters, or parents (b)	Any other person (c)	
\$	\$	\$	\$	\$
200	—	—	—	—
1,000	—	—	—	50
1,500	—	—	—	102
3,000	—	45	60	77
5,000	—	125	150	270
10,000	—	375	425	590
20,000	225	975	1,075	1,380
30,000	775	1,675	1,825	2,099
50,000	2,075	3,375	3,625	3,548
70,000	3,675	5,375	5,725	5,037
90,000	5,675	7,775	8,225	6,566
110,000	8,075	10,575	11,225	8,135
130,000	10,875	13,875	14,725	9,744
150,000	14,075	17,675	18,725	11,393
170,000	17,875	22,075	23,325	13,082
200,000	24,625	29,575	31,125	15,690
250,000	31,250	37,500	40,000	40,000
500,000	62,500	75,000	80,000	80,000

(a) In addition grandchildren, other issue, or dependent parents of the deceased person.
 (b) Includes brothers or sisters of the half blood or by step or adoptive relationship, and parents other than dependent parents.
 (c) Or any body corporate or unincorporate.

Rates of tax and the amounts of tax payable in respect of the assessment year 1977-78 on land of the values specified, are shown in the following table.

**LAND TAX—RATES OF TAX AND AMOUNTS
PAYABLE: ASSESSMENT YEAR 1977-78**

Unimproved value—		Rate	
Exceeding	Not exceeding	Tax on amount in first column	Tax per dollar on remainder
\$	\$	\$	cents
Nil	5,000	—	0·3
5,000	10,000	15	0·4
10,000	15,000	35	0·5
15,000	20,000	60	0·6
20,000	25,000	90	0·7
25,000	30,000	125	0·8
30,000	35,000	165	0·9
35,000	40,000	210	1·0
40,000	45,000	260	1·1
45,000	50,000	315	1·2
50,000	60,000	375	1·3
60,000	70,000	505	1·4
70,000	80,000	645	1·5
80,000	90,000	795	1·6
90,000	100,000	955	1·8
100,000	110,000	1,135	2·0
110,000	120,000	1,335	2·2
120,000	upwards	1,555	2·4

STATE AND LOCAL AUTHORITIES: TAXATION BY TYPE OF TAX
(\$'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Estate, gift, probate and succession duties	7,499	10,101	10,005	11,662	12,758
Property—					
Land tax	10,512	10,186	10,467	12,090	11,749
Local government rates	33,671	38,241	49,554	r 62,439	69,961
Metropolitan improvement rates	1,341	1,428	1,541	1,692	2,188
Other	—	—	—	—	182
Total, Property	45,524	49,855	61,562	r 76,221	84,080
Liquor licences	4,987	5,933	6,908	9,018	11,177
Tobacco licences	..	..	..	3,577	7,549
Gambling—					
Lotteries Commission	2,251	2,807	3,898	5,529	5,898
Racing—					
Totalisator Agency Board betting tax	4,598	5,733	7,014	8,141	9,010
Totalisator duty and licences	1,100	1,341	1,653	2,084	2,219
Bookmakers' betting tax and licences	527	648	723	860	1,028
Stamp duty	76	81	89	87	90
Total, Gambling	8,552	10,610	13,377	16,701	18,245
Ownership and operation of motor vehicles—					
Vehicle registration fees and taxes	16,129	17,311	26,740	r 32,191	35,963
Drivers' licences and fees	1,766	1,850	2,755	4,798	3,510
Stamp duty on vehicle registration	2,416	2,994	3,205	4,396	5,507
Road transport taxes—					
Omnibus and commercial vehicle licences and fees	778	1,002	1,280	1,423	1,539
Overload permits	223	233	241	264	300
Taxi licence fees	89	102	101	73	125
Road maintenance contribution	3,359	3,682	4,178	4,451	4,617
Motor vehicle third party insurance surcharge	2,402	2,592	2,754	2,930	3,170
Total, Motor Vehicles	27,162	29,766	41,254	50,525	54,731
Pay-roll tax (a)	32,492	48,990	75,013	91,877	106,229
Fire Brigade contributions from insurance companies	3,390	4,460	7,600	9,280	10,083
Stamp duties n.e.c.	23,627	28,019	26,741	39,904	49,071
Other taxes, fees, fines, etc.	6,748	7,786	13,001	16,502	18,900
GRAND TOTAL	159,981	195,520	255,461	r 324,807	372,825

(a) On 1 October 1971 the State Government commenced collection of pay-roll tax on wages paid or payable by employers after 31 August 1971; pay-roll tax had previously been levied by the Australian Government.

PENSION AND SUPERANNUATION SCHEMES

The Western Australian Government and many local government authorities and public corporations have established pension and superannuation schemes for eligible employees and their dependants, to which both employers and employees contribute. These schemes are operated either through separately constituted funds or through life insurance offices.

The *Superannuation and Family Benefits Act, 1938-1976* applies to employees of State Government Departments and some other public authorities. The Act establishes The Superannuation Fund and a Provident Account under the management of a Superannuation Board. Contributions made by the State are paid from the Consolidated Revenue Fund.

The *Superannuation, Sick, Death, Insurance, Guarantee and Endowment (Local Governing Bodies' Employees) Funds Act, 1947-1975* enables local government authorities to establish funds to provide benefits for their employees. Contributions made by an authority are paid from its ordinary revenue.

The *Parliamentary Superannuation Act, 1970-1976* establishes a Parliamentary Superannuation Fund to provide superannuation, pensions and other benefits for former Members of the Parliament of Western Australia and their dependants. The fund is financed from contributions paid by members and moneys appropriated from the Consolidated Revenue Fund.

The *Coal Mine Workers (Pensions) Act, 1943-1977* establishes a Coal Mine Workers' Pensions Fund to provide pensions and other benefits for persons formerly engaged in coal mining and for their dependants. The Fund is financed from contributions paid by employees and employers and moneys appropriated from the Consolidated Revenue Fund.

In the next table, particulars are given of pension and superannuation schemes established by the State Government, local government authorities, public corporations, the University of Western Australia, Murdoch University, and The Western Australian Institute of Technology. Particulars of the Parliamentary Superannuation Fund and the Coal Mine Workers' Pensions Fund are also included. Separate details are shown for schemes operated through separately constituted funds and for those operated through life insurance offices.

PUBLIC AUTHORITY PENSION AND SUPERANNUATION SCHEMES
(S'000)

Item	1972-73	1973-74	1974-75	1975-76	1976-77
Separately constituted funds—					
Income—					
Contributions towards premiums by—					
Employees	8,384	8,665	11,718	14,007	15,893
Employers	7,996	10,001	12,989	17,188	22,397
Other income	4,567	5,344	7,074	9,404	12,382
Total	20,947	24,010	31,781	40,599	50,672
Expenditure—					
Benefits to contributors	11,065	16,667	17,169	22,609	29,170
Other expenditure	157	589	855	376	152
Total	11,222	17,256	18,024	22,986	29,322
Accumulated funds	74,919	81,672	95,429	113,022	134,350
Schemes operated through life insurance offices—					
Income—					
Contributions towards premiums by—					
Employees	1,202	1,541	2,015	2,445	2,958
Employers	1,758	2,295	2,884	4,001	4,849
Other income	541	643	743	1,164	1,907
Total	3,502	4,478	5,642	7,610	9,714
Expenditure—					
Benefits to contributors	498	590	683	1,063	1,796
Other expenditure (including premiums)	2,958	3,858	4,996	6,715	8,074
Total	3,457	4,449	5,679	7,778	9,870
Assets of separately constituted funds—					
Cash and deposits—					
Deposits with Treasury	1,905	1,707	2,215	3,020	6,241
Other deposits and cash	162	342	435	688	110
Public authority securities—					
Australian Government	171	163	163	163	163
Other	55,221	59,001	68,269	78,481	89,853
Mortgages—					
Housing	966	1,206	1,013	1,214	1,993
Other	2,206	2,667	3,261	5,112	8,460
Loans to building societies	1,316	1,322	741	1,057	259
Company shares, debentures and notes	2,098	2,654	4,625	6,244	7,434
Other assets	11,231	12,955	15,257	17,762	20,902
Total	75,274	82,018	95,980	113,740	135,416
Less sundry creditors, etc.	356	346	551	719	1,066
Accumulated funds	74,919	81,672	95,429	113,022	134,350

Chapter VI—continued

Part 2—Private Finance

CURRENCY

The power to legislate with respect to currency, coinage and legal tender and the issue of paper money is vested by the Constitution in the Commonwealth Parliament. This power was originally exercised by the Commonwealth Government under the Coinage Act of 1909 and the Australian Notes Act of 1910. These Acts and later amendments were superseded by the *Reserve Bank Act* 1965 and the *Currency Act* 1965 when a decimal currency system was adopted in Australia with effect from 14 February 1966.

Prior to 14 February 1966 the Australian currency was based on the system then in use in the United Kingdom, and therefore had as its unit the pound (£) divided into twenty shillings (s.) each of twelve pence (d.). The *Currency Act* 1965, provided for the adoption of a monetary unit known as the 'dollar', which is divided into 100 minor units, or 'cents'. Coins are in the denominations of 50 cents, 20 cents, 10 cents, 5 cents, 2 cents and 1 cent. The *Reserve Bank Act* 1965 authorises the issue of notes in the denomination of 1 dollar, 2, 5, 10, 20 and 50 dollars, or in any other denomination that the Treasurer determines and notes are currently issued in all of these.

Australian notes are legal tender in Australia to any amount, coins of the denominations of 5, 10, 20 and 50 cents for amounts not exceeding five dollars, and two-cent and one-cent coins for amounts up to and including 20 cents.

Rates of Exchange

The following table shows the average telegraphic transfer selling rates of exchange for Sydney (New South Wales) on a selection of overseas countries. The figures appearing in the table, which are averages of daily quotations, are based on rates quoted by the Commonwealth Trading Bank of Australia.

OVERSEAS EXCHANGE RATES—AVERAGE TELEGRAPHIC TRANSFER SELLING RATES
SYDNEY ON OVERSEAS COUNTRIES: JUNE 1978

Country	Currency	Number to \$A1	Country	Currency	Number to \$A1
Austria	Schillings	16.92	Netherlands	Guilders	2.526
Belgium (a)—			New Caledonia	Francs	94.05
Financial rate	Francs	37.06	New Zealand	Dollars	1.113
Convertible rate	Francs	36.94	Norway	Kroner	6.11
Canada	Dollars	1.2681	Pakistan	Rupees	11.14
China, People's Republic of	Renminbi	1.933	Philippine Islands	Pesos	8.228
Denmark	Kroner	6.37	Singapore	Dollars	2.623
Fiji	Dollars	0.971	South Africa	Rands	0.9754
France	Francs	5.175	Spain	Pesetas	89.67
Germany, Federal Republic of	Deutsche Marks	2.355	Sri Lanka	Rupees	17.162
Greece	Drachmae	41.51	Sweden	Kronor	5.210
Hong Kong	Dollars	5.244	Switzerland	Francs	2.129
India	Rupees	9.413	Thailand	Bahts	22.75
Italy	Lire	971.00	United Kingdom	Pounds	0.616
Japan	Yen	242.18	United States of America	Dollars	1.1364

(a) The 'convertible' rate applies to trade transactions accompanied by documentation; in respect of other transactions the 'financial' rate applies.

BANKING

The banking system in Western Australia comprises the Commonwealth banking institutions, The Rural and Industries Bank of Western Australia and the private trading banks, summary details of which are given below.

Commonwealth Banking Institutions

Prior to the operation of the Reserve Bank Act and the Commonwealth Banks Act, passed by the Commonwealth Parliament in 1959, the Commonwealth banking institutions were the Commonwealth Bank, the Commonwealth Trading Bank and the Commonwealth Savings Bank. The Commonwealth Bank, in addition to performing the functions of a central bank, controlled the Australian note issue through a Note Issue Department and also provided special banking facilities through the Rural Credits Department, the Mortgage Bank Department and the Industrial Finance Department. The policy of the Banks was determined by a Commonwealth Bank Board.

The *Reserve Bank Act* 1959 repealed the Commonwealth Bank Acts, the first of which was passed in 1911, and established the Reserve Bank of Australia under the control of a Reserve Bank Board. The Reserve Bank was constituted as the central bank and took over the Note Issue Department and the Rural Credits Department of the former Commonwealth Bank. The function of the Rural Credits Department is to make available to statutory authorities or co-operative associations of primary producers advances to assist the marketing or processing of primary products.

The *Commonwealth Banks Act* 1959 constituted the Commonwealth Banking Corporation, which came into being on 14 January 1960 as the authority responsible for the operations of the Trading Bank, the Savings Bank and a new Development Bank. The Development Bank was formed basically from the Mortgage Bank Department and the Industrial Finance Department of the Commonwealth Bank, to provide finance and advice to persons to assist them in primary production or in the establishment or development of industrial undertakings, particularly small enterprises.

The Rural and Industries Bank of Western Australia

The Rural and Industries Bank of Western Australia was established by the State Government under the Rural and Industries Bank Act of 1944 to replace the former Agricultural Bank of Western Australia. The Bank consists of a Rural Department and a Government Agency Department, and management is vested in five Commissioners. The Rural Department provides general banking services and, since 1956, has also conducted savings bank business through a Savings Bank Division.

Trading Banks

At 30 June 1978 the trading banks conducting business in Western Australia comprised the Commonwealth Trading Bank of Australia, The Rural and Industries Bank of Western Australia (Rural Department), the Australia and New Zealand Banking Group Limited, The Bank of Adelaide, the Bank of New South Wales, the Banque Nationale de Paris, The Commercial Bank of Australia Limited, The Commercial Banking Company of Sydney Limited and The National Bank of Australasia Limited.

The operations of trading banks are governed by the *Banking Act* 1959 (Commonwealth) which places them under a degree of control by the central bank, the Reserve Bank of Australia.

The following table shows the averages of total amounts on deposit with the trading banks and of their outstanding advances during each of the years 1973-74 to 1977-78. The figures relate to Western Australian business only and represent the annual average of amounts as at the close of business each Wednesday. The information is prepared from returns furnished under the requirements of the *Banking Act* 1959 by all trading banks except The Rural and Industries Bank of Western Australia, which supplies information by special arrangement.

**TRADING BANKS—AVERAGES OF DEPOSITORS' BALANCES AND BANK ADVANCES
(\$'000)**

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Depositors' balances—					
Australian Government and State Government—					
Fixed	43,542	51,435	43,517	142,153	156,673
Current—					
Bearing interest	15	12	16	1,275	4,056
Not bearing interest	3,983	4,291	4,930	4,800	2,183
Other than Australian Government and State Government—					
Fixed	374,584	433,706	512,646	631,435	670,993
Current—					
Bearing interest	34,376	36,998	45,218	43,316	41,059
Not bearing interest	372,503	380,150	486,026	553,834	573,245
Total	829,002	906,589	1,092,350	1,376,813	1,448,208
Loans, advances and bills discounted (a)	604,460	673,526	791,376	927,708	1,163,207
Ratio of loans, advances, etc. to total balances (per cent)	72.9	74.3	72.4	67.4	80.3

(a) Excludes loans to authorised dealers in the short-term money market.

In the following table, which relates to Western Australian business only, the average amount on deposit with each trading bank and the average of its outstanding advances during the month of June 1978 are shown, together with the number of branches and agencies of each bank at 30 June 1978.

TRADING BANKS—BRANCHES, AGENCIES, DEPOSITS AND ADVANCES: JUNE 1978

Bank	Number of branches (a)	Number of agencies (a)	Depositors' balances (b)			Loans, advances, and bills discounted (b) (c)
			Not bearing interest	Bearing interest	Total	
			\$'000	\$'000	\$'000	\$'000
Commonwealth Trading Bank of Australia	82	22	97,509	137,339	234,848	243,298
The Rural and Industries Bank of Western Australia (Rural Department)	78	21	85,167	227,653	312,818	342,988
Other trading banks—						
Australia and New Zealand Banking Group Limited	76	10	88,087	127,181	215,268	146,373
The Bank of Adelaide	2	2	3,091	5,963	9,054	8,062
Bank of New South Wales	130	23	151,708	161,925	313,633	272,014
Banque Nationale de Paris	1	—	1,470	34,714	36,184	8,035
The Commercial Bank of Australia Limited	44	3	40,524	38,595	79,119	75,858
The Commercial Banking Company of Sydney Limited	10	—	7,943	9,577	17,520	8,350
The National Bank of Australasia Limited	82	18	90,016	111,724	201,739	170,294
Total, Other trading banks	345	56	382,836	489,678	872,515	688,984
TOTAL, ALL TRADING BANKS	505	99	565,512	854,670	1,420,181	1,275,270

(a) At 30 June. (b) Averages based on amounts at close of business each Wednesday.

(c) Excludes loans to authorised dealers in the short-term money market.

In July 1978 the outstanding advances of the trading banks, excluding The Rural and Industries Bank of Western Australia and the Banque Nationale de Paris, amounted in total to \$928.0 million. Business advances represented \$572.4 million, personal advances \$342.3 million, advances to non-profit organisations \$8.0 million, and to public authorities other than the Australian Government and the State Government \$5.0 million. Business advances were mainly for rural industry (\$147.6 million), for retail and wholesale trade (\$103.2 million) and for mining (\$51.1 million). Of the personal advances, loans for the building or purchasing of homes accounted for \$56.2 million.

The following table contains particulars of the average weekly debits to customers' accounts in each year from 1973-74 to 1977-78 and in each quarter of those years. The figures represent the total of all cheques and charges debited to accounts of customers of all trading banks and, in addition, the Rural Credits Department of the Reserve Bank of Australia and the Commonwealth Development Bank of Australia. Debits to Australian Government and State Government accounts at city branches are excluded as they are subject to abnormal influences. The figures are derived by averaging the debits made during weeks ended on Wednesdays during the several periods shown.

TRADING BANKS
AVERAGE WEEKLY DEBITS TO CUSTOMERS' ACCOUNTS (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
WEEKLY AVERAGE (<i>\$ million</i>)					
Average for quarter ended—					
September	394.0	472.5	614.8	731.6	890.5
December	432.3	516.0	675.4	809.1	979.0
March	452.4	508.6	688.4	842.8	991.7
June	478.8	566.5	741.6	874.2	1,042.3
Average for year	439.4	515.9	680.0	814.4	975.9

PER HEAD OF MEAN POPULATION
(*dollars*)

Average for quarter ended—					
September	367.5	429.8	546.0	623.7	741.8
December	400.3	464.4	595.8	685.7	810.8
March	415.4	453.5	602.4	710.0	816.8
June	438.4	504.1	646.8	732.4	854.6
Average for year	405.4	463.1	597.6	686.4	806.2

(a) Excludes debits to Australian Government and State Government accounts at city branches; see letterpress immediately preceding table.

Bank Charges. These charges, comprising three separate elements, are calculated quarterly and debited as one composite item. In addition to a basic maintenance fee, there is a ledger activity fee, and a collection fee on cheques deposited in excess of twenty per quarter. Rebates are allowable on ledger activity fees where credit balances are maintained at the level of \$1,000 or more throughout the quarterly period.

Savings Banks

At 31 December 1978, savings banks operating in Western Australia comprised the Commonwealth Savings Bank of Australia, The Rural and Industries Bank of Western Australia (Savings Bank Division), the Australia and New Zealand Savings Bank Limited, The Bank of Adelaide Savings Bank Limited, the Bank of New South Wales Savings Bank Limited, The Commercial Savings Bank of Australia Limited, the C.B.C. Savings Bank Limited and The National Bank Savings Bank Limited.

Individual depositors may not operate on their savings bank accounts by cheque, but cheque accounts are generally available to non-profit organisations such as friendly, co-operative and charitable societies. Interest is paid on deposits with savings banks and no charge is made for the keeping of accounts. A school savings bank service is provided and its operations, except for the number of accounts open at the end of each year, are included in the figures shown in the following table which shows savings bank transactions for each of the years 1973-74 to 1977-78.

SAVINGS BANK TRANSACTIONS

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Deposits (a)	\$'000 1,317,384	1,625,973	1,895,449	2,056,604	2,248,260
Withdrawals (a)	\$'000 1,265,823	1,365,650	1,818,297	2,040,154	2,210,319
Excess of deposits over withdrawals	\$'000 51,561	60,323	77,152	16,450	37,941
Interest added to accounts	\$'000 25,281	34,123	41,114	46,405	50,021
Accounts open at end of year (b)	No. 1,327,699	1,401,485	1,443,883	1,466,200	1,511,092
Depositors' balances at end of year—					
Total	\$'000 684,974	779,427	897,693	960,548	1,048,510
Average per operative account	\$ 516	556	622	655	694
Average per head of population	\$ 632	694	800	812	861

(a) Includes inter-branch transfers but excludes transfers from and to other States, i.e. accounts of less than \$2 which have not been operated on for more than two years).

(b) Excluding inoperative accounts

The following table, which relates to Western Australian business only, shows the number of branches and agencies of each of the savings banks at 30 June 1978. The amount of depositors' balances held by each bank at the end of June 1978 is also shown. This information, together with similar particulars for each of the other Australian States, is published monthly in the *Commonwealth of Australia Gazette*, and is prepared from returns furnished under the requirements of the *Banking Act 1959* by all savings banks except The Rural and Industries Bank of Western Australia (Savings Bank Division), which supplies information by special arrangement.

SAVINGS BANKS—BRANCHES, AGENCIES AND DEPOSITS
JUNE 1978

Bank	Number of branches (a)	Number of agencies (a)	Depositors' balances (b)
			\$'000
Commonwealth Savings Bank of Australia	92	590	413,524
The Rural and Industries Bank of Western Australia (Savings Bank Division)	78	448	228,494
Other savings banks—			
Australia and New Zealand Savings Bank Limited	76	162	98,823
The Bank of Adelaide Savings Bank Limited	2	5	2,252
Bank of New South Wales Savings Bank Limited	130	335	182,974
The Commercial Savings Bank of Australia Limited	44	35	36,045
C.B.C. Savings Bank Limited	10	7	6,792
The National Bank Savings Bank Limited	82	55	79,606
Total, Other savings banks	344	599	406,492
TOTAL, ALL SAVINGS BANKS	514	1,637	1,048,510

(a) At 30 June. (b) Particulars for the Commonwealth Savings Bank and The Rural and Industries Bank of Western Australia (Savings Bank Division) relate to 30 June, and those for other savings banks to the last Wednesday in June.

In December 1969 approval was given by the Reserve Bank of Australia to a proposal for the establishment of a new type of savings bank account on which interest could be paid at rates above the general deposit rate paid by savings banks. The holder of such an account is required to comply with certain conditions relating to its operation, these conditions varying between banks. Notice is required before a withdrawal may be made, the account must have, at all times, a specified minimum balance and transactions are in minimum amounts of \$100. The maximum rate of interest payable on these 'investment' accounts at 30 June 1978 was 8.50 per cent per annum.

Bank Interest Rates

The following table shows bank interest rates current at 30 June 1978, the dates from which they became operative, and the rates which were applicable prior to those dates, for both loans and deposits.

BANK INTEREST RATES AT 30 JUNE 1978

Particulars	Rate per annum	Date from which operative	Previous rate per annum
	per cent		per cent
LENDING RATES			
Trading banks—			
Overdraft—			
Less than \$100,000 (a)	10.50	1976—February	11.50
\$100,000 and over	(b)	1972—February	8.25
Unsecured personal loans (a) (c)	7.75	1976—February	7.25
Commonwealth Development Bank of Australia—			
Rural loans (d)	10.50	1974—July	8.50
Industrial loans (d)	10.50	1976—February	11.00
Reserve Bank of Australia, Rural Credits Department	9.50–10.00	1974—July	7.00–7.25
Savings banks—			
Housing loans to individuals (e)	8.75–10.00	1978—February	9.25–10.50
Other loans—			
Less than \$100,000 (a)	10.50	1976—February	11.50
\$100,000 and over	(b)	1972—March	7.75

DEPOSIT RATES

Trading banks—			
Fixed deposits of less than \$50,000—			
3 months and less than 6 months	7.50–7.75	1978—April	7.50–8.25
6 months and less than 2 years	8.00–9.00	February	8.25–9.00
2 years and less than 4 years	8.00–9.50	1976—April	8.00–8.25
Fixed deposits of \$50,000 and over (a) (b)—			
30 days to 4 years	10.00	1974—July	8.00
Certificates of deposit of \$50,000 and over (b)—			
3 months to 4 years	(f)	1973—September	6.50
Savings banks—			
Ordinary accounts (g)—			
\$4,000 and under	3.75–5.25	1975—November	3.75–6.00
Over \$4,000	5.00–6.25	1978—April	6.00–6.50
Investment accounts (h)	7.50–8.50	February	8.00–9.00

(a) Maximum rate. (b) Actual rates are a matter for negotiation between banks and their customers. (c) Flat rate. (d) Basic rate. (e) Standard range of rates on new loans. (f) Not subject to maximum rate. (g) The lower rate shown has predominated in the case of most banks. (h) Subject to special notice and minimum balance requirements.

INSURANCE

General Insurance

General insurance is available to the public in Western Australia from a number of companies and, in some fields, from the State Government Insurance Office. During 1977–78 there were 89 general insurance companies operating in Western Australia. There is also a Motor Vehicle Insurance Trust whose activities are confined to motor vehicle third party insurance.

The *Insurance Act 1973* (Commonwealth) establishes a comprehensive system of supervision of general insurance business throughout Australia. The Act prescribes minimum standards of financial soundness and authorises the investigation of any insurer who fails to meet the required standards or who appears to be likely to fall below those standards. The Act provides for the appointment of an Insurance Commissioner who is responsible, subject to any directions of the Treasurer, for the administration of the legislation.

The State Government Insurance Office covers fire, marine and general insurance risks for State Government instrumentalities and semi-government and local government authorities. It also conducts some classes of insurance business for the general public, the principal transactions being employers' liability (workers' compensation) and comprehensive motor vehicle insurance. By authority of amendments to the State Government Insurance Office Act in 1954 and 1958 the Office engages in personal accident insurance in respect of school children and students under a policy which indemnifies the parent or guardian against the cost of medical and surgical treatment and funeral and other expenses.

The following table gives details of general insurance transactions during each of the years from 1972-73 to 1976-77. It contains only selected items of statistics and is therefore not suitable for the construction of a 'Profit and Loss' statement or 'Revenue Account'. The amounts shown as 'Premiums' represent the full amount receivable in respect of policies issued or renewed during the year, less stamp duty, returns, rebates and bonuses paid or credited to policy holders during the year. They are not adjusted to provide for premiums unearned at the end of the year and consequently the amounts differ from 'earned premium income' appropriate to the year. The amounts shown as 'Claims' include provision for outstanding claims and represent claims or losses incurred during the year. Salvage and other amounts recoverable have been deducted. The transactions of The Motor Vehicle Insurance Trust are included and they are also shown separately in the table in the section *Motor Vehicle Third Party Insurance*. The figures shown under the heading of 'Contributions to fire brigades' represent payments made to the Western Australian Fire Brigades Board for the operation and maintenance of fire brigades, as required by the Fire Brigades Act.

Over the five years from 1972-73 to 1976-77, total premiums increased from \$90,465,000 to \$210,531,000 and total claims from \$58,389,000 to \$144,076,000.

GENERAL INSURANCE (a)
(\$'000)

Particulars	1972-73	1973-74	1974-75	1975-76	1976-77
Premiums—					
Fire	11,972	13,408	14,678	17,387	18,398
Crop (b)	1,089	2,604	4,011	4,809	4,392
Houseowners' and householders'	7,184	8,452	10,386	14,487	15,230
Marine	3,632	3,741	3,934	4,938	6,136
Motor vehicle comprehensive	23,360	26,887	36,169	r 43,100	54,629
Compulsory third party	16,713	15,590	14,721	17,266	25,751
Employers' liability (c)	12,877	20,883	31,947	45,627	61,248
Public liability	2,128	2,261	2,375	2,554	3,593
Personal accident	4,238	5,194	4,631	5,202	6,343
Other	7,272	8,023	11,079	12,129	14,811
Total, Premiums	90,465	107,043	133,931	r 167,499	210,531
Claims—					
Fire	3,813	4,640	11,073	r 12,007	4,395
Crop (b)	777	1,841	2,666	1,223	1,464
Houseowners' and householders'	2,311	3,318	5,608	7,138	6,919
Marine	1,755	2,033	2,838	r 3,704	4,097
Motor vehicle comprehensive	15,890	19,644	25,034	r 27,443	34,080
Compulsory third party	15,941	20,242	25,004	16,354	31,512
Employers' liability (c)	12,558	17,770	37,593	45,517	50,428
Public liability	937	1,057	1,759	1,031	1,606
Personal accident	1,513	1,573	1,759	r 1,887	2,302
Other	2,895	2,976	6,255	r 7,475	7,273
Total, Claims	58,389	75,094	119,590	r 123,779	144,076
Selected items of expenditure—					
Contributions to fire brigades	2,845	4,044	5,409	6,194	8,483
Commission and agents' charges	6,694	7,909	9,453	9,967	13,061
Expenses of management	15,437	18,235	23,154	23,943	30,215
Taxation	2,005	2,167	2,305	613	661
Other underwriting expenses	n.a.	n.a.	760	699	1,001

(a) Includes transactions of The Motor Vehicle Insurance Trust and the State Government Insurance Office. (b) Figures for years prior to 1974-75 relate to hailstone only. (c) Excludes workers' compensation insurance in the coal mining industry.

Life Insurance

Life insurance business throughout Australia is regulated by the *Life Insurance Act* 1945 (Commonwealth), which requires companies to be registered by the Life Insurance Commissioner appointed under the Act. The purpose of the Act, which supersedes State legislation, is to place life insurance business on a uniform basis throughout the Commonwealth and to afford protection to policy holders.

At 30 June 1978, there were thirty-six life insurance companies or societies operating in Western Australia. In terms of total sums insured, life insurance policies relate

predominantly to ordinary endowment or whole-of-life insurance and superannuation, although an appreciable volume of industrial business is also undertaken.

Details of policies, sums insured and annual premiums for each class of business are given in the following table for the years 1973-74 to 1977-78.

LIFE INSURANCE

Year	New policies issued			Policies discontinued or reduced			Policies, etc. existing at end of year		
	Policies	Sum insured	Annual premiums	Policies	Sum insured	Annual premiums	Policies	Sum insured	Annual premiums
	Number	\$m	\$m	Number	\$m	\$m	Number	\$m	\$m

ORDINARY BUSINESS

1973-74	52,777	544.5	8.9	23,481	173.3	3.5	509,154	2,799.8	57.4
1974-75	51,855	634.1	9.4	36,230	223.2	4.4	524,779	3,210.8	62.4
1975-76	47,870	715.5	9.7	38,349	254.2	5.1	534,300	3,672.0	67.1
1976-77	48,575	882.0	10.5	42,679	352.1	6.3	540,196	4,201.8	71.3
1977-78	48,163	992.8	10.7	49,531	426.4	7.7	538,384	4,767.2	74.4

INDUSTRIAL BUSINESS

1973-74	7,321	14.8	0.5	10,264	10.0	0.4	153,487	102.3	3.9
1974-75	5,830	14.0	0.5	14,609	10.7	0.4	144,708	105.7	4.0
1975-76	5,085	14.7	0.5	14,074	9.9	0.4	135,719	110.4	4.1
1976-77	4,394	15.0	0.5	12,599	10.5	0.4	127,514	114.9	4.2
1977-78	3,609	13.8	0.1	12,875	12.5	-	118,248	116.3	4.2

SUPERANNUATION BUSINESS

1973-74	7,819	201.2	5.6	(a) 11,200	79.1	2.3	45,749	574.0	17.6
1974-75	8,535	264.9	7.4	4,710	74.3	2.4	49,574	764.7	22.6
1975-76	11,007	358.8	10.1	5,228	110.0	3.1	55,353	1,013.4	29.5
1976-77	10,392	385.4	10.2	4,991	148.4	3.7	60,754	1,250.3	36.0
1977-78	10,799	634.4	14.8	5,135	190.5	5.3	66,371	1,694.2	45.6

ORDINARY, INDUSTRIAL AND SUPERANNUATION BUSINESS

1973-74	67,917	760.5	15.0	44,945	262.4	6.1	708,390	3,476.2	78.9
1974-75	66,220	913.0	17.3	55,549	308.1	7.1	719,061	4,081.1	89.0
1975-76	63,962	1,088.9	20.3	57,651	374.2	8.6	725,374	4,795.8	100.7
1976-77	63,361	1,282.3	21.2	60,269	511.1	10.3	728,464	5,567.0	111.5
1977-78	62,571	1,641.0	25.6	67,541	629.4	13.0	723,003	6,577.7	124.2

(a) Mainly because of the conversion of a superannuation scheme from individual policies to a blanket policy.

Motor Vehicle Third Party Insurance

Third party insurance in connection with motor vehicle accidents became compulsory on 1 July 1944 under the provisions of the Motor Vehicle (Third Party Insurance) Act of 1943. The Motor Vehicle Insurance Trust was established by an amendment to the Act in 1948 and comprises the general manager of the State Government Insurance Office and four other members nominated by participating approved insurers other than the State Government Insurance Office.

The Trust administers a Motor Vehicle Insurance Fund in which approved insurers participate. Premiums received from motor vehicle third party insurance and revenue from other sources constitute annual 'pools' and, after payment of claims and other expenses appropriate to each pool, the resulting profit or loss is shared by the participating insurers, which include the State Government Insurance Office. These shares cannot

be finally determined until the last claim is paid and it is usually several years before a pool has satisfied all the claims attributable to it. For this reason, the figures given in the following table are subject to progressive revision as the business of each pool approaches finality.

Details of the revenue and expenditure of The Motor Vehicle Insurance Trust for the period 1973-74 to 1977-78 appear in the next table.

THE MOTOR VEHICLE INSURANCE TRUST
($\$^{\circ}000$)

Revenue and expenditure	Pool (a) for the year—				
	1973-74	1974-75	1975-76	1976-77	1977-78
Revenue—					
Premiums	14,723	14,668	17,226	25,766	(b) 35,640
Interest received	2,887	2,361	2,505	2,615	1,401
Total, Revenue...	17,610	17,029	19,730	28,381	(b) 37,041
Expenditure—					
Claims (c)	17,586	21,081	26,728	28,847	(d) 37,323
Commission	75	73	73	76	78
Management expenses	424	540	661	710	748
Taxation	14	20	23	25	28
Total, Expenditure	18,099	21,714	27,485	29,658	(d) 38,177

(a) See accompanying letterpress to 30 June 1978. (b) Inclusive of \$8.44 million unearned premiums. (c) Includes estimate for claims outstanding. (d) Includes an allowance for claims not notified.

Health Insurance Organisations

Health insurance is offered by a number of organisations which provide one or more types of benefit covering such items as hospital and medical fees, funeral expenses and sick pay to or on behalf of contributing members and their dependants. They include societies registered under the *Friendly Societies Act, 1894-1975* and other organisations registered under the *National Health Act 1953* (Commonwealth).

Benefits are available in a wide range to meet the cost, either wholly or in part, of such services as treatment by a general or specialist medical practitioner (including surgical operations and obstetrical attention), X-ray, cardiographic and pathological examinations, physiotherapy, dental treatment, hospital care, home nursing and ambulance transport. Members of friendly societies may contribute also for the supply of medicines and some societies maintain endowment assurance funds and supplementary death benefit funds.

The following tables give details, for the years 1973-74 to 1977-78, of the membership and the financial activities of friendly societies registered under the *Friendly Societies Act*. 'Benefit' members are those who contribute to the Sick and Funeral Fund of a society and 'other' members are principally those who pay only for medical and hospital benefits. Total membership of registered societies at the end of 1977-78 stood at 65,067 and the balance of funds amounted to \$7,424,000.

FRIENDLY SOCIETIES—NUMBER, MEMBERS AND SICKNESS BENEFITS

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Registered societies	11	11	11	11	11
Branches	237	236	231	222	219
Members at end of year—					
Benefit members of sick and funeral funds	13,424	13,004	12,534	11,939	11,403
Total members (all benefits)	66,832	80,788	80,084	74,377	65,067
Sickness benefits—					
Number of members paid	1,622	1,528	1,377	1,226	1,093
Number of weeks of sick pay	44,868	43,091	30,630	38,624	35,873

FRIENDLY SOCIETIES—REVENUE AND EXPENDITURE
(\\$'000)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Revenue—					
Fees, contributions and levies	5,007	6,936	6,177	12,714	14,671
Interest, dividends and rent	204	232	249	265	294
Other	307	355	525	788	875
Total, Revenue	5,518	7,523	6,951	13,767	15,840
Expenditure—					
Sick pay	34	33	37	35	31
Medical attendance and medicine	4,463	6,307	6,011	10,813	13,915
Death benefits	57	61	58	60	61
Administration	354	436	509	649	753
Other	246	237	309	578	766
Total, Expenditure	5,154	7,074	6,924	12,135	15,526
Balance of funds at end of year	5,002	5,451	5,478	7,110	7,424

BUILDING SOCIETIES

Building societies in Western Australia are registered under the provisions of the *Building Societies Act, 1976-1977* primarily for the purpose of raising funds to assist members by granting loans, secured on mortgage, to build or acquire homes. They also provide a means of investment for shareholder members, trustee funds and other depositors. The funds of the societies may be in the form of payment for fully-paid shares, subscriptions for contributing shares, money placed on deposit, or negotiated loans. Another important source of revenue became available to the societies in 1956-57 when, under the *Housing Agreement Act 1956* (Commonwealth), it was provided that moneys should be allocated to approved institutions from Australian Government funds advanced to the States for housing. The current legislation, the *Housing Assistance Act 1978* makes provision for financial assistance to the States for the three years ended 30 June 1981. The Act also provides that the amount of home purchase assistance to be made to the States in respect of the financial year ending 30 June 1981, shall be at least 40 per cent of the total amount of the advances in that financial year. Moneys received by the States under this Act may be made available to home purchasers through Building Societies as well as other lending agencies.

The *Building Societies Act, 1976-1977* provides for the constitution of a Building Societies Advisory Committee of six members, comprising the Registrar of Building Societies as chairman and five other members appointed by the Minister. Of the five members, one shall be the Commissioner for Consumer Affairs or an officer of the Bureau of Consumer Affairs nominated by the Commissioner, three shall be persons each having experience in the conduct and management of a society or societies, and one shall be a person having extensive financial knowledge or experience but who is unconnected with the business of making loans for housing purposes.

The functions of the Committee, as set out in the Act, are to submit recommendations to the Minister for the more effective operation of societies; to make recommendations and submit proposals to the Minister from time to time with respect to regulations and model rules to be made under the Act; to investigate and report to the Minister on such other matters relating to societies and the provision of funds for home finance as may be referred to it by the Minister; to advise the Registrar on any matters referred to it by him; and to perform such other functions as may be prescribed.

The following table shows particulars of the activities of permanent and terminating building societies registered in Western Australia for the years 1975-76 and 1976-77.

BUILDING SOCIETIES (a)

Particulars	1975-76	1976-77
PERMANENT SOCIETIES		
Number of societies	10	10
	\$'000	\$'000
Liabilities—		
Withdrawable shares	522,517	646,176
Deposits	286,320	383,451
Loans	25,695	29,525
Other	14,650	19,568
Total, Liabilities	849,182	1,078,720
Assets—		
Amount owing on loans	632,929	851,896
Deposits	162,577	105,022
Bills, bonds and other securities	42,857	43,624
Other	10,819	78,178
Total, Assets	849,182	1,078,720
Expenditure—		
Interest paid and payable	69,617	84,981
Other	11,879	16,317
Total, Expenditure	81,496	101,298
Income—		
Interest received and receivable	81,490	102,802
Other	2,849	3,729
Total, Income	84,339	106,531

TERMINATING SOCIETIES

Number of societies	521	593
	\$'000	\$'000
Liabilities—		
Loans—		
Banks	n.a.	23,715
Government (b)	46,322	56,292
Other	n.a.	12,073
Other	n.a.	2,949
Total, Liabilities	80,504	95,029
Assets—		
Amount owing on loans (c)	71,568	84,534
Other	8,935	10,495
Total, Assets	80,504	95,029
Expenditure	n.a.	6,217
Income	n.a.	6,540

(a) The financial years shown do not relate to a uniform accounting period, the actual period varying according to the financial year adopted by individual societies. (b) Loans received by societies through the 1973-74 Commonwealth and State Housing Agreement. (c) Net of borrowing members' subscriptions for actuarial societies. Actuarial societies are those in which repayments of an advance are not normally offset against the advance until the sum of total subscriptions plus interest on these subscriptions equals the advance.

INSTALMENT CREDIT FOR RETAIL SALES

The statistics in the following tables cover all types of instalment credit schemes which relate primarily to the financing of retail sales of goods in which repayment is made by regular predetermined instalments. Types of schemes covered include hire purchase, time payment, budget account and personal loans which relate primarily to the financing of retail sales of goods. In these statistics the term 'retail sales' relates to retail sales by retail establishments coming within the scope of the Censuses of Retail Establishments conducted periodically by the Australian Statistician, Canberra (see Chapter IX, Part 2).

Credit schemes which do not involve repayment by regular predetermined instalments, lay-bys, and all credit transactions which relate mainly to the financing of 'producer' type goods such as plant, machinery and motor vehicles which would normally be used for *commercial* purposes are outside the scope of these statistics. In addition, the instalment credit transactions of businesses covered by these statistics which relate primarily to the financing of sales of land, buildings, property improvements, travel and services such as repair and maintenance work, and schemes involving rental or leasing are not included.

In the following tables, statistics of type of business have been classified according to 'Finance companies' and 'Other businesses'. A definition of the former term is given in the section *Finance Companies*. Most of the businesses included in the category 'Other businesses' are those operating retail establishments which come within the scope of the Census of Retail Establishments and which provide instalment credit for retail sales of consumer commodities. The remaining businesses comprising unincorporated finance businesses, and businesses other than wholesalers and manufacturers, whose financing activities would generally be regarded as ancillary to some other function.

Details of balances outstanding at 30 June for the years 1974 to 1978, according to type of business, are given in the next table.

**INSTALMENT CREDIT FOR RETAIL SALES
BALANCES OUTSTANDING (a) r
(\$ million)**

At 30 June—	Type of business		
	Finance companies	Other businesses	Total
1974	162.9	16.1	179.0
1975	162.0	14.9	176.9
1976	199.1	14.5	213.6
1977	255.1	15.3	270.3
1978	301.5	14.5	316.1

(a) Includes hiring charges, interest and insurance.

In interpreting movements in outstanding balances, it should be noted that these movements are determined not only by new amounts financed and cash collections under existing agreements, but also by other liquidations of balances such as rebates allowed for early payouts and bad debts written off.

The amount financed in respect of instalment credit for retail sales of household and personal goods, and vehicles, according to type of credit and type of business during the years 1973-74 to 1977-78 is shown in the next two tables.

**INSTALMENT CREDIT FOR RETAIL SALES—AMOUNT FINANCED
HOUSEHOLD AND PERSONAL GOODS r
(\$ million)**

Year	Finance companies			Other businesses			All businesses		
	Hire purchase	Other instalment credit	Total	Hire purchase	Other instalment credit	Total	Hire purchase	Other instalment credit	Total
1973-74	6.5	1.1	7.6	12.0	6.3	18.3	18.6	7.4	26.0
1974-75	6.9	0.2	7.1	13.8	6.3	20.1	20.7	6.5	27.2
1975-76	5.5	8.7	14.3	6.6	14.3	21.0	12.1	23.1	35.2
1976-77	6.4	16.1	22.4	5.5	16.5	22.1	11.9	32.6	44.5
1977-78	5.9	17.6	23.5	5.6	15.8	21.4	11.5	33.3	44.9

INSTALMENT CREDIT FOR RETAIL SALES—AMOUNT FINANCED
MOTOR VEHICLES, ETC.—ALL BUSINESSES †
(\$ million)

Year	Hire purchase				Other instalment credit				Total hire purchase and other instalment credit
	Cars and station wagons		Other (a)	Total	Cars and station wagons		Other (a)	Total	
	New	Used			New	Used			
1973-74	26.1	59.2	8.4	93.8	2.9	2.9	1.1	6.9	100.7
1974-75	27.4	37.6	8.9	73.9	3.5	2.0	1.2	6.7	80.5
1975-76	32.4	51.5	14.5	98.4	3.9	3.6	0.9	8.5	106.9
1976-77	36.9	65.0	18.8	120.7	4.5	4.6	0.6	9.7	130.4
1977-78	37.7	73.3	19.6	130.6	4.6	5.6	1.0	11.2	141.8

(a) Includes new and used motor cycles, boats, caravans, trailers, motor parts and accessories.

FINANCE COMPANIES

Information relating to the lending operations of finance companies in Western Australia is given in the following tables. A comprehensive account of the scope of the statistics, definitions, and more complete details of the transactions of finance companies are given in the annual bulletin *Finance Companies Assets, Liabilities, Income and Expenditure* and the monthly statement *Finance Companies*, published by the Australian Statistician, Canberra.

For the purpose of these statistics, finance companies are defined as companies which are engaged mainly in providing to the general public (businesses as well as persons in their private capacity) credit facilities of the following types: hire purchase and other instalment credit for retail sales; wholesale finance; other consumer and commercial loans; factoring; leasing of business equipment and plant; and bill of exchange transactions. The finance companies covered in these statistics, in so far as they provide credit for retail sales, are also included in the statistics shown in the preceding section *Instalment Credit for Retail Sales*.

Amount Financed. The following table shows the amount financed, according to type of agreement, *i.e.* instalment credit for retail sales, wholesale finance, personal loans, other consumer and commercial loans, in Western Australia for the years 1973-74 to 1977-78.

FINANCE COMPANIES
AMOUNT FINANCED: TYPE OF AGREEMENT †
(\$ million)

Year	Instalment credit for retail sales	Wholesale finance	Personal loans	Other consumer and commercial loans	Total
1973-74	106.1	176.9	10.0	158.3	451.3
1974-75	86.3	208.9	6.8	123.8	425.8
1975-76	120.1	307.8	15.4	239.9	683.2
1976-77	151.5	443.7	22.5	315.4	933.1
1977-78	164.8	443.6	31.2	411.6	1,051.3

Collections and other Liquidations of Balances. The following table shows the collections and other liquidations of balances, according to type of agreement, *i.e.* instalment credit for retail sales, wholesale finance, and other consumer and commercial loans, made by finance companies in Western Australia for the years 1973-74 to 1977-78.

FINANCE COMPANIES
COLLECTIONS AND OTHER LIQUIDATIONS OF BALANCES r
(\$ million)

Year	Instalment credit for retail sales	Wholesale finance	Personal loans	Other consumer and commercial loans		Total, all contracts
				Contracts including charges	Contracts excluding charges	
1973-74	127.9	170.4	10.3	86.2	78.9	473.5
1974-75	124.0	208.1	9.1	83.3	91.7	516.1
1975-76	142.3	285.4	13.5	119.2	116.0	676.3
1976-77	174.2	397.8	19.0	121.8	159.2	872.0
1977-78	208.8	435.8	29.0	179.5	220.9	1,074.0

Balances Outstanding. The following table shows the balances outstanding in Western Australia, according to type of agreement, and the total balances outstanding at the end of each year from 1973-74 to 1977-78.

FINANCE COMPANIES
BALANCES OUTSTANDING: TYPE OF AGREEMENT r
(\$ million)

Year	Instalment credit for retail sales	Wholesale finance	Personal loans	Other consumer and commercial loans		Total, all contracts
				Contracts including charges	Contracts excluding charges	
1973-74	161.4	36.8	15.5	121.7	119.1	454.6
1974-75	162.0	42.7	13.8	126.2	98.8	443.5
1975-76	199.1	71.0	22.5	166.1	113.5	572.2
1976-77	255.1	130.3	35.9	254.3	159.0	834.5
1977-78	301.0	149.8	51.8	322.9	214.8	1,040.4

Business Plant and Equipment on Lease. The following table shows the initial capital cost of business plant and equipment on lease and the balances outstanding in Western Australia at the end of each year from 1973-74 to 1977-78.

FINANCE COMPANIES
BUSINESS PLANT AND EQUIPMENT ON LEASE r
(\$ million)

Year	Initial capital cost of goods newly leased during year	Balances outstanding at end of year
1973-74	47.2	90.6
1974-75	36.3	98.4
1975-76	71.0	140.1
1976-77	117.3	223.1
1977-78	169.2	348.4

BANKRUPTCY

Under the provisions of the *Bankruptcy Act* 1966 (Commonwealth), which is administered by the Minister for Business and Consumer Affairs, the State of Western Australia is a proclaimed Bankruptcy District and the Supreme Court of Western Australia has federal jurisdiction in bankruptcy matters. There is a Registrar in Bankruptcy whose duties include the holding of public sittings for the examination of bankrupts, the examination

of witnesses, the issuing of bankruptcy notices and creditors' petitions, and such other duties as are specified in the Act or delegated to him by the Court. Another bankruptcy officer is the Official Receiver, who acts under the general authority and direction of the Court and whose duties relate to the conduct of the debtor and to the realisation and administration of his estate.

The bankruptcy of an estate may result from a petition by either the debtor or the creditors. In cases where it appears certain that the assets of a deceased estate will be insufficient to meet the debts, the executor or a creditor may petition to have the estate administered in bankruptcy.

Compositions, deeds of assignment and deeds of arrangement are provided for in the Act. A debtor may call a meeting of his creditors and either compound with them to pay a certain sum in the \$ as full settlement of his debts or enter into a deed of arrangement allowing him a specified time in which to pay. On the other hand, his creditors may require him to execute a deed of assignment, by which control of his affairs passes to a trustee registered under the Act, or to file a petition in bankruptcy.

Reference to bankruptcy also appears in Chapter V, Part 6—*Law, Order and Public Safety*.

The following table relates to bankruptcy proceedings during each of the years from 1973-74 to 1977-78.

BANKRUPTCY PROCEEDINGS

Year	Bankruptcies (a)				Compositions, arrangements and assignments without sequestration		
	On petition of—		Assets (\$'000)	Liabilities (\$'000)	Number	Assets (\$'000)	Liabilities (\$'000)
	Creditors	Debtors					
1973-74	25	275	921	3,288	69	1,177	1,642
1974-75	22	314	1,508	7,627	71	1,092	2,264
1975-76	20	181	667	2,676	57	1,355	3,209
1976-77	4	176	556	2,491	35	1,447	1,679
1977-78	13	248	1,331	3,634	47	1,904	2,185

(a) Includes orders for administration of deceased persons' estates.

PUBLIC TRUST OFFICE

The *Public Trustee Act, 1941-1978* establishes the Public Trust Office administered by the Public Trustee.

PUBLIC TRUST OFFICE

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Matters accepted for administration—					
Estates of—					
Deceased persons	1,469	1,643	1,647	1,536	1,402
Mentally incapable persons	273	149	111	112	89
Infirm persons	48	40	57	44	49
Uncared-for property	3	—	1	1	—
Court trusts	143	143	137	183	128
Workers' compensation	70	65	98	72	87
Agencies	14	29	19	25	30
Total	2,020	2,069	2,070	1,973	1,785
Matters on hand at 30 June	6,451	6,532	6,623	6,658	6,431
Value of transactions—	\$'000	\$'000	\$'000	\$'000	\$'000
Trust moneys received	12,220	14,464	18,010	23,856	29,558
Trust moneys paid	10,692	12,731	14,924	18,268	22,592
Unclaimed moneys paid to Consolidated Revenue Fund	47	74	70	82	148
Value of estates and other matters on hand at 30 June	39,602	44,858	51,776	67,109	72,247

The principal functions of the Public Trustee are the administration of the estates of deceased persons, including intestate estates; the management of the affairs of certain persons rendered incapable by mental illness or other infirmity; and the receipt of moneys under the control or order of the Supreme Court of Western Australia, to be invested and used for the maintenance, education or other benefit of the persons entitled thereto. The Public Trustee receives from the Workers' Compensation Board funds to be held in trust for investment and to be paid out at the direction of the Board. He may also act in the capacity of agent in cases of need.

OFFICE OF TITLES

The Office of Titles is established under the provisions of the *Transfer of Land Act, 1893-1972*. The Act provides for the appointment of a Commissioner of Titles, a Deputy Commissioner of Titles and a Registrar of Titles. The principal functions of the Office are the registration and recording of all instruments and dealings affecting privately-owned land or land alienated from the Crown, the certification and issue of titles to land, and the maintenance of a register of legal ownership.

The number of documents accepted for registration during the year ended 30 June 1978 was 185,250, thirty-five more than the number in 1976-77.

OFFICE OF TITLES

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of registrations—					
Certificates of title—					
Crown grant	1,656	3,499	1,744	1,989	1,738
Other	27,404	23,842	26,060	32,070	32,411
Leases—					
Crown	193	203	310	346	323
Other	47	54	46	29	32
Transfers	50,663	45,042	63,618	58,978	55,679
Mortgages	40,952	34,358	52,070	50,557	52,797
Discharges of mortgages	35,047	32,441	43,822	42,440	41,409
Caveats lodged	6,649	7,236	8,766	10,806	11,508
Amount of consideration—	\$'000	\$'000	\$'000	\$'000	\$'000
Transfers	694,830	634,142	1,097,115	1,200,378	1,526,188
Mortgages	546,028	546,335	1,078,364	1,083,270	1,385,635
Fees collected	1,913	1,764	3,180	3,448	3,492
Expenditure	1,445	1,869	2,182	2,489	2,815
Assurance Fund—					
Amount of credit at 30 June	315	336	318	331	356

CORPORATE AFFAIRS OFFICE

The Commissioner for Corporate Affairs is responsible, subject to the Minister, for the administration of the *Companies Act, 1961-1975*, the *Business Names Act, 1962-1976*, the *Associations Incorporation Act, 1895-1969* and the *Bills of Sale Act, 1899-1973*.

CORPORATE AFFAIRS OFFICE

Particulars	1974	1975	1976	1977	1978
Number of registrations effected—					
Local companies (a)	1,213	1,711	3,440	4,450	2,743
Other companies	320	292	304	392	430
Business names	18,732	20,526	24,378	25,765	29,000
Associations	188	264	238	220	254
Bills of sale and liens—					
Registrations	79,727	69,971	79,320	83,188	84,001
Satisfactions entered	1,164	683	800	594	701
Nominal capital of local companies registered during year	\$'000	\$'000	\$'000	\$'000	\$'000
Amount of bills of sale and liens—	52,066	30,009	50,007	62,333	199,217
Registrations	285,185	294,176	465,303	423,287	480,479
Satisfactions entered	11,155	7,881	9,361	10,696	17,025
Fees collected (b)	1,826	1,587	1,914	2,417	2,693

(a) Companies incorporated in Western Australia.

(b) Year ended 30 June.

LOTTERIES AND BETTING

Lotteries

The Lotteries Commission was established under the provisions of the *Lotteries (Control) Act, 1932*. The legislation currently in force is the *Lotteries (Control) Act, 1954-1972*. The Commission, as constituted by the Act, consists of four members appointed by the Minister. The principal functions of the Commission are to conduct lotteries and other similar devices in Western Australia to raise money for charitable purposes, and to control lotteries conducted by other persons.

The Act requires that all prizes distributed in lotteries conducted by the Commission shall be cash prizes. It is further provided that the total expenses of conducting lotteries in any year, including commission payable on ticket sales and the remuneration of members of the Commission, shall not exceed 25 per cent of the gross amount received from the sale of tickets.

The Commission is required to pay 20 per cent of all moneys received in respect of lotteries that it conducts into a special account, which is kept at the Treasury in terms of the *Hospital Fund Act, 1930-1937*. Moneys remaining to the credit of the Commission after meeting all outgoings authorised by the Act may, with the consent of the Minister, be applied to any approved charitable purpose or in the purchase, improvement or maintenance of lands and buildings for the purposes of the Act.

LOTTERIES COMMISSION—NUMBER OF CONSULTATIONS AND TICKET SALES

Year	Type of lottery											Total
	\$25	\$20	\$10	\$7	\$5	\$4	\$3	\$2	\$1.99	\$1	50c	
NUMBER OF CONSULTATIONS												
1973-74	-	-	1	-	1	2	1	4	1	19	88	117
1974-75	-	-	4	-	1	-	-	8	-	29	102	144
1975-76	2	-	3	-	3	-	-	3	-	46	101	138
1976-77	1	1	2	1	2	-	1	12	-	52	97	169
1977-78	-	2	3	-	2	-	1	22	-	76	48	154
NUMBER OF TICKETS SOLD ('000)												
1973-74	-	-	100	-	100	200	100	400	100	1,900	8,800	11,700
1974-75	-	-	400	-	100	-	-	800	-	2,900	10,200	14,400
1975-76	200	-	300	-	300	-	-	300	-	4,600	10,100	15,800
1976-77	100	100	200	100	200	-	100	1,200	-	5,200	9,700	16,900
1977-78	-	200	300	-	200	-	100	2,200	-	7,600	4,800	15,400
RECEIPTS FROM TICKET SALES (\$'000)												
1973-74	-	-	1,000	-	500	800	300	800	199	1,900	4,400	9,899
1974-75	-	-	4,000	-	500	-	-	1,600	-	2,900	5,100	14,100
1975-76	5,000	-	3,000	-	1,500	-	-	600	-	4,600	5,050	19,750
1976-77	2,500	2,000	2,000	700	1,000	-	300	2,400	-	5,200	4,850	20,950
1977-78	-	4,000	3,000	-	1,000	-	300	4,400	-	7,600	2,400	22,700

LOTTERIES COMMISSION—FINANCIAL TRANSACTIONS (\$'000)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
GENERAL ACCOUNT					
Receipts from ticket sales	9,899	14,100	19,750	20,950	22,700
Expenses—					
Prize money	6,008	8,672	12,197	12,900	14,026
Commission on ticket sales	749	1,067	1,448	1,542	1,696
Salaries and superannuation	167	238	278	324	349
Advertising	206	266	356	371	436
Other	121	147	219	249	245
Total	7,251	10,390	14,497	15,387	16,752
Surplus available for distribution	2,648	3,710	5,253	5,563	5,948

LOTTERIES COMMISSION—FINANCIAL TRANSACTIONS (\$'000)—*continued*

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
ACCUMULATED FUNDS ACCOUNT					
Balance at beginning of year	374	474	485	744	1,138
Surplus available for distribution	2,648	3,710	5,253	5,563	5,948
Unclaimed prizes	164	177	275	290	330
Rent and interest received	118	261	297	540	570
Other	28	5	32	12	50
Total	3,331	4,627	6,343	7,149	8,035
Grants approved	2,839	4,123	5,580	5,962	6,375
Lotto fund	-	-	-	-	500
Prizes paid	8	14	14	42	44
Other	10	4	5	7	1
Total	2,857	4,142	5,599	6,011	6,920
Balance at end of year	474	485	744	1,138	1,115
AMOUNT OF GRANTS PAID					
Hospitals and medical and health services	2,042	2,780	3,746	5,058	5,044
Homes, orphanages and mission centres	246	442	553	325	621
Infant health services	11	11	18	30	24
Other charitable organisations	453	517	517	524	663
Total	2,753	3,750	4,835	5,937	6,352

Betting

The *Betting Control Act, 1954-1978* and the *Totalisator Agency Board Betting Act, 1960-1973* provide for the regulation and control of betting and bookmaking on horse racing and greyhound racing in Western Australia.

The Betting Control Act authorises the Totalisator Agency Board to issue licences enabling the holder to carry on the business of bookmaking on a race-course or at registered premises, and betting by or with a person not so licensed is unlawful.

The Totalisator Agency Board Betting Act gives the Totalisator Agency Board authority to regulate and control off-course betting on totalisators through the Board and betting with the Board. The Board consists of eight members, one of whom is the General Manager of the Board. The other seven members are appointed by the Governor and comprise a chairman nominated by the Minister, three persons nominated by The Western Australian Turf Club, and three persons nominated by the Western Australian Trotting Association.

The application of the Act is confined to areas declared by proclamation to be 'totalisator agency regions'. The first agency established by the Board was opened on 18 March 1961. At 31 July 1978 there were 158 agencies in operation.

The Board derives its principal revenues from commission on bets and from a duty of 1½ per cent on the gross takings of every totalisator, as provided by the *Totalisator Duty Act, 1905-1973*. The Board may also borrow money, subject to the approval of the Treasurer. The Totalisator Agency Board Betting Act requires that the Board shall pay to The Western Australian Turf Club, the Western Australian Trotting Association and the Greyhound Racing Control Board the funds remaining after meeting all taxes and other specified items of expenditure.

Details of taxes, licence fees and duties payable in connection with horse racing are shown in Part 1 of this Chapter and the amounts collected during the five-year period ended 30 June 1977 appear in the table *State and Local Authorities: Taxation by Type of Tax* also in Part 1.

The following table shows the amounts invested on totalisators on race-courses and through agencies of the Totalisator Agency Board, and amounts invested with licensed bookmakers, during each of the five years 1973-74 to 1977-78.

**TOTALISATOR INVESTMENTS
AND INVESTMENTS WITH LICENSED BOOKMAKERS**

Type of investment	1973-74	1974-75	1975-76	1976-77	1977-78
	\$'000	\$'000	\$'000	\$'000	\$'000
Totalisator investments—					
On course	18,617	22,599	28,460	30,893	32,026
Off course (a)	98,073	120,447	145,191	157,414	177,709
Total	116,690	143,046	173,651	188,308	209,735
Investments with licensed bookmakers—					
On course	53,980	60,054	71,160	73,231	91,105
Off course	27	28	23	21	17
Total	54,008	60,082	71,184	73,251	91,123
All investments—					
On course	72,597	82,653	99,621	104,124	123,131
Off course	98,101	120,475	145,215	157,435	177,726
Total	170,698	203,128	244,835	261,559	300,858
Per head of mean population	\$ 155	\$ 189	\$ 211	\$ 221	\$ 249

(a) Investments made through agencies of the Totalisator Agency Board.

THE STOCK EXCHANGE OF PERTH LIMITED

The following table gives details of turnover during each of the five years 1973-74 to 1977-78.

**THE STOCK EXCHANGE OF PERTH LIMITED
TURNOVER OF STOCKS AND SHARES
(Figures supplied by The Stock Exchange of Perth Limited)**

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
NUMBER OF SHARES TRADED					
	'000	'000	'000	'000	'000
Ordinary—					
Industrial	16,927	16,100	21,005	24,122	30,449
Oil	10,095	6,059	9,542	9,050	12,304
Mining	28,090	24,341	31,246	42,018	57,750
Preference—					
Industrial	71	50	49	51	90
Mining	8	2	17	15	9
Total	55,191	46,553	61,858	75,257	100,602
VALUE OF TURNOVER					
	\$'000	\$'000	\$'000	\$'000	\$'000
Shares—					
Ordinary—					
Industrial	25,028	12,986	18,690	24,731	46,864
Oil	2,692	1,686	4,335	3,392	4,640
Mining	10,947	7,741	11,652	11,912	18,109
Preference—					
Industrial	114	64	74	63	91
Mining	7	1	12	10	5
Total	38,788	22,479	34,761	40,108	69,709
Commonwealth and semi-government loans Debentures, unsecured notes, etc.	1,611 599	1,038 668	950 2,893	3,301 3,840	1,464 4,914
Total	2,210	1,706	3,843	7,141	6,378
Total value of turnover	40,999	24,184	38,604	47,249	76,087

The Stock Exchange of Perth commenced operations in 1889, and conducted business at a number of locations before moving in December 1968 to its present quarters at Exchange House. These premises were designed and constructed to provide adequate space for total post trading which was introduced in July 1967, replacing the call system in which brokers made bids from their desks as stocks were called by a member of the Exchange staff.

The Stock Exchange of Perth was registered as a limited company under the provisions of the Companies Act on 30 June 1971. At that date there were thirty-five members of the Exchange, and at 30 June 1978 there were thirty members.

CHAPTER VII—LAND TENURE AND SETTLEMENT, WATER SUPPLY AND SEWERAGE

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CHAPTER VII

LAND TENURE AND SETTLEMENT, WATER SUPPLY AND SEWERAGE

Part 1—Land Tenure and Settlement

An outline of the origin and development of the land tenure system in Western Australia from the early years of settlement is given in Chapter VII of the *Official Year Book of Western Australia*, Nos. 1 and 2 (New Series).

The growth of land settlement in relation to particular agricultural and pastoral activities is dealt with in the relevant sections of Chapter VIII and in the *Statistical Summary* appearing after Chapter X.

LEGISLATION AND ADMINISTRATION

By the Land Act of 1898, earlier legislation relating to the sale, occupation and management of Crown lands was consolidated and amended. Under a series of Agricultural Lands Purchase Acts which were passed between 1896 and 1904 and consolidated by the *Agricultural Lands Purchase Act, 1909*, provision was made for the repurchase by the Crown of land suitable for closer settlement. The principal criteria applied in the purchase of such land were suitability for wheat or mixed farming and proximity to transport, especially the railways.

The operation of subsequent legislation has not greatly changed the pattern of land development which was created by the *Land Act, 1898* and the *Agricultural Lands Purchase Act, 1909*. The *Land Act, 1933-1977* is now the basic statute controlling the leasing and disposal of Crown land. Closer settlement legislation relates predominantly to schemes for the benefit of returned war-service personnel. Crown land is also leased under the Mining Act, the Petroleum Act and the Forests Act but no alienations are made under these Acts. In most freehold or leasehold titles of a residential, agricultural or pastoral nature the mineral rights and petroleum rights are reserved to the Crown.

The Department of Lands and Surveys is responsible for the leasing and alienation of Crown land, except where mining and forestry tenures are involved, and is under the control of the Minister for Lands. In certain instances, advisory or partly-executive boards have been created to assist in administration. These include the Land Board, which deals with general applications for land, and the Pastoral Appraisal Board.

Permits and leases for mining purposes are issued by the Department of Mines and those for forestry and timber milling by the Forests Department.

METHODS OF LAND ALIENATION

The principal methods of alienation provided for in the *Land Act, 1933-1977* are conditional purchase, public auction, private tender, selection under Part VIII which supersedes the Agricultural Lands Purchase Act, endowment (including free Crown grants) and reservation for public purposes. In addition to these normal methods of alienation there is provision in the Land Act for the release of land under special circumstances, where particular developmental projects are envisaged. In such cases any agreement must be ratified by the State Parliament.

Conditional Purchase

Titles secured by this method originally take the form of conditional purchase leases, on the satisfactory conclusion of which Crown grants may be obtained. The Act provides that a person shall not be competent to acquire, either as lessee or transferee, an area of land exceeding in the aggregate 5,000 acres (2,023 hectares); but on the recommendation of the Minister and with the approval of the Governor, it shall be competent for a person to acquire an area of land in one or more parcels exceeding 5,000 acres (2,023 hectares), but not in any event exceeding 10,000 acres (4,046 hectares), in any case where the Minister is satisfied that a holding requires an area greater than 5,000 acres (2,023 hectares) in order to be of a standard deemed by the Minister an economic farm unit. The Governor may reduce the maximum area that may be acquired in prescribed localities. The minimum purchase price of land acquired by conditional purchase is twenty cents per acre (forty-nine cents per hectare) and the purchaser must pay the costs of survey as well as the value of any improvement. He must progressively clear, cultivate and sow to pasture or crop, areas of land which must aggregate 50 per cent of the total area of the land at the end of the eleventh year.

The maximum period allowed for completion of purchase under an ordinary conditional purchase lease ranges from twenty-five to thirty years, with a possible extension of ten years in certain cases. There is, however, provision for conditional purchase by means of accelerated payments under which a 10 per cent deposit is lodged and the balance of the purchase price paid in four quarterly instalments. The improvement conditions for accelerated-payment leases require that the land shall be fenced within three years of the commencement of the lease and that improvements, equal in value to the purchase money, shall be effected within seven years. Unlike the ordinary conditional purchase lease, which cannot be converted to a Crown grant until the expiry of at least five years from the date of commencement, an accelerated-payments type of lease can be converted to a Crown grant at any time after the conditions have been met. Residential conditions, requiring that the lessee or a near relative shall reside on the property within two years from commencement of the lease and make it his habitual residence during at least six months of each year for the following three years, apply to ordinary conditional purchase leases but are not obligatory under accelerated-payment leases. Restrictions on transfers are imposed in each case.

Sale by Public Auction

The general conditions governing the sale to the public by auction of town or suburban land are set out in Part IV of the Land Act. Lands may be offered for sale by order of the Minister at such times and places as he may think fit, and notice of forthcoming sales must be published in the *Government Gazette of Western Australia* and in a newspaper. Ten per cent of the purchase money must be paid at the time of the sale and the balance in four equal quarterly instalments. The purchaser is normally required to erect a residence or business premises within a specified period, usually two or four years from the date of sale. Town or suburban land acquired at auction by instalment purchase is regarded as being held on licence until general requirements such as fencing and other prescribed improvements have been met, after which a grant in fee simple may be issued. In some instances special additional conditions may be imposed. In certain circumstances the Governor may dispense with the requirements as to sale of town and suburban lands by public auction and may approve of any such lands being offered for sale in fee simple or for leasing.

Sale by Private Tender

Sales by private tender, which are also called negotiated cash sales, are comparatively rare and usually relate to unwanted War Service Land Settlement farms and to areas set apart as special settlement lands.

Endowment of Land and Reservation for Public Purposes

No disposal of Crown land by way of endowment is now made. However, it is within the power of the Governor to dispose of, in any manner which serves the public interest, lands which are vested in the Crown. Crown land is frequently reserved by order of the Governor for a variety of public purposes and where alienation is ultimately required for certain of such purposes the necessary land is granted in fee simple in trust for the purpose of the reserve. Grounds for reservation include: the general requirements of the Government (e.g. public works and buildings; conservation of water, timber and indigenous flora and fauna; housing; public health and social welfare); the benefit of the Aboriginal inhabitants; local government needs for such purposes as the provision of town halls and other buildings, public utilities, social amenities, sports grounds and cemeteries; sites for churches, hospitals and other institutions; sites for clubs and club premises; mining and quarrying purposes; public parks; and the provision of camping and watering places for travellers and stock. Reserves may be of class 'A', which by proclamation of the Governor are reservations that must remain dedicated to the purpose declared in their proclamation until by Act of Parliament it is otherwise enacted, or classes 'B' and 'C', which are terminable by the Governor on notice in the *Government Gazette of Western Australia*. In the case of class 'B', however, the Land Act provides that in the event of cancellation, a special report by the Minister shall be presented to Parliament setting forth the reasons for such cancellation and the purpose to which it is intended to devote the land. Common uses of class 'A' reserves are for public recreation or amusement and for major public buildings. All reserves under Part III of the Act that are not proclaimed as class 'A' are classified as either 'B' or 'C'.

The Land Act provides that, when any reserve is not immediately required for the purpose for which it was made, the Governor may grant a lease for a period not exceeding ten years at such rents and subject to such conditions as he may think fit. Land reserved for parks or recreation grounds may be leased for the depasturing of stock even though the land is being used for the purpose for which it is reserved.

Other methods of alienation comprise mainly reservations of land for housing projects.

State Forests and Timber Reserves

In addition to the foregoing types of alienation, special provision is made in the Forests Act for the Governor, by Order in Council, to dedicate Crown land as a State Forest or to reserve Crown Land as a Timber Reserve. While the reservation of a Timber Reserve may be revoked in whole or in part by the Governor in Council, following a report of the Conservator of Forests, the dedication of a State Forest may not be revoked except with the consent of both Houses of Parliament. The use of such Forests and Reserves comes within the administration of the Conservator of Forests.

METHODS OF LEASING

Brief reference was made earlier to the work of the Department of Lands and Surveys, the Department of Mines and the Forests Department in granting leases of Crown lands in Western Australia. The activities of each Department in this field are now described in greater detail.

Department of Lands and Surveys

Approximately 99 per cent of the Crown land held under lease is covered by tenures granted by the Department of Lands and Surveys under the Land Act, and consists mainly of pastoral leases, special leases, leases of reserves and leases of residential lots. In addition, areas of perpetually-leased farming land have been made available to ex-servicemen under War Service Land Settlement Acts.

Pastoral Leases. The *Land Act, 1933-1977* provides that the maximum area held under pastoral lease by one person, or by two or more persons jointly, or by any association of persons incorporated shall not exceed one million acres (404,686 hectares), and that no

person shall become beneficially interested in leases of pastoral land to an extent whereby the aggregate area of pastoral land in which such person is beneficially interested would exceed one million acres (404,686 hectares). Where an area of pastoral land is worked in association with another area as one separate and distinct station, the maximum area which may be so worked is one million acres (404,686 hectares). The minimum requirement for the grant of a pastoral lease is that the land shall, in the opinion of the Pastoral Appraisal Board, be capable when fully developed of carrying not less than 6,000 sheep or not less than 1,200 head of cattle.

Pastoral leases are granted for a term expiring on 30 June 2015, and the annual rent payable is determined by the Minister for Lands acting on the advice of the Pastoral Appraisal Board. Rents are subject to reassessment at statutory intervals. A lessee may, at any time not less than five years nor more than six years after the date on which a reassessment of rent became effective, apply to the Minister to have the rent reviewed by the Board. Provision is made for total or partial relief from payment of rent in respect of any year during which, by drought, cyclone, fire or flood, a lessee suffers serious loss of stock, or wool production is adversely affected.

The holder of a pastoral lease is required to effect improvements of a specified nature and in accordance with a plan approved by the Minister on the advice of the Board. The amount spent on improvements each year must be at least two and a half times the annual rent, and expenditure at this rate must continue until the improvements proposed in the plan have been carried out. A lease is liable to forfeiture if the land is not stocked or kept stocked with such number of sheep or cattle, or both sheep and cattle, as the Board considers appropriate having regard to circumstances such as seasonal conditions affecting the land and the period since the commencement of the lease. Other conditions attaching to pastoral leases provide safeguards against the deterioration of land due to excessive grazing and to the unauthorised ring-barking of trees.

Special Leases. Section 116 of the Land Act specifies a variety of industrial and other purposes for which the Governor may grant special leases of Crown land. The yearly rental must be not less than \$4 and the period of the lease must not exceed twenty-one years. It is further provided that, in all cases where the intended period of leasing exceeds ten years, prior notice must be inserted in the *Government Gazette of Western Australia*. Section 116 is modified in certain cases by provisions contained in special Acts to enable the granting of leases for varying terms and conditions for specific projects.

Leases of Reserves. As stated earlier in this Chapter in the section *Methods of Land Alienation* the Governor may grant a lease of any reserved land which is not immediately required for the purpose intended at the time of reservation, but the period of the lease may not exceed ten years. By a further provision of the Land Act, no lease for a term exceeding one year shall be granted unless applications are called by notice in the *Government Gazette of Western Australia*. With the consent of the Governor, such land may be sub-leased. When land is reserved for parks or for recreation or amusement, if the land is not placed under the control or management of any person, the Governor may, even though the land is being used for the purpose for which it is reserved, grant a lease or licence for one year for the purpose of depasturing stock. The Governor may insert in the lease or licence such conditions as he may think fit to ensure that the land is available for the purpose for which it is reserved and he may renew any lease or licence for a further period of one year.

Leases of Residential Lots. The Governor may lease any town or suburban lands on such terms as he may think fit, under section 117 of the Land Act. In earlier years, leases of town and suburban lands were offered at public auction and, in most cases, such lessees may apply to purchase the fee simple of the land.

Perpetual Leases were authorised under the War Service Land Settlement legislation, which provided that ex-servicemen who had been allotted farms under this joint Commonwealth-State scheme and who met the requirements of the appropriate agreement might enjoy perpetual leases. The lessee, on payment of such purchase price for the

fee simple as was fixed by the Minister, might obtain the freehold of the property after the expiration of ten years from the commencement of the term of the perpetual lease or after such shorter period as the Commonwealth and the State determined or might determine where special circumstances existed.

Department of Mines

Under the provisions of the Mining Act various special tenures, of which gold-mining leases, mineral leases and coal-mining leases are the most important, are granted by the Governor in connection with the mining of gold, coal and other minerals. The Act contains provisions relating to the payment of fees, rents and royalties. The Governor may exempt any person or class of persons from the payment of royalties.

Oil exploration permits and production licences are granted by the Minister for Mines under the provisions of the Petroleum Act and as the Designated Authority under the provisions of the Petroleum (Submerged Lands) Act with authority to charge fees, rents and royalties.

Gold-mining Leases. As well as conveying a right to mine for gold to any depth, a gold-mining lease permits the construction of all necessary buildings and plant within the area which it defines. Where, in the opinion of the Minister, land is likely to contain alluvial gold, it is normally exempt from lease. However, a lease not exceeding 48 acres (19·4 hectares) in area may be granted if the Minister is satisfied that the land, having already been worked for alluvial gold has been abandoned, or is suitable for leasing on account of its great depth or excessive wetness, or on account of the costliness of the appliances required for its development. A lease not exceeding 24 acres (9·7 hectares) may also be granted if the Minister considers for any sufficient reason that such land ought not to be exempt from lease. In all other instances the maximum area for a lease is 24 acres (9·7 hectares). Leases must, where practicable, be rectangular with the length not exceeding twice the width.

The term of any gold-mining lease may not exceed twenty-one years, but has a right of renewal for a further twenty-one years. Its labour conditions provide that for the first year it must be manned by at least two men and for the remainder of its term by at least two men, or one man for every 6 acres (2·4 hectares), whichever is the greater. Subject to certain adjustments of these labour conditions, a person may hold two or more adjoining leases as an amalgamated group, provided that the group does not total more than 96 acres (38·8 hectares) and that the length along the line of reef or lode does not exceed 66 chains (1,328 metres). The Minister has discretion, in certain circumstances, to permit the amalgamation of leases which would result in an aggregate area exceeding 96 acres (38·8 hectares) but the length of reef or lode still may not exceed 66 chains (1,328 metres). A rent of fifty cents per acre (·4047 hectares) is charged during the first year and \$2 per acre during the following years. The grant of a gold-mining lease conveys an exclusive right to mine for gold or other minerals within the bounds of the lease, but excludes rights in respect of petroleum.

Mineral Leases. Mineral leases authorise the holders to mine for a specified mineral or combination of minerals to any depth within the confines of the lease and convey the same construction rights as a gold-mining lease. The term of any mineral lease shall not exceed twenty-one years, but shall have a right of renewal for a further twenty-one years. Except under special conditions, including the payment of royalty, as set out in the Act, land held under a mineral lease may not be mined for gold. Land which is proved to the satisfaction of the Minister to consist of payable alluvial ground is normally exempted from lease. However, a lease not exceeding 96 acres (38·8 hectares) in area may be granted if the Minister is satisfied that the land, having already been worked as alluvial ground, has been abandoned, or is suitable for leasing on account of its great depth, excessive wetness, or on account of the costliness of the appliances required for its development. A lease not exceeding 300 acres (121·4 hectares) may also be granted if the Minister considers for any sufficient reason that such land ought not to be exempt from lease. In all other cases a mineral lease may not exceed 300 acres (121·4 hectares)

and, where practicable, must be rectangular and the length shall not exceed twice the width. The labour conditions provide that a mineral lease must be manned by at least two men for the first twelve months and thereafter by at least one man for every 6 acres (2.4 hectares) or fraction thereof, with a minimum of two men. An annual rent of \$2 per acre (.4047 hectares) is charged. Adjoining leases may, by application to the Minister, be amalgamated but the total area may not exceed 600 acres (242.8 hectares).

Coal-mining Leases. Individual leases for coal mining have a maximum area of 320 acres (129.5 hectares). The term of any coal-mining lease may not exceed twenty-one years, but has a right of renewal for a further twenty-one years. Such leases must be efficiently worked during the first twelve months by at least one man, during the next twelve months by at least two men, and during each succeeding year of the lease by at least three men, for every 60 acres (24.3 hectares) or part thereof contained in the lease. The yearly rent of coal-mining leases is five cents per acre (.4047 hectares) and a royalty of 2.5 cents per ton (1.02 tonnes) is payable on all coal raised during the first ten years of the lease, rising to five cents per ton during the remainder of the term. The Mining Act provides for certain royalty rebates on newly-discovered coal deposits while the Mining Regulations contain special provisions regarding development of the deposits in the Collie district, the only area where coal is being mined in the State.

Other Mining Tenements

Mineral Claims. An area not exceeding 300 acres (121.4 hectares) may be applied for as a mineral claim, but the length must not exceed twice the width. The rent for a mineral claim is calculated at the rate of fifty cents per annum per acre (.4047 hectares). Working conditions require that not less than three men shall be continuously employed for every 100 acres (40.5 hectares) or fraction thereof.

Dredging Claims. Application may be made for dredging claims for gold or minerals in lakes, swamps, marshes, or rivers and the land adjacent thereto, or on the foreshore of, and land under, the ocean. The maximum area of a dredging claim shall not exceed 300 acres (121.4 hectares). Except in the case of river claims, where there is no restriction on width, the minimum width at right angles to the bank or shore edge shall not be less than 15 chains (302 metres). A river claim shall not exceed 6 miles (9.7 kilometres) in length. Working conditions require that not less than three men shall be continuously employed on the claim for every 100 acres (40.5 hectares) or part thereof. In the case of dredging claims that have been amalgamated, provision is made for the continuous employment of machinery and equipment in lieu of employing men.

Temporary Reserves. To encourage mining exploration, provision is made for the creation by the Minister of temporary reserves of Crown land and the Minister may also authorise any person to temporarily occupy such reserve on any terms that he thinks fit.

The acceptable maximum area which may be applied for in any one temporary reserve application is—for gold with or without other minerals—121.4 hectares; for iron ore—129.5 square kilometres; for other minerals—200 square kilometres.

The shape of the area shall be as near as practicable to a rectangle with the length not exceeding twice the breadth.

The annual fee required with each application is—for gold with or without other minerals—\$50; for coal only—\$500 plus \$5 per square kilometre (or part thereof); for other minerals—\$1,000 plus \$10 per square kilometre (or part thereof).

Full details of the proposed exploration expenditure and programme, and methods to be used are required before any application for the creation of a temporary reserve can be considered by the Minister. The lowest acceptable annual expenditure commitment on each temporary reserve is—for gold with or without other minerals—\$3,000; for coal only—\$100 per square kilometre (minimum \$10,000 if the area is less than 100 square kilometres); for other minerals—\$200 per square kilometre (minimum \$20,000 if the area is less than 100 square kilometres).

The initial term of any right of occupancy granted is twelve months. Applications for renewal of such occupancy right are not considered unless lodged at least fourteen days prior to the expiry date of any current right of occupancy and accompanied by the requisite annual fee and full details of the proposed exploration programme and expenditure.

In the event of any mineral being found by the holder of an occupancy right granted over a temporary reserve, the holder is required, during the currency of the occupancy right, to peg and apply for mining tenements, before productive mining is commenced.

Tenures under Special Acts. Because of the amount of finance involved in large-scale development of iron ore, bauxite, nickel, salt and various other mineral deposits the Government has made special agreements with various companies for the working of such deposits. The agreements are ratified by an Act of Parliament and mineral rights are granted to the lessee to carry out large-scale development and mining operations, subject to the varying obligations including the payment of royalties.

Tenures under provisions of the Petroleum Act, 1967-1972. This Act came into operation on 5 September 1969 and governs the exploration of and exploitation of the petroleum resources within Western Australia. It is basically similar to the Petroleum (Submerged Lands) Act, the principal tenures available being Permits and Licences.

A permit grants to the holder petroleum exploration rights over an area of up to 200 contiguous blocks (a block is a graticular section being five minutes of arc of latitude by five minutes of arc of longitude) which is valid for a term of five years and renewable for terms of five years over progressively reduced areas. Initially, areas are made available for application as exploration permits by advertisement in the *Government Gazette of Western Australia*. If several applications are received for a particular area, each is evaluated on its individual merits and a decision as to the grant of a permit is made accordingly. Applicants are required to submit details of their proposed exploration work and expenditure for the initial term, together with particulars of their technical qualifications and financial resources. An application fee of \$1,000 is payable. The successful applicant is required to enter into a \$5,000 security for due compliance with the conditions of the permit and observance of the provisions of the Act. Annual rental is payable, calculated at \$5 per block, with \$100 being the minimum rental payable.

Upon the discovery of petroleum within a permit, a 'location' of up to nine blocks including the discovery block is declared. The establishment of a location is a means of setting aside and identifying a specific number of blocks from which a Production Licence can be selected.

The holder of a permit has two years from the date the location is declared in which to apply for a Production Licence. This period may be extended for a further two years at the discretion of the Minister for Mines.

There is a specific requirement that the licensee shall carry out approved works within the licence area to the value of not less than \$100,000 per block per year. This figure may be offset in subsequent years by the value of petroleum produced in the preceding year. The term of a licence is for twenty-one years with renewal provisions. Annual rental is calculated at \$3,000 per block and a security of \$50,000 may be required.

Tenures under provisions of the Petroleum (Submerged Lands) Act, 1967-1970. This Act, which came into operation on 1 April 1968, governs the exploration for and exploitation of the petroleum resources of submerged lands adjacent to the Western Australian coast comprising the Continental Shelf and the sea-bed and subsoil beneath territorial waters and is administered by the Minister for Mines as the Designated Authority for and on behalf of the State and the Commonwealth. The principal tenures available under the Act are Permits and Licences.

A permit grants to the holder, petroleum exploration rights over an area of up to 400 contiguous blocks (a block is a graticular section being five minutes of arc of latitude by five minutes of arc of longitude) which is valid for a term of six years and renewable

for terms of five years over progressively reduced areas. Initially, areas are made available for application as exploration permits by advertisement in the *Government Gazette of Western Australia*. If several applications are received for a particular area, each is evaluated on its individual merits and a decision as to the grant of a permit is made accordingly. Applicants are required to submit details of their proposed exploration work and expenditure for the initial term, together with particulars of their technical qualifications and financial resources. An application fee of \$1,000 is payable. The successful applicant is required to enter into a \$5,000 security for due compliance with the conditions of the permit and observance of the provisions of the Act. Annual rental is payable, calculated at \$5 per block, with \$100 being the minimum rental payable.

Upon the discovery of petroleum within a permit a 'location' of up to nine blocks including the discovery block is declared. The establishment of a location is a means of setting aside and identifying a specific number of blocks from which a Production Licence can be selected.

The holder of a permit has two years from the date the location is declared in which to apply for a Production Licence. This period may be extended for a further two years at the discretion of the Designated Authority.

There is a specific requirement that the licensee shall carry out approved works within the licence area to the value of not less than \$100,000 per block per year. This figure may be offset in subsequent years by the value of petroleum produced in the preceding year. The term of a licence is for twenty-one years with renewal provisions. Annual rental is calculated at \$3,000 per block and a security of \$50,000 may be required.

Miscellaneous mining tenures. The leases and licences detailed above are those which are fundamental to mining development but there are several additional tenures which are issued in order to assist the processes of mineral extraction and treatment. These incidental tenures include rights to conserve and convey water, and to store machinery.

Forests Department

There are a number of licences, permits and leases issued under the provisions of the Forests Act.

Sawmilling. Permission to cut timber in State forests and Timber Reserves is authorised by the Conservator of Forests in the form of a Forest Produce (Sawmilling) Licence or a Sawmilling Permit. A Sawmilling Permit entitles the holder to sole cutting rights at a stipulated rate per year in respect of certain classes of timber within a defined area and for a specified period. The Forest Produce (Sawmilling) Licence differs from the Permit in that the licence does not provide for sole cutting rights to the area. In the case of softwood operations the Forests Department organises the supply of pine logs at a set rate per year to the mill landing from State plantations. Log sales are determined initially by tender or auction. Where appropriate resources are available, these licences and permits are normally renewed on an annual basis.

Each licence or permit holder is required to maintain an efficient operation and to supply the Forests Department with details of the logs taken into the mill. With regard to hardwood, a royalty is charged on the quantity of log timber which is delivered to the mill. With softwood operations the licensee is charged a stumpage rate for pine logs which are supplied to the mill.

The Forests Department ensures that cutting programmes are of such a nature that the forest resources are used to the best advantage and that provision is made for forest regeneration. The Department maintains close liaison with the licence and permit holders and in the case of hardwood operations stipulates the areas where the cutting may be undertaken. Licence for woodchipping is an example where the removal of other than millable timber is believed to assist in the process of forest regeneration.

Other licences, permits and leases. A number of other licences, permits and leases are issued by the Forests Department.

Forest Produce Licences are issued for the collection of various types of forest produce including fencing material, firewood and mining timber. There are also special provisions for the control of sandalwood operations. Some Forest Leases are granted by the Department for bush grazing and other purposes not opposed to the interests of forestry. These leases may be issued for any term not exceeding twenty years.

Permits are granted for apiary sites of an area not exceeding 1.25 hectares. They are issued to persons who are actively engaged in bee keeping and who have at least twenty-five hives of bees in the State. A permit may not be issued for an apiary site on Crown land if it is within three kilometres of a site already granted to another apiarist, and not more than four permits may be held for every fifty hives of bees owned.

LAND CLASSIFICATION

Large-scale as well as detailed soil survey measures have been developed progressively in Western Australia since the early days of settlement. Soil mapping of Crown lands in Western Australia has always been carried out as a function of the Department of Lands and Surveys. In the early years of land settlement the staff surveyors, when marking blocks, submitted classifications and commented generally on the probable yield and carrying capacity of the land, as a guide to pricing.

Modern survey techniques enable much use to be made of photogrammetric methods in the mapping and presentation of the soil survey, particularly in definition of vegetation and topographical detail such as rivers, creeks, swamps, hills, valleys, features such as rock outcrops and sand drifts, and the general contours of the land. Much topographical detail is available from the State mapping activities and this information is always used in conjunction with the field work of the soil survey.

The soils are graded into eight categories, to facilitate pricing procedure, due regard being given to the agricultural potential as determined by analysis and experimentation by the Department of Agriculture. This enables release of land in such a manner that each unit is adequate if developed on economic methods. At the same time, the soil maps assist in the overall planning for provision and extension of services such as roads, water and power supplies, townships and all the services essential to regional development. Pastoral potential appraisements are presented with more emphasis on the grazing potential of natural vegetation in order to assess estimated carrying capacities, rather than detailed soil types.

In addition to the soil and pastoral mapping surveys which are carried out under the direction of the Surveyor General, similar methods are used by other Government Authorities and private organisations, for forestry assessment, classification and control, and for geological mapping.

It has been estimated by the Surveyor General that, of the State's total area of 2,525,500 square kilometres about 11 per cent is represented by the agricultural areas, 52 per cent by the pastoral regions and the remaining 37 per cent by practically unoccupied areas of the interior. Soil mapping investigations have enabled a broad assessment of the total area and a detailed assessment of the bulk of the agricultural areas and pastoral regions.

OCCUPATION OF LAND

The following table shows, for a selection of years during the period from 1900 to 1978, the areas of land absolutely alienated or in process of alienation and of Crown land held under certain types of lease or licence. For the years 1900, 1910 and 1920 the basis of classification according to Department has been made to conform to current practice in the issue of leases and licences. For example, tenures relating to forests, which were originally issued by the Department of Lands and Surveys and later by the Department of Mines, have been shown for those years under the heading of Forests Department. For 1930 and later years the figures are as recorded by the Departments concerned. The types of tenure included under the several departmental headings are indicated in the footnotes to the table.

LAND ALIENATED AND LAND HELD UNDER LEASE
(*000 hectares)

At 31 December—	Area absolutely alienated	Area in process of alienation	Area of leases or licences in force on Crown land and issued (a) by—			
			Department of Lands and Surveys		Department of Mines (c)	Forests Department (d)
			Pastoral leases	Other leases (b)		
1900	1,401	1,278	34,977	4	34	345
1910	1,835	5,551	67,203	224	43	522
1920	3,623	5,958	104,420	999	42	664
1930	5,937	8,610	90,693	358	34	539
1940	7,408	5,602	82,875	843	38	954
1950	8,727	4,788	(e) 79,212	1,400	41	1,448
1960	11,158	5,185	88,301	2,685	37	1,617
1970	13,929	5,832	98,982	2,548	49	1,377
1974	14,873	4,620	97,411	2,592	93	1,313
1975	15,165	4,340	96,051	2,658	106	1,085
1976	15,504	3,182	96,061	2,633	127	1,212
1977	15,880	2,843	95,501	2,662	117	1,080
1978	16,225	2,554	95,547	2,820	118	2,236

(a) See letterpress preceding table. (b) Comprises special leases, leases of reserves, leases of residential lots and perpetual leases. (c) Comprises gold-mining leases, mineral leases and miners' homestead leases. (d) Predominantly sawmilling permits. Includes permits for cutting wandoos for tannin extraction, but excludes permits and licences for cutting timber and firewood in Goldfields areas. (e) Apparent decrease in area due mainly to revision in the records of the Department of Lands and Surveys.

Land which is shown as 'absolutely alienated' consists mainly of farming areas, acquired originally as conditional purchase leases and subsequently alienated under Crown grant. While held under lease prior to alienation they account for most of the land shown as 'in process of alienation'. These two sets of figures taken together consequently give a broad indication of the increased use of land for agricultural purposes during the period under review. Similarly, variations in the area occupied as sheep and cattle stations may be gauged by reference to the area of pastoral leases issued by the Department of Lands and Surveys.

The passing of the Homesteads Act in 1893 and of a comprehensive Land Act in 1898 provided the basis for a rapid increase in the settlement of agricultural land. Under the Homesteads Act, any man over the age of eighteen years who did not already own an area of 100 acres (40.5 hectares) or more in this State could apply for a free homestead farm of 160 acres (64.7 hectares), on condition that he resided on his land during at least six months of each of the first five years and carried out prescribed improvements. With a lower minimum age of sixteen years, a similar provision is contained in the *Land Act, 1933-1977*, and this provision, operating in conjunction with the conditional purchase lease system, has also been a factor in the increase in land settlement, particularly in the wheat-growing areas.

About 1905 the Department of Lands and Surveys, by implementing a system of survey and subdivision before selection, partially checked the indiscriminate selection of land by inexperienced farmers. A further stabilising influence on agricultural development was the introduction in 1909 of a system of grading Crown lands into classes, First, Second and Third according to suitability for farming.

The movement of population from the goldfields to the wheat belt contributed to the increase in the area of land in process of alienation from 1,277,512 hectares in 1900 to 5,550,573 in 1910. The ultimate alienation of about one-third of this land by Crown grant is reflected in the greatly increased figures for 'absolutely alienated' land in 1920. Settlement of the wheat belt developed rapidly during and after the period 1910 to 1920, in spite of serious droughts which occurred in 1911 and 1914. Although the increased

totals at 31 December 1930 were principally due to this development, they resulted in part from the acquisition during the previous ten years of farmland, mainly for dairying, in the south-west of the State under the Group Settlement Scheme. These holdings were individually much smaller than those in the wheat-growing districts, because of the type of farming and the heavy clearing costs, but the numbers involved made the total area taken up under the Scheme of some significance.

Pastoral leases, which comprise the greatest proportion of Crown land held under lease or licence, increased threefold between 1900 and 1920. The area actually held under pastoral lease conditions represents approximately one-third of the whole State. The aggregate area of gold-mining leases, mineral leases and miners' homestead leases, appearing in the table under the heading of Department of Mines, shows comparatively little variation since 1900. However, in recent years very large areas have been included in tenures issued under the provisions of the Petroleum Act and in temporary reserves under the Mining Act.

From 1930 the demand for land for agricultural purposes declined considerably, the principal reason being the lower farm commodity prices which prevailed for several years prior to the second World War. After 1945, however, the demand for land again increased, stimulated by the sharp rise in export prices, notably of wheat and wool, and later by the War Service Land Settlement Scheme. The area conditionally alienated in any one year reached a post-war peak of 691,161 hectares in 1953. During the next decade the area fluctuated between 285,657 hectares in 1956 and 499,591 hectares in 1962. The area then declined and by 1972 the area conditionally alienated was only 4,176 hectares, owing to restrictions imposed on the release of Crown land by conditional purchase. There has been a slight recovery in areas alienated in subsequent years but the annual totals have been less than 60,000 hectares.

The following table gives details of areas of land for which applications were approved, during each of the years 1974 to 1978, by the Department of Lands and Surveys for conditional alienation or allocation under lease or licence. The figures shown for any year do not necessarily represent land allotted for the first time, as they may include land previously held under any of the several forms of land tenure.

CROWN LANDS—AREA OF ALLOCATIONS
APPROVED BY DEPARTMENT OF LANDS AND SURVEYS (a)
(Hectares)

Particulars	1974	1975	1976	1977	1978
Conditional alienation—					
Conditional purchase	51,638	27,948	33,753	35,138	55,378
Town and suburban lots	1,981	190	109	126	140
Miscellaneous (b)	2,191	7,840	1,376	1,850	811
Total	55,810	35,978	35,238	37,115	56,329
Leases and licences—					
Pastoral leases and licences	252,427	1,420,213	623,449	297,195	1,004,166
Special leases	44,225	138,094	23,304	54,942	344,779
Miscellaneous leases (c)	233,924	29,846	194,198	17,230	14,114
Total	530,576	1,588,153	840,951	369,368	1,363,059

(a) See letterpress immediately preceding table. (b) Comprises free homestead farms and reserves.
c) Comprises perpetual leases, leases of reserves and leases of town and suburban lots.

GOVERNMENT LAND SETTLEMENT SCHEMES

Although, generally, the method of land alienation and settlement in the agricultural areas of Western Australia has been by independent applications by individual settlers for conditional purchase leases, there has also been a series of government land settlement schemes. The more important of these are the Soldiers' Settlement Scheme following the

1914-18 war, the Group Settlement Scheme introduced in 1921, the War Service Land Settlement Scheme which was initiated in 1945 and other lesser schemes for the settlement of civilians. An outline of each of these schemes appears in Chapter VII of the 1976 issue of the Year Book.

No government land settlement schemes are currently in operation. Activities in respect of the most recent of the schemes, the War Service Land Settlement Scheme, were officially terminated on 31 August 1966 when the main developmental work was completed.

Chapter VII—continued

Part 2—Water Supply and Sewerage

The principal water supply and sewerage systems of Western Australia are under the control of two State authorities, the Metropolitan Water Supply, Sewerage, and Drainage Board and the Public Works Department.

The Metropolitan Water Supply, Sewerage, and Drainage Board is constituted under the provisions of the *Metropolitan Water Supply, Sewerage, and Drainage Act, 1909-1978*. It came into being on 1 July 1964 and replaced the former Metropolitan Water Supply, Sewerage and Drainage Department as the authority responsible, subject to the Minister, for the general administration of the Act. The Board consists of seven members. One member is appointed Chairman on the nomination of the Governor and the remaining members comprise the General Manager of the Board; a qualified engineer; the Under-Treasurer or an officer of the Treasury nominated by him; and three appointees on the nomination of the Minister, one of whom represents the ratepayers of the City of Perth, the remaining two representing the ratepayers of the balance of municipal districts within the Metropolitan Water, Sewerage and Drainage Area. This area of approximately 5,040 square kilometres constitutes the territory under the Board's administration. It embraces Perth and the metropolitan area southward to Warnbro Beach and Serpentine, northward to Gingin Brook and Herne Hill and eastward to Swan View-Sawyers Valley, Kalamunda, Bickley and Carmel, and also incorporates approximately 2,100 square kilometres of the water catchment areas of the Canning, Serpentine, North Dandalup and South Dandalup Rivers and streams of the Darling Range.

The Public Works Department controls the Goldfields and Agricultural Water Supply and the Great Southern Towns Water Supply as well as 142 local water supplies. It also provides water for irrigation purposes in the four South-West Irrigation Districts (Waroona, Harvey, Collie River and Preston Valley), the Camballin Irrigation District and the Ord Irrigation District. In addition, the Carnarvon and Gascoyne Groundwater Supply Scheme supplying about 150 growers in the Carnarvon Non-Artesian Area is being operated.

Three independent town schemes are controlled by local Water Boards in country areas under the *Water Boards Act, 1904-1978* and some local authorities supply water under the provisions of the *Local Government Act, 1960-1978*. Private companies engaged in mining in the north-west of the State provide their own water supply for mining operations, power supply and domestic use. Individual water supplies serve railways, timber mill towns, isolated mines, pastoral properties, stock routes and agricultural areas, mainly from dams, tanks, wells and bores.

The principal water storages in Western Australia are shown in the next table. Supplies for the metropolitan area and environs are drawn almost entirely from Serpentine Reservoir and Serpentine Pipehead Reservoir, Canning Reservoir, Wungong Brook Diversion Weir, Churchman Brook Reservoir, Victoria Reservoir, North Dandalup Pipehead Dam, South Dandalup Reservoir, underground water from the shallow unconfined aquifers of the Gnangara sand beds, and artesian water from the deep confined aquifers. Mundaring Weir, which is the source for the Goldfields and Agricultural Water Supply, is linked to Kalgoorlie by pipeline and serves the more populous parts of the Eastern Goldfields as well as certain towns and farming areas north and south of the main pipeline. As occasion arises Mundaring Weir supplies to or draws from the Metropolitan Water Supply. Stirling Dam, upstream of the Harvey Weir, is used to augment this weir which is principally used for irrigation but is also used by the Harvey Water Board for domestic use in the town of Harvey. Similarly, Samsons Brook Dam is mainly used for irrigation purposes, but water is drawn from a pipehead dam near the town of Waroona for the

town water supply. Drakesbrook Dam, Logue Brook Dam, Waroona Dam and Glen Mervyn Dam are used solely for irrigation of areas in the south-west. Wellington Dam, on the Collie River supplies water to the southern part of the irrigation area, as well as towns and farmlands in the Great Southern Towns Water Supply Area and the southern portion of the comprehensive scheme area.

The storage capacities of the principal dams and reservoirs at 30 June 1978 were as shown below.

DAMS AND RESERVOIRS—STORAGE CAPACITY (a)
(⁰⁰⁰ cubic metres)

Dam or reservoir	Storage capacity	Dam or reservoir	Storage capacity
Canning Reservoir	93,420	Samson Brook Dam	9 165
Churchman Brook Reservoir	2,182	Serpentine Pipehead Reservoir	(e) 2,637
Drakesbrook Dam	2,288	Serpentine Reservoir	184,882
Fitzroy Dam	4,650	17-Mile Dam (f)	5,489
Glen Mervyn Dam	1,491	South Dandalup Reservoir	208,211
Harvey Weir	(b) 8,106	Stirling Dam	56,933
Kununurra Diversion Dam (c)	98,679	Victoria Reservoir	859
Logue Brook Dam	24,321	Waroona Dam	14,954
Mundaring Weir	77,127	Wellington Dam	185,482
North Dandalup Pipehead Dam	(d)	Wungong Brook Diversion Weir	(g) 57,482
Ord River Dam (Lake Argyle)	5,723,000		

(a) At 30 June 1978. (b) Excludes flashboard storage. (c) Bandicoot Bar Dam or Ord River Diversion Dam. (d) Diversion weir only. (e) Plate removed from crest, decreasing capacity by 1.2 million cubic metres. (f) On Uralla Creek, an anabranch of the Fitzroy River. (g) Diversion weir only, although a reservoir of 60 million cubic metres capacity is at present under construction.

METROPOLITAN WATER SUPPLY

The sources of the metropolitan water supply are South Dandalup Reservoir, Serpentine Reservoir and Serpentine Pipehead Reservoir, Canning Reservoir, Wungong Brook Diversion Weir, Churchman Brook Reservoir, Victoria Reservoir, North Dandalup Pipehead Dam, underground water from the shallow unconfined aquifers of the Gnangara sand beds north of Perth and artesian water from the deep confined aquifers. The supply from these sources is supplemented as necessary from a pipeline link with Mundaring Weir. Underground water used to augment hills supplies amounted to 52,850,000 cubic metres in 1977-78 and represented 48.5 per cent of the total output from all sources, compared with 36,714,700 cubic metres and 20.9 per cent during 1976-77.

METROPOLITAN WATER SUPPLY—QUANTITIES OF WATER DRAWN (a)
(⁰⁰⁰ cubic metres)

Source	1973-74	1974-75	1975-76	1976-77 (b)	1977-78 (c)
Canning Reservoir	40,899	53,362	54,813	19,932	4,161
Churchman Brook Reservoir	5,001	4,679	3,187	1,896	616
Mundaring Weir	6,280	6,450	4,103	1,290	(d)—2,908
North Dandalup Pipehead Dam	17,077	12,215	7,781	4,684	6,464
Serpentine Reservoir (e)	72,620	65,674	67,281	73,324	15,235
South Dandalup Reservoir	2,450	10,043	16,430	33,432	29,228
Victoria Reservoir	2,861	3,130	3,669	1,361	1,528
Wungong Brook Diversion Weir	9,657	6,139	7,249	2,820	1,765
Metropolitan bores (f)	17,236	21,157	31,017	36,714	52,850
Total	174,080	182,849	195,530	175,453	108,939

(a) Including supplies to railways and shipping. (b) Decreased quantities drawn mainly as a result of a publicity campaign to save water. (c) Water restrictions in force from July 1977. (d) Represents water pumped into Mundaring Weir in excess of draw. (e) Includes water drawn from Serpentine Pipehead Reservoir. (f) Includes shallow underground water.

Victoria Reservoir, which was completed in 1891 with a capacity of 859,000 cubic metres, was the first of the existing water conservation projects to be completed in the Darling Range. In 1921 a 104,500 cubic metre reservoir, which is no longer used for water supply, was constructed at Bickley Brook to replace a pipehead dam, and in 1928 one with a capacity of 2,182,000 cubic metres was completed at Churchman Brook. During the same period pipehead dams were built across the upper course of the Canning River and

its tributary, Wungong Brook, preliminary to the construction of Canning Reservoir, which was begun in 1933 and completed in 1940. Canning Reservoir has a storage capacity of 93,420,000 cubic metres retained by a concrete wall 66 metres high and 468 metres long at the crest. Serpentine Pipehead Reservoir was completed in 1957 and Serpentine Reservoir, commenced in 1957, was completed in 1961. Serpentine Reservoir is constructed of rolled earth fill and the embankment rises 52 metres above the stream bed, the length at the crest being 424 metres. Its capacity, which is slightly less than that of Wellington Dam on the Collie River, is 184,882,000 cubic metres. Supplies to the metropolitan system are augmented by the North Dandalup Pipehead Dam which is the first stage of the Dandalup Rivers Scheme and was completed in December 1970. The major storage component of the scheme, the 208,211,000 cubic metre capacity South Dandalup Dam, was completed in late 1973.

Water from storages in the Darling Range is conveyed to the metropolitan area by the Canning Tunnel, which was commissioned on 17 January 1975, and large trunk mains. It is then distributed by feeder, distribution and reticulation mains, either directly from the trunk main or from large storage service reservoirs at Mount Yokine, Mount Eliza, Bold Park, Mount Hawthorn, Richmond, Melville, Buckland Hill, Hamilton Hill, Thompson Lake, Greenmount, Mirrabooka, Wanneroo and Whitfords and from summit tanks and water towers situated at high points throughout the area supplied. The Canning Tunnel is an important addition to the trunk main system and is designed to cope with the maximum flow requirement envisaged from Canning Dam to Roleystone. In addition, groundwater from the shallow unconfined aquifers of the Gnangara Mound is distributed, after treatment, into the northern supply system. The groundwater is treated at water treatment plants situated at Gwelup, Mirrabooka and Wanneroo which have the capacity to produce 190,000 cubic metres of clear water daily. To meet the peak demand during the summer months, supplies from these sources are supplemented from a system of artesian bores which can provide a daily maximum of 95,500 cubic metres. At 30 June 1978 the number of consumer services was 272,351. The previous table shows the quantities of water which were drawn from the various sources during each of the five years ended 30 June 1974 to 1978.

COUNTRY WATER SUPPLIES

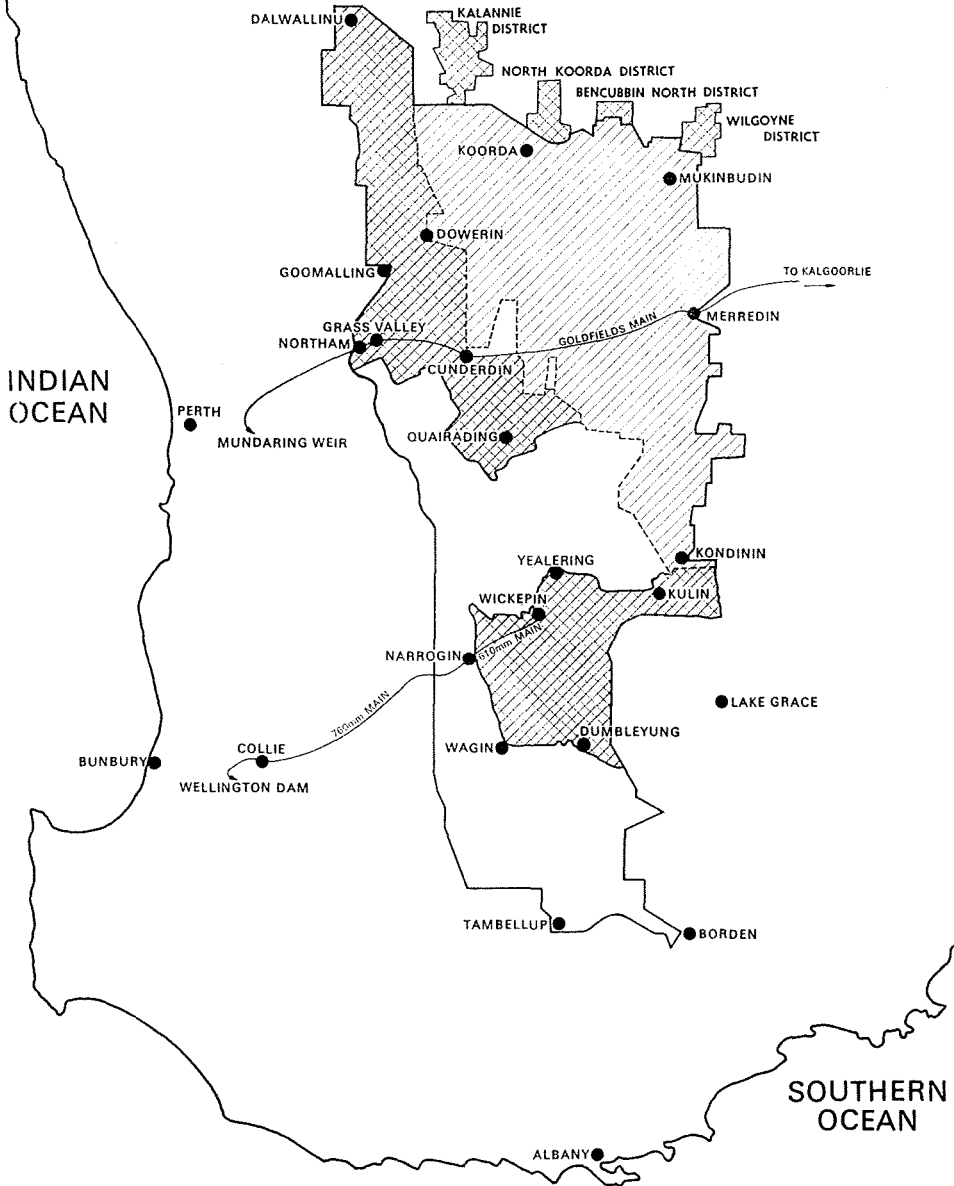
Supplies controlled by the Public Works Department

Since 1947 enlargement and extension of the Goldfields and Agricultural Water Supply and the development of the Great Southern Towns Water Supply have been carried out mainly in accordance with a project known as the Modified Comprehensive Scheme. A proposal for a comprehensive water supply scheme was first submitted by the State Government to the Australian Government in January 1946 when applying for financial assistance in its construction. The initial plan was intended to supply water to towns and farms in an area of 4.7 million hectares in mixed farming (cereal and sheep) districts of Western Australia, as well as to increase the supply to the Eastern Goldfields. A committee appointed by the Australian Government to consider the State's submission reported that certain areas within the scheme had a higher priority than others. As a result, the project was greatly reduced in scope and a modified scheme, to embrace 1.7 million hectares, was agreed to by both Governments and adopted in October 1947. The extent of the scheme as originally proposed, and as modified, is shown on the map on the following page. A description of the boundary of the modified scheme is contained in a schedule to the *Agricultural Areas, Great Southern Towns, and Goldfields Water Supply Act, 1947* (State), which gave parliamentary approval of the undertaking. Commonwealth financial aid was provided by means of the *Western Australia Grant (Water Supply) Act 1948* (Commonwealth) and later amendments, which authorised reimbursement to the State of one-half of its expenditure on the scheme, up to a maximum grant of \$10 million.

The modified scheme was completed in 1961, the total expenditure amounting to \$20.6 million. A request made by the State Government in 1960 for a grant equal to half the cost of extending the scheme virtually to the boundary as first proposed in 1946

WESTERN AUSTRALIA

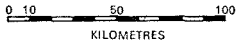
COMPREHENSIVE AGRICULTURAL AREAS WATER SUPPLY SCHEME



LEGEND

- 1946 (ORIGINAL) PROPOSAL.....
- 1947 PROPOSAL (NOW COMPLETED).....
- 1963 PROPOSAL (NOW COMPLETED).....

SCALE



was rejected by the Australian Government. Following this rejection the State Government embarked on a necessarily limited programme financed from its own loan moneys, the policy being to restrict extensions to supply certain towns within the original area and farm lands adjacent to pipelines. A further request was made by the State Government in 1963 for a grant of \$10.5 million payable over a seven-year period and representing one-half of the estimated cost of proposed extensions which would increase by 1.5 million hectares the area served by the scheme. The Australian Government agreed to provide assistance in the form of an interest-bearing loan up to a maximum of \$10.5 million, advances to be made during a period of eight years commencing with the financial year 1965-66. Legislative authority for the loan is given by the *Western Australia (South-west Region Water Supplies) Agreement Act 1965* (Commonwealth). The map on the previous page shows the additional areas reticulated under the 1963 proposals.

Goldfields and Agricultural Water Supply

The original purpose of this undertaking, which was formerly known as the Goldfields Water Supply was to supply water for the Coolgardie and the Kalgoorlie-Boulder areas. To provide conservation, the Helena River was dammed near Mundaring, and on completion of the reservoir in 1902 it had a capacity of 21 million cubic metres. The increasing demand for water in the area served made it necessary to augment supplies. This was achieved by raising the wall 9.8 metres to a height of 40.2 metres and when the work was completed in 1951 the enlarged capacity of the reservoir was 68.9 million cubic metres. The capacity has since been further increased to 77.1 million cubic metres by the erection of adjustable steel crest gates 1.2 metres in height. In 1972 the Lower Helena Pipehead Dam, some eight kilometres below Mundaring Weir, was brought into operation, water being pumped from this source to augment the supply from this reservoir. The main pipeline between Mundaring and Kalgoorlie is 554 kilometres long. It is for the most part 762 millimetre diameter steel but has 1,219 millimetre, 1,067 millimetre and 914 millimetre pipe in the western portion with some duplication of the 762 and 914 millimetre pipe. With the completion of an additional pump station at Mundaring in 1976 the pipeline is now equipped with eighteen pump stations. The maximum pumping capacity from Mundaring Weir is 127,000 cubic metres per day. The total capacity of all receiving, regulating, standby and service tanks (including four standby reservoirs at Kalgoorlie with a combined capacity of 336,000 cubic metres) is 1.2 million cubic metres.

At 30 June 1978 the Goldfields and Agricultural Water Supply was serving 112 towns and localities and water was being reticulated to farms in an area of 2.65 million hectares.

GOLDFIELDS AND AGRICULTURAL WATER SUPPLY

Year	Number of services	Length of water mains (kilometres)	Consumption (a) ('000 cubic metres)						Total
			Domestic	Commercial	Industrial (including railways)	Mining	Farms and market gardens	Other	
1973-74	27,451	7,999	6,238	758	232	3,699	4,012	1,372	16,311
1974-75	27,157	8,150	6,134	869	938	3,852	4,443	2,315	18,551
1975-76	27,942	7,940	6,438	930	1,100	3,986	4,955	2,488	19,897
1976-77	28,094	7,932	6,977	1,034	1,077	1,102	5,137	5,002	20,329
1977-78	27,853	8,022	4,359	746	771	1,102	3,753	4,255	14,986

(a) Figures include amounts consumed from local supplies at Waddouring-Barbalin-Knungajin, Bruce Rock, Narebeeb and Kondinin.

Extensions to country towns and agricultural areas have been made from several points along the main pipeline. Norseman is connected by an extension southward from Coolgardie. A branch from this main supplies the nickel mining town of Kambalda. From two points west of Merredin water is taken northward to supplement local schemes at Waddouring-Barbalin-Knungajin. Other extensions north and south of the main pipeline provide water for a number of towns and surrounding districts, including Toodyay, Corrigin, Goomalling, York, Beverley and Bullfinch. A pipeline southward from Merredin

to serve Bruce Rock, Narembeen, Kondinin and surrounding districts and Kulin and surrounding districts is linked to an extension south from Doodlakine. A main south from Cunderdin serves Quairading and the intermediate farmlands. Areas north-west of Burracoppin are served by an extension northward from a point east of Merredin, and districts north of Kellerberrin by a pipeline connecting Kellerberrin to the Waddouring-Barbalin-Knungajin system already mentioned. Water is taken northward from Cunderdin through Minnivale to a point near Kokardine. Extensions westward, eastward and northward from this pipeline serve a number of towns and localities, including Dowerin, Wyalkatchem, Yelbeni, Koorda, Kalannie, Pithara, Ballidu, Dalwallinu, Wubin and Wongan Hills, and surrounding farm lands. From a point on the main pipeline east of Southern Cross an extension northward serves Koolyanobbing, where iron ore is mined, while an extension southward serves Marvel Loch and adjacent farmlands.

Great Southern Towns Water Supply

The Great Southern Towns Water Supply serves towns on the Great Southern Railway from Brookton to Katanning, as well as a number of other towns. Water is drawn from Wellington Dam which also supplies the Collie River Irrigation District. Work on raising the wall of the dam to give it a holding capacity of some 185 million cubic metres was completed in 1960. Water is taken through Narrogin to Wickepin by means of a main pipeline 171 kilometres long. In addition to the pumping installation at the dam site, there are stations at a point forty-five kilometres east of the dam and at Narrogin. From Narrogin, pipelines extend sixty-four kilometres northward to Brookton, ninety-five kilometres southward to Katanning and eastward to Wickepin and Kulin. Branch lines from this latter line extend northwards to take in the towns of Yealering, Bullaring, Kondinin, Corrigin, Babakin and Ardath and southwards to Dumbleyung, Moulyinning, Dudinin, Harrismith and Lake Grace. A branch westward from Katanning serves the town of Kojonup and a second branch extends south-eastward through Broomehill to Gnowangerup. A pipeline eighteen kilometres long supplies water to a power station constructed for the State Energy Commission at Muja, south-eastward from Collie.

At 30 June 1978 the Great Southern Towns Water Supply was serving thirty-five towns and an area comprising 607,000 hectares of farmland. Details of the number of services, length of water mains and consumption for the years 1973-74 to 1977-78 are given in the following table.

GREAT SOUTHERN TOWNS WATER SUPPLY

Year	Number of services	Length of water mains (kilometres)	Consumption ('000 cubic metres)					Total
			Domestic	Commercial	Industrial (including railways)	Farms and market gardens	Other (a)	
1973-74	10,724	1,795	2,274	251	2,151	682	453	5,811
1974-75	10,907	1,916	2,584	290	881	743	496	4,993
1975-76	11,191	1,918	2,448	263	802	791	475	4,778
1976-77	11,384	1,923	2,743	262	597	1,671	543	5,816
1977-78	11,477	1,968	2,667	280	483	927	553	4,910

(a) Excludes mining, for which no services were provided by the Public Works Department.

Supplies to other Country Towns

One hundred and forty-two towns and localities are supplied with water from stream flow, dams, tanks, wells and bores, the schemes being administered under the provisions of the *Country Areas Water Supply Act, 1947-1978*. The following table gives, for these local schemes, the number of services, length of water mains and consumption for the years 1973-74 to 1977-78.

The Public Works Department is also responsible for the provision and maintenance of tanks and wells as a source of cartage water for a number of small communities in gold mining and agricultural areas.

PUBLIC WORKS DEPARTMENT: LOCAL SCHEMES

Year	Number of services	Length of water mains (kilometres)	Consumption ('000 cubic metres)						
			Domestic	Com-mercial	Industrial (including railways)	Mining	Farms and market gardens	Other	Total
1973-74	39,150	3,048	14,089	3,355	2,193	5,170	278	2,918	28,003
1974-75	41,639	2,659	15,442	3,784	2,965	167	369	9,452	32,179
1975-76	43,387	2,717	15,675	4,529	2,964	237	319	10,863	34,587
1976-77	45,739	2,832	17,344	4,059	2,837	218	294	14,124	38,876
1977-78	48,132	3,043	17,543	4,870	1,632	270	349	13,311	37,975

Other Country Water Supplies

As well as the schemes controlled by the Public Works Department, there are three local Water Boards operating under the *Water Boards Act, 1904-1978* which also draw supplies from stream flow, dams, tanks, wells and bores. In addition, some local authorities exercise powers under the *Local Government Act, 1960-1978* to supply water within their boundaries. There are still, however, a large number of individual farms and pastoral stations which are not connected to public schemes and are therefore obliged to provide their own supplies. The Forests Department and sawmilling companies operate schemes to supply water to their mill towns. In a number of ports and mining towns in the north-west of the State, mining companies are responsible for the provision of their own water supplies, and while the principal source of supply is underground reserves, desalination of sea water is also being used.

The use of water by railways of the Australian Government and State Government has decreased with the replacement of steam locomotives by diesel. The majority of the former railway dams have been handed over to the Public Works Department and have been incorporated into the various schemes for use as town water supplies, farmland reticulation and agricultural water carting sources. Water consumed by the railways is obtained from supplies controlled by the Metropolitan Water Supply, Sewerage, and Drainage Board and the Public Works Department.

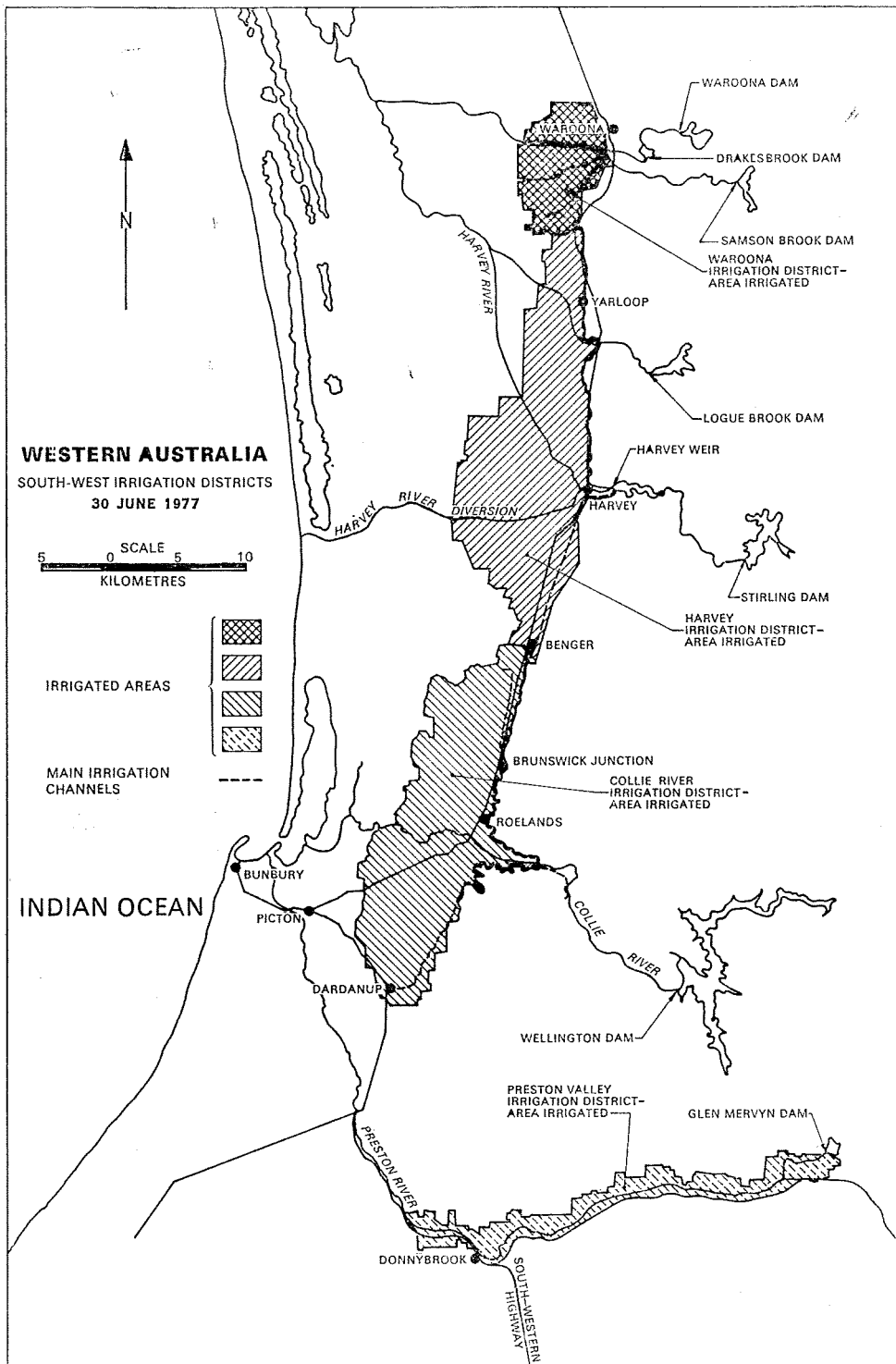
UNDERGROUND WATER

Considerable use is made of groundwater by individual farmers, pastoralists, market gardeners, etc. and it is estimated that over 50,000 bores are in use in the State. The quality of the water varies from place to place and much of it is too saline for irrigation or even stock. Both pressure waters and non-pressure waters are used to supply or augment the supplies of numerous towns, including such major centres as Perth, Albany, Bunbury, Busselton, Carnarvon, Dampier, Esperance, Exmouth, Geraldton, Karratha and Port Hedland, and the list is growing. In a number of ports and mining towns in the North West (e.g. Paraburdoo, Tom Price and Newman) mining companies are responsible for the provision of their own water supplies.

Industries also are using groundwater in substantial quantities, particularly in the processing of titanium, iron, and alumina. Recent mineral discoveries in several areas have given rise to very large demands for water, the search for which has had to be intensified. Marked advances in the knowledge of aquifers and quality of water in the main sedimentary basins have been made as a result of extensive geological surveys and exploratory drilling by the Geological Survey (a branch of the Department of Mines), several oil companies, the Public Works Department and the Metropolitan Water Supply, Sewerage, and Drainage Board.

The Public Works Department and the Metropolitan Water Supply, Sewerage, and Drainage Board are responsible for all developmental works and exploration for their own supplies. The Geological Survey is responsible for exploratory work, as well as for investigating and assessing the State's groundwater resources, and advising local government authorities, private industry and individuals on groundwater problems.

An article on Perth's underground water, contributed by the Geological Survey of Western Australia appears in Chapter II, Part 1.



SOUTH-WEST IRRIGATION SCHEMES

Irrigation schemes have been established by the State Government on the coastal plain south of Perth in the Waroona, Harvey, Collie River and Preston Valley Irrigation Districts between Waroona and Donnybrook, the water being channelled from dams in the adjacent Darling Range. The areas irrigated and main irrigation channels in each Irrigation District at 30 June 1978 are shown on the accompanying map, together with the relevant dams.

Specialist advice on irrigation farming methods is available through the Department of Agriculture and the properties are watered on a rotational plan, according to the 'Zone', or section of the District, within which the farms are situated.

The Harvey Irrigation District, opened in 1916, was the first large-scale project. Harvey Weir, with a capacity of 2.36 million cubic metres on completion, was constructed as the source of water supply and the service initially provided was for 1,215 hectares of land for citrus growing.

The success of dairying and stock raising and to a lesser extent vegetable growing, which have replaced citrus culture, has led to gradual but substantial extensions of the south-west irrigation area. The damming of Drakes Brook in 1931 and Samson Brook in 1941 provided a storage capacity of 10.37 million cubic metres which, by alterations to Samson Brook Dam in 1960, has been increased to 11.45 million cubic metres and is used for the irrigation of 1,570 rated hectares in the Waroona Irrigation District. In 1966 a third storage to serve the Waroona District, known as Waroona Dam, was completed on Drakes Brook about five kilometres up-stream from the existing Drakesbrook Dam. Its capacity is 14.95 million cubic metres. In 1931 the capacity of Harvey Weir was enlarged to 9.13 million cubic metres (including flashboard storage) and in 1948 Stirling Dam, with an original capacity of 54.83 million cubic metres (increased to 56.93 million cubic metres by alterations in 1958), was completed further up-stream on the Harvey River. These works enabled the Harvey Irrigation District to be extended northward to link with the Waroona District. Logue Brook Dam, with a capacity of 24.32 million cubic metres, was completed in 1963 and provides additional supplies for the Harvey Irrigation District, the rated area of which is 5,581 hectares.

Details of irrigation in each district in the years 1976-77 and 1977-78 are given in the following table. Similar information relating to northern irrigation schemes embracing the Ord and Camballin Irrigation Districts appears later in this Part.

IRRIGATION: SOUTH-WEST SCHEMES

Particulars	Irrigation district (a)								Total	
	Waroona		Harvey		Collie River		Preston Valley		1976-77	1977-78
	1976-77	1977-78	1976-77	1977-78	1976-77	1977-78	1976-77	1977-78		
Area watered—										
Pasture hectares	1,751		5,957		6,588				14,296	
Fodder crops "	51		86		48				185	
Potatoes "		n.y.a.	29	n.y.a.	31	n.y.a.	58	n.y.a.	118	n.y.a.
Other vegetables "	56		81		31		3		171	
Orchards "			91		28		145		264	
Total "	1,858	1,461	6,244	5,553	6,726	6,518	206	185	15,034	13,717
Hectare waterings (b)	12,276	9,641	41,750	36,005	48,417	46,340	1,112	844	103,555	92,830
Average number of waterings(c)	6.6	6.6	6.7	6.5	7.2	7.1	5.4	4.6	6.9	6.8
Total water gauged at entry to district	17,907	13,450	58,203	52,081	66,440	66,722	1,085	1,128	143,635	133,381
Dam capacity (d) '000 cu m	26,407	26,407	90,380	90,380	185,482	185,482	1,491	1,491	303,760	303,760
Length of channels " km	75	75	285	285	199	200	..	..	559	560

(a) See map on preceding page. (b) Area watered multiplied by number of waterings. Figures shown represent the sum of hectare waterings for individual holdings in each district. (c) Total hectare waterings divided by total area watered. (d) Includes flashboard storage.

During 1969 construction of the Glen Mervyn Dam on a tributary of the Preston River near Mumballup was completed. Water from this dam is made available each summer for controlled release into the Preston River when the natural stream flow is insufficient for the irrigation of orchards downstream from Donnybrook.

Concurrently with developments in the Harvey and Waroona Irrigation Districts, action was taken to conserve water for the Collie River Irrigation District and Wellington Dam on the Collie River was completed in 1933. In view of its importance, not only to irrigation projects but also to the Great Southern Towns Water Supply, the wall of this reservoir has been raised and when work was completed in 1960 its capacity of 36.37 million cubic metres was increased to 185.48 million cubic metres. It serves an area of 4,851 rated hectares in the Collie River Irrigation District, which extends from Brunswick Junction to Dardanup.

NORTHERN IRRIGATION SCHEMES

Carnarvon. A thriving plantation industry has developed at Carnarvon which is situated near the mouth of the Gascoyne River. This centre is one of the major producers in Western Australia of tomatoes, watermelons, pumpkins, cucumbers, capsicums and runner beans. Carnarvon also exports capsicums, zucchinis and pumpkins to the Eastern States. It produces over half the bananas consumed in Western Australia as well as limited supplies of citrus fruit, mangoes and avocados.

The rainfall at Carnarvon is extremely variable and averages little more than 230 millimetres per annum. Agricultural development has been made possible only by irrigation. Water is obtained from the growers' own irrigation plants and from the Government-controlled Carnarvon Groundwater Supply Scheme which is supplied from bores along the Gascoyne River extending between points twenty kilometres and fifty-two kilometres upstream from the mouth of the river. More than 60 per cent of water used for irrigation is now supplied from this Scheme. Usually the river bed is exposed as surface flows of the Gascoyne River do not occur regularly each year. Wells and bores are sunk into the river sands and the water obtained is pumped either into storage tanks or direct to plantation channels and pipes from which it is distributed to plants by bays or furrows. Limitation of supply from the river sands has led to the State Government instituting control over the quantity and quality of water pumped, and the up-river sources have been developed to bring additional supplies of water into the irrigation area.

The Gascoyne Research Station is maintained at Carnarvon by the Department of Agriculture. Early activities of this research station have contributed to the success of the Carnarvon plantations particularly in the fields of plant selection and pest control. More recently, emphasis has been placed on the introduction of new varieties of avocados, pineapples, mangoes, bananas and citrus fruit, as well as new vegetable varieties and techniques for improving irrigation.

Ord River. The Ord River in the Kimberley Division traverses a tropical area which receives monsoonal rains of irregular incidence and quantity, varying from an annual mean of 510 millimetres in the south to 760 millimetres in the north. Investigations at the Kimberley Research Station, established in 1945 and operated until 1975 by the Department of Agriculture in conjunction with the Commonwealth Scientific and Industrial Research Organization, showed that the climate and soil conditions are favourable for the cultivation of sorghum, sugar-cane, rice, cotton, safflower and various oil seeds. Following these investigations the State Government, with Australian Government financial assistance, embarked on a project to provide water supplies for irrigation in the area.

The Ord Irrigation Project provides for the development of 72,000 hectares of land agriculturally and topographically suitable for irrigation. The project comprises four stages: the first was the construction of a diversion dam to supply water for an area of 12,100 hectares and the second, the building of a main storage dam with a capacity of 5,720 million cubic metres. The other stages are the progressive development of the whole 72,000 hectares and the construction of a hydro-electric power station.

The Kununurra Diversion Dam, situated at Bandicoot Bar about 105 kilometres by road south-east of Wyndham and forty-eight kilometres downstream from where the Ord River Dam now stands, was officially opened on 20 July 1963. The capacity of the diversion dam is 98.7 million cubic metres and irrigation from the dam commenced in April 1963. Its storage is named Lake Kununurra.

There are thirty-five farms developed, thirty in the first stage on Ivanhoe Plain averaging 270 hectares each and five in the second stage on Packsaddle Plain averaging 373 hectares each. Prior to 1975 cotton was the main crop. However, owing to high off-farm costs, high costs of insecticides and a decrease in the return for cotton no commercial crops have been planted since 1974. Lower meat prices have also led to reduced areas of grain sorghum and fodder crops being grown for fattening of cattle. Trial crops of peanuts are being grown and a pilot processing plant has been established. Rice is grown and processed for the Western Australian market. Crops of sunflower, oats, barley, maize and safflower are also being grown. The prospects for a sugar industry in the area are being investigated and a detailed feasibility study has been undertaken by a major Australian sugar company using the expertise of various bodies in the Queensland sugar industry. A pilot sugar farm is now established.

The original pilot farm for the Ord Irrigation Project, an area of 970 hectares developed by a private company to conduct farm-scale trials under an agreement with the State Government, later became the company's property under the agreement.

The diversion dam was recognised by the Australian Government in August 1959 as an approved project within the meaning of the *Western Australia Grant (Northern Development) Act 1958* (Commonwealth). This legislation provided for payment by the Australian Government to the State Government of a non-repayable grant of \$10 million for development of the part of the State north of 20°S. latitude. Of this grant \$8.2 million was spent on the diversion dam. In February 1963 a further approach was made to the Australian Government requesting an amount of \$3.3 million for the completion of channels and drains required to develop the whole of the 12,100 hectares included in the first stage of the project. The request was approved in August 1963 and moneys made available by way of grant in terms of the *Western Australia (Northern Development) Agreement Act 1963*.

In November 1967, the Australian Government approved the plan for the second phase of the Ord River Irrigation Scheme and agreed to provide financial assistance to the State for the works involved. Agreement as to the terms and conditions for financing the second phase of the scheme was announced in March 1968. In terms of the *Western Australia Agreement (Ord River Irrigation) Act 1968* the Australian Government agreed to provide financial assistance to the State in an amount equivalent to expenditure on the works, up to a maximum of \$48.18 million. The assistance took the form of a non-repayable grant for the construction of the main Ord dam (\$21.80 million) and an interest-bearing loan for the associated irrigation and drainage facilities.

The Ord River Dam was constructed over three dry seasons, 1969 to 1971, and was officially opened on 30 June 1972. A pump station and irrigation supply facilities to bring 2,020 hectares of new irrigation farmland into production on Packsaddle Plain was completed in December 1973. An extension of the scheme covering 770 hectares on Ivanhoe Plain was completed in December 1974.

Fitzroy River. The Camballin irrigation area is situated on the Liveringa flood plain, 105 kilometres south-east of Derby. Irrigation water from the Fitzroy River is diverted by means of a weir with a capacity of 4.7 million cubic metres into Uralla Creek, an anabranch, for twenty-seven kilometres to another dam with a storage of 5.5 million cubic metres constructed on Uralla Creek. Later it will be necessary to construct a storage dam on the upper reaches of the Fitzroy River for the large-scale developments envisaged for this area.

The irrigation works were constructed by the Western Australian Government in terms of the *Northern Developments Pty. Limited Agreement Act, 1969-1978*. Although only an area of up to 2,600 hectares of rice and grain sorghum has been irrigated in any one year, a much larger area, which is capable of being irrigated while the river is flowing, has been developed. The company which has interests in a number of cattle stations in the Kimberleys, developed a feed lot capable of handling up to 7,500 head at a time. However, the economic downturn in the beef industry which occurred at about that time, has resulted in little activity since 1974.

IRRIGATION: ORD AND CAMBALLIN DISTRICTS

Particulars	Irrigation district				Total	
	Ord		Camballin		1976-77	1977-78
	1976-77	1977-78	1976-77	1977-78		
Area watered hectares	4,309	4,519	-	-	4,309	4,519
Hectare waterings (a)	27,011	20,860	n.a.	n.a.	n.a.	n.a.
Average number of waterings (b)	6.3	4.6	n.a.	n.a.	n.a.	n.a.
Total water gauged at entry						
to district '000 cu m	66,307	69,628	-	-	66,307	69,628
Dam capacity "	5,821,649	5,821,649	11,639	11,639	5,833,288	5,833,288
Length of channels km	116	116	32	32	148	148

(a) Area watered multiplied by number of waterings. Figures shown represent the sum of hectare waterings for individual holdings in each district. (b) Total hectare waterings divided by total area watered.

WATER RESOURCES INVESTIGATION AND MEASUREMENT

Work on the investigation and measurement of the water resources of Western Australia, both surface and underground, has been accelerated in recent years partly owing to the activities of the Australian Water Resources Council, which was established by joint action of the Australian Government and State Government in 1962. The Council comprises Australian Government and State Government Ministers primarily responsible for water resources.

The primary objective of the Council is the provision of a comprehensive assessment on a continuing basis of Australia's water resources, and the extension of measurement and research so as to provide a sound basis for the planning of future development.

In terms of its main objective, the Council in 1964 recommended, and the Australian Government and State Governments agreed, that there should be an accelerated programme of establishment of stream gauging stations and investigation of underground water. Financial assistance to the States was rendered by the Australian Government under the *States Grants (Water Resources) Act 1964*, subject to certain qualifying expenditure by each State. Under various States Grants (Water Resources Measurement) Acts and the *States Grants (Water Resources Assessment) Act 1976*, financial assistance to the States was continued and extended to 30 June 1979.

The total expenditure by the Western Australian Government on water resources measurement, including grants received from the Australian Government, is given in the following table. In general, expenditure has increased each year over the past decade to a peak of \$5,005,692 in 1977-78.

EXPENDITURE ON WATER RESOURCES
MEASUREMENT (a)

Year			Surface water	Underground water
1973-74	....	....	1,065,915	1,559,624
1974-75	....	....	1,371,777	1,968,843
1975-76	....	....	1,740,034	2,436,521
1976-77	....	....	1,881,011	3,030,363
1977-78	....	....	1,910,000	3,095,692

(a) Including Australian Government grants.

Surface Water

To enable the surface water resources of Western Australia to be managed efficiently a network of gauging stations has been set up to monitor the quantity and quality of stream flows throughout the State. A wide range of stream and catchment sizes in a variety of landscapes, environments and climates is being measured. An increasing amount of research is also being carried out to determine the effects of changing land-use practices on the salinity of water in dams and streams.

The number of stream-gauging stations in operation is increasing each year and at 30 June 1978 totalled 300, compared with 292 at 30 June 1977. All stations are under the control of the Public Works Department.

The distribution of the gauging stations in the various drainage divisions is as follows:

South-West Coast Division (Esperance to the Hill River)	206
Indian Ocean Division (Arrowsmith River to the De Grey River)	53
Timor Sea Division (Broome to the Ord River)	41
Total	300

Underground Water

To locate and measure the quantity and quality of underground water available to supply the ever-growing needs of town water supplies, industries, farmers, pastoralists, etc. a considerable amount of investigation, including drilling, is in progress in Western Australia. The work is being carried out by the Department of Mines, the Public Works Department, and the Metropolitan Water Supply, Sewerage, and Drainage Board, with the Department of Mines assuming the major responsibility for hydro-geological work.

Underground water exploration projects in course during 1977-78 included major investigations of shallow aquifers south of Perth, which may provide water to augment Perth's water supply. Other investigations designed to locate underground water to provide or augment the water supplies for country towns and new mining developments are continuing.

SEWERAGE SCHEMES

Metropolitan Sewerage

There are twelve sewerage systems administered by the Metropolitan Water Supply, Sewerage, and Drainage Board within the metropolitan area.

Wastewater from the major systems either gravitates or is pumped through the pipe systems to treatment works at Point Peron, Subiaco, Swanbourne, Woodman Point and Beenyup. After treatment the effluent is discharged into the Indian Ocean, some distance from the coast under a substantial depth of water.

The other seven systems are served by treatment plants at Canning Vale, Gosnells, Westfield, Kwinana, Eden Hill, Kelmscott and Forrestfield, the treated effluent being disposed of in sandy soil in the vicinity of the plant sites.

In addition, the Board is operating temporary, extended aeration plants at Two Rocks, Wanneroo, Yanchep and Maddington and is also operating extended aeration package plants on behalf of Westrail at Kewdale, as well as for a large shopping centre at Cannington and the Kalamunda Hospital Board.

METROPOLITAN SEWERAGE SYSTEMS

At 30 June—	Services	Population served	Length of sewers
	number	persons	kilometres
1974	99,698	380,000	2,432
1975	111,300	420,000	2,635
1976	120,000	453,000	2,886
1977	128,000	459,000	3,151
1978	138,000	495,000	3,345

Country Towns Sewerage

At 30 June 1978 thirty-seven towns outside the metropolitan area had sewerage schemes which were constructed pursuant to the *Country Towns Sewerage Act, 1948-1978*. In addition, a further eleven schemes have been provided by local government authorities and ten as private development in mining areas by certain mining companies. The maximum subsidy available to local authorities under the Act was increased in 1977 and, as a result, three new schemes were under construction in 1978-79.

The following table shows the number of towns sewered, the area sewered and the number of services controlled by the Public Works Department at 30 June for each of the years 1974 to 1978. Details of the individual towns serviced are given in the succeeding table.

COUNTRY SEWERAGE SYSTEMS

At 30 June—	Number of towns sewered	Area sewered	Length of sewers	Services
	number	hectares	kilometres	number
1974	30	3,568	434	12,828
1975	33	3,905	475	14,276
1976	33	4,348	522	15,431
1977	36	4,781	565	17,723
1978	37	5,273	619	19,105

COUNTRY SEWERAGE SYSTEMS: AREA SEWERED, SEWERS AND NUMBER OF SERVICES

Town	At 30 June 1977			At 30 June 1978		
	Area sewered	Length of sewers	Services	Area sewered	Length of sewers	Services
	hectares	kilometres	number	hectares	kilometres	number
Albany	632	88.3	3,044	665	92.8	3,067
Bunbury	301	36.8	1,733	374	45.4	1,591
Collie	283	38.3	1,244	283	38.3	1,297
Corrigin	67	9.1	209	69	9.4	243
Denmark	8	1.6	29	8	1.6	28
Derby	n.a.	n.a.	n.a.	7	0.9	20
Eneabba	34	2.4	52	34	2.4	56
Exmouth	82	10.8	545	82	10.8	552
Geraldton	30	2.4	158	30	2.4	158
Gnowangerup	76	8.0	207	76	8.0	220
Harvey	47	4.9	41	85	8.7	117
Karratha	284	24.5	967	351	30.9	1,143
Katanning	225	26.5	633	245	30.0	703
Kellerberrin	75	7.4	87	101	9.5	118
Kojonup	55	8.3	195	73	8.8	209
Kununurra	97	8.9	228	97	8.9	294
Laverton	46	5.5	232	46	5.5	237
Leeman	8	1.5	52	8	1.5	53
Mandurah	217	25.5	329	310	38.1	486
Meckering	25	2.5	41	25	2.5	41
Merredin	165	20.4	431	181	22.4	537
Mount Barker	70	9.3	80	70	9.3	89
Mukinbudin	44	3.1	n.a.	44	3.2	45
Narembeen	n.a.	n.a.	n.a.	32	3.0	n.a.
Narrogin	235	28.2	951	273	32.5	1,045
Northam	428	58.8	2,414	429	58.9	2,472
Pingelly	77	8.1	109	77	8.1	113
Pinjarra	142	15.0	443	146	15.5	484
Port Hedland	489	47.4	1,633	508	48.3	1,845
Roebourne	47	5.3	61	48	5.3	97
Three Springs	51	4.0	178	51	4.0	189
Wagin	82	11.4	350	83	11.5	359
Wickham	72	8.8	392	72	8.8	439
Wongan Hills	78	8.9	163	80	9.2	201
Wundowie	41	7.1	235	41	7.1	241
Wyalkatchem	48	7.4	158	48	7.4	161
Wyndham	120	8.5	99	121	8.5	155
Total	4,781	565.0	17,723	5,273	619.4	19,105

CHAPTER VIII—PRODUCTION

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CHAPTER VIII—PRODUCTION

In this Chapter 'production' denotes those economic activities with output in the form of 'goods' or 'commodities' which will be marketed as raw materials, fuels, semi-processed articles or finished products. This definition excludes building and construction activity which is covered in Chapter V, Part 5.

The Chapter is divided into three Parts which deal with the major sectors of production as follows:

- Part 1 Agriculture, Forestry, Fishing and Hunting
- Part 2 Mining
- Part 3 Manufacturing and Electricity and Gas.

The subdivision of the Chapter into Parts 1, 2 and 3 is based on 'industry divisions' in the Australian Standard Industrial Classification (ASIC), and also reflects the current stage of development of economic statistics whereby information presented in Part 2 and Part 3 comes mainly from a system of integrated economic censuses based on ASIC, whereas only some statistics in Part 1 have been included in this system. A brief description of ASIC and the system of integrated economic censuses is given below.

Australian Standard Industrial Classification (ASIC)

In 1969 the Australian Bureau of Statistics issued the 'Australian Standard Industrial Classification (Preliminary Edition)', or 'ASIC', which sets out a classification of all economic activities grouped into four levels of 'industry' in which the activities are primarily carried out. At the broadest level of the classification, economic activities are grouped into the following 'industry divisions':

- Division A Agriculture, Forestry, Fishing and Hunting
- B Mining
- C Manufacturing
- D Electricity, Gas and Water
- E Construction
- F Wholesale and Retail Trade
- G Transport and Storage
- H Communication
- I Finance, Insurance, Real Estate and Business Services
- J Public Administration and Defence
- K Community Services
- L Entertainment, Recreation, Restaurants, Hotels and Personal Services.

Each industry division is further divided into industry sub-divisions, groups and classes. An example from the Manufacturing division is given below:

Industry Division	: C	Manufacturing
Industry Sub-division	: 28	Glass, Clay and Other Non-Metallic Mineral Products
Industry Group	: 281	Glass and Glass Products
Industry Class	: 2811	Plate and Sheet Glass

Economic units are classified to industry division, sub-division, group and class, in that order, based on the predominant activities among all the activities carried out by the unit concerned. The basic economic unit is the *establishment* which generally represents the total operations under one ownership at one physical location (e.g. a farm, a shop, a factory, a mine). In some cases (e.g. electricity and gas production and distribution) the location constraint is relaxed to cover the total operations under one ownership in one

State. Some separately-located units which exist primarily to provide services to other establishments under the same ownership (e.g. separately-located administrative offices, laboratories, warehouses, manufacturers' sales offices not holding stocks, etc.) are regarded as *ancillary units* and are classified to the industry of the establishments served rather than to an industry based on the activity performed. If all the activities of all establishments and ancillary units under the same ownership are considered together the unit is described as the *enterprise*, or all the operations of a single entity in Australia. The final unit in the hierarchy is the *enterprise group* which is the group of legal entities owned or controlled by a single legal entity (e.g. a parent company and its subsidiaries as defined in the Companies Act).

Integrated Economic Censuses

In 1968-69 the Australian Bureau of Statistics commenced a programme of integrated economic censuses to replace or add to the range of existing censuses developed independently over many years. By employing standard definitions of data items as described below and by using the standard definitions of units and methods of classification set out in ASIC, the programme was designed to remove many inconsistencies, gaps and overlaps between existing censuses and thereby permit comparisons of data across broad sectors of economic activity.

Statistics published from the integrated economic censuses are mainly *establishment statistics* or statistics resulting from the aggregation of data for individual establishments and ancillary units. In this Chapter most of the statistics in Parts 2 and 3 are establishment statistics from integrated censuses and data for the standard items can be regarded as comparable between the two Parts. However, the sectors of production covered by Part 1 of this Chapter have not been fully included in the system of integrated economic censuses and consequently some of the statistics in Part 1 differ in scope from those in Parts 2 and 3. Tables showing enterprise/establishment structure, industry, etc. together with the table setting out estimates of turnover, expenditure, value added, etc. are based on fully integrated data, whereas the commodity statistics (area and production of crops, livestock numbers, etc.) are the traditional holding-based information which is collected irrespective of enterprise or establishment structure.

Enterprise Statistics. Since an enterprise is defined as a single legal entity, the use of the enterprise as the unit of aggregation provides statistics which are often of more value than establishment statistics in considering questions related to management and ownership. The statistics which result from the aggregation of enterprise data are different from establishment statistics since, for enterprises comprised of establishments operating in different industries, the industry classification of the enterprise depends on the respective contributions of each establishment to the value added of the enterprise. For example, an enterprise operating a mine and a factory contributes to both mining and manufacturing in establishment statistics whereas, in enterprise statistics, it is classified wholly to either mining or manufacturing depending on which establishment has the greater value added.

The concept of an enterprise has no geographical limits other than the requirement that only operations within Australia are included. For this reason enterprise statistics generally relate only to Australia as a whole and are not dissected into State components, except in Part 1 (Agriculture). Where published, such statistics show the number of enterprises in each ASIC industry class together with data for the standard set of establishment items described below, plus additional items collected only at the enterprise level such as rent and leasing revenue, land tax, rates and pay-roll tax, employer contributions to super-annuation schemes, depreciation, interest and royalties (paid and received) and other expenses.

Standard Data Items in Integrated Censuses. A necessary part of the system of integrated economic censuses was the adoption of common definitions for data items common to all censuses. Listed below are the definitions of the standard data items appearing in tables in Parts 1 to 3 of this Chapter.

Number of Establishments. The number of establishments as defined above operating at 30 June of each year. Numbers of separately-located administrative offices and ancillary units serving the establishments are not included.

Persons Employed. Working proprietors and employees on the pay-roll including those working at separately-located administrative offices and ancillary units.

Wages and Salaries. The wages and salaries of all employees including those at separately-located administrative offices and ancillary units. Amounts drawn by working proprietors are not included.

Turnover. Sales (exclusive of excise and sales tax) of goods, whether produced in the establishment or not, plus transfers out of goods to other establishments of the same enterprise, plus bounties and subsidies on production, plus all other operating revenue (such as commission, repair and service revenue), plus capital work done for own use, or for rental or lease. Rent and leasing revenue, interest income, royalties and receipts from the sale of fixed tangible assets are excluded.

Stocks. All the stocks of materials, fuels, etc. and finished goods and work-in-progress of the establishment, whether located at the establishments or elsewhere in Australia.

Purchases, Transfers In and Selected Expenses. Purchases of materials, fuel, power, stores, containers, etc. plus transfers in of goods from other establishments of the same enterprise, plus charges for commission and sub-contract work, repair and maintenance expenses, outward freight and cartage, motor vehicle running expenses and sales commission payments.

Value Added. Turnover, plus increase (or less decrease) in the value of stocks, less purchases, transfers in and selected expenses.

Rent and Leasing Expenses. Outlay on rent and leasing of buildings, vehicles, machinery, plant and equipment.

Fixed Capital Expenditure. Outlay on new and secondhand fixed tangible assets, less disposals, including expenditure on establishments not yet in operation.

Foreign Control Statistics

A programme of studies of foreign control in key industries has been undertaken by the Australian Bureau of Statistics. Results relating to the mining and manufacturing industries, and mineral exploration are presented in this Chapter.

For the purpose of these statistics, an enterprise is classified as foreign-controlled if a single foreign-resident investor (individual, company or group of related companies) or foreign-controlled enterprise held at least 25 per cent of the paid-up value of voting shares in that enterprise, provided that there was no larger holding by an Australian-controlled enterprise or Australian-resident individual. Note that this definition of foreign control includes cases where there was an equal holding by an Australian-controlled enterprise or an Australian-resident individual. All enterprises not classified to foreign control are classified to Australian control.

In the case of details for mining and manufacturing establishments, operations data for each establishment are allocated wholly to the control category of the enterprise operating that establishment, and the results summed over all mining/manufacturing establishments. In the case of mineral exploration, funds expended are allocated wholly to the control category of the enterprise contributing those funds, and the results summed over all enterprises.

Chapter VIII—continued

Part 1—Agriculture, Forestry, Fishing and Hunting

INTEGRATED AGRICULTURAL STATISTICS

In order to assess assistance required by the rural sector the Industries Assistance Commission, established under the *Industries Assistance Commission Act 1973* required a set of detailed statistics (data base) which was comparable with that already available from the Integrated Economic Censuses.

Information from all units operating within the agricultural sector, obtained at a special census conducted in 1974, was used to create an additional data base, using the methodology of the Australian Standard Industrial Classification (ASIC) and compatible definitions with those of the Integrated Economic Censuses for Establishments, Enterprises and Enterprise Groups.

The identification of economic units within the agricultural sector has allowed the production of more meaningful statistics of economic size, legal status and industry classification. It has also provided some insight into the activities of agricultural enterprises in other sectors of the economy and the activities of non-agricultural enterprises in the agricultural sector.

For those units within ASIC Subdivision 01: Agriculture, which operate land, industry classifications are determined annually by applying unit prices to each agricultural activity undertaken by individual units and by then assessing the predominant activity according to the estimated values derived. For units that do not operate land (e.g. beekeepers), industry classifications are determined by each operator's description of his activities.

Enterprise and establishment units, which are predominantly engaged in activities covered by ASIC Subdivision 01: Agriculture, are referred to respectively as agricultural enterprises and agricultural establishments.

The procedure for determining industry classification is also used for size classification purposes. For each unit, an 'estimated value of operations' (which includes both agricultural and non-agricultural operations) is calculated.

The number of economic units operating in the agricultural sector, their industry, legal status and size together with a tabulation of certain financial aggregates are shown in the next seven tables.

The following table shows details of the number of units operating in the agricultural sector in each State for the three years 1975-76 to 1977-78.

NUMBER OF UNITS OPERATING IN THE AGRICULTURAL SECTOR
STATES AND AUSTRALIA

Type of unit	Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust.
Establishments—								
Agricultural establishments operated by agricultural and non-agricultural enterprises	1975-76	53,382	49,007	34,028	19,730	16,507	6,306	180,411
	1976-77	50,890	47,822	33,073	19,498	16,042	5,912	173,625
	1977-78	50,852	48,104	33,947	19,994	16,871	6,016	176,155
Non-agricultural establishments operated by agricultural enterprises	1975-76	145	170	75	99	101	33	637
	1976-77	123	164	68	91	80	38	579
	1977-78	143	178	63	86	66	38	585
Enterprises—								
Agricultural enterprises	1975-76	52,344	48,163	33,485	19,342	16,175	6,143	176,489
	1976-77	49,586	46,788	32,297	18,921	15,691	5,768	169,754
	1977-78	48,806	46,626	32,185	19,236	15,756	5,793	169,143
Non-agricultural enterprises operating agricultural establishments	1975-76	914	663	376	273	223	144	2,633
	1976-77	861	589	339	349	217	128	2,528
	1977-78	799	653	425	335	244	154	2,659

The table below shows the number and industry of agricultural enterprises for each State for the year 1977-78.

NUMBER AND INDUSTRY OF AGRICULTURAL ENTERPRISES
STATES AND AUSTRALIA: 1977-78

Industry of enterprise		N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust.
ASIC code	Description							
0111	Cereal grains	5,748	3,786	3,335	1,624	1,592	27	16,160
0112	Oilseeds (n.e.c.)	146	48	647	56	3	-	900
0113	Sheep/Cereal grains	7,796	4,442	328	5,509	6,079	60	24,266
0114	Meat cattle/Cereal grains	2,215	753	1,616	202	100	30	4,942
0115	Sheep/Meat cattle	4,722	4,494	969	1,336	800	609	13,031
0116	Sheep	6,269	5,654	1,251	2,404	2,000	1,053	18,721
0117	Meat cattle	8,711	8,196	7,840	1,123	1,937	986	29,090
0118	Milk cattle	4,158	11,851	3,597	1,527	663	1,517	23,334
0119	Pigs	1,099	707	1,035	450	194	201	3,690
0121	Poultry for meat	292	118	79	51	35	8	583
0122	Poultry for eggs	412	308	220	157	116	45	1,274
0131	Grapes	696	1,874	151	1,684	247	4	4,664
0132	Plantation fruit	942	-	891	-	78	-	1,915
0133	Orchard and other fruit	2,022	1,293	881	1,565	742	434	6,953
0141	Vegetables—Potatoes	301	1,016	278	161	229	291	2,279
0142	Vegetables—Other	1,285	862	1,366	953	579	269	5,329
0150	Multi-purpose farming	94	42	173	35	39	81	469
0161	Sugar cane	498	-	5,951	-	-	-	6,450
0162	Peanuts	2	-	366	-	-	-	368
0163	Tobacco	67	317	594	-	-	-	981
0164	Cotton	59	-	75	-	-	-	134
0165	Nurseries and specialised horticultural activities (except forest nurseries)	631	337	189	83	111	36	1,394
0166	Agriculture (n.e.c.)	641	528	353	316	212	142	2,216
	Total (ASIC code 01)	48,806	46,626	32,185	19,236	15,756	5,793	169,143

The following table shows the number of agricultural enterprises classified according to industry and legal status for the year 1977-78. Family partnerships operated 11,937 or 76 per cent of the 15,756 agricultural enterprises in that year.

AGRICULTURAL ENTERPRISES—INDUSTRY AND LEGAL STATUS
WESTERN AUSTRALIA: 1977-78

Industry of enterprise		Legal status						Total enterprises
ASIC code	Description	Sole operator	Family partnership	Other partnership	Private incorporated company	Public incorporated company	Other (a)	
0111	Cereal grains	210	1,252	45	51	2	32	1,592
0112	Oilseeds (n.e.c.)	-	1	-	2	-	-	3
0113	Sheep/Cereal grains	587	5,059	120	219	-	94	6,079
0114	Meat cattle/Cereal grains	24	67	3	4	-	2	100
0115	Sheep/Meat cattle	155	582	21	32	-	10	800
0116	Sheep	397	1,396	71	116	1	19	2,000
0117	Meat cattle	515	1,246	52	99	3	22	1,937
0118	Milk cattle	81	531	12	12	-	7	663
0119	Pigs	44	134	8	5	1	2	194
0121	Poultry for meat	4	27	1	3	-	-	35
0122	Poultry for eggs	25	78	2	6	-	5	116
0131	Grapes	111	127	3	2	-	4	247
0132	Plantation fruit	13	64	1	-	-	-	78
0133	Orchard and other fruit	200	511	12	14	-	5	742
0141	Vegetables—Potatoes	39	189	1	-	-	-	229
0142	Vegetables—Other	138	426	11	2	-	2	579
0150	Multi-purpose farming	6	33	-	-	-	-	39
0161	Sugar cane	-	-	-	-	-	-	-
0162	Peanuts	-	-	-	-	-	-	-
0163	Tobacco	-	-	-	-	-	-	-
0164	Cotton	-	-	-	-	-	-	-
0165	Nurseries and specialised horticultural activities (except forest nurseries)	30	71	2	7	-	1	111
0166	Agriculture (n.e.c.)	75	123	5	6	-	3	212
	Total (ASIC code 01)	2,654	11,937	370	580	7	208	15,756

(a) Includes co-operative societies, trusts and estates.

The following table shows the number of agricultural establishments classified according to the industry of the establishment and the estimated value of operations for the year 1977-78. Agricultural establishments with predominant activities of Cereal grains and Sheep/Cereal grains accounted for 8,079 or 48 per cent of the 16,871 agricultural establishments and those with an estimated value of operations of \$150,000 or more accounted for 992 or 6 per cent of the 16,871 agricultural establishments in that year.

**AGRICULTURAL ESTABLISHMENTS
INDUSTRY AND ESTIMATED VALUE OF OPERATIONS
WESTERN AUSTRALIA: 1977-78**

Industry of establishment		Number of establishments with estimated value of operations (\$'000)						
ASIC Code	Description	Less than 2 (a)	2-9	10-19	20-29	30-39	40-49	50-59
0111	Cereal grains	16	85	113	127	138	159	166
0112	Oilseeds (n.e.c.)	-	-	-	1	1	1	1
0113	Sheep/Cereal grains	31	61	225	402	556	685	716
0114	Meat cattle/Cereal grains	7	20	18	17	13	12	9
0115	Sheep/Meat cattle	1	212	216	146	95	62	38
0116	Sheep	17	365	338	325	247	202	145
0117	Meat cattle	65	1,464	379	137	47	20	17
0118	Milk cattle	16	150	176	109	67	69	39
0119	Pigs	2	79	38	28	11	14	6
0121	Poultry for meat	-	1	4	1	7	8	4
0122	Poultry for eggs	-	17	5	1	2	6	6
0131	Grapes	-	203	37	7	1	4	-
0132	Plantation fruit	-	3	4	12	13	16	15
0133	Orchard and other fruit	9	322	172	99	56	39	21
0141	Vegetables—Potatoes	1	9	53	55	34	36	16
0142	Vegetables—Other	7	177	155	109	45	28	26
0150	Multi-purpose farming	1	3	8	4	5	5	4
0161	Sugar cane	-	-	-	-	-	-	-
0162	Peanuts	-	-	-	-	-	-	-
0163	Tobacco	-	-	-	-	-	-	-
0164	Cotton	-	-	-	-	-	-	-
0165	Nurseries and specialised horticultural activities (except forest nurseries)	-	-	-	-	-	-	-
0166	Agriculture (n.e.c.)	20	24	23	9	24	2	1
	Total (ASIC code 01)	198	3,337	2,002	1,613	1,371	1,369	1,231

Industry of establishment		Number of establishments with estimated value of operations (\$'000)					Total establishments
ASIC Code	Description	60-74	75-99	100-149	150-199	200 and over	
0111	Cereal grains	207	246	278	102	91	1,728
0112	Oilseeds (n.e.c.)	-	-	-	-	-	4
0113	Sheep/Cereal grains	987	1,099	996	353	240	6,351
0114	Meat cattle/Cereal grains	6	9	3	-	2	110
0115	Sheep/Meat cattle	33	38	19	6	10	882
0116	Sheep	158	174	143	44	41	2,199
0117	Meat cattle	24	10	19	3	5	2,190
0118	Milk cattle	37	19	14	2	2	700
0119	Pigs	4	8	9	3	8	210
0121	Poultry for meat	5	2	2	4	3	36
0122	Poultry for eggs	14	14	13	8	28	124
0131	Grapes	1	-	1	-	-	257
0132	Plantation fruit	5	6	3	1	1	79
0133	Orchard and other fruit	20	11	11	5	5	770
0141	Vegetables—Potatoes	7	17	6	-	-	234
0142	Vegetables—Other	15	12	10	6	6	596
0150	Multi-purpose farming	4	1	3	-	1	39
0161	Sugar cane	-	-	-	-	-	-
0162	Peanuts	-	-	-	-	-	-
0163	Tobacco	-	-	-	-	-	-
0164	Cotton	-	-	-	-	-	-
0165	Nurseries and specialised horticultural activities (except forest nurseries)	12	9	5	2	6	119
0166	Agriculture (n.e.c.)	-	5	4	2	2	243
	Total (ASIC code 01)	1,539	1,680	1,539	541	451	16,871

(a) Comprises agricultural establishments with estimated value of operations less than \$1,500 that are components of enterprises having estimated value of agricultural operations equal to or greater than \$1,500.

The following table shows the number of agricultural enterprises classified according to industry of the enterprise and the estimated value of operations for the year 1977-78. Agricultural enterprises with predominant activities of Cereal grains and Sheep/Cereal grains accounted for 7,671 or 49 per cent of the 15,756 agricultural enterprises and those with an estimated value of operations of \$150,000 or more accounted for 1,048 or 7 per cent of the 15,756 agricultural enterprises in that year.

**AGRICULTURAL ENTERPRISES
INDUSTRY AND ESTIMATED VALUE OF OPERATIONS
WESTERN AUSTRALIA: 1977-78**

Industry of enterprise		Number of enterprises with estimated value of operations (\$'000)					
ASIC code	Description	2-9	10-19	20-29	30-39	40-49	50-59
0111	Cereal grains	73	90	111	121	148	141
0112	Oilseeds (n.e.c.)	-	-	1	1	1	-
0113	Sheep/Cereal grains	55	195	368	515	639	679
0114	Meat cattle/Cereal grains	21	16	17	9	10	6
0115	Sheep/Meat cattle	189	198	133	88	59	36
0116	Sheep	323	295	289	239	189	135
0117	Meat cattle	1,333	348	125	44	20	14
0118	Milk cattle	142	165	105	68	68	39
0119	Pigs	70	35	28	11	13	6
0121	Poultry for meat	1	4	1	2	8	4
0122	Poultry for eggs	17	4	7	7	6	6
0131	Grapes	199	34	9	1	3	-
0132	Plantation fruit	3	4	12	13	15	15
0133	Orchard and other fruit	314	167	96	58	39	20
0141	Vegetables—Potatoes	7	53	53	33	36	15
0142	Vegetables—Other	177	150	106	46	28	26
0150	Multi-purpose farming	3	9	4	5	5	3
0161	Sugar cane	-	-	-	-	-	-
0162	Peanuts	-	-	-	-	-	-
0163	Tobacco	-	-	-	-	-	-
0164	Cotton	-	-	-	-	-	-
0165	Nurseries and specialised horticultural activities (except forest nurseries)	23	22	9	23	2	1
0166	Agriculture (n.e.c.)	136	36	18	8	-	1
	Total (ASIC code 01)	3,086	1,825	1,492	1,292	1,289	1,147

Industry of enterprise		Number of enterprises with estimated value of operations (\$'000)					
ASIC code	Description	60-74	75-99	100-149	150-199	200 and over	Total enterprises
0111	Cereal grains	188	242	273	105	100	1,592
0112	Oilseeds (n.e.c.)	-	-	-	-	-	3
0113	Sheep/Cereal grains	936	1,054	991	376	271	6,079
0114	Meat cattle/Cereal grains	7	9	3	-	2	100
0115	Sheep/Meat cattle	31	32	22	4	8	800
0116	Sheep	142	157	141	46	44	2,000
0117	Meat cattle	18	9	18	3	5	1,937
0118	Milk cattle	35	21	16	2	2	663
0119	Pigs	4	8	8	3	8	194
0121	Poultry for meat	15	12	2	4	2	35
0122	Poultry for eggs	14	12	13	7	23	116
0131	Grapes	1	-	-	-	-	247
0132	Plantation fruit	5	6	3	1	1	78
0133	Orchard and other fruit	20	10	11	4	3	742
0141	Vegetables—Potatoes	9	17	6	-	-	229
0142	Vegetables—Other	14	10	11	5	6	579
0150	Multi-purpose farming	4	2	3	-	1	39
0161	Sugar cane	-	-	-	-	-	-
0162	Peanuts	-	-	-	-	-	-
0163	Tobacco	-	-	-	-	-	-
0164	Cotton	-	-	-	-	-	-
0165	Nurseries and specialised horticultural activities (except forest nurseries)	10	8	6	1	6	111
0166	Agriculture (n.e.c.)	-	5	3	3	2	212
	Total (ASIC code 01)	1,443	1,604	1,530	564	484	15,756

The following table shows the number of agricultural enterprises classified according to estimated value of operations and legal status for the year 1977-78.

**AGRICULTURAL ENTERPRISES
ESTIMATED VALUE OF OPERATIONS AND LEGAL STATUS
WESTERN AUSTRALIA: 1977-78**

Estimated value of operations (\$'000)	Legal status						Total enterprises
	Sole operator	Family partnership	Other partnership	Private incorporated company	Public incorporated company	Other (a)	
2— 9	1,107	1,809	65	65	1	39	3,086
10— 19	461	1,273	37	36	—	17	1,825
20— 29	318	1,088	39	28	—	19	1,492
30— 39	208	1,008	30	31	1	14	1,292
40— 49	154	1,061	30	31	—	13	1,289
50— 59	118	952	19	41	1	16	1,147
60— 74	112	1,227	31	56	—	17	1,443
75— 99	85	1,389	31	77	2	20	1,604
100—149	56	1,300	47	100	—	27	1,530
150—199	15	469	15	56	—	9	564
200 and over	20	361	26	59	1	17	484
Total all size groups	2,654	11,937	370	580	7	208	15,756

(a) Includes co-operative societies, trusts and estates.

The following table shows estimates of turnover, expenditure, cash operating surplus, capital expenditure and indebtedness of agricultural enterprises for four years up to 1977-78. The data are obtained from the Agricultural Finance Surveys conducted annually by the Australian Bureau of Statistics. They contain economic statistics relating to agricultural industries which are comparable with those from the manufacturing, mining and retailing sectors of the economy. They differ from value of primary commodities produced data in the following ways.

- (1) Data relate only to enterprises whose predominant activity is agriculture, whereas value of primary commodities produced data relate to the value of the total recorded production of commodities in a given year regardless of the predominant activity of the enterprise.
- (2) The information relates to transactions on a cash rather than an accrual basis for agricultural enterprises during specific financial years. It does not therefore relate to one specific crop, season, etc.

Separate sample estimates have been calculated for components and totals at all levels. Users should exercise care when using the data, as the sample estimation methods used may result in the aggregate of the component estimates not necessarily being the same as the separate estimates of the total. Since the standard errors are, in general, lower for totals than for individual components, the totals can be taken to be a more reliable estimate than the addition of the component items.

Sample estimates may differ from results which would have been obtained from a comparable complete collection. A measure of the likely difference is given by the standard error of the estimates. There are about two chances in three that a sample estimate will differ by less than one standard error from the figures that would have been obtained from a comparable complete collection, and about nineteen chances in twenty that the differences will be less than two standard errors. For example, if a sample survey gives an estimate of \$4,000 million and the standard error of this estimate is 2 per cent *i.e.* \$80 million, then there would be two chances in three that a comparable complete collection would give a figure within the range of \$3,920 million to \$4,080 million, and nineteen chances in twenty that the figure would be within the range of \$3,840 million to \$4,160 million.

For a more detailed explanation of the methodology and terminology used the reader is referred to the bulletin *Agricultural Sector, Part IV, Financial Statistics 1977-78* (Catalogue No. 7507.0) published by the Australian Statistician, Canberra.

ESTIMATES OF TURNOVER, EXPENDITURE, CASH OPERATING SURPLUS, CAPITAL EXPENDITURE AND INDEBTEDNESS OF AGRICULTURAL ENTERPRISES
WESTERN AUSTRALIA

Item	1974-75		1975-76	
	\$ million	Standard error %	\$ million	Standard error %
Sales from crops	368.2	3	468.5	3
Sales from livestock	129.6	6	127.4	4
Sales from livestock products	233.2	3	249.5	6
Other miscellaneous revenue	15.7	15	21.7	37
Turnover	757.0	2	863.0	2
Less Marketing expenses	71.0	6	96.8	5
Purchases of livestock	48.6	15	35.0	10
Payments for seed and fodder	20.5	7	21.0	9
Payments for fertiliser	68.0	5	75.0	5
Payments for chemicals, etc., veterinary supplies and services	13.8	5	16.4	9
Payments for electricity and fuel	28.2	4	37.3	4
Water and drainage charges	1.6	20	2.5	27
Payments to contractors	41.3	6	47.0	6
Repairs and maintenance	70.0	5	68.9	4
Other selected expenses			13.7	6
Purchases and selected expenses	364.0	3	412.2	3
Value added (a)	412.7	5	468.0	4
Less Rates and taxes	11.6	3	14.0	7
Insurance payments	11.1	4	13.1	5
Other expenses	17.7	6	20.3	7
Rent and leasing expenses (other than land)	4.8	23	6.8	24
Plus Rent and leasing revenue (other than land)	3.5	15	5.5	35
Adjusted value added (a)	372.2	5	420.9	4
Less Wages, salaries and supplements	52.9	8	58.5	6
Gross operating surplus (a)	319.2	6	365.0	5
Less Interest, land rent paid	37.3	9	46.7	7
Plus Interest, land rent received	11.9	20	13.9	14
Cash operating surplus (b)	274.1	7	315.6	5
Total net capital expenditure	114.9	8	168.4	5
Loans by banks, pastoral and insurance companies	241.4	9	290.7	8
Loans under hire purchase and other instalment credit	32.4	35	62.7	11
Other amounts owing	69.0	36	63.8	18
Gross indebtedness	342.4	7	419.4	7

Item	1976-77		1977-78	
	\$ million	Standard error %	\$ million	Standard error %
Sales from crops	525.8	4	342.7	4
Sales from livestock	158.1	5	200.3	5
Sales from livestock products	282.7	5	280.8	3
Other miscellaneous revenue	27.8	12	30.0	12
Turnover	995.9	3	854.7	2
Less Marketing expenses	93.6	5	85.9	3
Purchases of livestock	33.6	11	53.5	10
Payments for seed and fodder	24.1	8	28.5	10
Payments for fertiliser	81.9	5	82.4	4
Payments for chemicals, etc., veterinary supplies and services	16.1	7	16.8	5
Payments for electricity and fuel	41.6	3	44.5	3
Water and drainage charges	3.0	27	1.4	16
Payments to contractors	39.7	9	36.8	5
Repairs and maintenance	69.4	5	61.9	4
Other selected expenses	15.4	8	15.2	8
Purchases and selected expenses	418.5	3	426.9	3
Value added (a)	537.5	4	399.9	5
Less Rates and taxes	12.3	4	12.7	4
Insurance payments	12.1	5	11.6	4
Other expenses	21.2	6	22.6	5
Rent and leasing expenses (other than land)	5.5	25	5.2	25
Plus Rent and leasing revenue (other than land)	5.8	39	2.7	15
Adjusted value added (a)	492.3	4	350.6	5
Less Wages, salaries and supplements	60.4	7	57.0	7
Gross operating surplus (a)	431.9	5	293.6	6
Less Interest, land rent paid	43.1	8	46.6	7
Plus Interest, land rent received	14.4	15	12.8	16
Cash operating surplus (b)	443.1	5	287.7	6
Total net capital expenditure	157.6	7	133.7	7
Loans by banks, pastoral and insurance companies	263.4	9	351.7	8
Loans under hire purchase and other instalment credit	52.4	20	67.9	11
Other amounts owing	145.6	14	132.9	15
Gross indebtedness	461.3	8	552.4	7

(a) Includes estimate for increase in value of livestock

(b) Excludes estimate for increase in value of livestock.

VALUE OF PRIMARY COMMODITIES PRODUCED

For primary production (*i.e.* agriculture, forestry, fishing and hunting) the *gross value* is based on the wholesale price realised 'at the principal market'. Where primary products are consumed at the place of production or where they become raw material for secondary industry within the State, these points of consumption are taken as the 'principal market'.

The '*local value*' is the value at the source of production and is obtained by deducting marketing costs from the gross value. Marketing costs comprise freight, cost of containers, commission, and other charges incurred in marketing. Gross values provide a reliable measure of the value of production of any particular commodity or group but when comparing or combining values for primary industries with those for secondary industries the value added series of financial statistics from the Agricultural Finance Survey should be used.

Gross values of the principal items are shown in the next table for each of the years 1973-74 to 1977-78.

Wheat was the most important item in 1977-78 with a gross value of \$292.9 million, followed by wool with \$257.4 million. Forestry contributed \$24.5 million, fishing \$44.1 million and hunting \$2.7 million.

PRIMARY COMMODITIES PRODUCED GROSS VALUE OF PRINCIPAL ITEMS (\$'000)

Commodity group and commodity	1973-74	1974-75	1975-76	1976-77	1977-78
Agriculture—					
Crops—					
Barley	48,050	33,822	52,399	60,910	68,352
Oats	25,253	18,045	32,700	28,906	31,100
Wheat	461,049	361,211	427,507	290,489	292,901
Hay (all kinds)	22,529	14,144	10,048	10,760	15,374
Pasture seed—					
Barrel medic	79	138	125	157	129
Subterranean clover	2,028	1,531	936	1,584	1,734
Cotton	1,966	1,752	—	—	—
Nursery products (a)	3,099	3,975	4,682	5,939	7,868
Vegetables—					
Cauliflowers	1,263	1,752	1,600	1,933	2,419
Lettuce	1,170	1,286	1,192	1,220	1,900
Onions	1,197	1,025	1,221	1,342	1,529
Potatoes	8,431	8,806	12,320	11,247	9,532
Tomatoes	2,321	2,714	3,284	4,053	3,855
Fruit—					
Apples	8,388	11,890	12,594	12,323	11,443
Bananas	1,479	1,733	2,205	2,502	4,057
Oranges	1,180	1,239	1,281	1,620	2,009
Pears	1,034	1,159	1,161	2,202	1,326
Plums and prunes	952	1,091	1,167	1,460	1,782
Vine fruits	1,597	2,072	1,999	2,246	2,249
Livestock slaughtering—					
Cattle and calves	65,808	40,092	45,803	65,062	76,931
Sheep and lambs	35,943	21,942	23,118	32,714	39,548
Pigs	19,023	16,936	18,211	18,348	18,994
Poultry	11,067	12,917	13,865	16,004	19,771
Livestock products—					
Wool (shorn and dead)	250,704	218,513	241,796	275,093	257,411
Whole milk (b)	19,627	20,458	20,660	r 23,274	25,539
Eggs	7,949	12,032	13,431	14,037	15,477
Honey	1,280	935	1,174	1,603	763
Forestry	15,264	19,995	23,404	26,349	24,529
Fishing—					
Prawns	4,277	4,564	r 10,960	12,334	17,056
Rock lobsters	17,855	19,929	r 29,493	44,141	50,880
Fish	2,093	2,549	r 3,633	4,291	6,725
Hunting	1,739	1,657	1,744	2,622	2,675

(a) Value of seedlings, cut flowers, bulbs, trees, etc. produced.

(b) Includes Australian Government subsidy.

In 1977-78, the gross value of primary commodities produced amounted to \$1,120.6 million, of which agricultural commodities contributed \$1,005.0 million.

VALUE OF PRIMARY COMMODITIES PRODUCED: 1977-78
(\$'000)

Commodity group	GROSS VALUE (based on principal market prices)	Marketing costs	LOCAL VALUE (as at source of production)
Agriculture	1,005,029	97,624	907,404
Forestry	24,529	956	23,573
Fishing, pearling and whaling	88,340	302	88,038
Hunting	2,675	555	2,120
Total	1,120,572	99,437	1,021,135

SUMMARY OF AUSTRALIAN STATISTICS

The following table contains a selection of the principal statistics of primary production in each of the Australian States for 1976-77.

PRINCIPAL STATISTICS OF PRIMARY PRODUCTION
AUSTRALIA: 1976-77

Particulars	Unit	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia (a)
Rural holdings—								
Area	'000 ha	65,981	14,499	155,007	63,052	115,221	2,308	491,524
Principal crops—								
Wheat for grain—								
Area	'000 ha	3,116	1,103	582	839	3,314	2	8,956
Production	'000 tonnes	5,141	1,780	794	832	3,249	4	11,800
Oats for grain—								
Area	'000 ha	250	241	9	117	372	6	995
Production	'000 tonnes	307	309	9	90	347	9	1,072
Barley for grain—								
Area	'000 ha	417	366	218	855	452	12	2,321
Production	'000 tonnes	571	402	407	889	553	25	2,847
Hay, all types—								
Area	'000 ha	233	518	35	164	169	72	1,195
Production	'000 tonnes	772	2,004	173	512	560	345	4,376
Pasture seed	tonne	1,535	2,532	434	2,996	2,845	246	10,604
Onions—								
Area	hectare	1,173	843	1,065	776	190	247	4,294
Production	tonne	25,330	18,807	22,993	22,389	7,863	7,916	105,298
Potatoes—								
Area	hectare	8,399	9,892	6,325	3,202	2,347	3,705	(b) 33,872
Production	tonne	111,861	243,625	106,348	83,441	70,943	112,276	728,494
Other vegetables—								
Area	hectare	16,767	15,431	19,575	5,801	3,244	8,631	(b) 69,543
Apples—								
Number of trees	'000 trees	1,278	1,107	1,096	546	938	1,261	6,229
Production	tonne	70,565	61,139	37,783	18,315	41,863	71,781	301,551
Pears—								
Number of trees	'000 trees	185	1,086	121	151	87	49	1,679
Production	tonne	6,446	81,757	3,752	6,812	5,077	1,434	105,280
Oranges—								
Number of trees	'000 trees	2,516	666	224	1,452	267	—	5,126
Production	tonne	131,536	35,292	21,715	124,215	8,908	—	321,674
Vineyards—								
Area	hectare	15,059	20,795	1,522	31,244	2,445	56	71,124
Grapes (all purposes)	tonne	147,810	271,793	5,292	293,489	9,970	28	728,385
Livestock numbers, 31 March 1977—								
Sheep and lambs	'000	49,700	21,925	13,304	15,132	31,149	4,015	135,360
Cattle	'000	8,350	5,104	11,506	1,608	2,474	819	31,533
Pigs	'000	760	397	441	317	234	65	2,229
Livestock slaughtered for human consumption—								
Sheep	'000	4,057.9	4,922.1	858.8	1,969.6	4,046.6	469.1	16,326.6
Lambs	'000	5,120.0	5,549.5	647.6	1,457.1	1,830.8	523.5	15,286.7
Cattle	'000	2,955.8	2,397.5	2,316.8	579.2	844.8	284.8	9,535.6
Calves	'000	503.3	1,196.7	512.7	76.7	70.4	72.9	2,444.7
Pigs	'000	1,024.1	934.8	702.9	344.2	343.3	99.6	3,477.9
Wool production	mil. kg	232.9	126.1	64.4	94.3	166.4	18.1	702.7
Whole milk production—								
All purposes	'000 litres	942,995	3,212,247	623,692	354,912	214,851	422,671	5,772,988
Fisheries production—								
Fish, live weight	tonne	18,254	10,089	5,425	14,065	7,559	2,363	59,111
Crustaceans, live weight	tonne	2,969	316	12,187	4,788	12,506	1,178	36,867
Gross value of production—								
Agriculture	\$'000	2,097,130	1,379,511	1,418,073	711,616	958,511	176,059	6,771,244
Forestry	'000	65,209	49,916	31,440	20,426	26,349	55,429	251,506
Fishing, pearling and whaling	'000	36,059	16,014	34,475	27,087	69,094	11,713	205,794
Hunting	'000	7,638	11,318	680	747	2,622	445	23,450

(a) Includes Northern Territory and Australian Capital Territory except where indicated; see footnote (b).
excludes Northern Territory and/or Australian Capital Territory.

(b) Incomplete;

The gross value of primary production (excluding mining) for Australia as a whole in 1976-77 amounted to \$7,252 million, of which Western Australia contributed \$1,056.6 million or 14.6 per cent of the total. The major contributor was New South Wales with \$2,206 million or 30.4 per cent.

The total area of rural holdings in Australia was 491,524,000 hectares. Rural holdings in Queensland occupied the largest area (155,007,000 hectares), followed by Western Australia (115,221,000 hectares). Western Australia, with 3,313,942 hectares, had the largest area under wheat for grain in 1976-77.

SEASONAL CALENDAR

The following calendar is intended to show the main periods when principal agricultural and pastoral activities are carried out in Western Australia. Operations are generally confined to the periods shown but are subject to variation according to such factors as geographical location within the State, the variety of seed sown (or trees and vines planted) and exceptional seasonal conditions.

SEASONAL CALENDAR

Item	Period	
	Sowing or planting	Harvesting
Pastures—		
Clovers	April to June	December to April
Medics	April to June	December to April
Grain—		
Wheat	May to mid-July	November to January
Oats	May and June	November and December
Barley	May to July	November and December
Rye	May and June	November and December
Sweet Lupins	April to June	November to January
Hay—		
Wheaten	May and June	October and November
Oaten	April to June	October and November
Linseed	May to July	December and January
Vegetables—		
Beans, Runner—		
Carnarvon area	March to September	May to November
Perth Division	August to March	November to June
Green Peas—		
For processing	May to September	October to December
Fresh	May to September	August to December
Potatoes—		
Early planting—		
Perth and South-West	June and July	October to December
Mid-season planting—		
Perth, South-West and Lower Great Southern	July to November	November to March
Late planting—		
South-West and Lower Great Southern	November to February	February to June
Onions	March to November	September to April
Tomatoes—		
Carnarvon and Geraldton areas	February to August	May to December
Other areas	June to February	October to June
Fruit—		
Apples	June to August	February to May
Apricots	June and July	December and January
Bananas	September to March	July to June
Lemons	July and August	July to June
Mandarins	July and August	May to September
Nectarines	June and July	January and February
Olives	July and August	March and April
Oranges, Navel	July and August	May to September
Oranges, Valencia	July and August	August to February
Peaches	June and July	December to March
Pears	June and July	February and March
Plums	June and July	December to March
Grapes—		
For table use	July to September	January to May
For wine making	July to September	February to April
For drying	July to September	February
Shearing and lambing—		
Shearing—		
Pastoral areas	March to August	
Agricultural areas	February to November	
Lambing—		
Pastoral areas	April to July	
Agricultural areas	April to September	

LAND UTILISATION ON RURAL HOLDINGS

In 1977-78 there were 17,767 rural holdings in the State, comprising 114 million hectares of land or just under 46 per cent of the total area of Western Australia.

Prior to 1975-76 the accepted definition of a rural holding was a piece of land of one hectare or more in extent, used for the production of agricultural products or for the raising of livestock and the production of livestock products. Holdings of less than one hectare on which commercial market gardens, nurseries, poultry farms or hatcheries operated were also included. Commencing with the 1975-76 season a rural holding was defined as a location (or number of locations) belonging to an enterprise with estimated gross receipts from, or expenditure leading to, agricultural production equal to or in excess of \$1,500. Although the new definition resulted in the total number of returns included in the 1975-76 tabulations being some 700 less than the number that would have been included under the previous definition, the effect on recorded total agricultural production is insignificant.

Of the total area of rural holdings, 4.9 million hectares were used for crops and 7.2 million hectares were under sown pasture. The balance consists mainly of uncleared land, (most of which is pastoral leases held by sheep and cattle stations), but it also includes cleared land used for grazing or which was resting during the season, fallowed areas, newly cleared land and small areas of lucerne.

Land development in the post-war period was stimulated by generally favourable prices for agricultural and pastoral commodities. Special concessions to primary producers under the provisions of the taxation legislation also contributed to the increased capital investment in primary industry. This development, undertaken principally by established farmers and by the War Service Land Settlement Board, was aided by the introduction of modern mechanical methods of land clearing. As a result, the area of land used for crops increased from 1.4 million hectares in 1946-47 to more than 4.9 million hectares in 1977-78. This is the largest area of crops recorded in Western Australia. The area under sown pastures expanded from 0.8 million hectares in 1946-47 to more than 7.8 million hectares in 1974-75.

Details of land utilisation in the five years to 1977-78 are given in the next table together with the number of active rural holdings. When examining the following tables the effect of the change in definition of a rural holding explained above should be borne in mind.

LAND UTILISATION

Season	Active rural holdings (number)	Land use during the season (hectares)				Total area of holdings (hectares)
		Used for crops	Under sown pastures	Lucerne (all purposes)	Balance of holdings	
1973-74	20,608	4,133,095	6,939,501	16,687	103,563,970	114,653,253
1974-75	20,500	3,757,626	7,837,053	13,164	103,992,848	115,600,691
1975-76	18,871	4,207,158	7,447,823	15,367	104,618,561	116,288,909
1976-77	17,817	4,416,434	7,053,802	12,560	103,738,536	115,221,332
1977-78	17,767	4,910,100	7,203,923	9,817	102,366,792	114,490,632

The following table shows a classification of rural holdings according to size of holding for 1977-78. For the State as a whole the largest group of holdings is in the size range 1,000 to 1,999 hectares and the 4,037 holdings concerned represent 23 per cent of the total number of holdings in the State.

The next largest group is holdings in the range 750 to 999 hectares and the 1,558 holdings in this category account for almost 9 per cent of the total. Just over 11 per cent of all holdings are under twenty hectares in size.

In the 'agricultural areas' there were 17,133 holdings for a total area of 23,311,622 hectares of land whereas in the 'pastoral areas' there were only 634 holdings, however, the total area comprised 91,179,010 hectares of land. Further details of 'pastoral areas' appear later in this Part.

**CLASSIFICATION OF RURAL HOLDINGS
ACCORDING TO SIZE OF HOLDING: SEASON 1977-78**

Area of holdings	In agricultural areas (a)		In pastoral areas (b)		Whole State	
	Number of holdings	Area	Number of holdings	Area	Number of holdings	Area
hectares		hectares		hectares		hectares
1 to 4	906	2,403	18	47	924	2,450
5 to 9	527	3,501	62	410	589	3,911
10 to 19	429	5,861	39	491	468	6,352
20 to 29	228	5,322	17	370	245	5,692
30 to 39	194	6,678	5	164	199	6,842
40 to 49	310	13,330	3	120	313	13,450
50 to 74	547	33,710	3	203	550	33,913
75 to 99	463	39,800	1	80	464	39,880
100 to 124	435	48,586	-	-	435	48,586
125 to 149	373	50,819	1	136	374	50,955
150 to 199	616	106,984	-	-	616	106,984
200 to 249	601	133,772	1	243	602	134,015
250 to 299	449	122,711	3	787	452	123,498
300 to 399	705	243,926	1	355	706	244,281
400 to 499	499	334,770	4	1,785	759	336,555
500 to 749	1,366	848,153	4	2,267	1,370	850,420
750 to 999	1,553	1,343,256	5	4,294	1,558	1,347,550
1,000 to 1,999	4,028	5,748,387	9	12,349	4,037	5,760,736
2,000 to 2,999	1,451	3,503,314	2	5,242	1,453	3,508,556
3,000 to 3,999	588	2,022,160	1	3,156	589	2,025,316
4,000 to 4,999	277	1,220,428	1	4,455	278	1,224,883
5,000 to 9,999	260	1,687,303	3	20,979	263	1,708,282
10,000 to 19,999	34	419,024	7	101,632	41	520,656
20,000 to 29,999	4	95,525	8	206,942	12	302,467
30,000 to 49,999	9	351,857	15	612,064	24	963,921
50,000 and over	25	4,920,042	421	90,200,439	446	95,120,481
Total	17,133	23,311,622	634	91,179,010	17,767	114,490,632

(a) The agricultural areas comprise the Perth, South-West, Upper Great Southern, Lower Great Southern and Midlands Statistical Divisions and the Sub-divisions of Dundas and Greenough. (b) The pastoral areas comprise the Kimberley and Pilbara Statistical Divisions and the Sub-divisions of Lefroy, Gascoyne and Carnegie.

In the next table details of rural land utilisation according to statistical division are given for 1977-78. The statistical divisions (and their component local government areas) were revised with effect from 1 January 1976. Maps showing the boundaries of the statistical divisions appear at the end of Chapter III.

LAND UTILISATION IN EACH STATISTICAL DIVISION: 1977-78

Statistical division	Active rural holdings (number)	Land use during the season (hectares)				Total area of holdings (hectares)
		Used for crops (a)	Under sown pastures	Lucerne (all purposes)	Other	
Perth	2,217	8,188	66,061	111	43,350	117,710
South-West	3,382	40,634	608,493	1,179	279,817	930,123
Lower Great Southern	2,919	491,365	1,572,871	1,038	788,651	2,853,925
Upper Great Southern	2,377	899,281	1,477,783	79	930,399	3,307,542
Midlands	4,150	2,298,628	2,102,606	289	3,046,502	7,448,025
South-Eastern	809	241,929	614,725	7,064	17,247,982	18,111,700
Central	1,713	926,747	746,624	55	39,797,000	41,470,426
Pilbara	77	3	4,081	-	14,930,711	14,934,795
Kimberley	123	3,325	10,679	2	25,302,380	25,316,386
Total	17,767	4,910,100	7,203,923	9,817	102,366,792	114,490,632

(a) Excludes areas of sown pastures and of lucerne cut for hay or harvested for seed.

AGRICULTURE

Wheat

Although wheat has been grown from the earliest years of settlement, cultivation was confined to limited areas as late as 1890 when, of a total area of approximately 14,000 hectares, about one-third was located in the Toodyay-Northam area of the Avon Valley,

about one-quarter in the Geraldton-Greenough district and a similar area in the York-Beverley region, with lesser areas at Williams and at places in what is now the South-West Statistical Division. During the 1890s, however, substantial development took place as a result of extensions to the Great Southern and Eastern Railways and the completion of the line from Midland Junction to Walkaway, and by 1910 wheat farming was being carried out in widespread areas in the southern part of the State and as far east as the Merredin district, an area with an average annual rainfall of only 330 millimetres. An outstanding factor in this development was the introduction and increasing use of phosphate fertiliser (superphosphate) to correct the widespread phosphorous deficiency of the wheat belt soils of Western Australia.

The decline in gold production which began in 1904 reduced employment in mining and caused people in increasing numbers to take up agricultural land. This contributed to a spectacular growth in wheat farming and 702,000 hectares were sown to wheat for grain in 1915 compared with 79,000 hectares ten years earlier. The first World War caused a serious reduction in area sown but recovery was fairly rapid from 1920, and by 1925 the area sown for grain had risen to more than 850,000 hectares.

Following the war, a policy of expanding land settlement was resumed. A soldiers' settlement scheme was initiated and a large-scale programme of assisted immigration, with financial aid provided by the British, Australian and State Governments, was inaugurated. With adequate finance available, greater technical efficiency and a buoyant market for wheat, the area sown for grain increased threefold between 1920 and 1930. Among the technical advances contributing to the increase were the introduction of tractors and the development by the Department of Agriculture of early-maturing and drought and disease resistant wheat varieties.

Because of the relatively low yield, mechanisation was of great significance in the growth of wheat farming in Western Australia, but other aspects of the industry received early consideration and experimental farms were established by the Department of Agriculture in areas where particular difficulties were encountered. As a result, special wheat strains have been developed and farming techniques improved. An extensive programme of soil research and classification has been carried out by the Department and has revealed several mineral deficiencies which it has been possible to correct by the addition of trace elements, notably copper and zinc, to standard fertilisers. Experiments have also been made on methods of soil conservation in those areas which are subject to wind or water erosion, and some success has been achieved by the planting of certain grasses and fodder crops and by contour ploughing and the use of contour banks.

In 1930, an area of 1,601,000 hectares was sown for grain and produced a previously unsurpassed total harvest of 1,456,000 tonnes, which was not exceeded until 1958. Low prices subsequently caused a decline in area sown to 1,028,000 hectares in 1935, but by 1938 the total had risen to 1,381,000 hectares for a yield of 1,003,000 tonnes. The sowing of wheat for grain was reduced during the second World War to one-half of the pre-war level, only 613,000 hectares being sown in 1944. In the immediate post-war years it steadily increased and by 1950 had risen to 1,289,000 hectares. Over the next six years it declined slightly, the smallest area sown in that period being 1,119,000 hectares in 1956. Significant increases occurred in each of the following three years and in 1959 the area sown was 1,505,000 hectares. Except in 1946 and 1969, when the average yield per hectare was only 0.66 tonnes, seasonal conditions in the post-war years have generally been favourable and good yields have been maintained. In 1955 a record average yield to that date of 1.24 tonnes was obtained from 1,169,000 hectares, the total production being 1,449,000 tonnes or only 7,000 tonnes less than the 1930 harvest which was produced from an area 431,000 hectares greater in extent. Between 1956 and 1967, areas and production followed a generally increasing trend and by 1968, the area of land sown to wheat for grain had increased to 3.0 million hectares from which a harvest of 3.1 million tonnes was obtained for an average yield of 1.04 tonnes per hectare. With the introduction of the Wheat Delivery Quotas Plan in 1969 the area sown to wheat decreased by over 900,000 hectares between 1968-69 and 1971-72. The downward trend was arrested in 1972-73 when quotas were raised and 2.4 million hectares were sown. The area sown further increased to 3.0 million

hectares in 1973-74 from which a State record harvest of 4.2 million tonnes was obtained at an average yield of 1.41 tonnes per hectare. In 1977-78 a record 3.6 million hectares were sown but, owing to the adverse season, only 2.9 million tonnes were harvested.

WHEAT FOR GRAIN—AREA AND PRODUCTION

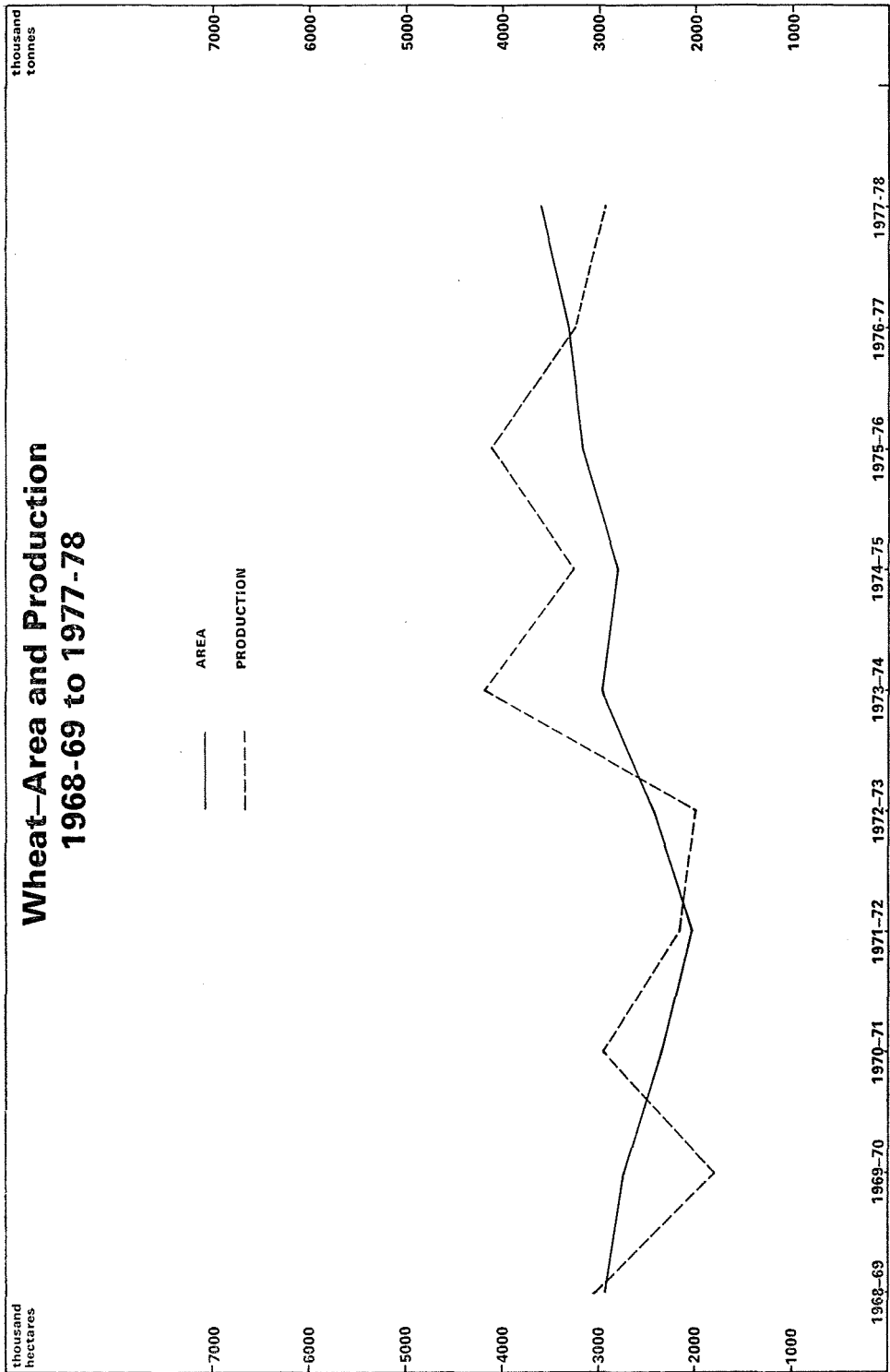
Season	Area sown	Production		
		Total	Average yield per hectare	Gross value
1900-01	hectares 29,947	tonnes 21,092	tonnes 0.70	\$ 309,862
1910-11	235,527	160,517	0.68	2,162,432
1920-21	516,379	333,336	0.65	11,023,272
1930-31	1,600,938	1,456,141	0.91	12,201,176
1940-41	1,062,301	573,159	0.54	8,647,906
1950-51	1,288,925	1,358,056	1.05	65,328,246
1960-61	1,627,242	1,739,074	1.07	92,290,238
1970-71	2,361,146	2,956,969	1.25	153,226,816
1973-74	2,977,920	4,210,782	1.41	461,049,005
1974-75	2,809,883	3,277,071	1.17	361,210,674
1975-76	3,171,289	4,122,011	1.30	427,507,019
1976-77	3,313,942	3,248,780	0.98	290,488,533
1977-78	3,608,871	2,945,461	0.82	292,862,760

Size Classification of Wheat Farms. In 1965-66, of the 22,853 rural holdings of all types in the State, wheat for grain was grown on 9,267 or 40.6 per cent of the total. For 1968-69, the percentage decreased slightly to 40.1 per cent. In 1974-75 wheat for grain was grown on 7,899 or 38.5 per cent of the 20,500 rural holdings of all types in the State.

Of the 17,767 rural holdings of all types in the State in 1977-78, wheat for grain was grown on 7,847. Holdings growing between 1 and 399 hectares of wheat for grain accounted for 59 per cent of the holdings but only 22 per cent of the total area, whereas holdings growing 400 or more hectares accounted for only 41 per cent of holdings but 78 per cent of the total area sown to wheat for grain.

HOLDINGS GROWING WHEAT FOR GRAIN CLASSIFIED ACCORDING TO AREA SOWN SEASON 1977-78

Area of wheat for grain	Number of holdings	Total area sown to wheat for grain
hectares		hectares
1 to 9	175	830
10 to 19	140	1,830
20 to 29	180	4,165
30 to 39	121	4,040
40 to 49	182	7,750
50 to 74	330	20,131
75 to 99	304	25,826
100 to 149	643	78,056
150 to 199	564	96,682
200 to 249	686	150,703
250 to 299	452	122,845
300 to 399	848	289,247
400 to 499	763	332,865
500 to 999	1,570	1,086,954
1,000 to 1,499	552	647,476
1,500 and over	337	739,471
Total	7,847	3,608,871



Wheat Varieties. Of 3,638,511 hectares sown to wheat in 1977-78, whether for grain, hay or green fodder, 1,941,427 or 53·4 per cent were sown to Gamanya. The next most popular variety of wheat, in terms of area sown, was Madden with 464,330 hectares or 12·8 per cent of the total. The only other variety with more than 200,000 hectares sown was Falcon with 236,680 hectares or 6·5 per cent. These are all high quality bread varieties suitable for the Australian Standard White (ASW) and Australian Hard grades of wheat.

AREAS SOWN TO INDIVIDUAL VARIETIES OF WHEAT (a)

Variety	1973-74		1974-75		1975-76		1976-77		1977-78	
	Area (hectares)	Per cent of total	Area (hectares)	Per cent of total	Area (hectares)	Per cent of total	Area (hectares)	Per cent of total	Area (hectares)	Per cent of total
Darkan	39,267	1·3	36,273	1·3	44,264	1·4	51,477	1·5	55,620	1·5
Eagle	32,557	1·1	51,845	1·8	70,905	2·2	47,523	1·4	43,900	1·2
Falcon	376,956	12·5	320,924	11·3	317,496	9·9	270,129	8·1	236,680	6·5
Gambee	27,129	0·9	84,318	3·0	141,132	4·4	114,378	3·4	93,079	2·6
Gamanya	1,892,384	63·0	1,787,150	63·1	1,933,966	60·5	1,832,660	54·9	1,941,427	53·4
Heron	105,933	3·5	93,261	3·3	135,321	4·2	143,111	4·3	135,401	3·7
Insignia	46,533	1·9	136,866	4·8	165,534	5·2	165,845	5·0	175,740	4·8
Insignia 49	58,089	1·9	57,242	2·0	70,355	2·2	75,042	2·2	68,742	1·9
Madden	(b)	(b)	(b)	(b)	(b)	(b)	261,890	7·8	464,330	12·8
Other varieties	326,964	10·9	262,533	9·3	315,071	9·9	377,985	11·3	423,592	11·6
Total	3,005,813	100·0	2,830,412	100·0	3,194,044	100·0	3,340,040	100·0	3,638,511	100·0

(a) For grain, hay and green fodder.

(b) Not available as a separate item; included in 'Other varieties'

Bulk Handling of Wheat. The rapid increase in the production and export of wheat between 1910 and 1920 caused problems of transport and storage, and proposals for the bulk handling of the grain led to the formation of a company for this purpose in 1920. This original undertaking was wound up before commencing operations because the technical difficulties then appeared too great and the saving in handling costs problematical. In the early 1930s depressed wheat prices once again stimulated the search for cheaper methods of storage and transportation of grain. Experiments were carried out in the Wyalatchem area during the 1931-32 season which essentially involved the adaptation of existing bagged wheat storages and bagged wheat mobile elevators to handle wheat in bulk.

The experiment proved successful and the Bulk Handling Act of 1935 gave a growers' co-operative the right of operating, under franchise, a bulk handling system. The co-operative company was Co-operative Bulk Handling Limited which had been formed in 1933, the initial capital being subscribed by two existing co-operatives, The Westralian Farmers and The Grain Pool. In founding Co-operative Bulk Handling Limited these two organisations had provided that as soon as the system was established and the initial liability repaid, ownership and control would be passed to the users of the system.

With its present toll system of operation Co-operative Bulk Handling Limited essentially conforms to the Rochdale principles of co-operation. The grower delivering grain to the Company pays a toll on each tonne delivered. For the first \$2 of toll, he receives one ordinary share in the company, which must be returned to the company if he ceases to deliver grain. For the remainder of his tolls he receives a debenture repayable in full over a ten-year cycle. The tolls are used for capital expenditure and for the repayment of previous tolls summarised into debentures. The toll system thus creates a revolving capital fund subscribed by the growers actually using the system, and in turn achieves perpetual and complete user-ownership. Each user of the system receives a share but only one share. He cannot accumulate any additional shares and thus has only one vote.

By 1943 the original construction programme had been completed and all debts repaid. At this time the decision was made to hand the system over to the growers to enable them to control and direct future expansions for their own benefit.

To the outbreak of the second World War and beyond, the company continued its policy of expansion and modernisation. Services to off-line receival points were begun in the 1940-41 season and in 1951 growers of oats and barley requested that the co-operative

include these grains in its system. Since then the company has stored and transported up to six grain types in many varieties and grades. Laboratory and sampling techniques have been extended, ensuring high quality control and a continued effort to meet marketing requirements. In addition Co-operative Bulk Handling Limited provided and operates transfer depots for handling grain from narrow gauge to standard gauge railway wagons at Merredin, Midland and Northam. The depots are concrete vertical silo systems and between them handle all the grain destined for shipment through the Fremantle and Kwinana terminals which handle something more than half the total receivals.

In the 1960s, Co-operative Bulk Handling Limited commenced a modernisation programme of its country receival points. Original receival points were conceived in the era of horse-drawn transport and were spaced about eleven kilometres apart. Motor transport and better roads meant that a thirty-two-kilometre spacing would be adequate, while the mechanisation of farming and the improvement of farming techniques indicated a large size of storage was required. The modernisation programme has involved the progressive replacement of the older bins, permanent roofed bulkheads and open bulkheads with horizontal storages built of either concrete or steel and equipped with integrated handling machinery, or provision for such machinery to be installed at a later date.

In addition to country receival points storage, Co-operative Bulk Handling Limited provided and operates terminal depots for bulk wheat shipments at Albany, Bunbury, Esperance, Fremantle, Geraldton and Kwinana. The modern deep-draught bulk loading terminal at Kwinana which comprises vertical cell and horizontal storage facilities, ship docking and loading facilities and administration block is reputed to form the world's largest single grain-shipping complex.

Grain is delivered to the terminal in specially designed hopper-bottom rail trucks which discharge their load through long grids inlaid between the rail tracks. Belt conveyors beneath the tracks then take the grain to elevators which are used to direct it into one of two horizontal storage units, which have a total capacity of 700,100 cubic metres, or the vertical cells, which have a capacity of 519,000 cubic metres. Facilities for grain cleaning, dust control, fumigation and quality control are incorporated within the complex to ensure fast, hygienic handling of grain. The computerised control system installed in the terminal monitors stock records and grain flows at all times.

Outloading of grain involves transfer from the storage facilities to the shipping gallery along four conveyor belts, which have a combined outloading capacity of 5,000 tonnes per hour. The shiploading gallery and jetty, in conjunction with the main cell blocks began operating in June 1977.

At 31 December 1978, storage capacity in the country was 8,742,000 cubic metres and at the ports 2,472,800 cubic metres. The latter figure includes the total storage capacity at Kwinana. The initial storage constructed in 1931 provided for 23,276 cubic metres. The largest seasonal production that Co-operative Bulk Handling Limited has handled was 6,364,463 cubic metres of all grains in the 1973-74 season. By contrast, in the initial season the system handled 46,000 cubic metres.

Marketing of Wheat. The Australian Wheat Board is the sole authority for the marketing of wheat within Australia and of wheat and flour for export. The Board derives its authority from Wheat Industry Stabilization Plans established under joint Commonwealth and State legislation and continued in existence under provisions of the *Wheat Industry Stabilization Act 1974* (Commonwealth) which applied to the season commencing on 1 October 1974, and applies for each of the next six succeeding seasons. However, it should be noted that the stabilization provisions of the legislation are restricted to five seasons ending on 30 September 1979. The *Wheat Industry Stabilization Act 1974* repealed earlier Acts of 1968, 1970 and 1973.

Different principles are introduced with the new stabilization plan insofar as a stabilization price now replaces the guaranteed price of the old plan, and is to be adjusted to reflect trends in world wheat prices over a period of years. For the 1974-75 season (the first year of the new plan) the stabilization price was fixed at \$73.49 per tonne. The level of government assistance to the wheat industry or payments by growers to the Wheat

Prices Stabilization Fund will be influenced both upwards and downwards by changes in world marketing conditions affecting prices, and not, as formerly, by movement in Australian production costs. The stabilization price for the 1974-75 season will be subject to adjustment for each season for the next four years in accordance with a formula which provides for a variation in the stabilization price, from one season to the next, of one quarter of the difference, in Australian money values, between:

- (a) the average export price for the season as determined (this is calculated when all wheat in a pool for the season has been sold/shipped); and
- (b) the amount obtained by adding together one-half of the average export price of the season immediately preceding the current season and one-half of the stabilization price for that immediately preceding season.

Unlike the old guaranteed price in the previous stabilization plan, which applied to a maximum export quantity of 200 million bushels (5,443,108 tonnes) each season, the stabilization price under the new plan will apply to all wheat exported in a season.

Home Consumption Price of Wheat. The legislation provides that the basic class of wheat to be marketed by the Board is 'Australian Standard White' which is defined as wheat other than wheat classified by or on behalf of the Board as 'Prime Hard', 'Hard', 'Durum' or 'Biscuit wheat', or as having a quality defect.

For the year commencing 1 December 1974 or any of the four succeeding years the Australian Minister for Primary Industry is required by the *Wheat Industry Stabilization Act 1974*, after consultation with the appropriate Minister in each State, to fix a price per tonne for wholesale sales in Australia by the Board for each year of Australian Standard White wheat in bulk, free on rail at a port of export. The Australian Parliament's powers in relation to pricing only apply in a Federal Territory and the corresponding Western Australian legislation provides that the price shall be that which 'would be applicable under the Commonwealth Act if the contract were made in the Australian Capital Territory'.

The *Wheat Industry Stabilization Act 1974* (Commonwealth) requires the Australian Minister for Primary Industry to fix the price in respect of a year in the above-mentioned five-year period by—

- (a) taking as a basis an amount of \$70·41 per tonne;
- (b) making such increase or decrease, if any, in that price as he considers appropriate by reason of increases or decreases that have occurred since 1 December 1973 in prices, wages or rates of charges (including rates of interest) payable in connexion with—
 - (i) the carrying on of operations wholly or partly for the purposes of the production of wheat; or
 - (ii) the transport, handling or storage of wheat; and
- (c) adding such amount as, after consultation with the Board, he considers to be necessary to be included in the price per tonne of all wheat sold by the Board in that year for use or consumption in Australia for the purpose of enabling the Board to meet the costs of shipment of wheat by the Board to the State of Tasmania.'

Under the provisions of the *Wheat Industry Stabilization Amendment Act 1976*, the Minister is also required to take into account 'as he considers appropriate, increases or decreases, since 1 December 1974, in the value of the labour of owners and other operators of wheat farms in the production of wheat on those farms, calculated by reference to the rates of wages that would be payable to employees for labour'.

Higher or lower prices for wheat, other than Australian Standard White will apply on the domestic market by reason of difference in quality.

The home consumption price for the 1977-78 season was fixed at \$111·16 per tonne. The home consumption price for the 1978-79 season is \$111·61 per tonne.

Wheat Standards. The Western Australian Wheat Standards Committee establishes standards for Australian Standard White (W.A.) wheat and Australian Hard (W.A.) wheat. The procedure approved for determining these standards of wheat provides for samples being drawn progressively at each country receipt point and port of shipment during the harvest period. After all samples are assembled they are sorted into zones of origin (Geraldton, Fremantle, Bunbury, Albany and Esperance), the zones being fixed in relation to each siding's natural port terminal. Each zone is then taken separately, the samples from the sidings in the zone being bulked together and thoroughly mixed and it is from these mixtures that each zone's contribution to the main bulk sample for the State is drawn.

Zone contributions are then bulked together and thoroughly mixed, after which ten weighings are taken on a Schopper one-litre scale chondrometer and from the average of those weighings the standards for the season are declared. Subsequently, the wheat is subjected to mechanical and quality tests.

Official standard samples are widely distributed to commercial interests and appropriate Government Departments and instrumentalities both locally and overseas, as being representative of the wheat of the particular season which is on offer to the world grain markets.

Wheat Delivery Quotas Plan. The Australian Wheat Growers' Federation put forward proposals, in March 1969, for the allotment of quotas on deliveries of wheat to the Australian Wheat Board. The Federation's proposals were mainly designed to bring marketable supplies of wheat more into line with available outlets, following the record Australian and State harvests in 1968-69. The proposals, which first became effective for the 1969-70 harvest, established for Western Australia a quota of 2.3 million tonnes for deliveries of wheat for that season.

State Governments have the responsibility of implementing the quota plan within the States and separate enabling legislation has been enacted in each State. Particulars of the statutory provisions relating to the establishment in Western Australia of a quota scheme with respect to the delivery and marketing of wheat, are contained in the *Wheat Delivery Quotas Act, 1969-1974* which provides for the establishment of a Wheat Quotas Committee, consisting of three members appointed by the Minister for Agriculture. Subject to the direction of the Minister, the Committee is empowered under the Act to determine individual quotas for growers, but quotas may be reviewed by the Minister at any time.

For the season 1973-74 the State's allocation was set at 3.1 million tonnes. However, complementary State and Commonwealth legislation provided that the Australian Wheat Board 'may have regard to the possibility that the Australian wheat quota originally determined for that season, may be increased by a quantity not exceeding 544,311 tonnes'.

All wheat accepted as 'quota wheat' is the subject of normal Australian Wheat Board payments within the framework of the Wheat Industry Stabilization Act.

The 1975-76 season was declared a non-quota season by the Australian Minister for Primary Industry and consequently there was no restriction whatsoever on the quantity of wheat which a grower might deliver. However, the State Minister for Agriculture approved a recommendation to maintain a base quota (for possible use in subsequent seasons) for individual properties.

The 1977-78 and 1978-79 seasons were also declared non-quota years and continue the guidelines of adjusting individual base quota records at the end of each non-quota season by the 80 per cent—20 per cent calculation adopted for the 1975-76 season.

Further details of the State's wheat quotas and of the method of allocation are given on pages 346-7 of the *Western Australian Year Book*, No. 17—1979.

Exports of Wheat

Most of Western Australia's wheat production is exported as grain and flour and in the following table the fluctuations which have occurred in exports since 1929 are shown, together with figures giving the estimated total wheat equivalent. Prior to the early

1970s the United Kingdom had been a most consistent purchaser of the State's wheat but, since 1973-74 no exports to the United Kingdom have been recorded. Since 1961-62 China, excluding Taiwan Province, and Japan have been the most important customers and in 1969-70 their purchases together accounted for 78 per cent of the State's total wheat exports. In 1977-78 their combined purchases were 55 per cent of the State's total exports, China, excluding Taiwan Province being the most important customer with purchases amounting to 1,325,271 tonnes. In 1977-78 principal buyers (other than China, excluding Taiwan Province), in order of importance, were Japan, Indonesia and the Arab Republic of Egypt. In the same year the principal customer for flour was Mauritius. Further details of exports appear in Chapter IX, Part 1.

EXPORTS OF WHEAT AND FLOUR

Year	Wheat	Flour (a)	Estimated total wheat equivalent
1929-30	tonnes 679,116	tonnes 62,659	tonnes 767,466
1939-40	417,226	83,159	534,344
1949-50	585,417	105,065	733,558
1959-60	999,173	79,697	1,111,546
1969-70	1,814,774	31,173	1,858,727
1973-74	2,139,973	11,232	2,155,810
1974-75	3,241,895	19,281	3,269,081
1975-76	3,215,792	11,658	3,232,230
1976-77	3,009,101	11,355	3,025,112
1977-78	3,795,969	7,888	3,807,091

(a) Ships' stores are excluded from figures for 1959-60 and subsequent years.

Oats

Although oats have been grown in Western Australia since the early development of wheat farming, cultivation was somewhat limited until stimulated by the introduction of large-scale sheep raising in the agricultural areas, when their high nutritional worth as stock feed made them a very valuable crop. The area sown to oats for grain increased from 78,301 hectares in 1920 to 111,238 in 1930, to 173,682 in 1940, to 237,025 in 1950 and 538,153 in 1960. It then remained reasonably static until 1972 when the area sown to oats fell to 296,666 hectares. Some fluctuations have occurred since 1972 but the last three years have shown increases in area sown, the area for 1977-78 being 414,978 hectares.

Locally bred varieties of oats feature prominently in the industry. Although the main variety is Swan, a very high quality oat grown on more than 42 per cent of the area sown it is being replaced by West, released in 1975, which is both a higher-yielding variety in drier areas and rust-resistant. A new variety, Moore, better suited to the wetter Western Districts where it out-yields both Swan and West, was released in 1978.

In addition to their importance as local stock feed, oats are exported in substantial quantities. In 1977-78 the total sold overseas was 117,763 tonnes, the principal buyers being Japan; the Federal Republic of Germany; China, Taiwan Province only; and Malaysia.

Although growers are free to market oats in any way they wish, in practice a large proportion of all sales, whether for export or the local market, is effected through the Western Australian State Voluntary Oats Pool, which is conducted by The Grain Pool of W.A. From 28 November 1975, oats became an 'approved grain' under the provisions of the *Grain Marketing Act, 1975*. This means that all oats delivered to Co-operative Bulk Handling Limited are deemed to have been received on behalf of the Grain Pool of W.A.

OATS FOR GRAIN—AREA AND PRODUCTION

Season	Area	Production		
		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$
1973-74	324,890	383,107	1.18	25,252,625
1974-75	262,347	249,526	0.95	18,044,683
1975-76	319,877	385,670	1.21	32,700,101
1976-77	372,299	347,396	0.93	28,906,170
1977-78	414,978	415,645	1.00	30,294,654

Barley

Barley grows well over a wide range of climatic and soil conditions and generally yields better than other cereals. It is successful on saline soils where other crops may not do well and as a first crop on newly-developed land. With the introduction of wheat delivery quotas, and because barley was a suitable alternative crop, the area of barley sown for grain rose to a record 911,318 hectares in 1971-72 but the relaxation of wheat quotas in the following years caused a contraction in the area sown to barley.

Both 'two-row' and 'six-row' barley are grown and, while a large amount of the grain produced is retained on farms for stock feed, the bulk of the crop is now exported. In 1977-78 the quantity exported overseas was 565,099 tonnes, the principal buyers being Japan and the Federal Republic of Germany. For many years sales of 'two-row' barley were mainly to local maltsters. However, since 1968-69 exports of 'two-row' barley have become increasingly important. Most 'six-row' barley sold continues to be marketed overseas.

Clipper variety barley is recommended for all areas for producing 'two-row' malting, manufacturing and feed grades of barley. Alternative acceptable varieties are Dampier for 'two-row' manufacturing and feed and the Beecher variety for 'six-row' feed. Dampier is lower yielding than Clipper in most areas and is not sought by overseas markets to the same extent as Clipper.

Until 1975-76 the marketing of barley, both for export and for local consumption, was controlled by The Western Australian Barley Marketing Board with the Grain Pool of W.A. as the Board's managing and selling agents. The licensed receiver for the Board was Co-operative Bulk Handling Limited. Since November 1975, with the passing of the *Grain Marketing Act, 1975* The Grain Pool of W.A. has taken over the functions of The Western Australian Barley Marketing Board, which disbanded following the repeal of the Marketing of Barley Act in 1975.

BARLEY FOR GRAIN—AREA AND PRODUCTION

Season	Two-row				Six-row			
	Area	Production			Area	Production		
		Total	Average yield per hectare	Gross value		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$	hectares	tonnes	tonnes	\$
1973-74	377,254	481,948	1.28	37,522,393	132,581	144,260	1.09	10,527,195
1974-75	305,463	251,931	0.82	25,857,060	81,535	77,125	0.95	7,964,457
1975-76	332,269	411,481	1.24	43,085,870	86,716	93,521	1.08	9,313,348
1976-77	375,504	489,946	1.30	54,317,574	76,797	63,143	0.82	6,592,506
1977-78	531,267	705,252	1.33	65,680,491	82,356	46,013	0.56	3,790,602

Lupins

The large-scale growing of lupins for processing has been undertaken in Western Australia since 1971-72, mainly in the areas from Geraldton to Watheroo and from Bridgetown to Kojonup, although in later years, with the development of new strains, growing

has spread into drier parts of the wheat belt. The industry is based largely on white-seeded, white-flowered varieties of the narrow-leaved lupin (*Lupinus angustifolius*). The main variety is Unicrop which has a relatively short growing season. In 1976, Marri, a later-maturing variety with resistance to grey leaf spot disease, was released for the northern lupin-growing areas. The White lupin (*L. albus*) is being developed for more loamy soils, and the high protein variety Ultra was released in 1976. In 1976-77 and 1977-78 seasonal conditions adversely affected both the area sown and the yield of lupins.

LUPINS FOR GRAIN—AREA AND PRODUCTION

Season	Area	Production		
		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$
1973-74	64,075	49,313	0.77	3,915,225
1974-75	118,607	77,151	0.65	6,435,041
1975-76	121,877	88,710	0.73	7,889,774
1976-77	95,840	23,323	0.24	2,380,958
1977-78	57,343	23,616	0.41	2,790,639

Prior to 1974-75, marketing of lupins for processing was conducted through a voluntary pool operated by The Grain Pool of W.A. In that year the Western Australian Seed Board took over the marketing through a compulsory pool, with the Grain Pool acting as managing and selling agents and Co-operative Bulk Handling Limited acting as licensed receivers. Since November 1975, under the provisions of the *Grain Marketing Act, 1975* the Western Australian Seed Board has been disbanded and marketing of lupins (except receival) is now entirely the responsibility of The Grain Pool of W.A.

Other Grains

The introduction of the Wheat Delivery Quotas Plan in 1969-70 effectively limited the quantity of wheat which could be delivered to the Australian Wheat Board. This caused producers to look for alternative cash crops and considerable interest was shown in rape seed production. The area sown to rape expanded rapidly to a peak of 41,566 hectares in 1972-73 but in that season the average yield dropped to 0.21 tonnes per hectare due to the spread of blackleg disease. Consequently the area planted to rape fell dramatically in 1973-74 to 2,225 hectares. Future production will depend on the availability of disease-resistant strains of rape. The release for sowing in 1978 of Wesreo, a high-yielding variety of summer rape (*Brassica napus*) which combines good resistance to blackleg disease with high quality seed is expected to have a substantial effect on future areas planted.

Low erucic acid rape seed varieties only are recommended as high erucic acid rape seed is not wanted on local or overseas markets. Currently a maximum of 5 per cent erucic acid is fixed as the acceptable level for receival into the statutory pool conducted by the Grain Pool of W.A.

RAPE SEED—AREA AND PRODUCTION

Season	Area	Production		
		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$
1973-74	2,225	792	0.36	120,081
1974-75	2,170	768	0.35	125,224
1975-76	3,678	1,830	0.50	299,110
1976-77	949	855	0.90	145,534
1977-78	1,346	1,474	1.10	294,302

The area sown to linseed is small although the yield and quality is sound. Tests carried out have indicated that Western Australian linseed compares favourably with the top North American grades.

Linseed marketing is statutorily controlled and is the responsibility of The Grain Pool of W.A. While receivals have not always permitted exports, the nucleus exists for a viable industry.

Grain sorghum, rye, field peas, vetches, sunflower and safflower are also grown but only in small quantities. However, considerable interest is being shown in producing sunflower seed in the Ord River region, and production of this seed should be substantially increased.

Hay

Large quantities of pasture hay are cut from clover and grass pastures, production in 1977-78 being 267,254 tonnes from 82,670 hectares. The principal cereal hay crop is oats and 258,300 tonnes of oaten hay were cut in 1977-78 from 80,419 hectares. Wheat is the only other cereal crop which is used extensively for this purpose and in 1977-78 the production was 53,997 tonnes from 23,452 hectares. Barley, vetches, lucerne, rye, lupins and rape are also used for hay making but they are of minor importance only.

HAY—AREA AND PRODUCTION

Season	Pasture		Oaten		Wheaten		Other (a)		Total	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
	hectares	tonnes	hectares	tonnes	hectares	tonnes	hectares	tonnes	hectares	tonnes
1973-74	104,386	356,204	80,483	275,899	23,340	67,270	11,740	34,931	219,949	734,304
1974-75	89,143	287,156	52,880	160,415	15,477	40,948	6,123	19,842	163,623	508,361
1975-76	80,126	253,012	60,229	212,067	16,803	51,555	6,171	19,843	163,329	536,477
1976-77	74,125	240,893	70,011	247,958	20,129	55,700	5,032	15,880	169,297	560,431
1977-78	82,670	267,254	80,419	258,300	23,452	53,997	4,565	17,043	191,106	596,594

(a) Mainly barley, vetch, lucerne, rye, lupins and rape hay.

Pastures

The first established pastures in the State were cultivated to provide grazing for dairy cattle but, with the rapid increase in the number of sheep carried on wheat farms, by far the greater area is now located in the wheat-growing districts.

Subterranean clover was one of the first pasture species sown in these districts and it is still the most important, although other clovers, medics and a variety of grasses including Wimmera rye grass and perennial rye grasses are also grown extensively. The present practice in the higher-rainfall areas is to sow a mixture of two or more species, selected for their suitability to the type of soil and rainfall, to give a legume-grass pasture.

From 0.8 million hectares in 1945-46, the area under sown pasture increased remarkably to 7.8 million hectares in 1974-75. The top-dressing of pastures with superphosphate has developed to such an extent that this treatment is now general practice.

Western Australia is in a particularly good position to produce seed of annual legumes and grasses on a large scale and during the last few years has produced at least one-third of the total Australian crop.

In the decade from the mid 1960s considerable areas of new land were cleared, much of it along the south coast where the growing season is six or seven months. It has been found that if heavier seed and fertiliser applications are used, good subterranean clover seed crops can be grown in the first year on this new land. Similarly, in more inland districts good yields of annual medics can be obtained on suitable soil types. The paddocks generally being used are large, open and only gently undulating, and are thus suitable for the operation of modern harvesting machines. Very little, if any, rain falls in the summer months and this ensures ideal harvesting conditions.

The development of suction harvesting machines in recent years has enabled this potential to be exploited. Suction harvesters are now used to harvest most of the more important small-seeded legume crops (subterranean clover, barrel medic and rose clover).

Seed certification schemes are operated by the Department of Agriculture for the main species of pasture seed. These schemes ensure that buyers are in a position to obtain good quality seed of the cultivar they require free from undesirable weed seeds. Certification schemes have assisted greatly in marketing and in allowing the development of a sound export trade.

There is an important export trade in subterranean clover seed and in 1977-78 the total exported was 1,247,107 kilograms, over 89 per cent of which went to other Australian States.

PASTURE SEED HARVESTED

Season	Principal pasture seed								Total pasture seed (a)
	Subterranean clover		Lupins		Barrel medic		Wimmera rye grass		
	Area harvested	Pro-duction	Area harvested	Pro-duction	Area harvested	Pro-duction	Area harvested	Pro-duction	Area harvested
1973-74	hectares	kilograms	hectares	kilograms	hectares	kilograms	hectares	kilograms	hectares
1973-74	17,316	3,379,496	3,632	1,386,833	1,881	220,442	1,247	159,826	26,856
1974-75	13,551	3,061,614	3,911	1,004,756	1,842	195,288	1,045	130,648	22,878
1975-76	7,201	1,559,513	2,362	613,508	862	104,298	308	50,581	12,514
1976-77	11,231	2,305,656	(b)	(b)	1,009	121,924	179	45,727	(c) 13,603
1977-78	11,046	2,311,822	673	157,460	699	83,180	521	76,482	13,262

(a) Includes lucerne harvested for seed.

(b) Not available.

(c) Incomplete.

Crops for Green Feed

Large areas of oats are grown for use as green feed for stock. Among other crops which are cultivated for this purpose, but to a far lesser extent, are lupins, barley, wheat, field peas, rye and forage sorghum.

CROPS FOR GREEN FEED—AREA GRAZED OR CUT (Hectares)

Season	Oats	Lupins	Barley	Wheat	Field peas	Forage sorghum	Rye	Other (a)	Total
1973-74	77,950		23,960	5,431	1,545	1,274	1,260	2,215	113,635
1974-75	51,468		12,795	5,417	2,085	1,271	1,175	1,270	75,481
1975-76	49,350	n.a.	10,538	5,849	1,727	720	394	1,461	70,039
1976-77	48,286		7,551	5,969	1,735	638	541	1,377	66,097
1977-78	55,093	8,815	7,853	6,188	1,717	671	833	1,185	82,355

(a) Mainly vetches, millet, grain sorghum and maize.

Potatoes

The cultivation of potatoes, the State's principal vegetable crop, is confined largely to the higher-rainfall areas of the south-west. Winter crops are planted during June and early July on the frost-free hillsides and drained flats of the coastal areas between Waroona and Donnybrook and on the market garden land in the Perth Statistical Division. Mid-season plantings are made from the middle of July to November on summer-moist areas or on sprinkler-irrigated land in the Shires of Manjimup, Busselton, Albany and Waroona and in market gardens in the Perth Statistical Division. Late crops are planted between mid-November and the end of February in all districts growing early and mid-season crops, other than the Perth Statistical Division.

The average yield of potatoes per hectare in Western Australia is consistently very much greater than that for Australia as a whole, and in 1977-78 comparative yields were 25.79 tonnes and 21.42 tonnes per hectare. This is due mainly to the favourable climatic conditions in Western Australia and the use of sprinkler irrigation. Delaware, the principal variety grown in the State, gives high yields under a wide range of growing conditions. There is a substantial export surplus, the bulk of which usually goes to the other Australian States with smaller consignments being sent overseas, principally to the Republic of Singapore.

Potato production in Western Australia is controlled, under the provisions of the *Marketing of Potatoes Act, 1946-1974*, by the Western Australian Potato Marketing Board, which is the sole marketing authority for potatoes produced in the State. The object of this provision is to ensure adequate supplies for local consumption and effective marketing of crops.

POTATOES—AREA AND PRODUCTION

Season	Area	Production		
		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$
1973-74	2,242	60,603	27.04	8,430,589
1974-75	2,356	67,450	28.63	8,805,596
1975-76	2,308	68,033	29.48	12,320,496
1976-77	2,347	70,943	30.23	11,247,158
1977-78	2,066	53,289	25.79	9,532,000

Onions

The production of onions is confined largely to the metropolitan and adjacent areas, Spearwood being the main centre. In these districts onions are usually grown on light sandy soils and yields of up to 50 tonnes per hectare are obtained. The maximum area planted (206 hectares) was recorded in 1962-63. From that year there was a downward trend in area planted to a minimum of 122 hectares in 1970-71. The downward movement has since been reversed and in 1977-78 189 hectares were planted for a production of 8,013 tonnes.

Onions are imported annually into Western Australia during the winter but a surplus is produced locally during summer months and is exported, in the main, to overseas markets, the most important being the Republic of Singapore.

ONIONS—AREA AND PRODUCTION

Season	Area	Production		
		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$
1973-74	146	5,659	38.76	1,197,415
1974-75	157	6,236	39.72	1,024,751
1975-76	175	7,194	41.11	1,220,766
1976-77	190	7,863	41.38	1,341,994
1977-78	189	8,013	42.40	1,528,574

Tomatoes

The main centres of production of tomatoes are at Carnarvon and Geraldton and in the districts around Perth. At Carnarvon and Geraldton, because of the warm winter climate, growers are able to produce early crops and take advantage of the high prices ruling on the Melbourne market during the winter and spring. They also supply substantial quantities to the Perth market and there is a consistent export trade with the Republic of Singapore and Christmas Island (Indian Ocean).

Supplies to the Perth market from December to June are grown in and near the metropolitan area, principally in the Shire of Wanneroo. Tomatoes are also grown in a number of districts in the South-West and Lower Great Southern Divisions.

The total area under tomatoes reached a peak of 629 hectares in 1944-45 but the average yield per hectare in that year was a low 12.02 tonnes per hectare. Since then, although the area has declined, yields per hectare have improved and production in 1977-78 was 7,691 tonnes from 233 hectares, an average yield of 33.00 tonnes per hectare.

TOMATOES—AREA AND PRODUCTION

Season	Area	Production		
		Total	Average yield per hectare	Gross value
	hectares	tonnes	tonnes	\$
1973-74	261	8,764.89	33.59	2,321,344
1974-75	212	7,085.48	33.42	2,714,304
1975-76	212	7,181.40	33.87	3,283,721
1976-77	238	8,723.14	36.61	4,053,314
1977-78	233	7,690.82	33.00	3,852,271

Other Vegetables

In addition to the cultivation of potatoes, onions and tomatoes, previously mentioned, many other vegetables are produced, the bulk of them in or near the metropolitan area where growers benefit not only from proximity to the principal market but also from an abundant supply of water at relatively shallow depths. Small quantities are also produced in many country districts. An important early crop of beans is grown at Carnarvon and transported by road to Perth. Part of this crop is then railed or air-freighted to Adelaide.

TURNIPS, CARROTS, PARSNIPS, BEETROOT—AREA AND PRODUCTION

Season	Turnips (swede and white)			Carrots			Parsnips			Beetroot		
	Area	Production		Area	Production		Area	Production		Area	Production	
		Quantity	Gross value		Quantity	Gross value		Quantity	Gross value		Quantity	Gross value
	ha	tonnes	\$	ha	tonnes	\$	ha	tonnes	\$	ha	kg	\$
1973-74	32	367	65,979	198	7,834	982,305	33	497	128,610	4	71,073	12,793
1974-75	30	346	62,283	198	7,994	843,367	36	545	163,965	3	43,109	9,665
1975-76	32	320	41,887	217	8,715	1,247,378	30	585	144,561	3	55,350	9,908
1976-77	22	293	67,301	218	7,930	1,185,834	28	574	137,688	3	51,469	11,323
1977-78	20	238	49,980	247	9,618	2,019,780	23	555	266,000	2	39,977	13,192

PUMPKINS, BEANS, GREEN PEAS—AREA AND PRODUCTION

Season	Pumpkins			Beans						Green peas		
	Area	Production		French and runner			Broad			Area	Production	
		Quantity	Gross value	Area	Quantity	Gross value	Area	Quantity	Gross value		Quantity	Gross value
	ha	'000 bags	\$	ha	kg	\$	ha	kg	\$	ha	kg	\$
1973-74	344	95	404,670	343	2,790,004	842,740	16	85,404	15,373	730	6,066,366	204,289
1974-75	408	99	667,481	304	2,125,280	762,616	16	126,748	27,885	891	6,834,718	308,968
1975-76	373	86	520,628	271	1,907,393	755,703	14	86,620	15,592	910	4,835,054	233,767
1976-77	355	90	759,412	243	1,714,211	755,384	27	195,348	37,116	886	5,824,914	319,464
1977-78	323	79	244,820	242	1,919,688	848,174	8	58,080	27,298	868	5,837,876	399,632

CABBAGES, CAULIFLOWERS, LETTUCE—AREA AND PRODUCTION

Season	Cabbages			Cauliflowers			Lettuce		
	Area	Production		Area	Production		Area	Production	
		Quantity	Gross value		Quantity	Gross value		Quantity	Gross value
1973-74	hectares	'000 crates	\$	hectares	'000	\$	hectares	'000 crates	\$
1973-74	140	260	475,221	281	3,584	1,262,882	201	442	1,169,716
1974-75	157	290	613,110	327	4,170	1,752,003	193	437	1,285,639
1975-76	140	234	589,048	301	3,944	1,600,199	170	375	1,192,292
1976-77	149	265	787,116	331	4,002	1,933,326	176	378	1,219,580
1977-78	147	248	821,800	356	4,266	2,418,753	186	395	1,899,708

Orchards

Fruit production is largely confined to the temperate regions between Gingin to the north of Perth and Albany on the south coast. The cool, wet winters and warm, dry summers of this area permit the successful cultivation of a wide variety of fruits. In the southern and south-western sections, apples, pears and stone fruits are grown extensively while in the districts around Perth the principal crops are apples, stone fruits, citrus fruits and grapes. Outside this main fruit-growing area, banana plantations have been established at Carnarvon in the north-west.

FRUIT (a)—AREA AND GROSS VALUE OF PRODUCTION

Season	Area (b)			Gross value of production				
	Orchard fruit	Plantation and berry fruit	Total	Pome (c)	Citrus (d)	Stone (e)	Other (f)	Total
	hectares	hectares	hectares	\$	\$	\$	\$	\$
1973-74	7,718	248	7,965	9,422,404	1,780,166	1,844,151	1,813,352	14,860,073
1974-75	7,591	232	7,823	13,049,323	1,948,681	2,029,022	2,146,706	19,173,732
1975-76	6,939	212	7,151	13,756,120	2,017,536	2,236,603	2,688,256	20,698,515
1976-77	6,903	213	7,115	14,524,900	2,563,115	3,081,209	3,128,497	23,297,721
1977-78	6,330	235	6,565	12,786,352	2,889,172	3,444,966	4,693,258	23,813,748

(a) Excludes grapes. (b) Comprises bearing and non-bearing trees and plants. (c) Apples, pears and quinces. (d) Principally oranges, mandarins, lemons and grapefruit. (e) Plums, peaches, apricots, nectarines and cherries. (f) Bananas, loquats, figs, olives, passion fruit, almonds and other minor fruits.

Apples

Apples, which are the principal fruit crop, account for more than half the total orchard area. Donnybrook, Manjimup and Bridgetown (based on number of bearing and non-bearing trees) are the most important centres but other districts in the south-west and in the Darling Range near Perth produce large quantities. In 1977-78 the total number of bearing trees was 764,094 which produced 1,781,249 cases, the principal varieties being Granny Smith, Jonathan, Yates, Delicious and Cleopatra.

APPLES—NUMBER OF TREES AND PRODUCTION

Season	Number of trees		Production		
	Bearing	Non-bearing	Total	Average yield per bearing tree	Gross value
			cases	cases	\$
1973-74	933,751	153,286	2,764,948	3.0	8,387,908
1974-75	908,210	133,871	2,730,724	3.0	11,890,338
1975-76	873,058	120,718	2,672,096	3.1	12,594,488
1976-77	834,200	103,567	2,203,319	2.6	12,322,574
1977-78	764,094	76,755	1,781,249	2.3	11,309,585

There is a valuable export trade, with 592,740 bushels being exported overseas in 1977-78. The Republic of Singapore is the most important market, followed by the United Kingdom, Malaysia and Qatar.

Pears

Pears are usually grown in conjunction with apples but the number of trees planted and the quantity produced are much less, the total number of bearing trees in 1977-78 being 59,226 and the production 237,078 cases. The bulk of the crop is consumed locally but significant quantities are exported, principally to the Republic of Singapore, Qatar, Kuwait and Hong Kong.

PEARS—NUMBER OF TREES AND PRODUCTION

Season	Number of trees		Production		
	Bearing	Non-bearing	Total	Average yield per bearing tree	Gross value
1973-74	63,428	19,845	cases 201,307	cases 3.2	\$ 1,034,232
1974-75	63,067	26,485	241,516	3.8	1,158,773
1975-76	62,907	26,739	255,757	4.1	1,161,309
1976-77	61,143	25,775	253,830	4.2	2,201,913
1977-78	59,226	26,646	237,078	4.0	1,476,487

Citrus Fruit

While the Shire of Chittering is the chief citrus fruit producer, there are other important areas near Perth in the Shires of Kalamunda, Swan and Armadale-Kelmscott, and in the south-west, in the Shires of Harvey and Capel (in order according to number of trees bearing and non-bearing). Although oranges are by far the most important crop, substantial quantities of lemons, mandarins, and grapefruit are also produced.

Production is largely for local consumption but there is some export trade, mainly with the Republic of Singapore, Christmas Island (Indian Ocean), Malaysia and Mauritius.

ORANGES AND MANDARINS—NUMBER OF TREES AND PRODUCTION

Season	Oranges				Mandarins			
	Number of trees		Production		Number of trees		Production	
	Bearing	Non-bearing	Quantity	Gross value	Bearing	Non-bearing	Quantity	Gross value
1973-74	291,712	42,214	cases 389,233	\$ 1,179,829	41,370	13,650	cases 51,214	\$ 273,824
1974-75	285,172	35,009	371,993	1,238,785	39,669	14,474	52,932	278,775
1975-76	258,708	25,191	374,899	1,280,797	36,835	10,472	51,164	365,652
1976-77	247,674	19,283	404,901	1,620,025	36,621	9,849	63,543	488,010
1977-78	233,283	16,942	399,994	2,010,207	37,334	8,596	62,485	379,648

LEMONS AND GRAPEFRUIT—NUMBER OF TREES AND PRODUCTION

Season	Lemons (a)				Grapefruit			
	Number of trees		Production		Number of trees		Production	
	Bearing	Non-bearing	Quantity	Gross value	Bearing	Non-bearing	Quantity	Gross value
1973-74	33,864	9,761	cases 119,354	\$ 280,649	8,207	7,660	cases 16,877	\$ 45,864
1974-75	33,074	12,040	112,986	369,930	9,222	6,712	19,210	60,852
1975-76	29,506	13,222	108,622	321,141	9,312	6,493	15,598	49,419
1976-77	30,742	10,146	110,751	355,238	10,095	4,427	20,970	98,735
1977-78	33,142	7,132	117,191	385,350	10,703	1,752	19,723	107,567

(a) Includes limes.

Stone Fruits

Plums, peaches, apricots, nectarines and cherries are grown in the hills districts in the Darling Range near Perth, in the Swan Valley and in many districts in the south-west. The total number of stone fruit trees (bearing and non-bearing) in 1977-78 was 168,832, comprising 73,672 plum and prune trees, 61,144 peach trees, 14,227 apricot trees, 12,097 nectarine trees and 7,692 cherry trees. The bulk of the stone fruit crop is consumed locally but shipments of plums are sent overseas, mainly to the Republic of Singapore, Hong Kong and Malaysia.

PLUMS AND PEACHES—NUMBER OF TREES AND PRODUCTION

Season	Plums and prunes				Peaches			
	Number of trees		Production		Number of trees		Production	
	Bearing	Non-bearing	Quantity	Gross value	Bearing	Non-bearing	Quantity	Gross value
1973-74	69,904	12,304	cases 127,996	\$ 952,398	47,829	13,856	cases 104,044	\$ 568,367
1974-75	68,794	11,492	149,435	1,090,579	49,142	14,876	105,968	592,130
1975-76	63,651	9,754	144,187	1,166,577	46,516	14,095	102,246	621,168
1976-77	65,082	9,927	147,840	1,460,196	46,783	14,574	102,328	910,713
1977-78	62,818	10,854	137,086	1,767,825	46,048	15,096	90,893	981,502

APRICOTS AND NECTARINES—NUMBER OF TREES AND PRODUCTION

Season	Apricots				Nectarines			
	Number of trees		Production		Number of trees		Production	
	Bearing	Non-bearing	Quantity	Gross value	Bearing	Non-bearing	Quantity	Gross value
1973-74	13,664	3,290	cases 17,919	\$ 189,941	5,895	2,778	cases 12,894	\$ 114,671
1974-75	12,808	3,118	21,940	179,615	6,337	2,664	13,244	119,726
1975-76	11,775	3,863	19,703	254,825	6,785	3,020	12,323	113,043
1976-77	12,106	2,868	23,095	306,471	7,413	3,124	14,090	186,129
1977-78	11,053	3,174	19,138	360,011	7,727	4,370	13,773	180,369

Bananas

Production of bananas is confined almost entirely to a narrow strip of land along the Gascoyne River at Carnarvon. The plantations are dependent on water pumped from bores which tap a subterranean flow in the sands of the usually dry river bed. As a surface flow in the river channel results only from heavy rains, which do not occur every year, a problem is presented in the falling-off of water supplies and in the increase in the salt content of the underground water during long dry periods. These conditions and also periodic damage from cyclones cause fluctuations in the area of the plantations and in production.

The crop is transported by road to Perth and sold locally in competition with bananas imported from other Australian States.

BANANAS—AREA AND PRODUCTION

Season	Area		Production		
	Plants of bearing age	Young plants not bearing	Total	Average yield per hectare (a)	Gross value
1973-74	hectares 163	hectares 40	tonnes 5,731.05	tonnes 35.16	\$ 1,479,049
1974-75	168	18	5,629.43	33.51	1,733,493
1975-76	150	27	5,271.70	35.14	2,204,905
1976-77	162	20	5,560.77	34.33	2,502,348
1977-78	166	37	5,408.78	32.38	4,056,516

(a) Calculated on the area of bearing plants only.

In the previous table, details are given of the area and production of bananas for the period 1972-73 to 1977-78. In the ten years ended 1977-78, peak production was reached in 1969-70 with a total crop of 6,379·42 tonnes. Production in 1970-71 (1,616·78 tonnes), however, was the lowest recorded over the decade.

Vineyards

Over 50 per cent of the State's 2,540 hectares of grape vines are in the Shire of Swan, other historically important centres being Chittering, Wanneroo, Toodyay and Gosnells. In recent years significant areas of vines have been planted at Gingin, Margaret River and Frankland and wines produced have shown considerable promise, winning major awards around Australia.

In the dried vine fruit industry, currants are the main item of production and a high proportion of the crop is exported. In 1977-78, just under 88 per cent of exports went to other Australian States, mainly Victoria, the remainder being purchased primarily by the Republic of Singapore and Malaysia.

Table grapes are grown for the local market and for export overseas, mainly to Indonesia and the Republic of Singapore. The production of beverage wines has exceeded 2·8 million litres for the past ten years, reaching a record production of over 3·8 million litres in 1968-69. Most of the wine produced is for local consumption although approximately 452,000 litres was exported to other Australian States and overseas in 1977-78.

GRAPES—AREA AND PRODUCTION

Season	Area		Grapes used for wine making and table use		Dried vine fruits		Wine production	
	Vines of bearing age	Young vines not bearing	Quantity	Gross value	Quantity	Gross value	Beverage (a)	Distillation
	hectares	hectares	tonnes	\$'000	tonnes	\$'000	litres	litres
1973-74	2,104	373	7,349	990	1,062	607	3,151,631	718,942
1974-75	2,276	326	7,652	1,309	1,198	763	3,608,297	654,963
1975-76	2,010	364	7,257	1,311	1,068	681	3,198,158	879,270
1976-77	2,048	397	7,419	1,685	876	560	3,729,330	543,175
1977-78	2,200	340	7,431	1,743	916	605	3,158,007	540,885

(a) Includes spirit produced from distillation wine and used in fortification.

Nurseries

The main concentration of commercial nurseries is in the areas of Wanneroo, Kalamunda and Canning Vale in the Perth Statistical Division. Most nurseries produce ornamental shrubs and trees; some specialise in the production of bedding plants while others concentrate on cut-flower production. Fruit trees, mainly citrus, are produced by specialist nurseries in the Perth Division while pome and stone fruit trees are mostly produced in the South-West Statistical Division at Manjimup and Donnybrook.

NURSERIES (a)—AREA AND VALUE OF PLANT SALES (b)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Area	159	141	136	153	191
Sales (year ended 30 June) (c)	3,098,770	3,975,030	4,681,738	5,939,024	7,868,320

(a) Excludes non-commercial nurseries and commercial nurseries with total sales of nursery products less than \$500 in 1974-75 and those with less than \$1,500 in subsequent years. (b) Value at the holding, after deducting costs incurred in marketing. (c) Sales between nurseries included in the census have been excluded.

Artificial Fertilisers

Soils in Western Australia are acutely deficient in phosphate, and regular applications of phosphatic fertiliser are required for crop and pasture growth. Newly cleared land may require applications of up to 230 kilograms of superphosphate per hectare for

satisfactory crop yields, but annual applications can be reduced as the phosphate content of the soil is improved through the residual effect of the added fertiliser. On established land, applications of 100 kilograms to 120 kilograms of superphosphate per hectare are commonly used in wheat growing.

Nitrogen deficiencies also exist in some areas. Legume pastures have assisted greatly in building up nitrogen in the soil and in some situations appreciable increases in yield may be achieved by applying forms of concentrated nitrogenous fertiliser.

ARTIFICIAL FERTILISER USED ON RURAL HOLDINGS

Season	Crops					Pastures (a)				
	Area fertilised	Quantity used				Area fertilised	Quantity used			
		Super-phosphate (b)	Other artificial fertilisers	Total	Average per hectare		Super-phosphate (b)	Other artificial fertilisers	Total	Average per hectare
1973-74	hectares	tonnes	tonnes	tonnes	tonnes	hectares	tonnes	tonnes	tonnes	tonnes
1974-75	4,017,722	487,874	89,704	577,578	0.14	5,780,655	801,534	43,460	846,994	0.15
1975-76	3,584,892	432,491	106,252	538,743	0.15	5,304,270	713,926	36,862	750,788	0.14
1976-77	3,764,930	402,767	121,100	523,867	0.14	4,013,972	444,914	21,078	465,992	0.12
1977-78	4,091,336	409,138	148,623	557,760	0.14	4,224,585	450,420	24,383	474,803	0.11
1977-78	4,573,468	367,102	212,351	579,454	0.13	4,357,208	480,496	37,784	518,280	0.12

(a) Includes lucerne for all purposes.

(b) Includes superphosphate with trace elements.

PASTORAL PRODUCTION

Throughout this section, where mention is made of the 'pastoral areas' the portion of the State referred to comprises the Kimberley and Pilbara Statistical Divisions and the Sub-divisions of Lefroy, Gascoyne and Carnegie. The balance of the State, referred to as the 'agricultural areas', comprises the Perth, South-West, Upper Great Southern, Lower Great Southern and Midlands Statistical Divisions and the Sub-divisions of Dundas and Greenough.

In the early days of settlement, pastoral activities in Western Australia were confined largely to what are now the agricultural areas and were usually associated with the cultivation of crops. However, beginning with Captain George Grey's visit in 1838 to the area known as the West Kimberley, explorers increasingly drew attention to the pastoral possibilities of large sections of the present Kimberley, Pilbara and Central Statistical Divisions.

In 1857 and 1858, F. T. Gregory noted the existence of good pastoral country in the Murchison and the Gascoyne districts and in the course of a journey further to the north in 1861 he discovered the Ashburton, Fortescue, De Grey and Oakover Rivers. His reports of good grazing lands in the area led to the establishment of sheep stations by pastoralists from the south, the first of such ventures, in 1863, being in the De Grey district of what is now the Pilbara Statistical Division. Graziers were also turning their attention to the south-east and in the 1870s pastoral lands were being taken up in the coastal areas to the south of the Nullarbor Plain. Another development in the extension of pastoral activity began with Alexander Forrest's journey through the Kimberley in 1879 and his favourable reports on the suitability of the country for grazing. Leases along the Fitzroy and the Ord Rivers were stocked not only with livestock shipped from the south and from the other Australian Colonies but also with cattle brought overland to the area, principally from Queensland and New South Wales, by remarkable feats of droving.

The value of production from the pastoral areas for 1977-78 was 3.6 per cent of the total gross value of Western Australian agricultural production.

Sheep

The following table shows the total numbers of sheep, and their distribution between the agricultural and pastoral areas, in each year from 1959 to 1978. Additional details showing the numbers of sheep in the State from 1829 appear in the Statistical Summary following Chapter X.

SHEEP NUMBERS AND DISTRIBUTION

At 31 March—	In agricultural areas		In pastoral areas		State total
	Number	Proportion of State total (per cent)	Number	Proportion of State total (per cent)	
1959	13,070,754	80·6	3,144,490	19·4	16,215,244
1960	13,395,527	81·6	3,016,062	18·4	16,411,589
1961	13,940,614	81·3	3,210,770	18·7	17,151,384
1962	14,951,185	81·6	3,362,694	18·4	18,313,879
1963	15,403,902	82·3	3,323,222	17·7	18,727,124
1964	16,608,300	82·4	3,556,568	17·6	20,164,868
1965	18,670,759	83·4	3,721,075	16·6	22,391,834
1966	20,695,040	84·7	3,731,768	15·3	24,426,808
1967	23,525,280	86·0	3,845,106	14·0	27,370,386
1968	26,406,575	87·6	3,754,302	12·4	30,160,877
1969	28,888,450	87·8	4,012,708	12·2	32,901,158
1970	29,844,044	88·7	3,789,913	11·3	33,633,957
1971	31,129,804	89·7	3,579,044	10·3	34,708,848
1972	31,049,873	90·2	3,355,125	9·8	34,404,998
1973	27,777,077	89·8	3,142,103	10·2	30,919,180
1974	29,423,820	90·7	3,027,253	9·3	32,451,073
1975	31,472,640	91·3	3,003,697	8·7	34,476,337
1976	31,577,937	90·8	3,192,785	9·2	34,770,722
1977	28,206,722	90·5	2,951,591	9·5	31,158,313
1978	27,621,890	92·6	2,201,226	7·4	29,823,116

The present distribution of sheep in the State is the result of two opposite trends operating over many years. In the pastoral, or station areas where the industry is based on long-term pastoral leases, severe droughts have led to a decline in the number of sheep. In the agricultural, or farming areas, however, the sheep population has generally risen. Factors contributing to this rise, particularly since the war, have been the increasing use of subterranean clover in the wheat belt, the provision in many areas of more assured water supplies, a taxation policy which, by the provision of special concessions to primary producers, has encouraged farmers to clear and develop new land, the War Service Land Settlement Scheme which developed new areas and the stimulating effect of buoyant wool prices in the post-war period.

The result has been a marked upward trend in sheep numbers since the war, modified by the effect of poor seasons such as 1972-73 and 1976-77. Sheep numbers reached a peak of 34·8 million at 31 March 1976 but declined to 29·8 million at 31 March 1978 mainly as a result of the poor seasonal conditions. Numbers in the agricultural areas increased from 7 million or 72 per cent of the State total in 1945, to 27·6 million or almost 93 per cent. Numbers generally increased in pastoral areas after 1945 until they reached more than 4 million in 1969. Since then numbers have declined to 2·2 million in 1977-78 and as a percentage of the State total this represents a decline from 28 per cent to just over 7 per cent.

In the following table, sheep flocks at 31 March 1978 are classified according to the size of flock. Of the 17,767 holdings of all types, sheep were carried on 11,672. Holdings carrying between 1,000 and 3,999 sheep accounted for 53 per cent of the flocks and 46 per cent of the total number of sheep. Those with less than 1,000 sheep accounted for 28 per cent and 5 per cent, respectively, and those with more than 3,999 accounted for 18 per cent and 49 per cent, respectively.

An analysis of collected data relating to breeds of sheep as at 31 March 1977 showed that Merinos accounted for 89 per cent of the total. Corriedales, Polwarths and British breeds, the most important of which are Border Leicester, Dorset Horn, Poll Dorset, Southdown and Suffolk, comprised 4 per cent and 2 per cent was made up of Crossbreds, including Merino Comebacks.

SHEEP FLOCKS AT 31 MARCH 1978
CLASSIFIED ACCORDING TO SIZE OF FLOCK

Size of flock (numbers)	Number of—	
	Flocks	Sheep
1- 99	725	27,276
100- 499	1,109	318,506
500- 999	1,467	1,099,162
1,000- 1,499	1,540	1,904,261
1,500- 1,999	1,317	2,289,419
2,000- 2,999	2,073	5,076,833
3,000- 3,999	1,308	4,476,890
4,000- 4,999	724	3,217,042
5,000- 5,999	464	2,513,537
6,000- 6,999	305	1,967,881
7,000- 7,999	198	1,476,079
8,000- 8,999	104	877,198
9,000- 9,999	83	786,721
10,000-14,999	174	2,087,681
15,000-19,999	51	859,689
20,000-49,999	29	742,108
50,000 and over	1	102,833
Total	11,672	29,823,116

Marketing of Lamb

Lamb Marketing Board. All lamb produced for slaughter south of the twenty-sixth parallel in Western Australia is now marketed through the Western Australian Lamb Marketing Board. The Board was established by the *Marketing of Lamb Act, 1971* and began operations in December 1972. It came into being mainly as a result of pressure from, and following a referendum of the State's lamb producers who looked to the Board to improve the stability of their industry and increase returns.

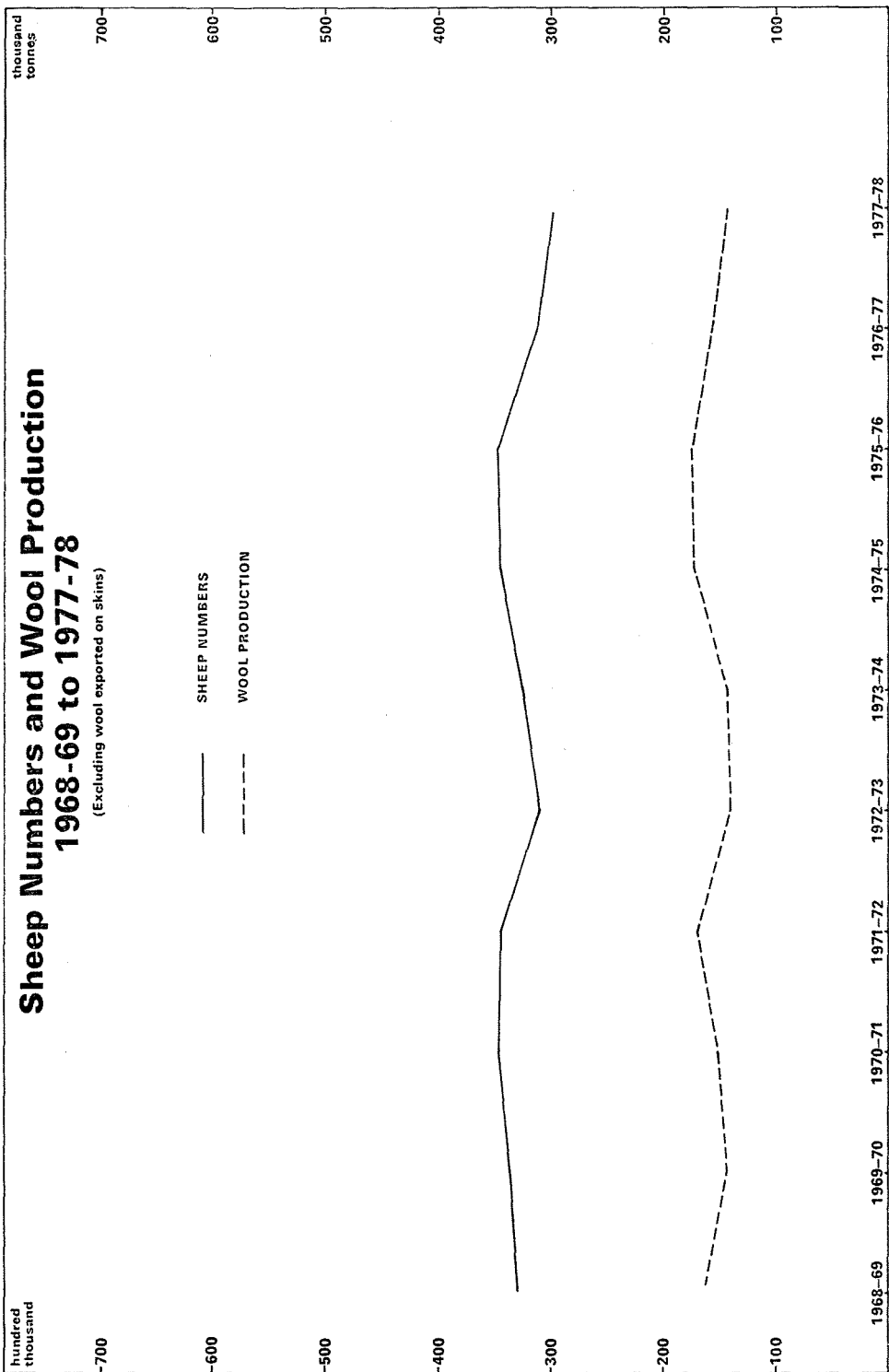
As provided by the Act, the Lamb Marketing Board consists of five members, four of whom are appointed by the Governor and an *ex officio* member, the manager of the Board, who is its chief executive officer. Of the appointed members, two are elected producer representatives, one a meat trade representative nominated by the Minister for Agriculture, and one person, also nominated by the Minister (who is neither a producer nor financially interested in the slaughter, distribution or sale of lamb), who shall be Chairman of the Board. The major aims of the Board are to introduce an orderly method of marketing and encourage producer participation in lamb marketing, develop an advance price schedule, implement a weight and grade system to be used as a guide for standards of future production and to rationalise procedures throughout the industry.

Apart from control of the local market supplies the Board also is responsible for arranging exports of lamb. During the period of the Board's operation there has been a marked change in the pattern of export sales of Western Australian lamb with the traditional United Kingdom market being replaced by Middle East markets. In 1972-73 the United Kingdom took 2,232 tonnes of lamb and Iran 49 tonnes but in 1977-78 Iran took 12,023 tonnes with only 534 tonnes going to the United Kingdom. A further 2,925 tonnes of lamb were exported to Kuwait and neighbouring countries.

Wool

Total wool production in 1977-78 amounted to 149,409 tonnes, of which shorn wool accounted for 141,929 tonnes. It was shorn from 33.9 million sheep and lambs, the average weight of wool shorn being 4.2 kilograms. The balance of the 1977-78 production comprised 1,206 tonnes of dead and fellmongered wool, and 6,275 tonnes of wool exported on skins.

During the war years wool was compulsorily acquired by the Australian Government in accordance with an agreement with the United Kingdom. The scheme was administered by the Central Wool Committee and the price paid was determined by a



system of appraisal which, however, operated within limits agreed upon by the two Governments. During this period large stocks of wool were accumulated and after the war an organisation was formed with the object of selling this surplus with the least possible disturbance to ruling prices. Government control of wool ceased after the war and wool auctions operated by members of the National Council of Wool Selling Brokers of Australia were resumed in Perth in 1946. These sales are attended by Australian and overseas buyers who bid for individual lots. Some wool is auctioned at sales conducted independently of the National Council and a significant portion of the clip is purchased on farms by wool dealers who buy direct from producers. In September 1957, auctions were held at Albany for the first time. Sales in Perth were discontinued in 1960 and the selling centre was transferred to Fremantle.

The Australian Wool Board, constituted under the *Wool Industry Act* 1962, came into being in 1963 and replaced the Australian Wool Bureau which was established by the *Wool Use Promotion Act* 1953. The function of the Board was to promote the use of wool and wool products in Australia and other countries and to inquire into methods of marketing wool and any other matters connected with marketing of wool. A subsidiary of the Board, the Australian Wool Testing Authority was responsible for the provision of a testing service for wool and wool products. In 1967 the Wool Board recommended the establishment of an authority to enforce standards of clip preparation, to conduct a price averaging plan and, in conjunction with wool selling brokers, to conduct a system of supply management involving chiefly wools in the price averaging plan. These proposals, with some amendments, were accepted by the Australian Wool Industry Conference and the Federal Government and on 1 July 1970 The Australian Wool Marketing Corporation Pty. Ltd. (a non-statutory body) began operations.

In November 1970 the Australian Wool Commission Act established the Australian Wool Commission which was empowered to take over the functions of The Australian Wool Marketing Corporation Pty. Ltd. The Commission was required to operate a flexible reserve price scheme for wool sold at auction and to perform other functions aimed at improving the marketing of Australian wool.

Following a submission by the Australian Wool Industry Conference and a report by a Government committee the Australian Wool Corporation was established by the *Wool Industry Act* 1972. This Act repealed both the *Wool Industry Act* 1962 and the *Australian Wool Commission Act* 1970 and vested all rights, property and assets of the Australian Wool Board and the Australian Wool Commission in the Australian Wool Corporation. The Corporation came into operation on 1 January 1973 and took over the functions of both the Australian Wool Board and the Australian Wool Commission which ceased to operate on that date. The functions of the Corporation relate to wool marketing, wool use promotion, wool testing, wool research and the management of wool stores. Following amendments to the *Wool Industry Act* in 1977 the Corporation now has an active role in negotiating sea freights for wool to Australia's main markets.

The number of sheep and lambs shorn, the average weight of wool shorn per sheep or lamb, and production of wool are given in the following table.

SHEEP SHORN AND WOOL PRODUCTION

Year	Sheep shorn			Average weight of wool shorn	Wool production (in the grease)			
	Sheep	Lambs	Total		Shorn	Dead and fell-mongered	Exported on skins	Total
	'000	'000	'000	kg	tonnes	tonnes	tonnes	tonnes
1973-74	28,945	6,818	35,763	4.0	142,100	1,047	6,292	149,439
1974-75	30,348	7,644	37,992	4.5	172,093	566	7,317	179,975
1975-76	31,363	7,526	38,889	4.5	173,987	820	8,815	183,622
1976-77	29,175	6,114	35,289	4.4	154,919	1,318	10,138	166,375
1977-78	28,293	5,580	33,873	4.2	141,929	1,206	6,275	149,409

The number of sheep and lambs shorn, wool clip and average weight of wool shorn in each statistical division for 1977-78 are given in the following table.

**SHEEP AND LAMBS SHORN AND WOOL CLIP IN STATISTICAL DIVISIONS
YEAR ENDED 31 MARCH 1978**

Statistical division	Sheep and lambs shorn	Wool clip	Average weight of wool shorn		
			Sheep	Lambs	Total
Perth Statistical Division	number 109,967	kg 366,021	kg 3·6	kg 1·4	kg 3·3
Other divisions—					
South-West	1,337,861	5,326,086	4·5	1·4	4·0
Lower Great Southern	8,277,853	35,959,884	4·9	1·5	4·3
Upper Great Southern	7,764,524	32,939,660	4·8	1·4	4·2
Midlands	8,765,161	35,853,127	4·7	1·4	4·1
South-Eastern	2,380,728	10,423,760	4·8	1·7	4·4
Central	4,293,523	17,191,095	4·4	1·3	4·0
Pilbara	493,371	1,886,467	4·0	1·3	3·8
Kimberley	6,826	25,140	3·7	—	3·7
Total	33,319,847	139,605,219	4·4	1·3	4·2
WESTERN AUSTRALIA	33,429,814	139,971,240	4·7	1·4	4·2

The next table shows the gross value of wool production for the five years 1973-74 to 1977-78. The total value of \$291,358,000 shown for 1976-77 was the highest recorded over the preceding decade.

**GROSS VALUES OF WOOL PRODUCTION
(\$'000)**

Year	Shorn wool	Dead wool and fellmongered wool	Wool exported on skins	Total
1973-74	250,352	1,361	7,676	259,389
1974-75	218,351	508	6,039	224,898
1975-76	241,477	550	9,408	251,434
1976-77	274,469	1,146	15,743	291,358
1977-78	256,794	1,240	11,744	269,778

Although the greater proportion of the wool clip is exported in the grease, scouring or degreasing is done in the State and degreased wool is an appreciable item in the external wool trade. During 1977-78 exports of greasy and degreased wool were 112,075 tonnes and 10,996 tonnes, respectively. The most important buyers of greasy wool were Japan, the Union of Soviet Socialist Republics, the Federal Republic of Germany, France, Italy, India, Belgium-Luxembourg and Poland. Principal purchasers of degreased wool were Japan, the United States of America, the Federal Republic of Germany, United Kingdom and Italy. Further details of exports of greasy and degreased wool, both interstate and overseas, are given in Chapter IX, Part 1—*External Trade*.

Cattle

Cattle are classified according to the two main purposes of 'meat production' and 'milk production', irrespective of breed.

The table below shows the numbers of cattle for meat production kept on rural holdings at 31 March 1974 to 1978. A later table details, for the same period, the numbers kept for milk production. Cattle numbers in each State and Territory at 31 March 1978 are given in a table later in this Part.

In 1978 the Kimberley Statistical Division carried 811,864 head of cattle for meat production, or 38·0 per cent of the State total. Other pastoral areas carried 159,400 head and agricultural areas 1,165,974.

The cattle which were originally shipped or driven overland from the other Australian Colonies to start the industry in the northern pastoral areas were predominantly

shorthorn breeds, and these still form the great bulk of all cattle kept for meat production in those areas. Carcass weights, however, have been increased by importing better-type bulls, by improving watering facilities on the cattle stations and by the replacement of droving by the transport of the animals from stations to abattoirs in large road trucks.

Killing and freezing works operate at the ports of Wyndham, Broome and Derby and consignments of frozen and chilled beef from these centres go mainly to overseas destinations. Some of it is sent south for consumption in the metropolitan area and live cattle are also shipped from northern ports to be slaughtered for the metropolitan market. By far the greater proportion of beef consumed in the southern part of the State, however, is supplied from the agricultural areas, some of it being from stock culled from dairy herds.

The following table shows the numbers and proportions of cattle for meat production in agricultural areas and in pastoral areas at 31 March 1974 to 1978. At 31 March 1966, the proportion of cattle kept for meat production in agricultural areas was only 42.5 per cent, with 451,062 cattle out of a total of 1,061,767. The importance of the agricultural areas as a source of meat production increased steadily until 1975 when 63.7 per cent of cattle kept for meat production were in these areas. However, since 1975 this proportion has decreased each year to 54.6 per cent at 31 March 1978.

CATTLE FOR MEAT PRODUCTION—NUMBERS AND DISTRIBUTION

Particulars	At 31 March—				
	1974	1975	1976	1977	1978
Number of head—					
In agricultural areas	1,338,617	1,513,514	1,547,908	1,325,113	1,165,974
In pastoral areas	814,830	862,283	939,065	987,397	971,264
Total	2,153,447	2,375,797	2,486,973	2,312,510	2,137,238
	per cent	per cent	per cent	per cent	per cent
Proportion of total—					
In agricultural areas	62.2	63.7	62.2	57.3	54.6
In pastoral areas	37.8	36.3	37.8	42.7	45.4

**CATTLE FOR MEAT PRODUCTION AT 31 MARCH 1978
CLASSIFIED ACCORDING TO SIZE OF HERD AND LOCATION**

Size of herd (numbers)	In agricultural areas (a)		In pastoral areas (b)		Whole State	
	Number of—		Number of—		Number of—	
	Herds	Cattle	Herds	Cattle	Herds	Cattle
1- 29	2,238	25,442	15	233	2,253	25,675
30- 49	901	35,239	9	344	910	35,583
50- 69	843	49,378	11	616	854	49,994
70- 99	977	81,369	19	1,560	996	82,929
100- 149	1,086	131,870	18	2,093	1,104	133,963
150- 199	652	112,499	14	2,342	666	114,841
200- 299	781	188,581	30	7,009	811	195,590
300- 399	362	123,753	27	9,497	389	133,250
400- 499	179	78,877	26	11,272	205	90,149
500- 699	178	103,642	21	12,248	199	115,890
700- 999	95	76,463	19	15,765	114	92,228
1,000- 1,499	48	56,632	22	25,363	70	82,195
1,500- 1,999	13	21,525	11	19,037	24	40,562
2,000- 4,999	16	47,485	40	123,383	56	171,068
5,000- 9,999	1	6,566	17	114,699	18	121,265
10,000 and over	2	26,653	37	625,403	39	652,056
Total	8,372	1,165,974	336	971,264	8,708	2,137,238

(a) The agricultural areas comprise the Perth, South-West, Upper Great Southern, Lower Great Southern and Midlands Statistical Divisions and the Sub-divisions of Dundas and Greenough. (b) The pastoral areas comprise the Kimberley and Pilbara Statistical Divisions and the Sub-divisions of Lefroy, Gascoyne and Carnegie.

In the agricultural areas, holdings with less than 200 cattle for meat production accounted for 80 per cent of the herds, but only 37 per cent of total cattle for meat production in those areas. Within this group, holdings with less than thirty cattle for meat production represented 27 per cent of the holdings but only 2 per cent of the total cattle for meat production. In the pastoral areas, holdings with more than 4,999 cattle for meat production accounted for only 16 per cent of the herds in those areas but more than 76 per cent of the total number of cattle at that date.

Slaughtering

Beef from cattle slaughtered at Wyndham, Broome and Derby in the Kimberley Division is principally for export. The local market for meat is supplied mainly from abattoirs at Fremantle, Waroona, Harvey, Bunbury, Albany, Geraldton, Wooroloo, Katanning and Kalgoorlie but most of these establishments also slaughter for the export trade. Owing to poor seasonal conditions and resultant high slaughtering levels over the preceding three years, stock numbers available for slaughter in 1978-79 fell significantly. As a consequence of this the Midland Abattoir, the largest in the State, was placed on a care and maintenance basis. Small establishments operating in country towns also contribute substantially to total production, and most stations and many farms slaughter sufficient for all or part of their own requirements.

LIVESTOCK SLAUGHTERED AND MEAT PRODUCED

Year	Livestock slaughtered (a)						Meat produced (b)	
	Sheep		Lambs		Cattle and calves		Mutton and lamb	Beef and veal
	Number	Gross value (c)	Number	Gross value (c)	Number	Gross value (c)		
	'000	\$'000	'000	\$'000	'000	\$'000	tonnes	tonnes
1973-74	2,620	30,718	1,189	13,909	488	65,808	66,157	94,106
1974-75	3,037	17,212	1,330	11,115	542	40,092	76,018	106,117
1975-76	4,394	19,183	1,745	13,573	793	45,803	103,303	147,223
1976-77	4,193	30,885	1,833	18,094	918	65,062	93,762	160,287
1977-78	2,668	31,329	1,487	20,512	848	76,931	65,483	148,149

(a) Mainly slaughtering for human consumption but also includes quantities condemned and small numbers of livestock slaughtered for boiling down. (b) Dressed carcass weight; excludes condemned carcasses and offal. (c) Value 'on hoof' at principal market.

DAIRYING

Compared with the wheat, wool and meat producing industries, dairying as a major well-organised rural activity is of fairly recent origin. Its growth was retarded initially by the difficulty of clearing heavily-timbered country in the south-west and the need for special methods of pasture establishment, but these problems were progressively overcome and dairying became a significant feature of primary production. In recent years dairy production has been increasingly affected by a cost/price squeeze and loss of traditional markets.

Until the establishment of the first butter factory at Busselton in 1898, dairy farming in Western Australia was essentially for the production of whole milk, although small quantities of farm butter were marketed. As more factories commenced processing, the industry steadily developed and its growth was further stimulated by the establishment of irrigation areas, the first at Harvey in 1916, and by the introduction of the Group Settlement Scheme in 1921. Another important factor in increasing production was the successful establishment of subterranean clover which resulted in a marked improvement in pastures.

In 1933, a Milk Board was established by State legislation, with the primary purpose of regulating the supply of liquid whole milk and fresh table cream to the Perth metropolitan area and, in later years, to other main centres of population in the south-west

portion of the State. Under the Board, dairymen's contract quantities were established as a means of ensuring that sufficient milk was produced to meet the needs of the domestic market throughout the year.

The Board was succeeded in 1974 by the present Dairy Industry Authority, which consists of a chairman and eight members, representing all sections of the industry. The powers and functions of the Authority extend over the whole of the dairy industry of Western Australia whereas the Milk Board covered milk for liquid consumption only. The Act provides for the Authority to purchase and sell milk and dairy products under vesting provisions in the *Dairy Industry Act, 1973*. The Authority has adopted a modern and vigorous attitude towards the promotion of milk as a low-priced, high quality product. It has, with the approval of the State Government, taken positive steps to assure the supply of milk for domestic purposes in Western Australia throughout the 1980s and beyond. By implementing a Dairy Assistance Plan, it has been possible, during the years since 1975, to provide quotas for most dairymen who desire them and who are capable of meeting the bases and principles for the production of milk for human consumption, both in quantity and quality. Western Australia has been a leader in this positive attitude to the needs of the consumer and to those who service the dairy industry.

The introduction in 1977 of quotas for milk used in the production of flavoured milk and yoghurt provided an additional stimulus to production. These items, together with fresh table cream, form a valuable adjunct to the market for liquid milk. These are dairy products providing good dietary foods for consumers and, at the same time assuring a stable income for those persons involved in their production, processing and distribution.

The industry has been assisted by the extensive experimental work carried out by the Department of Agriculture and the advisory service which it provides on all aspects of dairy farming.

Price instability has been one of the major difficulties of the industry and in 1926 the 'Paterson Plan', which was a voluntary scheme of price stabilisation, was introduced. It met with considerable success but weaknesses finally became apparent and it was abandoned in 1934 in favour of the Dairy Products Marketing Regulation Act passed by the State Parliament. On 1 April 1946, Western Australia entered the voluntary butter price equalisation scheme, operated since 1936 by the Commonwealth Dairy Produce Equalisation Committee Limited, and in January 1947 the State extended its participation to include cheese. The Committee, which comprised certain members of the State Dairy Products Boards and other persons representing the industry, entered into agreements with manufacturers to secure to them equal rates from sales of butter and also of cheese, and for this purpose fixed basic prices at which these products sold in Australia or abroad were to be taken into account. The effect was that local and export trade were distributed among manufacturers in equitable proportions. The Committee fixed basic prices and equalised returns to factories through an Equalisation Fund.

Until June 1975 a subsidy was provided by the Australian Government for butterfat used in the production of butter and cheese. The subsidy in the final year of payment, 1974-75, was \$45.00 per tonne on butter and \$21.46 on cheese. A subsidy available under the *Processed Milk Products Bounty Act 1962* on exports of processed milk products (excluding butter, cheese and certain other specified goods) also ceased on the above date. Some financial assistance has been provided in the period subsequent to June 1975 by Australian Government underwriting of the equalisation price of a wide variety of processed milk products. The prices to be underwritten were determined after wide discussion between the government and representatives of the dairy industry based on guidelines produced by the Bureau of Agricultural Economics.

After investigation into the state of the dairy industry and the type of assistance which should be provided, the Industries Assistance Commission made certain recommendations in its report of September 1976. The recommendations were for a three-tiered compulsory stabilisation scheme to be operated by the Australian Dairy Corporation.

The *Dairy Industry Stabilization Act 1977* and related legislation provided for the implementation of Stage I, essentially a compulsory levy-disbursement scheme, from 1 July 1977. This replaced the previous voluntary equalisation scheme administered by the Commonwealth Dairy Produce Equalisation Committee Ltd and is expected to have results similar to those attained under the voluntary scheme.

The Commonwealth Dairy Produce Equalisation Committee Ltd continued in existence until 30 June 1978, having at that date finalised all equalisations of product pools for which it had been responsible.

Stages II and III of the compulsory scheme are to be introduced at later dates.

The Industries Assistance Commission also recommended that the previous underwriting arrangements should continue on a short-term basis. The level of assistance which applied from 1 January 1978 should enable manufacturers to pay their suppliers \$1.65 per kilogram butterfat at the place of production.

The following table shows the numbers of cattle kept for milk production on rural holdings at 31 March 1974 to 1978. From a total of 240,338 at 31 March 1963 the numbers have declined to 134,109 at 31 March 1978.

CATTLE FOR MILK PRODUCTION

Particulars	At 31 March—				
	1974	1975	1976	1977 r	1978
	number	number	number	number	number
Bulls of dairy breeds used or intended for service—					
Aged one year and over	2,489	2,367	2,409	2,240	1,802
Calves (aged under one year)	925	831	1,078	1,201	1,111
Total	3,414	3,198	3,487	3,441	2,913
Cattle used or intended for production of—					
Milk or cream for sale—					
Cows—In milk and dry	94,941	91,079	93,188	83,521	74,107
Heifers—Aged one year and over	38,664	37,277	35,747	33,272	29,473
Heifer calves—Aged under one year	33,696	30,924	29,188	26,111	22,395
Milk or cream for use on rural holdings—					
House cows and heifers	5,898	5,737	5,916	5,590	5,221
Total	173,199	165,017	164,039	148,494	131,196
Total cattle for milk production	176,613	168,215	167,526	151,935	134,109

In the next table, the number of holdings carrying cattle for milk production at 31 March 1978 are classified by the size of the herds. Over 77 per cent of the herds contained less than ten cattle for milk production. However, these accounted for 4 per cent of the total number of such cattle. Holdings carrying 100 or more cattle for milk production accounted for only 16 per cent of herds but 87 per cent of the total cattle for milk production at that date.

CATTLE FOR MILK PRODUCTION AT 31 MARCH 1978 CLASSIFIED ACCORDING TO SIZE OF HERD

Size of herd (numbers)	Number of herds	Total cattle
1- 9	2,697	5,571
10- 19	48	620
20- 29	17	405
30- 39	17	561
40- 49	23	1,007
50- 59	18	967
60- 69	24	1,539
70- 79	21	1,560
80- 89	26	2,189
90- 99	26	2,442
100-124	83	9,350
125-149	91	12,437
150-174	87	13,993
175-199	68	12,679
200-249	112	24,613
250 and over	129	44,176
Total	3,487	134,109

The quantity and gross value of whole milk produced in each of the years 1973-74 to 1977-78 are given in the following table.

WHOLE MILK PRODUCTION (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Quantity '000 litres	241,157	245,895	r 232,265	r 214,851	188,394
Gross value (b) \$'000	19,627	20,458	20,660	23,274	25,539

(a) Year ended 30 June. Includes milk used for processing into butter, cheese and condensery products. Details of butter production appear in Part 3 of this Chapter. (b) Includes subsidy paid by the Australian Government.

Pig Raising

For many years the rearing of pigs has been carried on in conjunction with the production of butterfat as cream, thus providing a practical means of using the skim milk obtained. This is now on the decline, however, owing to the current trend for whole milk to be supplied in bulk by the dairy farmers direct to processing plants. In the main, pigs are now raised on grain-growing holdings and, in 1978, 68 per cent of pigs in the State were in the wheat belt. There are also a number of farmers in the districts around Perth who specialise in pig raising and in fattening for market pigs obtained from country areas.

The principal breeds in Western Australia are the Berkshire, Large White and Land-race and crosses of these breeds. Pigs are reared for bacon and ham as well as pork and, although the greater proportion of production is consumed locally, there is some export trade. In 1977-78 a total of 421,481 kilograms of pork was shipped interstate and 198,772 kilograms overseas.

In the following table, pig herds at 31 March 1978 are classified according to the size of the herd. Holdings carrying less than fifty pigs accounted for 53 per cent of the total herds but only 13 per cent of the total number of pigs. Herds containing between fifty and 499 pigs accounted for slightly less than 45 per cent of herds and over 64 per cent of total pigs while those with more than 500 pigs accounted for less than 2 per cent of herds but more than 22 per cent of pigs.

PIG HERDS AT 31 MARCH 1978
CLASSIFIED ACCORDING TO SIZE OF HERD

Size of herd (numbers)	Number of herds	Total pigs
1- 9	322	1,449
10- 19	319	4,537
20- 29	292	7,031
30- 39	276	9,481
40- 49	193	8,503
50- 69	336	19,668
70- 99	277	22,874
100- 149	247	29,763
150- 199	126	21,615
200- 299	117	28,155
300- 499	80	30,836
500- 699	18	10,622
700- 999	10	8,319
1,000 and over	17	34,505
Total	2,630	237,358

In the table below, the numbers of pigs on rural holdings at 31 March are shown for each of the years 1974 to 1978. The number reported at 31 March 1978 was 237,358, a decrease of 2 per cent on the 1977 figure of 242,116. This continues the downward movement from the numbers at 31 March 1973 (476,316), the highest ever recorded.

PIG NUMBERS

At 31 March—	Boars	Breeding sows	Other pigs (a)		Total
			Under six months	Six months and over	
1974	4,634	41,703	207,279	90,007	343,623
1975	4,175	37,243	222,739		264,157
1976	4,093	37,260	218,498		259,851
1977	3,921	35,396	202,799		242,116
1978	3,881	35,780	197,697		237,358

(a) Includes baconers, porkers, suckers, weaners and slips, for which separate age details were not collected from 1975.

The next table shows the numbers and gross value of pigs slaughtered in each of the years 1973-74 to 1977-78, together with the quantity of meat produced. Factory production of bacon and ham is also shown. The amount produced in 1976-77 was the highest recorded over the preceding decade, a gradual increase occurring each year over the period except in 1974-75, when a slight decrease was recorded.

PIGS SLAUGHTERED (a) AND MEAT PRODUCED

Year	Pigs slaughtered		Pigmeat produced (c)	Bacon and ham produced (d)
	Number	Gross value (b)		
1973-74	499,797	\$'000 19,023	tonnes 28,270	tonnes 5,367
1974-75	391,304	16,936	22,078	5,279
1975-76	354,204	18,211	19,832	5,368
1976-77	345,175	18,348	19,671	5,873
1977-78	322,781	18,994	18,170	5,625

(a) Comprises slaughterings in abattoirs, butcheries and on stations and farms.
 (b) Value 'on hoof' at principal market or at factory door. (c) Dressed carcass weight; excludes condemned carcasses and offal but includes quantities used to produce bacon and ham. (d) Factory production.

LIVESTOCK IN AUSTRALIA

The following table gives details of livestock numbers in each State and Territory of Australia at 31 March 1978.

LIVESTOCK NUMBERS AT 31 MARCH 1978—AUSTRALIA ('000)

State or Territory	Sheep	Cattle				Pigs
		Bulls (1 year and over) used or intended for service	For production of milk or cream	Mainly for meat production	Total	
New South Wales	48,000	120	538	6,714	7,372	739
Victoria	22,021	92	1,582	2,898	4,572	401
Queensland	13,438	185	425	10,881	11,490	463
South Australia	14,073	28	166	1,048	1,242	311
Western Australia	29,820	45	132	2,094	2,271	237
Tasmania	3,969	13	173	547	734	64
Northern Territory	1	41	-	1,640	1,681	3
Australian Capital Territory	119	-	-	15	16	-
AUSTRALIA	131,442	523	3,018	25,838	29,379	2,219

POULTRY FARMING

Poultry farming in Western Australia is now mainly a specialist industry and a large proportion of poultry meat and egg production is on holdings which carry sufficient birds to make the particular activity the sole or predominant source of income. Most of the

commercial poultry farms are situated in the Perth Statistical Division, within a fifty-kilometre radius of Perth, but egg birds are also kept for commercial production on orchards, dairy farms and wheat farms throughout the agricultural areas.

On specialist poultry farms modern developments in breeding, sexing and nutrition have resulted in considerably higher egg production per bird. Egg-producing birds are largely first-cross hens, bred mainly from White Leghorn cocks and Australorp hens. Production of poultry meat has increased considerably in recent years, mainly as a result of increased slaughterings of meat chickens which have been produced on specialist farms using strains of poultry developed specifically for meat production. Between 1973-74 and 1977-78 slaughterings of meat chickens rose from 14.0 million to slightly more than 17.0 million.

Under the *Marketing of Eggs Act, 1945-1977*, all producers in the South-West Land Division are required to market their eggs either through the Western Australian Egg Marketing Board or under the permit system which is administered by the Board. The principal purpose of this legislation is to ensure satisfactory disposal of eggs, including that surplus over local requirements which is consistently produced and which must be sold overseas at prices which usually do not offer a reasonable return to the producer. In order to provide a fund with which to equalise returns from local and export sales the Board, prior to 1 July 1965, made a charge on all eggs sold locally. This charge was subsequently replaced by a levy imposed by Commonwealth legislation which came into operation on 1 July 1965.

The *Poultry Industry Levy Act 1965* provides for the imposition throughout Australia of a levy on hens not less than six months old kept for commercial purposes. Special exemptions are made in respect of 'broiler breeder hens', being hens used to produce chickens for table purposes. The levy, which does not apply to flocks of fewer than twenty-one hens, nor to the first twenty hens in any flock, is payable fortnightly and may not exceed \$1 annually per bird. In June 1978 the levy stood at 4c per fortnight for each hen.

Under the *Poultry Industry Levy Collection Act 1965* the authority responsible for the collection of the levy in this State is the Western Australian Egg Marketing Board. The *Poultry Industry Assistance Act 1965* establishes a Poultry Industry Trust Fund for the receipt of the amount of the levy and other moneys. The Act provides for payment from the Fund to a State, by way of financial assistance, of such amounts as the Federal Minister may determine upon the recommendation of The Council of Egg Marketing Authorities of Australia.

Although the Australian Government levy replaces the egg equalisation levies formerly imposed by the several State authorities for the purpose of equalising returns from local markets and export sales, the State authorities continue to make charges necessary to defray the costs of handling, grading and marketing of eggs.

In 1977-78 Japan and Hong Kong were the most important overseas markets for eggs in the shell. Overseas exports of eggs in liquid form (including frozen pulp) in 1977-78 were valued at \$335,820.

Details of poultry numbers in the State at 31 March of the years 1974 to 1978 are given in the next table. The succeeding table shows eggs sold and poultry slaughtered for table purposes over the five years ended 1978.

POULTRY NUMBERS

	At 31 March—	Fowls	Ducks	Turkeys
1974	4,311,827	38,217	5,021
1975	3,884,171	31,189	2,819
1976	3,616,771	15,304	4,806
1977	3,512,476	2,992	3,017
1978	4,026,419	2,753	1,126

**EGG PRODUCTION AND POULTRY SLAUGHTERED (a)
FOR TABLE PURPOSES**

Year ended 31 March—	Egg production (b)		Poultry slaughtered for table purposes (c)	
	Quantity	Gross value	Dressed weight	Gross value
	'000 dozen	\$'000	tonnes	\$'000
1974	13,938	7,949	17,243	10,655
1975	16,973	12,032	17,714	12,428
1976	16,320	13,431	19,457	13,865
1977	15,118	14,037	20,513	16,004
1978	15,533	15,477	21,949	19,770

(a) Excludes non-commercial production. (b) Figures shown were supplied by the Western Australian Egg Marketing Board. (c) Year ended 30 June.

BEE KEEPING

Commercial producers of honey in Western Australia may be divided into three categories. There are a comparatively small number of specialist apiarists, engaged solely or mainly in honey production, who operate on a large scale and transport their hives from district to district. There are also some substantial producers who are engaged in agricultural activities and use their farms as a central site from which they may transport their hives to other areas as necessary. Finally there are the many farmers and orchardists who keep a few hives and produce honey as a minor supplementary activity.

BEE KEEPERS, BEEHIVES AND HONEY PRODUCTION (a)—1977-78

Classification of hives (a)	Bee keepers (b)		Productive beehives (c)		Honey production	
	Number	Proportion of total (per cent)	Number	Proportion of total (per cent)	Quantity (kg)	Proportion of total (per cent)
40- 99	55	33.95	1,988	6.14	67,303	4.59
100-199	32	19.75	2,587	7.99	91,207	6.21
200-299	20	12.35	3,979	12.29	163,997	11.17
300-499	29	17.90	8,940	27.61	391,108	26.65
500-799	21	12.96	9,684	29.91	517,606	35.27
800 and over	5	3.09	5,200	16.06	236,482	16.11
Total	162	100.00	32,378	100.00	1,467,703	100.00

(a) Excludes details of bee keepers with less than 40 hives. (b) At 30 June 1978. (c) Represents the number of hives at 30 June 1978 from which honey was taken during the year and excludes hives kept for production but from which no honey was taken, nuclei, pollination hives, etc.

BEEHIVES AND PRODUCTION OF HONEY AND BEES-WAX (a)

Year	Beehives (b)		Honey production		Bees-wax production	
	Productive (c)	Unproduc- tive (d)	Quantity	Gross value	Quantity	Gross value
	number	number	tonnes	\$'000	tonnes	\$'000
1973-74	32,098	4,414	2,389	1,280	35	62
1974-75	33,794	4,883	2,527	935	36	65
1975-76	34,069	5,346	3,354	1,174	53	89
1976-77	36,483	6,083	3,143	1,603	49	123
1977-78	32,378	8,930	1,468	763	27	96

(a) Excludes particulars of bee keepers with less than 40 hives. (b) Number at 30 June. (c) Hives from which honey was taken during the year. (d) Includes hives kept for production but from which no honey was taken during the year, nuclei, pollination hives, etc.

In the 1975 and earlier issues of the publication, the statistics on bee keeping were compiled from information supplied annually by bee keepers with five or more hives. However, from 1974-75, the statistics have been compiled from data from bee keepers

with forty or more hives. Details for the year 1973-74 have been adjusted to the new basis which will be continued in future years. Consequently, statistics shown in the tables below are not directly comparable with those shown in the 1975 and earlier issues. In 1977-78 the number of bee keepers operating between five and thirty-nine hives was 107. These bee keepers operated 756 (or 2.3 per cent) of all productive hives and accounted for 15,833 kilograms of honey production and 435 kilograms of bees-wax production. These amounts represented about 1 per cent of value of honey produced and less than 2 per cent of value of bees-wax produced.

In 1977-78 exports of honey totalled 1,543 tonnes, the export value being \$1,552,560. The principal buyers were the United Kingdom, which purchased 807 tonnes; Malaysia 209 tonnes and the Republic of Singapore, 148 tonnes.

THE DEPARTMENT OF AGRICULTURE

A Bureau of Agriculture formed in 1894, became the Department of Agriculture in 1898 when the cleared, arable land in Western Australia was less than 1 per cent of present farm land, no superphosphate was used in Western Australian farming and no wheat varieties were available for the drier areas more than 100 kilometres inland.

In the Department's first twenty-five years, development of the wheat belt was the main activity. The area under cereal crop increased from 30,000 hectares in 1900 to more than 1.6 million hectares in 1930 and 4.8 million hectares in 1977-78.

In the Department's first ten or fifteen years, experiment farms, or 'State farms' were established. The first of these had its origin in plots which were established at Hamel in 1896. Valuable work was carried on at this centre for nearly twenty years in connection with the growing of potatoes, fruit, cereals, hops, fodder crops and pasture, and some success was achieved with wheat breeding.

Government farms were opened at Narrogin in 1901 and at Nabawa, forty kilometres north of Geraldton, in 1902. In 1907 a farm at Nangeenan, near Merredin, was taken over from the Lands Department and is now the Merredin Research Station. In the same year a farm was established in the south-west at Brunswick in order to provide object lessons in dairying, as it was felt that there were great possibilities of expanding the dairying industry. After functioning for several years this farm was closed and the land was subsequently used for closer settlement purposes.

In 1911 a change was made in the policy of the government farms in the wheat belt and their character changed from 'experimental' to 'experiment' farms and ultimately to 'research stations'. Instead of being conducted mainly with the object of producing revenue they were to be used primarily for collecting information concerning local conditions that would be of value to the district. In addition, wheat, oats and barley were bred and pure pedigree seed produced.

The Department expanded progressively and in 1960 occupied a new site at South Perth as its Head Office embracing field plots, glass-houses, animal houses, a virology block and all ancillary units.

The Department of Agriculture has a broad role to foster the State's agriculture and the overseas marketing of its products. By representation on the Australian Agricultural Council, it helps establish nationally acceptable policies.

It is the branch of the State Government service which brings scientific advice to farmers, pastoralists and allied industries, conducts a wide range of research and administers relevant Acts of Parliament. It maintains services to assist farmers and its regulatory work consists of carrying out the provisions of some of the laws relating to agriculture.

The operations of the Department are organised into Divisions, Sections or Branches, the heads of which are responsible to the Director of Agriculture, through the Deputy Director and two Assistant Directors.

A reorganisation of the Department, designed to increase the efficiency of departmental services, took place in July 1977. A new Animal Health Division comprises veterinary services, stock and abattoir inspection, animal health laboratories, stock brand-

ing and stock movement. The Animal Production Division has separate Branches or Sections dealing with beef cattle, dairy cattle, sheep and wool, pigs, poultry and apiculture. It also is responsible for several research stations. Responsibility for quality control of dairy products and food technology research is the function of the new Dairy and Food Technology Division.

The Plant Research Division deals with plant nutrition, crop and pasture agronomy and has Branches or Sections for plant pathology, weed agronomy, seed products and biometrics. A diagnostic plant analysis service which uses a multi-channel spectrometer was recently initiated by the Division.

Plant breeding, the quality testing of cereals and other seeds, grain inspection services and responsibility for many of the Department's research stations is the function of the Plant Production Division. The greater part of the Department's extension services and country district offices are within the Regional Services Division, which provides an overall advisory service to farmers, except for specialist veterinary services and horticultural advice.

The Resource Management Division comprises several Branches dealing with range-land management (the pastoral industries), soil conservation, soil research and surveys, and irrigation and drainage. The functions of the Horticulture Division are the responsibility of Sections dealing with fruit, vegetables, viticulture, floriculture, and the horticultural inspection services. The Division also administers several research stations.

The Administration Division comprises the Branches or Sections of Botany (the Western Australian Herbarium), Entomology, Information, Marketing and Economics, and the Library. In addition to these the Division includes the Kimberley District Office and the Kununurra Experimental Farm.

Close liaison is maintained with the Agriculture Protection Board.

The Head Office at South Perth houses the main administrative, research specialist and diagnostic staff and there are twenty-five district offices and twenty-four research stations. Most research stations are for the wheat and sheep, beef, and dairying industries but specific stations cater for fruit, vegetables, poultry, pigs, viticulture and tropical agriculture.

Research activities

Investigation and research work is a major function of the Department and has meant much to the State's farming. Cereal breeding and economic assessment of varieties is a continuing process in which more than 6,000 trial plots are planted each year. Cereal varieties bred by the Department have increased the incomes of farmers by many millions of dollars in the years they have been grown. The introduction of new plant species and varieties (including rust-resistant types), the determination of rotations for improving yields and maintaining soil fertility, as well as ways to improve district performance and profitability are all part of the investigation and research work.

Research into plant diseases, deficiencies and fertiliser needs are important aspects of the Department's work and success in this field made possible the extensive expansion of farming into light land in the past three decades. The sowing of lupins to provide nitrogen, and the use of trace elements were major factors in developing the sandy soils; the establishment of new subterranean clover species in areas of light rainfall, made possible the ley farming system of cropping in rotation with pastures which greatly expanded the productivity of the State's dry land farming.

Many specific problems and deficiencies have been investigated. Recent important examples are lupinosis disease in sheep, annual ryegrass toxicity, clover scorch and blackleg in rape. Breeding new cultivars is the long term answer to some of these problems and good progress has been made. Sweet lupins (developed by a scientist now working in the Department on improved varieties) are grown for their high protein grain and have become an important field crop. Many research projects are joint efforts between different Divisions. Space precludes a list of all research effort but animal health and nutrition, weed

control and efficient beef, dairy, chicken meat, egg and pig production are part of the constant research stream. Research by the Beef and Carcase Classification Branches has originated a commercial system of continuous on-line descriptive classification of beef carcasses in abattoirs. This development is important in the evaluation of carcasses for both producers and the meat industry. The system is to be tested in abattoirs throughout Australia.

In the horticultural industries, research has enabled commercial growers to maintain and expand production in the face of diminishing numbers of growers. This has been achieved by the introduction of new varieties and rootstocks and the development of management techniques to increase quality and yields well above previous levels.

Nutritional disorders and diseases of farm animals cause considerable loss to farmers and pastoralists. Some of the Department's most notable successes have been achieved when dealing with problems in this field, which include enzootic ataxia, enterotoxaemia, toxic paralysis, clover disease in sheep, copper and cobalt deficiencies in cattle, contagious pleuro-pneumonia, Kimberley horse disease, plant poisoning of stock and infertility in dairy cows. Problems of sheep infertility, lupinosis, brucellosis in beef herds, mastitis in dairy cows and ryegrass toxicity in cattle and sheep are among major problems still under investigation.

A soil conservation service was established in the Department in 1947 and since then much information on the incidence and nature of erosion has been collected. A considerable area of agricultural land has suffered from salt encroachment since clearing. Over 160,000 hectares of once productive land has become too saline for cropping. The Department has carried out considerable research into the reasons for salt encroachment and the measures that can be taken to improve the productivity of saline land. The provision of water supplies in many rural areas has been difficult. Research has developed various means of improved water conservation by the use of roaded catchments and techniques of dam sealing and design. Although the main emphasis has been on soil and water conservation in agricultural areas, an increasing amount of research is being carried out concerning the wider aspects of environmental protection, often in co-operation with other Government Departments. Examples include coastal and river protection, studying and reducing the impact of industrial and urban development and examining possible consequences of activities such as the wood chip industry and the mining of mineral sands.

The Department is responsible for carrying out surveys of rangeland condition and erosion in the pastoral areas and provides maps and descriptions of the resource base of leasehold land. The work is done in collaboration with the Department of Lands and Surveys.

In the north-west of the State the sheep-carrying capacity of large tracts of country has been seriously reduced by drought and overgrazing. Officers of the Department have shown that much of this country can be improved by adopting systems of grazing management different from those of the past.

Lupin growing and the production of sheep meat for Middle East markets are two successful agricultural enterprises with which the Department has been closely associated in recent years. Research is also establishing lupins as a source of protein in feeds manufactured for the poultry, pig, sheep and cattle industries. In particular, research by the Department leading to the use of lupin grain as a feed supplement to increase ewe fertility has provided a large potential for increased lamb production. Here the Department has been engaged in developing management and breeding systems to help satisfy the new market requirements, advising on feeding and accommodation during shipping and discussing market requirements with importers.

The Department has transferred its Ord Irrigation Area research work to the Kununurra Experimental Farm from the Kimberley Research Station, formerly operated in conjunction with the Commonwealth Scientific and Industrial Research Organization. Research is focussed on irrigation row crops for tropical areas—sugar cane, rice, oilseeds, legumes, cereals and pharmaceutical crops. At the pilot sugar cane farm, harvestings

between May and September 1979 gave high yields of cane and sugar. A highlight was a yield of 26.8 tonnes of sugar per hectare on a six-hectare plot of an experimental cane variety.

At Carnarvon the main emphasis is on out-of-season winter vegetables for the Perth market. At the Gascoyne Research Station in Carnarvon, the Department assists growers with research into disease, pest and weed control, variety selection, cultural and irrigation methods, and packaging, marketing and economic developments.

Rangeland management and beef production research is conducted from Derby and Kununurra on various properties, including the adjacent Ord River and Fox River stations, the site of a massive million-hectare regeneration project conducted by the Department. Other rangeland research is carried out on individual properties throughout the pastoral areas.

The Western Australian Herbarium conducts research into the flora and vegetation of the State. The work is primarily in taxonomy, but studies in ecology, anatomy and cytology are also undertaken.

Advisory services

Extension work is perhaps the Department's most important function and has exercised a powerful influence in publicising and accelerating the adoption of better farming methods. Besides making individual visits to a property where a specific request has been made or where some urgent action is required, extension officers support the formation of farmers' organisations and attend meetings and field days where talks are given to groups of farmers. Many such meetings are held on the Department's research stations but field experiments and demonstrations on farmers' properties also provide venues for extension. Major problems such as farm management, taxation and fertilisers are commonly discussed, along with current difficulties with husbandry practices. Besides such personal contacts, many of the Department's twenty-five district advisory offices send newsletters to farmers in their areas.

Mass media play an important role in extension and about 200 radio broadcasts are given by departmental officers each year. A weekly Press service is also provided and regular publications include the quarterly *Journal of Agriculture* which is distributed to more than 6,000 farmers, the quarterly *Dairy Notes* which reaches all the State's dairy farmers, a farm Bulletin series, and a *Rangeland Bulletin* for the State's pastoralists. Three additions to these services in recent years have been *Technotes* (an internal technical advisory service), *Farmnotes* and *Market Information Service*. Since 1968, the Department has made twenty half-hour programmes per year for televising to South-West and Great Southern farmers.

Advisory work is largely the function of the Regional Services Division although other Divisions and Branches or Sections of the Department are involved in this activity. Apart from specialist services available from the Department's Head Office at South Perth, advice relevant to country areas is available from officers stationed at district offices at Bridgetown, Busselton, Carnarvon, Denmark, Derby, Esperance, Geraldton, Harvey, Jerramungup, Kalgoorlie, Katanning, Kelmscott, Kununurra, Lake Grace, Manjimup, Meekatharra, Merredin, Midland, Moora, Narrogin, Northam and Three Springs. A recent organisational alteration has been the decentralisation of some services, such as diagnostic tests, to larger offices at Albany and Bunbury. The district office at the port of Fremantle is mainly concerned with inspection and quarantine services.

The extension and advisory work of the Herbarium, while it is to a large degree involved in agriculture, is also directed to other activities concerning the utilization and management of the State's flora, including forestry and wildlife research. Research findings not related to agriculture are published in *Nuytsia* and *Western Australian Herbarium Research Notes*.

Other services

Since 1970, and at a cost of \$5,954,699 (\$3,741,586 Commonwealth, \$2,213,113 State) the Department has progressed strongly in the eradication of brucellosis and bovine tuberculosis from Western Australian cattle. By January 1979, 1,700 herds comprising

285,899 head of breeders, had been certified free of brucellosis and properties quarantined for investigation were fewer than 89 after an earlier peak of 400. The campaign is one of the Department's biggest undertakings of recent years and all Western Australian cattle are expected to be declared provisionally free of brucellosis by 1980-81. Except for the Kimberleys and a small area of the inland north, Western Australia is provisionally free of bovine tuberculosis, allowing free passage of cattle traded interstate.

The Department's Animal Health Division has also greatly assisted the increased export of live sheep in the past few years by inspection and the issue of health certification.

The Department operates certain services which assist the producer to increase his efficiency. Probably the best known is the production of pure pedigree varieties of seed wheat, oats and barley. These are of value to the cereal grower, who is able to obtain his requirements at moderate cost. Sponsoring and supervising the production of approved lines of seed, notably potatoes and beans, has led to the wide use of these specialised lines with a resulting increased yield, and certification of pure lines of pasture seed gives farmers a guarantee of quality in the seed they buy. A dairy herd recording scheme is administered and subsidised. This enables farmers to gauge the milk yield and mastitis status of individual cows. Provision of a central laboratory at Bunbury has enabled an extension of the service and 34 per cent of dairy farms are now covered by the scheme. Determinations of the digestibility of hay and other feedstuffs are also carried out. Milking machines on dairy farms are checked for correct working as a free service. Assistance and technical advice is given to farmers concerned with the installation of irrigation schemes and the preparation of land for irrigation.

A superphosphate application rate prediction service is now available to help farmers decide the best rates of application of superphosphate for their crops and pastures based on previous fertiliser history and on soil test. The service uses the 'Decide' method of superphosphate prediction, developed in co-operation with the Commonwealth Scientific and Industrial Research Organization.

Avondale Project

At the historic Avondale Research Station, Beverley, the Avondale Project dealing with the development of agriculture was created as one of the contributions by the Department to the States 150th Year Celebrations held in 1979. Officially opened by His Royal Highness, The Prince of Wales, the Project features a fauna and flora reserve, a cultivar garden of historic crop and pasture plants, sheep and cattle displays of breed types found in Western Australia and probably the largest technological collection of farm machinery and artifacts, which have been important to the development of the State's agriculture since settlement in 1829. The Project includes the restoration of the original Avondale stables and homestead, built in the last century. The homestead has been furnished to the period 1900, and Clydesdale horses have been re-introduced. The Station is open to the public.

Administration of Acts

The Department of Agriculture is responsible for administering some fifty Acts concerning a wide range of subjects. Some of the more important relate to animal and plant disease and insect pests, industry trust funds, soil conservation, regulations of the dairy industry, vermin control, marketing of agricultural products and registration of feeding stuffs, fertilisers and stock brands.

The Department operates an integrated inspection service to provide quarantine protection for animal, horticultural, agricultural and forest industries against the importation and spread of plant pests and diseases from overseas as well as interstate, and to maintain quality standards of fruit and vegetables supplied to the local market and for shipment overseas. The properties of milk and dairy produce are kept under constant surveillance to ensure the best possible quality to the consumer.

AGRICULTURE PROTECTION

The Agriculture Protection Board is the body responsible for seeing that the State's agricultural resources are protected from the sometimes devastating effects of certain plant and animal pests.

The Board consists of the Director of Agriculture as Chairman, the Chief Executive Officer as Deputy Chairman, an officer of the State Treasury, two representatives of the Farmers' Union, one representative of the Pastoralists' and Graziers' Association and five representatives of the Country Shire Councils' Association of W.A.

New legislation affecting the Board's operation was passed in 1976. This was the Agriculture and Related Resources Protection Act which replaced the Noxious Weeds Act and the Vermin Act. Under the new Act, plants formerly called noxious weeds can be declared by the Board to be 'declared plants' and the former vermin to be 'declared animals' for the purposes of the Act.

Responsibility for controlling these declared plants, or declared animals rests with the occupier of land, whether this be a private individual or company, a local government authority, or a government department. The Agriculture Protection Board's role is to co-ordinate the control effort and see that declared plants and declared animals are dealt with according to its policies. The new legislation provides for these policies to be formulated by Zone Control Authorities on the advice of Regional Advisory Committees. The authorities and committees are made up of farmers, pastoralists and Shire Councillors from each region.

As well as co-ordinating overall agriculture protection policies, the Board advises on methods of control, maintains services to prevent pest animals and plants entering the State, and conducts research into the biology and control of vertebrate pests. The Board also has an operational contract service which landholders can use if they wish to carry out control work.

ADVISORY COMMITTEES

Responsibility for advising the Minister for Agriculture on the growing and marketing of the most suitable types of wheat, coarse grain and seeds lies with two bodies—the State Wheat Advisory Committee and the State Coarse Grains and Seeds Advisory Committee. These two committees, which have similar functions are constituted with the aims of improving the grain quality in Western Australia and the issuing annually of a list of recommended varieties as a guide to farmers in Western Australia. Membership of the two committees covers a wide range of interests, including producers, processors, bulk handling and storage authorities, exporters and research institutions. Secretarial and technical functions are undertaken by the Department of Agriculture.

In preparing lists of recommended varieties the committees take into account such factors as average yields per hectare from variety trials carried out by the Department of Agriculture on research stations and farmers' properties and analyses of grain and flour undertaken in Department of Agriculture laboratories and by the Bread Research Institute in Sydney.

ARTIFICIAL BREEDING BOARD

The Artificial Breeding Board, established in December 1966, under the provisions of the *Artificial Breeding Board Act, 1965*, consists of an independent chairman, two representatives of The Farmers' Union of Western Australia (Inc.), one representative of The Royal Agricultural Society of Western Australia and a veterinary surgeon.

The Artificial Breeding Board Act charges the Board with the responsibility of promoting and developing artificial breeding practices and services. This began when the Board took over the artificial insemination services established by the Department of Agriculture in 1956.

In February 1977 the Board embarked upon a scheme of extensive training of farmers in artificial insemination techniques to inseminate cows in their individual herds—a scheme intended to replace the need for the Artificial Breeding Board's daily insemination service. The transition to a total regime of insemination by herdsmen was completed by mid 1979.

The Artificial Breeding Board provides semen delivery services to the major towns of most cattle breeding districts within the South West Land Division, also farm to farm deliveries to the South West dairy and beef producers.

Semen stocks maintained at the Board's Administration and Distribution Centre located at Harvey originate from all available areas around the world. Extensive in-store stocks provide breeders with a selective range of sires in each breed. Semen is currently available from six dairy breeds and thirty-five beef breeds.

Artificial breeding is increasingly recognised as a reliable means of expanding genetic selection. Breeder management and enthusiasm coupled with technical efficiency have achieved very good results, which are reflected in the non-return rate of 74 per cent for 1978.

FARM MANAGEMENT SERVICE LABORATORY

The University of Western Australia, by resolution of the Senate, approved the establishment of the Farm Management Service Laboratory within the University in 1966. The aims of the Laboratory are to develop concepts and services in management accounting, computer planning and animal breeding which are specially suited to the needs of farmers; to make these developments available to farmers; and to use information processed by the Laboratory for teaching and research at the University of Western Australia.

The Laboratory hires its own staff and computer time, and pays its own operating expenses. Fees are charged to cover costs, though initially the Laboratory drew on capital grants made to it by various firms and institutions through the John Thomson Agricultural Economics Centre at the Institute of Agriculture.

Services provided by the Laboratory include computer techniques for planning farm business and solving farm problems. A set of programmes has been developed to enable farmers to breed at least cost for maximum genetic improvement of economically important traits in sheep flocks and pig and beef herds.

FORESTRY

The Prime Indigenous Forests

Although the prime indigenous forests of Western Australia cover only a small percentage of the area of the State, they are of considerable economic importance. This is not only on account of the durability, strength and general-purpose nature of their hardwood timbers, but also because of their occurrence in the water catchment areas in the high-rainfall and closely-populated section of the State. Being easy to regenerate after cutting, they form a natural and effective protection against soil erosion and provide for the increasing public demand for forest recreation. More than 1.8 million hectares have been permanently dedicated as State Forests and approximately 117,517 hectares of forest land are held as Timber Reserves under the Forests Act and the Land Act.

Jarrah (*Eucalyptus marginata*) is the State's principal timber and the prime forest covers almost 1.5 million hectares of the State Forests. Karri (*E. diversicolor*) is next in importance and is distributed over some 140,000 hectares. Wandoo (*E. wandoo*) accounts for a smaller portion of the dedicated area and Tuart (*E. gomphocephala*), another valuable timber, has a restricted area of about 3,000 hectares. Blackbutt (*E. patens*) occurs in patches throughout the jarrah and karri forests and is an important milling timber with properties and uses similar to jarrah. Marri (*E. calophylla*), the most widespread of the commercial eucalypts, has been widely used as a pole timber and, to a limited extent, for building scantling. Of greatest importance, however, is the use of marri as principal raw material for an export wood chip industry based on the Manjimup region.

Other eucalypts and many trees of different genera occur within the prime forest belt but they are not of major economic importance. The main distribution of the prime forests, which are practically confined to the south-western portion of the State, is shown on the accompanying map.

The Inland Forests

Beyond the area of prime forest is an inland sclerophyllous woodland, within which are a number of eucalypts (both tree and mallee form), as well as several types of *Acacia*, such as the wattles and mulgas, tea tree (*Melaleuca spp.*) and casuarinas. Sandalwood (*Santalum spicatum*), indigenous to the wheat belt and semi-arid areas of the State, is still exported to Asian countries but is now obtained only from the semi-arid regions.

While none of the inland woodland can be classed as suitable for sawmilling in the ordinary sense, it forms an important source of timber for mining and agricultural purposes. During recent years, soil conservation in the regions of low rainfall has received increasing attention and the importance of controlling clearing, grazing and firewood cutting has been recognised. The Forests Department maintains a staff to exercise these controls and to advise on tree planting. Work is proceeding with demarcation of areas representing important inland ecotypes for which long-term conservation proposals have been prepared.

Forestry Administration

Scientific forestry was given considerable impetus in Western Australia with the passing of the Forests Act in 1918. Extensive cutting over the previous fifty years had seriously depleted the State's forests and adequate provision had not been made for protection and regeneration. The Act, with significant amendments in 1974 and 1976 confers wide powers on the Forests Department to provide for multiple use management of the forest resource.

The forests are managed within a long range working plan which caters for wood production, water yield, recreation, flora and fauna conservation, amenity and minor product values. Specific areas are accorded a usage priority depending on the natural site potential and the State demand. Trees approved for cutting are marked by trained foresters, who work under the direction of the Conservator of Forests and closely control both the indigenous forest and State pine plantations. The future productivity of the forests is also safeguarded by ensuring that cutting is carried out to protect immature growth and other forest values and to encourage regeneration.

All forest operations are planned to reduce the influence of forest disease. In particular, the introduced jarrah dieback disease (*Phytophthora cinnamomi*) necessitates careful planning and control and special hygiene and quarantine measures are employed.

In future years, if the demand from the increasing population is to be met, it will be necessary to supplement the timber supplies from the natural hardwood forest. For this purpose plantations of exotic pines, principally *Pinus radiata* and *Pinus pinaster*, have been established throughout the south-west.

Only approximately 5,500 hectares of pine were planted in the period from just prior to 1920 up to 1950. These areas were almost entirely experimental and were used to solve the many nutritional and technological problems which were encountered.

Plantings at a higher rate have been undertaken since 1955, bringing the present total State-owned pine plantation area in Western Australia to 43,500 hectares.

Recent plantings have been at approximately 2,700 hectares per annum, but this will have to be lifted to approximately 3,200 hectares per annum if the desired self-sufficiency is to be attained by just after the turn of the century.

Much of the land used for pine planting at present is repurchased farmland and although it is intended to continue with the repurchasing policy it will not be possible to obtain sufficient area in this way. Because of this, parts of a large area, south of Busselton, known as the Donnybrook Sunkland are under consideration as possible planting sites. At the same time plans are also being devised to enhance the conservation and amenity values of the area.

Plantings in the Sunkland, together with those of the Blackwood Valley and others relatively close to Bunbury, will provide the raw material for future, large, integrated pine-utilisation industries such as sawmills, particle board, veneer and plywood plants, and pulp and paper mills.

Because of the hot, dry summers experienced in most of the areas covered by State Forests, there is a considerable risk of damage by fire and intensive precautions are taken by the Department to minimise this danger. Radio-equipped spotter aircraft and key look-out towers provide surveillance of the critical forest areas during prescribed burning periods and during summer. An area of 270,500 hectares was burnt by prescription in 1978 and 85 per cent of this burning was carried out by dropping incendiaries from a low-flying aircraft. Restrictions are placed on all burning operations by farmers and other persons when the fire hazard is high and at such times warnings are issued emphasising the danger. All staff and employees of the Department are available and trained to fill roles in either direct fire fighting or technical support. Fire suppression is planned on the basis of rapid attack with adequate crews for achieving early control.

In association with the system of cutting control, various royalties, licence and permit fees are collected as part of the Consolidated Revenue of the State.

The protection of native flora is also vested with the Forests Department which administers the *Native Flora Protection Act, 1935-1938*. The main provision of the Act is the authority given to the Governor of Western Australia to declare by proclamation that any or all wildflowers or native plants are protected in any specified part of the State.

Penalties are provided under the Act for picking protected wildflowers or plants or for selling or offering them for sale. The Act, however, empowers the Minister for Forests to issue licences to pick protected wildflowers or native plants for scientific or other purposes approved by the Minister.

Prior to 1963, only certain wildflowers and native plants were declared protected in various parts of the State. However, owing to extensive land-clearing operations and the consequent rapid decline in areas of wildflowers, it was decided in 1963 to issue a proclamation protecting all wildflowers and native plants on all Crown lands, State Forests, lands reserved for public purposes, and every road within the South-West and Eucla Land Divisions and on all flora and fauna reserves throughout the rest of the State. Further proclamations have since been issued protecting specific wildflowers and plants throughout Western Australia.

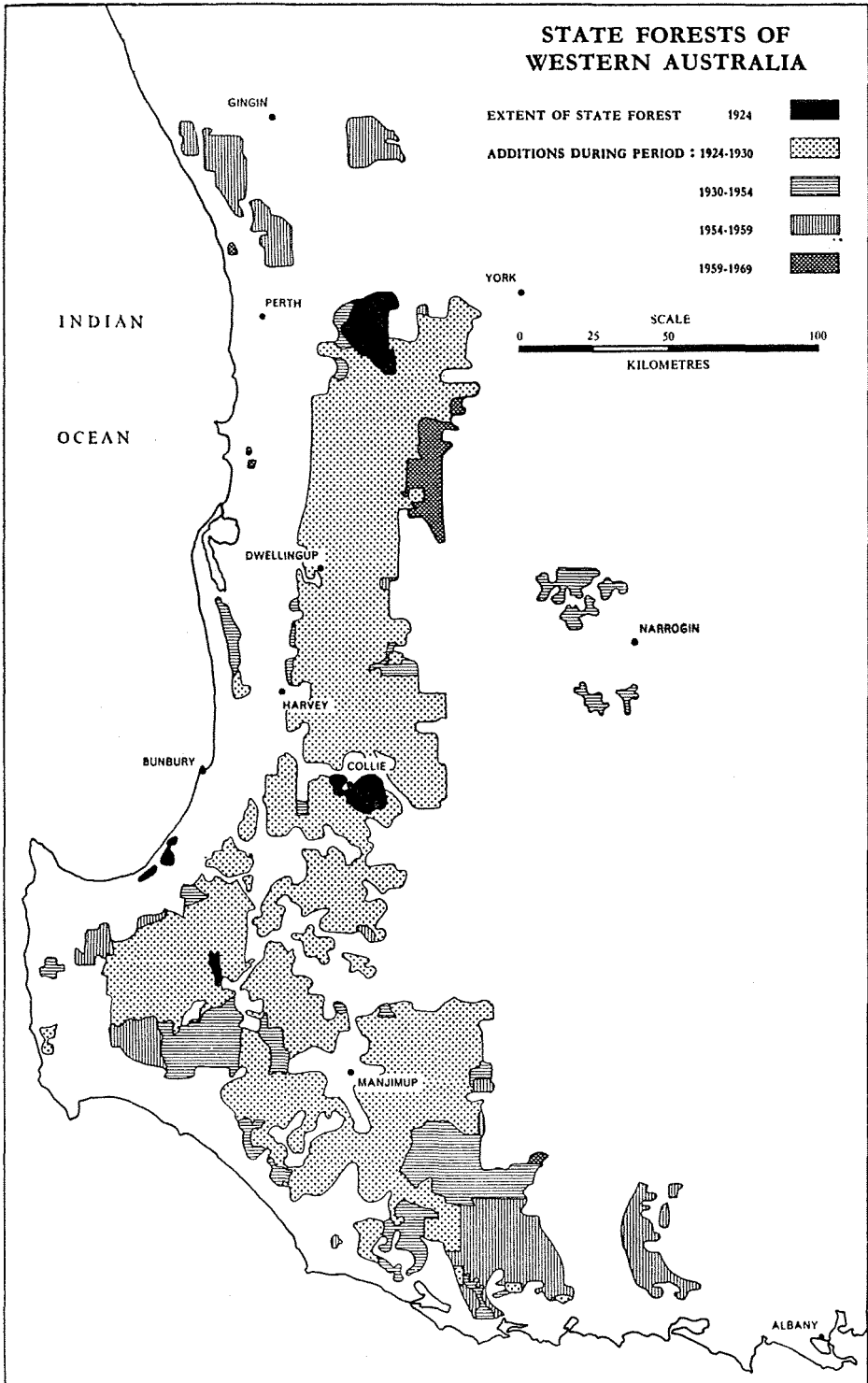
Policing of the Act is carried out by officers of the Forests Department and Honorary Inspectors appointed under the *Native Flora Protection Act, 1935-1938*. Notices prohibiting the picking of wildflowers are supplied by the Forests Department to Shire Councils for erection on road verges.

The *Native Flora Protection Act, 1935-1938* will be repealed by the *Wildlife Conservation Act Amendment Act, 1976* when it comes into operation on a date to be fixed by proclamation. This will place protection of native flora under the control of the Department of Fisheries and Wildlife. Protection of flora in State Forests and Timber Reserves is also provided for in the Forests Act.

Principal Forest Products

Sawn timber from jarrah and karri is the principal form of forest wood production, but there has been a rapid increase in the local use of logs for plywood manufacture and of mill and bush residues for wood chipping during recent years. Karri and locally-grown pine logs, together with imported logs are used for plywood. Small-sized thinnings from pine plantations and manufacturing residues are used for the production of particle board. Hardwood mill wastes and bush residues of marri and karri now form the basis of an important export wood chip industry located in the southern forests.

In addition to these major wood products, the State's forest wealth includes sandalwood for export, firewood for general purposes, and various seeds and plants for propagation both in Australia and abroad. Wandoo and jarrah are used as a source of charcoal for



the high-grade charcoal pig-iron produced at Wundowie. The karri, wandoo, marri and some inland shrub species are important nectar producers for apiarists, who move their bees to various forest sites in following the nectar flow.

The following table gives details of log production and sawn timber production from 1973-74 to 1977-78.

TIMBER PRODUCTION
(Cubic metres)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Sawlog production (a)—					
Hardwood	1,049,978	1,048,925	1,102,491	1,038,126	1,003,569
Softwood	68,740	79,231	45,083	45,352	53,788
Other log production (b)—					
Hardwood	2,976	6,239	98,370	377,021	434,377
Softwood	54,653	49,918	60,484	75,842	73,437
Sawn timber production—					
Hardwood	374,899	368,844	383,010	369,151	347,111
Softwood	26,534	27,086	16,258	16,685	18,669

(a) Includes sawlogs and logs used in the production of plywood veneer.

(b) Includes chipwood.

With increased development and competition for resources the value of State Forests for water production and recreation is becoming increasingly apparent. The current working plan emphasises water production as the major production objective in the northern jarrah forest. Provision to meet the forest recreation needs of the public is also afforded high priority.

Sawmilling and production of timber is also referred to under *Manufacturing* in Part 3 of this Chapter.

In 1977-78 exports of railway sleepers totalled 27,978 cubic metres, of which 4,959 went to other Australian States and 23,019 to overseas markets, mainly the United Kingdom. In the same year 28,466 cubic metres of other rough, sawn or dressed timber were exported to other Australian States, and 2,645 shipped overseas, the principal markets being the Republic of South Africa, the United Kingdom and the United States of America.

FISHERIES (INCLUDING WHALING AND PEARLING)

General Fisheries

Since the end of the second World War, rock lobsters have become the most important item of production of that section of the fishing industry which is concerned with the catching of edible species. Prior to the war there was a small local market for fresh rock lobsters, but in 1941 production was stimulated by canning for the armed forces. Although canning continued until 1950, it had become far less important by 1947 than another development, the freezing of rock lobster tails for export, mainly to the United States of America. The overseas demand, which developed rapidly in post-war years, gave great impetus to the industry and the take increased greatly after 1947 to a record production of 10,733 tonnes in 1977-78 valued at \$50.9 million. This is the highest value of catch ever recorded the previous highest being \$44.1 million in 1976-77. Overseas and interstate exports of rock lobster tails in 1976-77 totalled 4,071 tonnes with an f.o.b. value of \$47.1 million, while the figures for 1977-78 were 3,902 tonnes and \$48.0 million, respectively.

The most important commercial species of rock lobsters in Western Australian waters is the western rock lobster (*Panulirus longipes cygnus*), which is fished off the south-west coast between Murchison River and Bunbury. The principal localities around which rock lobsters are caught are Houtman Abrolhos, Geraldton, Dongara, Beagle Island, Green Head, Jurien Bay, Cervantes, Lancelin, Ledge Point and Fremantle. The industry is pro-

tected from overfishing by such measures as the declaration of closed seasons; the proclamation of fishing zones; the prohibition of the taking of lobsters of less than a prescribed size or of female rock lobsters having berry (*i.e.* eggs) attached; requiring that every rock lobster pot shall have an escape gap of specified dimensions; the granting only in special circumstances of new licences for boats for rock lobster-fishing; and limiting the number of pots that a boat may carry or use at any one time. The catch is processed either on specially equipped freezer boats or at shore stations licensed under the *Fisheries Act, 1905-1975* as processing establishments.

The catches of Australian salmon (*Arripis trutta*), which school in the bays on the south and lower south-western coasts, yield a large proportion of the production of inshore and beach fishing and are used almost exclusively for canning. The remainder of the catch from this type of fishing comprises chiefly tailor (*Pomatomus saltator*), Australian herring (*Arripis georgianus*), western sand whiting (*Sillago schomburgki*), sea mullet (*Mugil cephalus*) and trevally or skipjack (*Usacaranx georgianus*). This is sold mainly as wet fish on the local market, but large quantities of Australian herring are canned and there are some exports, principally of whiting, to other Australian States.

The following table shows the catch and value of fish, crustaceans and molluscs by principal species for Western Australia for the years 1975-76 to 1977-78.

FISH, CRUSTACEANS AND MOLLUSCS: CATCH AND VALUE

Species—Common name	Quantity (a) (tonnes)			Value (b) (\$'000)		
	1975-76	1976-77	1977-78	1975-76	1976-77	1977-78
Fish—						
Cobbler	302	246	273	261.1	263.5	255.8
Emperor	70	60	101	51.1	54.2	117.8
Herring, Australian	639	503	811	89.4	105.7	275.7
Herring, Perth	193	146	311	65.7	67.0	142.9
Jewfish, Westralian	133	155	130	285.1	395.9	359.5
Mackerel, scaly	107	419	524	32.2	129.9	188.8
Morwong	115	33	259	76.0	12.8	94.0
Mullet, sea	684	468	565	328.0	299.7	316.3
Mullet, yellow-eye	692	638	449	242.1	306.0	255.5
Perch, giant	18	25	37	18.6	96.2	128.3
Pilchard	986	632	1,105	216.8	195.9	597.0
Redfish, Bight	84	83	332	82.7	50.5	466.1
Salmon, Australian	1,128	1,173	750	353.0	308.6	269.1
Shark, bronze whaler	82	97	137	45.3	99.0	129.9
Shark, whiskey	95	148	201	52.5	116.0	151.2
Shark, other	258	300	566	138.9	160.3	230.6
Snapper	464	556	511	320.8	436.2	477.8
Tuna, southern bluefin	518	656	1,924	149.9	269.1	866.6
Whiting, King George	35	71	52	53.6	107.7	120.2
Whiting, western sand	157	187	160	100.7	183.5	186.6
Other species	1,018	964	1,699	669.1	633.4	1,097.3
Total, Fish	7,778	7,559	10,897	3,632.8	4,291.1	6,725.0
Crustaceans—						
Crabs	124	161	127	160.1	149.7	134.3
Prawns—						
Banana	439	252	87	667.4	802.8	133.5
Brown tiger	1,859	1,124	1,585	5,242.5	6,098.5	8,321.9
Endeavour	393	259	385	377.9	731.9	1,123.6
Western king	1,691	1,349	1,797	4,565.4	4,510.0	7,307.1
Other species	50	63	86	107.2	190.4	169.7
Total, Prawns	4,432	3,047	3,940	10,960.3	12,333.5	17,055.9
Rock lobsters	8,757	9,297	10,773	29,492.7	44,141.3	50,880.3
Total, Crustaceans	13,313	12,506	14,839	40,613.0	56,624.6	68,070.5
Molluscs—						
Abalone	355	300	248	257.0	662.3	626.1
Scallops	248	510	876	41.5	75.4	235.4
Other molluscs	97	202	297	45.6	104.8	244.6
Total, Molluscs	700	1,012	1,421	344.2	842.4	1,106.2
TOTAL, WESTERN AUSTRALIA	21,790	21,077	27,158	44,590.1	61,758.1	75,901.6

(a) Live (whole) weight.

(b) Gross value paid to fishermen.

The coastal waters northward from the mouth of the Murchison River to North West Cape and Exmouth Gulf are the source of several species of commercial importance. Snapper (*Chrysophrys unicolor*) are caught between the Murchison River and North West Cape during the northern schooling season from May to August. Cod and Spanish mackerel, though in smaller quantities, are also caught between the Murchison River and North West Cape. At Shark Bay a prawn-fishing industry has been successfully established, the catch being processed at Carnarvon. The species caught are the western king prawn (*Penaeus latisulcatus*) and the brown tiger prawn (*P. esculentus*). A prawn fishery has also been established at Exmouth Gulf, the principal species caught being the brown tiger prawn and the western king prawn. Quantities of endeavour prawn (*Metapenaeus endeavouri*) and banana prawn (*P. merguensis*) are also caught. The catch is processed at Learmonth and on freezer boats. As a conservation measure the number of fishing boats licensed to operate has been limited to thirty-five at Shark Bay and twenty-three at Exmouth Gulf. From a catch of 108 tonnes in 1961-62, the State production of prawns has increased significantly and in 1977-78 was 3,940 tonnes. A small fishery, limited to sixteen prawn trawlers, fishes from Nickol Bay. Banana and brown tiger prawns are also caught seasonally at Onslow and in the Admiralty Gulf.

The first fishing grounds to be exploited were the estuaries and rivers and, although they are not now as important as other grounds, they still provide substantial quantities of fish of a fairly wide variety. The principal species are cobbler (*Cnidoglanis macrocephalus*) and yellow-eye mullet (*Aldrichetta forsteri*), most of which are caught in Peel Inlet and the Harvey and Swan estuaries. Other species include garfish (*Hemirhamphus australis*), Perth herring (*Fluviolosa vlaminghi*), sea mullet, tailor, sand whiting, King George whiting (*Sillaginodes punctatus*), and pilchard (*Sardinops neopilchardus*). Crabs (*Portunus pelagicus*), green-tail prawns (*Metapenaeus dalli*) and western king prawns are also caught commercially in these waters. Investigations are being carried out to determine the commercial potential of tuna stocks off the north-west coast.

A summary of the principal statistics of the fishing industry is given in the following tables.

GENERAL FISHERIES

At 31 December—	Boats licensed	Value of boats and equipment	Fishermen licensed (a)	Year	Production			
					Rock lobsters		Other fish (b)	
					Quantity (c)	Value	Quantity (c)	Value
	number	\$'000	number		tonnes	\$'000	tonnes	\$'000
1974 r	1,573	29,969	2,978	1973-74	6,767	17,855	6,983	2,093
1975 r	1,588	37,672	3,241	1974-75	8,306	19,929	7,222	2,549
1976	1,569	39,298	3,055	1975-76	8,757	29,493	7,778	3,633
1977	1,678	53,239	3,616	1976-77	9,297	44,141	7,559	4,291
1978	1,798	77,198	3,863	1977-78	10,773	50,880	10,897	6,725

(a) Comprises employees and working proprietors. weight.

(b) Excludes crustaceans and edible molluscs.

(c) Live (whole)

FISH, CRUSTACEANS AND MOLLUSCS: CATCH BY METHOD, 1977-78 (Tonnes)

Particulars	Haul net and beach seining	Mesh set and gill netting	Hand lining	Trawling	Pot fishing and drop nets	Other methods	Total
Fish	3,056	1,760	718	1,853	678	2,833	10,897
Crabs	4	85	-	2	33	2	127
Prawns	6	15	-	3,918	-	2	3,940
Rock lobsters	-	-	-	1	10,754	18	10,773
Molluscs	4	-	1	918	-	498	1,421
Total	3,069	1,859	719	6,692	11,466	3,353	27,158

Over recent years, research work on the biology of the marron (*Cherax tenuimanus*), conducted by the Department of Fisheries and Wildlife, has demonstrated the feasibility of marron aquaculture in the south-west. In December 1976, regulations were passed under the *Fisheries Act, 1905-1975*, establishing fish-farming guidelines. Limited commercial production of marron for sale became available during 1977. Juvenile marron for stocking farm dams or establishing brood stocks for commercial culture are available from the State's hatchery at Pemberton and from approved registered marron farms.

Brown trout, rainbow trout and English perch have been introduced into the streams of the south-west. These species together with indigenous stocks of freshwater cobbler, marron, barramundi and cherabin, provided fishing sport for 18,154 licensed amateur inland fishermen during 1977-78.

The Western Australian Department of Fisheries and Wildlife, in association with the Commonwealth Scientific and Industrial Research Organization and other State and Commonwealth authorities, is undertaking research on rock lobsters, prawns, whiting, scallops, abalone, tuna and Australian salmon in Western Australian marine waters. These organisations are also involved in research into problems relating to estuaries and freshwaters, including examination of the effects of dredging and damming, the introduction of trout and marron into dams and freshwater streams, the pollution of inland lakes, and the tourist and recreational potential of the estuaries and freshwaters of the State.

Research is carried out chiefly at two centres. The marine research centre at Waterman, about twenty-two kilometres north of Fremantle was built for the Department of Fisheries and Wildlife and incorporates eleven separate laboratories and a large aquarium with circulating water, for experiments and studies on a wide range of species. A second centre, the Commonwealth Scientific and Industrial Research Organization marine research centre at Marmion was opened in 1976.

A special group of Fisheries Department officers is investigating the potential for commercial exploitation of selected species of fish from areas which, to date, have not been commercially exploited. In addition, the Fishing and Allied Industries Committee, with the assistance of a \$40,000 grant from the Reserve Bank of Australia's Rural Credit Development Fund, is studying the potential production available from the 200-nautical-mile fishing zone off Western Australia.

Whaling

Whaling was conducted along the Western Australian coast from the first years of settlement and whale oil and whale bone were among the earliest exports from the Colony. Activity since then has fluctuated widely and has now ceased altogether. The latest large-scale revival of the industry began in 1949, when a station at Point Cloates on the north-west coast was reopened after a lapse of more than twenty years. A treatment plant was established by the Australian Whaling Commission at Babbage Island, near Carnarvon, in 1951 and a plant at Frenchman Bay near Albany was enlarged in the following year. In 1956, the company operating from Point Cloates purchased the Australian Whaling Commission's station at Babbage Island and transferred its activities to that base.

During the 1963 season the two whaling companies operating in Western Australia took only eighty-seven humpback whales, compared with a quota of 550 allocated under the procedure laid down by the International Whaling Commission. At a meeting held in London in July 1963 the Commission decided that more stringent measures should be adopted to prevent further depletion of numbers. Accordingly it imposed a total ban on the taking of humpback whales for an indefinite period in all waters of the Southern Hemisphere. The company operating from Carnarvon, which relied mainly on the taking of humpbacks, ceased whaling activities at its Carnarvon base in August 1963.

From 1963 onwards, the only station operating was at Cheynes Beach, Frenchman Bay, where sperm whaling had been carried on since 1955. This station finally closed in November 1978.

The figures in the following table have been derived from information provided by the Fisheries Branch of the Australian Department of Primary Industry. Since 1963, more whales were taken in 1975 than in any other year but the highest annual production of oil (6,166 tonnes) occurred in 1971.

WHALING

Particulars	1974	1975	1976	1977	1978
Sperm whales taken No.	1,082	1,174	995	624	679
Oil produced (a) ... tonnes	5,554	5,768	5,694	3,872	3,478

(a) 1 tonne = 6 barrels (approximately).

Pearl-shell Fishing and Pearl Culture

Pearl and pearl-shell fishing has been a valuable industry for many years, the main centre being Broome. The pearls obtained were once an important feature of production but the success of the industry now depends almost entirely on the shell produced and the price obtainable for it. Activities were suspended following the outbreak of war with Japan, when valuable luggers and equipment were lost. After the war recovery of the industry was slow because of a shortage of suitable boats and the difficulty in obtaining experienced divers. In 1953 the rate of progress improved when the services of trained Japanese divers again became available. By 1957 production of shell had reached the pre-war level of about 1,000 tonnes but due to the depressed state of the market it fell to 765 tonnes in 1958. Except for a slight recovery in 1960, production declined in each year from 1959 until 1964, when 140 tonnes of shell were raised. Due to the increased demand for shell for pearl culture, production has increased slightly since then.

In 1956 a licence was granted to a company to culture pearls at Kuri Bay in Brecknock Harbour, 209 kilometres north-east of Derby and the initial harvest of pearls was gathered in 1957. Licences have since been issued to other companies and pearl culture farms are now successfully established in Cygnet Bay, Roebuck Bay, Kuri Bay and at Port Smith, south of Broome.

An article by Dr D. A. Hancock, Chief Research Officer of the Western Australian Department of Fisheries and Wildlife, describing the process of pearl culture at Kuri Bay appeared in the *Western Australian Year Book*, No. 13—1974.

Australian Fishing Zone

As a result of the Law of the Sea Convention meetings held over a number of years, Australia, with many other countries, is to adopt a 200-nautical-mile fishing zone. A number of joint-venture feasibility studies and test-fishing programmes have commenced in anticipation of the Australian Fishing Zone legislation during 1979.

HUNTING

Although hunting has been carried on from the first years of settlement, it has never been an important industry. In 1977-78 the recorded gross value was \$2,675,000 but reliable and complete information is difficult to obtain and this amount could therefore be deficient.

Kangaroos have been destroyed in great numbers from the earliest days, the principal reason for the organised destruction being the damage done to pastures and fencing. In 1971 the kangaroo management programme under the control of the Western Australian Department of Fisheries and Wildlife came into effect. This programme, based on a reserve/sanctuary system, limited shooting seasons and licensing of kangaroo shooters is designed to ensure the long-term conservation of the kangaroo while recognising the right of the landholder to protect his property. The export of kangaroo products was banned by the Australian Government in 1973 but some skins are used in local factories while kangaroo meat is used as pet food.

The earliest recorded export of rabbit skins relates to the year 1900 and the meat and skins of these animals have been a source of income to trappers ever since. In an attempt to reduce the damage done to crops and pastures, various methods of control have been adopted and since the second World War an intensive campaign, using myxomatosis virus, poisons and warren ripping, has met with considerable success. As a result, the quantity of rabbit meat produced and the number of skins exported and treated locally have declined greatly and are now insignificant.

Wild goats are slaughtered and the meat is exported.

The skins of animals other than marsupials and rabbits, together with exports of Western Australian fauna, are taken into account in the value of the hunting industry, but these are not significant.

Chapter VIII—continued

Part 2—Mining

DESCRIPTION OF MINING IN WESTERN AUSTRALIA

Although the discovery of gold was of particular significance in the early development of the Western Australian economy, renewed importance of the mining industry in the State began mainly with the considerable expansion associated with iron ore and other minerals which occurred in the late 1960s. This recent growth in importance of the industry is demonstrated by the fact that in 1976-77, value added (see definition at the beginning of this Chapter) by mining establishments in Western Australia was \$908 million, or 375 per cent more than in 1968-69 when value added data first became available. Value added by mining establishments in Western Australia in 1976-77 was \$767 per head of mean population, compared with the national average of \$255.

The map which follows shows the location of the major operating mining projects in Western Australia at the end of December 1978. The text below describes the development of the mining industry in the State including references to current projects depicted on the map.

The first major developments followed the discovery of *gold* in the Kimberley region of the far north of the State in 1885, although gold had been found in various places previously and other minerals had also been discovered, including copper and lead in the Northampton district, north of Geraldton, and coal at the Irwin River, south of the same town. The Kimberley gold find was followed by extensive prospecting activity resulting in gold strikes between 1887 and 1891 in the Yilgarn, Pilbara, Ashburton and Murchison districts. Rich discoveries in 1892 at Coolgardie and in 1893 at nearby Kalgoorlie were followed by development of the famous 'Golden Mile' between Kalgoorlie and Boulder which became one of the major gold producing areas of the world and, until recently, was the principal source of gold both in the State and in Australia.

Although gold production declined after the exhaustion of surface deposits and the peak production of 64,222,000 grams in 1903, gold mining remained as the major component of the Western Australian mining industry for many years. Since 1903, production of gold has fluctuated markedly. In recent years, production has declined and the 1976-77 production of 7,619,000 grams was a small decrease from the previous year. Gold mining has decreased considerably on the 'Golden Mile', and at the end of 1978 only one major gold mine was operating in that area. However, production has increased considerably in the Norseman area and a number of new projects have recently commenced mining gold. Among these is the Telfer project in the Paterson Ranges which, by the end of 1978, had become the largest gold mine in Australia.

The more recent history of mineral development in Western Australia has seen the importance of gold surpassed by the opening up of major iron ore deposits in the north-west of the State and the introduction of important new industries based on nickel, petroleum, bauxite and mineral sands.

Iron ore in the form of hematite has been mined at Cockatoo Island, in Yampi Sound in the north of the State, since 1951 and limonitic ore was mined at Wundowie in the Darling Range east of Perth for some years from 1948. It was not until the early 1960s, however, following the Australian Government's decision to modify its embargo on overseas exports of iron ore, which had been in force since 1938, that widespread interest in developing the State's iron ore resources occurred. The ensuing activity has resulted in iron ore becoming the major Western Australian mineral with production of 88,999,000 tonnes containing 56,361,000 tonnes of iron, valued at \$698 million in 1976-77. This represents a 3 per cent increase over the previous year's production.

The State's measured, indicated and inferred iron ore reserves with an iron content of more than 55 per cent were assessed by the State Department of Mines as 33,000 million tonnes at May 1978. The deposits occur mainly in the Pilbara, in the north-west of the State, where major production commenced in 1966 and expanded each year up to 1975-76, when a fall in production was recorded. All of the production from this area is exported as ore, pellets or fines, mainly to Japan. Ore from Mount Goldsworthy and Shay Gap, east of Port Hedland, is railed to a deepwater port at Finucane Island, just off Port Hedland. Output from Mount Tom Price and Paraburdoo, in the Hamersley Range area south-west of Port Hedland, is railed to Dampier where some of it is pelletised. From Mount Whaleback in the Ophthalmia Range near Newman, ore is railed to Port Hedland. Limonitic ore from Pannawonica in the Robe River valley is railed to Cape Lambert where it is shipped as pellets or fines.

Iron ore is also mined at Koolyanobbing, some 450 kilometres east of Perth, where production commenced in 1950. This ore is used mainly for pig-iron production at Kwinana and Wundowie. The first shipment of ore from the deposits on Koolan Island, adjacent to Cockatoo Island in Yampi Sound, was made in January 1965.

At the end of 1978, a number of new mines were in the planning stage, as were expansion programmes for some of the existing mines. In addition, concentrating plants are under construction at Mount Whaleback and Tom Price, to treat low grade ores which are currently unsaleable.

Nickel was discovered in 1966 at Kambalda to the south of Kalgoorlie and since then there has been rapid expansion in the nickel industry accompanied by a very high level of exploration activity. At the end of 1978 mines were operating at Kambalda, Spargoville and Nepean, which are all in an area within 100 kilometres of Kalgoorlie, while production had just commenced at a new mining operation at Agnew, some 350 kilometres north of Kalgoorlie. Weakness in the world market for nickel led to some reduction in production in the second half of 1977. Nickel concentrates are exported from Esperance or processed in a smelter at Hampton, near Kalgoorlie, and a refinery at Kwinana for subsequent export in processed form. In 1976-77 production of concentrates was 450,224 tonnes, containing 54,578 tonnes of nickel.

In May 1966 Barrow Island, about 100 kilometres north-east of Onslow, was declared a commercial oilfield. The first shipment of *crude oil* from this field was made on 25 April 1967. Production in 1976-77 was 11,569,000 barrels valued at almost \$30.0 million. In July 1970 a *natural gas* field at Dongara, about 100 kilometres south-east of Geraldton, was declared commercially viable and subsequently a 410-kilometre underground pipeline was constructed to supply gas to domestic and industrial users in Perth and heavy industry in Kwinana and Pinjarra. This supply commenced on 1 December 1971. Production of natural gas in 1976-77 (including a small amount produced at Barrow Island) was 862 million cubic metres.

Bauxite deposits at Jarrahdale in the Darling Range near Perth were first mined in 1959, and in 1963 the mine began supplying ore to an alumina refinery at Kwinana. Mining commenced further south in the Darling Range in 1972 to supply a new refinery near Pinjarra which began operations in April 1972. Bauxite production from both areas amounted to 11,028,000 tonnes in 1976-77. Bauxite/alumina projects are currently being planned for establishment in the southern region of the Darling Range.

Ilmenite, leucoxene, rutile, zircon, monazite and xenotime concentrates are being produced from *mineral sands* mined near Capel and treated there and nearby at Bunbury. The ilmenite content is of particular importance because it is virtually chrome-free and little difficulty is experienced in producing a concentrate of high quality. Production of ilmenite concentrates commenced in 1956, when recorded production was 3,346 tonnes. Since 1974, various operators have commenced mining and treatment of mineral sands in the Eneabba-Jurien Bay area north of Perth. However, operations at Jurien Bay ceased during 1977. Some treatment is also carried out at Geraldton. Rutile and zircon are the major products from the Eneabba area, whereas in the Capel area, ilmenite accounts for most of the value of mineral sands production. In 1976-77, ilmenite produc-

tion was 929,276 tonnes, valued at \$17.4 million. Zircon production was 166,518 tonnes, valued at \$14.9 million, while the total value of mineral sands produced was \$55.2 million.

The only commercial production of *coal* in Western Australia occurs at Collie in the south-west of the State. The coal is sub-bituminous and there are substantial reserves in the area which have been deep-mined since the 1890s. Surface mining was introduced in 1943, and in 1976-77 production from surface and underground mines totalled 2,339,000 tonnes valued at \$21.9 million. Recent large increases in the price of imported petroleum have resulted in a growth in the demand for coal and coal output has increased considerably since 1974, after having been fairly stable at around one million tonnes per annum for a number of years.

In 1968 large-scale production of *common salt* (sodium chloride) commenced at Lake Lefroy near Kambalda and subsequently production of salt by the solar evaporation of sea water began at Port Hedland, Lake MacLeod near Carnarvon, Useless Loop in Shark Bay and at Dampier. Most of the salt produced is exported. Production in 1976-77 was 4,031,000 tonnes valued at \$28.4 million. *Gypsum* is also extracted in certain areas associated with salt production.

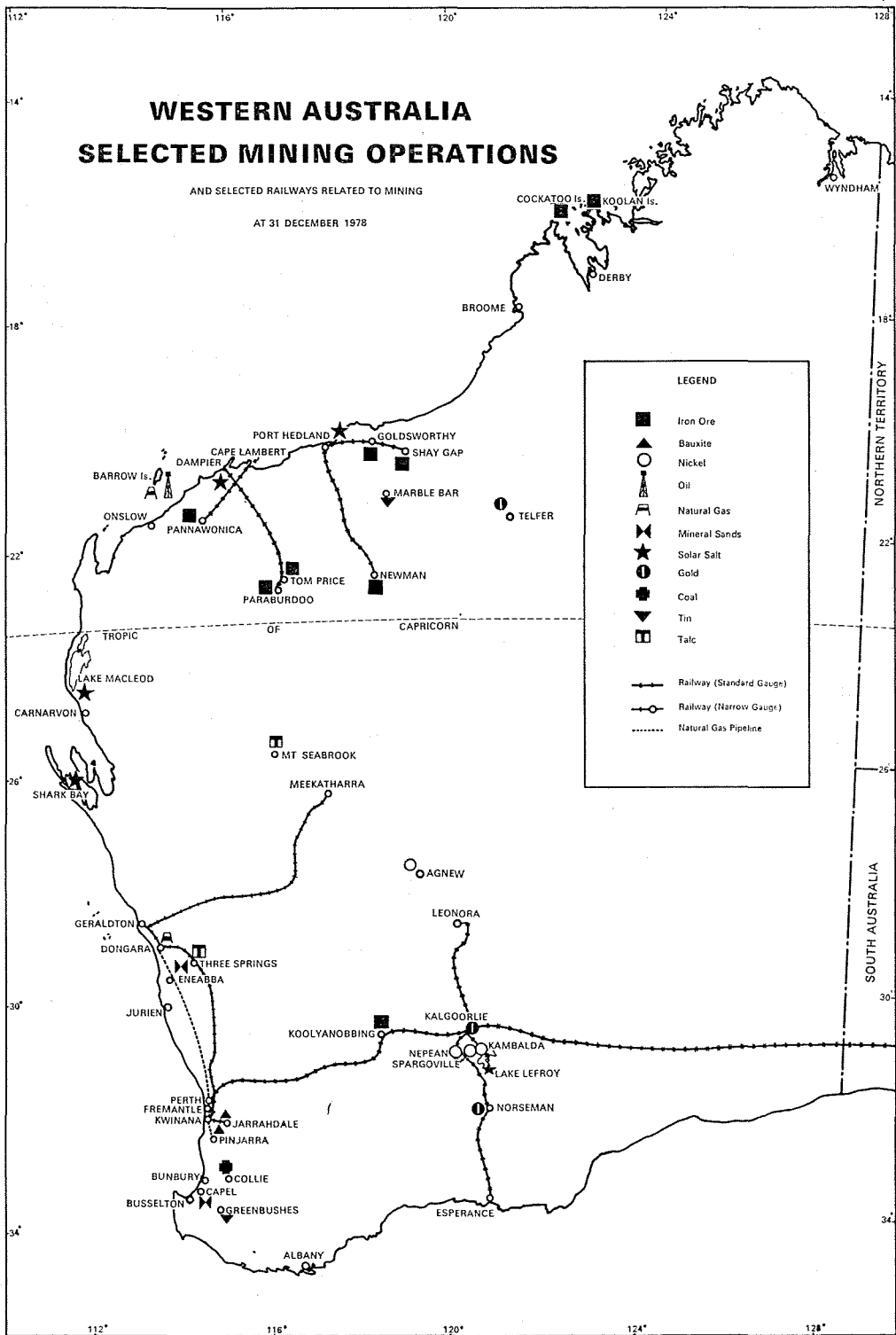
Among other minerals produced in Western Australia are *tin* and *tantalite* which were discovered at Greenbushes, in the south-west, in 1888. Production of 866 tonnes of tin concentrate valued at \$4.31 million was recorded in 1976-77. *Talc* is produced from deposits at Three Springs, south-east of Geraldton, and at Mount Seabrook near the upper Murchison River. Production in 1976-77 totalled 66,945 tonnes. *Copper*, *lead* and *manganese* have been mined in significant quantities in the past but activity has declined in recent years, although significant amounts of copper, together with cobalt and precious metals, are contained in nickel concentrates produced. *Silver* in Western Australia is produced only as a by-product of other minerals, mainly gold.

The quarrying of *construction materials* in Western Australia is an important part of the mining industry. However, materials such as sand and gravel, which are in very plentiful supply, are not included in mining statistics because of difficulties in compiling reliable data. In 1976-77 the value of recorded production of building and monumental stone (mainly limestone, granite and sandstone), crushed and broken stone (used mainly for roads, concrete and rail ballast) and crushed and broken limestone, was \$18.9 million. A further 1,169,000 tonnes of *limestone* valued at \$4.46 million was produced for other purposes, including agriculture, cement making, glass making, lime burning and iron ore pelletising.

MINING STATISTICS

In the Australian Standard Industrial Classification, 'mining' is used in the broad sense to include the extraction of minerals occurring naturally as solids such as coal and ores, liquids such as crude petroleum, or gases such as natural gas, by such processes as underground mining, open-cut extraction, quarrying, operating of wells or evaporation pans, dredging or recovering from ore dumps or tailings. Establishments engaged mainly in dressing or beneficiating ores or other minerals by crushing, milling, screening, washing, flotation, other (including chemical) beneficiation processes and natural gas absorption and purifying are included. Excluded are establishments engaged mainly in the refining or smelting of ores (other than the preliminary smelting of gold), iron ore pelletising and in the manufacture of such products of mineral origin as coke, cement or fertilisers.

Mining statistics presented in the following tables are derived from the integrated economic censuses of mining described in the introduction to this Chapter. Definitions of the items in these tables are also given in the introduction. It should be noted that the tables relate only to mining establishments (*i.e.* establishments at which mine development has commenced) and exclude mining leases at which only exploration is being carried out. The statistics, however, cover all exploration which continues on leases on which development or production has commenced. Separate details of exploration expenditure both on and off production leases are given in tables at the end of this Part.



The year-by-year comparisons in these tables indicate a slow-down in the growth of the mining industry in 1975-76 and 1976-77, compared to that of previous years. Employment increased marginally in 1976-77 after a decrease in the previous year, while the increases in the other indicators were generally lower than in most other recent years.

**MINING ESTABLISHMENTS—SUMMARY OF OPERATIONS BY INDUSTRY
SUB-DIVISION: 1976-77**

ASIC code (a)	Industry sub-division Description	Number of establishments operating at 30 June	Persons employed at 30 June			Wages and salaries
			Males	Females	Total	
11	Metallic minerals	65	11,591	1,163	12,754	\$'000 173,066
12-13	Coal and crude petroleum	5	1,008	16	1,024	12,861
14	Construction materials	31	415	74	489	5,098
15	Other non-metallic minerals	33	594	75	669	7,988
	Total mining	134	13,608	1,328	14,936	199,013

ASIC code (a)	Industry sub-division Description	Turnover	Stocks		Purchases, transfers in and selected expenses	Value added	Fixed capital expenditure
			Opening	Closing			
11	Metallic minerals	\$'000 1,254,044	\$'000 110,062	\$'000 127,746	\$'000 468,227	\$'000 803,500	\$'000 124,012
12-13	Coal and crude petroleum	70,143	3,008	4,258	10,196	61,197	2,713
14	Construction materials	23,267	1,919	2,037	10,379	13,006	1,384
15	Other non-metallic minerals	39,821	5,529	6,448	10,929	29,811	3,871
	Total mining	1,387,274	120,519	140,489	499,731	907,513	131,981

(a) Australian Standard Industrial Classification.

MINING ESTABLISHMENTS—SUMMARY OF OPERATIONS

Item	Unit	1972-73	1973-74	1974-75	1975-76	1976-77
Number of establishments operating at 30 June	No.	131	138	134	129	134
Persons employed at 30 June—						
Males	No.	11,221	12,102	13,630	13,302	13,608
Females	No.	780	943	1,301	1,402	1,328
Total	No.	12,001	13,045	14,931	14,704	14,936
Wages and salaries	\$'000	71,946	96,255	136,802	163,734	199,013
Turnover	\$'000	653,049	736,124	1,010,661	1,167,698	1,387,274
Closing stocks	\$'000	57,461	65,785	93,799	124,667	140,489
Purchases, transfers in and selected expenses	\$'000	200,942	250,441	365,968	397,849	499,731
Value added	\$'000	449,553	493,992	673,282	800,976	907,513
Fixed capital expenditure	\$'000	87,785	96,862	151,872	161,770	131,981

**MINING ESTABLISHMENTS—PERSONS EMPLOYED AND VALUE ADDED BY INDUSTRY
SUB-DIVISION: WESTERN AUSTRALIA AND AUSTRALIA, 1976-77**

ASIC code (a)	Sub-division Description	Persons employed				Value added			
		Western Australia		Australia		Western Australia		Australia	
		No.	Per cent	No.	Per cent	\$'000	Per cent	\$'000	Per cent
11	Metallic minerals	12,754	85.39	32,429	47.77	803,500	88.54	1,563,838	44.07
12-13	Coal and crude petroleum	1,024	6.86	26,632	39.23	61,197	6.74	1,733,497	48.86
14	Construction materials	489	3.27	6,008	8.85	13,006	1.43	170,533	4.81
15	Other non-metallic minerals	669	4.48	2,819	4.15	29,811	3.29	80,289	2.26
	Total mining	14,936	100.00	67,888	100.00	907,513	100.00	3,548,157	100.00

(a) Australian Standard Industrial Classification.

The relative importance of metallic mineral mining in Western Australia compared with Australia is clearly illustrated in the table above. This table also reflects the greater importance of coal and petroleum mining in some other States compared with Western Australia. The relatively low contribution by construction materials in Western Australia, by comparison with Australia, is partly the result of sand and gravel not being included in the Western Australian figures.

**MINING ESTABLISHMENTS—SUMMARY OF OPERATIONS
WESTERN AUSTRALIA AND AUSTRALIA**

Particulars	Year	Number of establishments operating at 30 June	Persons employed at 30 June	Wages and salaries	Turnover	Value added
Western Australia	1972-73	131	12,001	\$'000 71,946	\$'000 653,049	\$'000 449,553
	1973-74	138	13,045	96,255	736,124	493,992
	1974-75	134	14,931	136,802	1,010,661	673,282
	1975-76	129	14,704	163,734	1,167,698	800,976
	1976-77	134	14,936	199,013	1,387,274	907,513
Australia	1972-73	r 1,323	63,060	402,894	2,265,129	1,597,301
	1973-74	r 1,305	64,056	481,006	2,798,062	1,996,096
	1974-75	r 1,306	69,122	675,442	3,725,629	r 2,669,069
	1975-76	r 1,271	67,609	782,522	r 4,257,029	r 3,049,735
	1976-77	1,277	67,888	927,563	5,062,142	3,548,157
Western Australia as a percentage of Australia	1972-73	per cent r 9.90	per cent 19.03	per cent 17.86	per cent 28.83	per cent 28.14
	1973-74	r 10.57	20.36	20.01	26.31	24.75
	1974-75	r 10.26	21.60	20.25	27.13	r 25.23
	1975-76	r 10.15	21.75	20.92	r 27.42	r 26.26
	1976-77	10.49	22.00	21.46	27.40	25.58

MINERAL PRODUCTION—QUANTITY AND EX-MINE VALUE

Mineral	Unit	1974-75		1975-76		1976-77	
		Quantity	Value	Quantity	Value	Quantity	Value
Bauxite	'000 tonnes	7,115	\$'000 n.p.	8,743	\$'000 n.p.	11,028	\$'000 n.p.
Clays—all kinds (a)	"	1,462	1,703	1,781	2,028	2,016	2,308
Coal	"	1,879	12,511	2,157	17,613	2,339	21,876
Construction materials—							
Building and monumental stone	"	94	465	82	365	27	181
Crushed and broken stone	"	4,191	13,626	3,807	16,476	3,759	16,959
Crushed and broken limestone	"	1,205	1,181	1,594	2,015	1,329	1,719
Crude oil (b)	'000 barrels	13,177	26,486	12,413	29,363	11,569	29,986
Felspar	tonne	469	13	975	25	470	14
Gold bullion	'000 grams	8,298	29,794	10,091	27,156	9,955	27,689
Gypsum	tonne	124,471	433	79,835	237	117,369	420
Iron ore	'000 tonnes	90,659	552,803	86,092	619,802	88,999	698,159
Limestone for industrial purposes (c)	"	1,272	3,576	1,236	3,482	1,169	4,464
Mineral sands—							
Ilmenite	tonne	873,393	14,185	866,203	15,360	929,276	17,414
Leucoxene	"	17,559	2,079	14,821	2,078	8,818	1,318
Monazite	"	2,526	387	2,984	505	5,368	937
Rutile	"	25,118	3,474	65,570	13,391	99,632	20,647
Xenotime	"	16	12	14	9	13	9
Zircon	"	87,641	10,799	111,782	15,692	166,518	14,852
Natural gas	'000 cubic metres	821,669	n.p.	836,719	n.p.	861,908	n.p.
Nickel concentrate	tonne	405,380	n.p.	471,662	n.p.	450,224	n.p.
Ochre	"	—	—	874	15	166	3
Salt	'000 tonnes	4,143	17,290	4,512	24,396	4,031	28,411
Semi-precious stones	"	18	18	..	9	..	25
Talc	tonne	51,976	n.p.	62,730	n.p.	66,945	n.p.
Tantalite concentrate	kilogram	178,700	942	119,970	1,256	104,990	1,127
Tin concentrate	tonne	982	3,416	940	3,178	866	4,314
Other (value only) (d)	"	..	165,245	..	201,221	..	244,928
Total value	..	..	860,442	..	995,672	..	1,137,757

(a) Includes bentonite. (b) Value based on price per barrel published by Ampol Petroleum Limited. (c) Comprises limestone for agriculture, cement making, flux, glass making, lime burning and iron ore pelletising. (d) Includes those minerals for which values are not available for publication.

The first table above sets out a five-year summary of Western Australian mining, with comparative data for Australia. These comparisons indicate that Western Australian mining establishments are generally larger than those in the rest of Australia, and output per worker is generally higher, due mainly to the comparative magnitude and capital-intensive nature of the mining projects in Western Australia.

The second table above which sets out details of quantity and value of mineral production, provides a further illustration of the importance of iron ore in Western Australia. Iron ore surpassed gold as the mineral with the highest annual value of production in 1966 and, since 1967, has accounted for more than half the annual value of minerals produced in this State. Other noteworthy features of this table are the significant increase in production of Bauxite resulting from continued expansion of mining operations in the Dwellingup region, and the large increases in the production of rutile and zircon concentrates resulting from increased production from the recently opened Jurien-Eneabba field.

The table that follows sets out the contents of selected metallic minerals produced. Variations in the contents data shown in this table are, by and large, reflections of variations in production of the parent mineral.

**MINERAL PRODUCTION
CONTENTS OF SELECTED METALLIC MINERALS**

Mineral in which contained	1974-75	1975-76	1976-77
COPPER (tonnes)			
Copper ore	—	—	1,673
Nickel concentrate	4,449	4,585	4,438
Total, Copper	4,449	4,585	6,111
GOLD ('000 grams)			
Gold bullion	6,257	7,606	7,542
Nickel concentrate	48	38	77
Total, Gold	6,305	7,644	7,619
IRON ('000 tonnes)			
Iron ore	57,089	53,940	56,361
Total, Iron	57,089	53,940	56,361
MONAZITE (a) (tonnes)			
Monazite concentrate	2,351	2,775	4,993
Total, Monazite (a)	2,351	2,775	4,993
NICKEL (tonnes)			
Nickel concentrate	49,106	57,307	54,578
Total, Nickel	49,106	57,307	54,578
SILVER ('000 grams)			
Gold bullion	1,474	1,815	1,647
Nickel concentrate	255	215	294
Total, Silver	1,729	2,030	1,941

For footnote, see end of table.

The previous table gives details of foreign control of Western Australian and Australian mining establishments. The table should be read in conjunction with the explanatory notes at the beginning of this Chapter. Readers requiring more detailed information are referred to the publication *Foreign Ownership and Control of the Mining Industry* (Catalogue No. 5317.0) issued by the Australian Statistician, Canberra.

EXPLORATION FOR MINERALS

Mineral Exploration (other than for Petroleum)

The data in this section have been derived from the annual Mineral Exploration Census (excluding Petroleum Exploration) which is carried out by the Australian Bureau of Statistics. The first census was conducted in respect of the year 1965 and for further information and statistics in greater detail, the reader is referred to the publication *Mineral Exploration* (Catalogue No. 8407.0) issued by the Australian Statistician, Canberra.

For the purposes of the census, mineral exploration consists of the search for and appraisal of new ore occurrences and known deposits of minerals (including extensions to deposits being worked) by geological, geophysical, geochemical, and other methods, including drilling. Exploration for water is excluded. The construction of shafts and adits is included if primarily for exploration purposes. Excluded are mine development activities (which include the construction of drives, shafts, winzes, etc.) in underground mines and the preparation of quarrying sites for open-cut extraction (including overburden removal) carried out primarily for the purpose of commencing or extending mining and quarrying operations.

Mineral exploration, which covers a major portion of the State, is concerned chiefly with exploration for iron, nickel, copper, gold, lead, tin, bauxite, mineral sands, uranium, diamonds and coal, apart from petroleum (see following section).

In the next two tables, details are given of private and State Government exploration in Western Australia over the period 1972-73 to 1976-77.

**MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM)
EXPENDITURE AND DRILLING: 1976-77**

Particulars	Private exploration			State Government exploration (a)	Total (incl. State Government)
	On production leases	On other areas	Total		
	\$'000	\$'000	\$'000	\$'000	\$'000
Exploration expenditure—					
Wages and salaries	1,939	13,020	14,959	680	15,639
Stores, materials and fuels purchased	802	5,475	6,277	38	6,315
Payments to contractors, consultants, etc.	7,191	15,154	22,346	—	22,346
Other current expenses	1,507	15,117	16,624	—	16,624
Net capital expenditure	1,512	2,851	4,363	14	4,377
Total	12,952	51,617	64,569	732	65,301
Drilling expenditure (b)—					
On core drilling	3,073	7,786	10,859	—	10,859
On non-core drilling	1,756	4,386	6,143	—	6,143
Total	4,829	12,173	17,002	—	17,002
	'000 metres	'000 metres	'000 metres	'000 metres	'000 metres
Drilling operations—					
Core drilling	42	126	168	—	168
Non-core drilling	136	618	754	—	754
Total	178	744	922	—	922

(a) Exploration by the Western Australian Department of Mines.

(b) Included in 'Exploration expenditure' above.

From 1965, expenditure on private exploration in Western Australia rose from \$3,948,000 to a peak of \$86,082,000 in 1970-71. This peak came as the culmination of a period of activity which was sparked by the discovery of nickel at Kambalda in 1966 and saw a significant increase in expenditure on mineral exploration. From a value of just over

\$10 million in 1967, the figure rose by over 700 per cent to more than \$86 million in a matter of three and one-half years. Since then, however, the level of private expenditure has generally declined, although total private exploration expenditure of \$64,569,000 in 1976-77 represented an increase compared to 1975-76. Expenditure on drilling fluctuated similarly, declining from \$21,507,000 in 1970-71 to \$14,238,000 in 1975-76, then increasing to \$17,002,000 in 1976-77. The amount of drilling done has fallen more markedly than expenditure, having declined from 1,955,000 metres in 1970-71 to 922,000 metres in 1976-77.

These fluctuations in expenditure and depth drilled are clearly evident in the graph which follows.

MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM) (a)
EXPENDITURE AND DRILLING

Particulars	Unit	1972-73	1973-74	1974-75	1975-76	1976-77
Exploration expenditure—						
Wages and salaries	\$'000	13,933	14,422	15,515	13,789	15,639
Stores, materials and fuels purchased	\$'000	5,980	7,748	6,473	5,656	6,315
Payments to contractors, consultants, etc.	\$'000	13,339	12,732	19,991	16,763	22,346
Other current expenses	\$'000	15,543	14,845	12,442	12,400	16,624
Net capital expenditure	\$'000	2,699	4,414	3,296	2,180	4,377
Total	\$'000	51,496	54,161	57,718	50,788	65,301
Drilling expenditure (b)—						
On core drilling	\$'000	(b)	7,110	8,307	8,022	10,859
On non-core drilling	\$'000	(b)	6,092	5,812	6,216	6,143
Total	\$'000	12,407	13,202	14,119	14,238	17,002
Drilling operations—						
Core drilling	'000 metres	269	262	253	196	168
Non-core drilling	'000 metres	1,124	993	1,012	681	754
Total	'000 metres	1,393	1,255	1,266	877	922

(a) Includes exploration by the Western Australian Department of Mines.

(b) Included in 'Exploration expenditure' above.

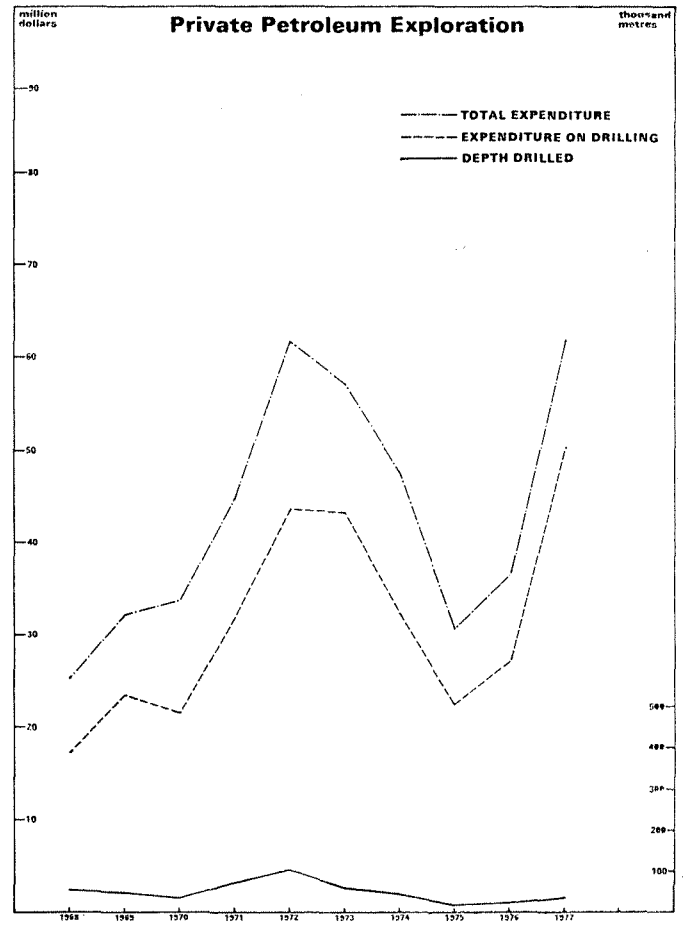
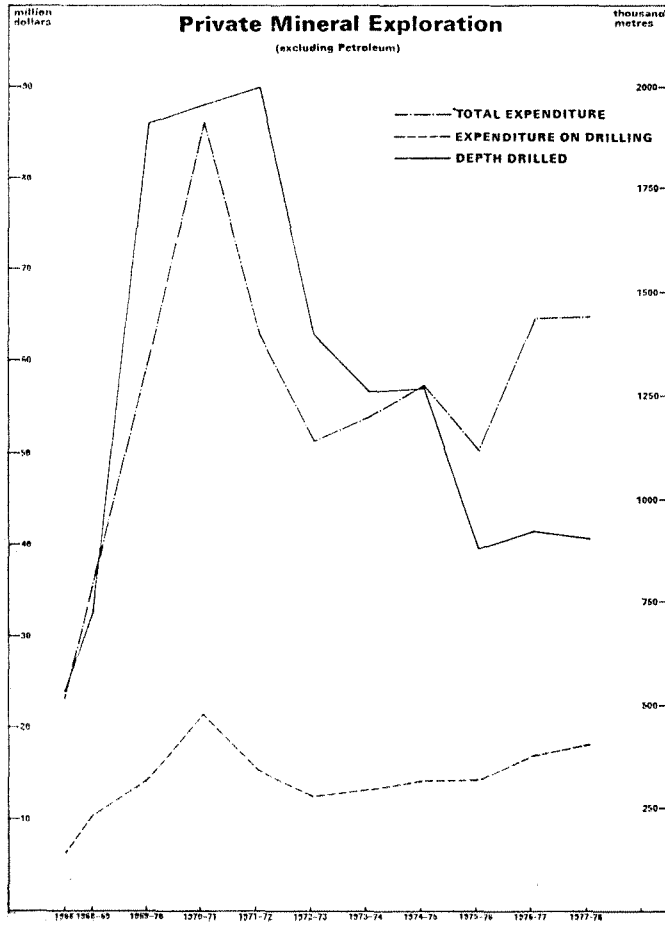
The two tables that follow show details of private exploration classified by the type of mineral sought and by the size of the enterprise group involved in the exploration. From the first table it can be seen that nearly all mineral exploration activity (apart from petroleum exploration) was directed to seeking metallic minerals.

The most notable feature of the second table is the predominance of the larger enterprise groups in mineral exploration. Expenditure on exploration by enterprise groups spending in excess of 1 million dollars was well over half of total expenditure in 1976-77, although such groups accounted for only 6.5 per cent of the number of explorers.

PRIVATE MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM)
EXPENDITURE BY TYPE OF MINERAL SOUGHT
((\$'000))

Type of mineral sought	Total private exploration			On production leases	On other leases	Total private exploration
	1973-74	1974-75	1975-76	1976-77		
Mineral sands	3,695	2,149	2,496	583	1,048	1,631
Uranium	3,094	2,502	2,291	..	5,191	5,191
Iron ore	45,527	50,210	42,032	12,257	39,409	13,942
Other metallic minerals						
Coal	646	733	394	112	5,969	385
Construction materials	751	1,548	2,910			
Other non-metallic minerals						5,696
Total	53,713	57,143	50,123	12,952	51,617	64,569

Private Mineral and Petroleum Exploration



**PRIVATE MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM)
ENTERPRISE GROUPS CLASSIFIED BY SIZE OF EXPENDITURE**

Size of total expenditure of enterprise groups (a) on mineral exploration	Expenditure						Enterprise groups	
	On production leases		On other areas		Total exploration		No.	Per cent
	\$'000	Per cent	\$'000	Per cent	\$'000	Per cent		
1975-76								
\$10,000 and under	3	—	216	0.4	219	0.4	78	39.8
\$10,001 to \$25,000	22	—	441	0.9	463	0.9	26	13.3
\$25,001 to \$50,000	88	0.2	553	1.1	642	1.3	19	9.7
\$50,001 to \$100,000	82	0.2	1,028	2.1	1,110	2.2	15	7.7
\$100,001 to \$250,000	107	0.2	3,907	7.8	4,014	8.0	25	12.8
\$250,001 to \$500,000	350	0.7	2,786	5.6	3,136	6.3	9	4.6
\$500,001 to \$1,000,000	97	0.2	7,239	14.4	7,337	14.6	11	5.6
\$1,000,001 to \$2,500,000	—	—	10,603	21.2	10,603	21.2	8	4.1
Over \$2,500,000	6,847	13.7	15,753	31.4	22,600	45.1	5	2.6
Total 1975-76	7,598	15.2	42,525	84.8	50,123	100.0	196	100.0
1976-77								
\$10,000 and under	7	—	194	0.3	201	0.3	69	37.1
\$10,001 to \$25,000	35	0.1	392	0.6	427	0.7	27	14.5
\$25,001 to \$50,000	27	—	642	1.0	670	1.0	18	9.7
\$50,001 to \$100,000	144	0.2	493	0.8	637	1.0	8	4.3
\$100,001 to \$250,000	299	0.5	4,047	6.3	4,346	6.7	26	14.0
\$250,001 to \$500,000	649	1.0	5,100	7.9	5,749	8.9	15	8.1
\$500,001 to \$1,000,000	114	0.2	7,558	11.7	7,672	11.9	11	5.9
\$1,000,001 to \$2,500,000	—	—	5,214	8.1	5,214	8.1	4	2.2
Over \$2,500,000	11,677	18.1	27,977	43.3	39,654	61.4	8	4.3
Total 1976-77	12,952	20.1	51,617	79.9	64,569	100.0	186	100.0

(a) For the purposes of this table, the total exploration activities of an enterprise group (i.e. a group of companies which are related in terms of the Companies Act) are considered to relate to a single unit, irrespective of the number of returns completed or the number of types of activity in which it engaged.

The table that follows gives details of foreign control of mineral exploration (other than for petroleum) in Western Australia and Australia. The table should be read in conjunction with the explanatory notes at the beginning of this Chapter. Readers requiring more detailed information are referred to the publication *Foreign Control in Mineral Exploration* (Catalogue No. 5323.0), issued by the Australian Statistician, Canberra.

MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM) FOREIGN CONTROL AND AUSTRALIAN CONTROL—WESTERN AUSTRALIA AND AUSTRALIA: 1975-76

Particulars	Enterprises contributing funds towards total exploration expenditure		Funds contributed towards—		
			Expenditure on drilling	Other expenditure	Total
	number	per cent	per cent	per cent	per cent
Western Australia—					
Foreign control	90	34.9	59.1	65.7	63.9
Australian control	168	65.1	40.9	34.3	36.1
Total	258	100.0	100.0	100.0	100.0
Australia—					
Foreign control	163	32.5	54.9	54.3	54.4
Australian control	339	67.5	45.1	45.7	45.6
Total	502	100.0	100.0	100.0	100.0

Petroleum Exploration

Petroleum exploration is defined as consisting of the search for, and appraisal of, deposits of crude oil and gas by geological, geophysical, geochemical and other means, including drilling. Included in the expenditure are the costs of drilling and testing ex-

ploratory oil and gas wells. Also included are the costs of access roads, site construction, permits, licences and similar fees, relevant office buildings and furniture, transportation equipment, storage facilities, plant and equipment and review work if primarily for the purposes of exploration for deposits of crude oil or natural gas. Details of drilling developmental wells and expenditure on production facilities, and pipelines, and production costs, etc. are excluded.

An extensive programme of oil exploration commenced in 1952 and resulted in the discovery of flow oil in the Exmouth Gulf area of the Carnarvon Basin in 1953. The discovery proved to be of non-commercial significance, but it stimulated further exploration for oil in Western Australia. A large area of the State has now been scientifically examined and geophysical and geological surveys are still being carried out. Discoveries of petroleum have been made at Barrow Island and Yardarino (1964), at Gingin (1965), at Dongara (1966), at Pascoe Island (1967) and at Mondarra (1968).

In recent years, exploration off the coast of Western Australia has resulted in the discovery of considerable reserves of natural gas over an area of the north-west continental shelf, north of 21° S latitude. Further details on this exploration appear in Chapter II, Part 1.

Information on petroleum exploration expenditure and on drilling in Western Australia for the five years 1973 to 1977 is given in the tables below. These figures have been compiled from data published by the Bureau of Mineral Resources, Geology and Geophysics.

**PRIVATE PETROLEUM EXPLORATION
EXPENDITURE AND SOURCE OF FUNDS
(\$'000)**

Particulars	1973	1974	1975	1976	1977
Private expenditure (a)—					
Geological	399	855	801	329	536
Geophysical	7,312	5,365	3,307	6,323	3,724
Drilling	43,719	32,579	22,646	27,396	50,810
Other	6,164	9,124	4,122	2,794	7,375
Total	57,594	47,923	30,875	36,842	62,445
Source of funds—					
Private sources	52,364	45,281	29,527	36,842	62,445
Government subsidy (b)	5,230	2,642	1,348	—	—

(a) Includes expenditure financed by payments under the *Petroleum Search Subsidy Act 1959* (Commonwealth). (b) Comprises payments under the *Petroleum Search Subsidy Act 1959*.

PRIVATE PETROLEUM EXPLORATION—WELLS AND DEPTH DRILLED

Particulars	Unit	1973	1974	1975	1976	1977
Wells—						
Drilled (i.e. those which reached final depth)—						
As oil producers	No.	1	—	—	—	—
As gas producers	No.	3	1	1	1	—
As oil and gas producers	No.	2	1	1	—	—
Plugged and abandoned	No.	16	19	7	4	9
Total	No.	22	21	9	5	9
Average final depth of wells drilled	metre	3,189	2,365	1,939	2,922	3,024
Drilling still in progress at 31 December (uncompleted holes)	No.	3	—	1	2	3
Drilled or drilling over 3,000 metres	No.	16	8	3	4	8
Depth drilled—						
Completed wells	metre	55,712	46,203	17,501	17,534	23,307
Uncompleted holes	metre	4,579	—	620	4,017	10,176
Total	metre	60,291	46,203	18,121	21,551	33,483

Chapter VIII—continued

Part 3—Manufacturing

Manufacturing in Western Australia does not have the relative importance to manufacturing in Australia which applies to the State's mining industry. Nevertheless, value added (see definition at the beginning of this Chapter) by manufacturing establishments in Western Australia in 1976-77 was \$1,152 million, or \$244 million more than value added by the State's mining establishments. This value added, however, was only 6.0 per cent of all value added by manufacturing establishments in Australia and was \$973 per head of mean population compared with the national average of \$1,375.

Owing to the inclusion of manufacturing in the system of integrated economic censuses in 1968-69 it is not possible to compare the statistics in this Part with manufacturing statistics for years prior to 1968-69. The statistics up to 1967-68, however, which are available in the Statistical Summary following Chapter X and in earlier issues of the Year Book, provide a consistent historical record back to the year 1900. At that time 632 factories employing 11,166 persons were recorded, compared with 5,404 factories in 1967-68, employing 67,335 persons.

Up to the early 1950s, manufacturing in Western Australia had grown steadily with some surge in growth during each of the World Wars and a pronounced down-turn during the depression of the early 1930s. Most of the factories were small and medium-sized establishments supplying the small local market and carrying out some processing of the State's primary products for export. The long-established industries such as slaughtering, dairy products processing, brewing, baking, wool scouring, sawmilling, printing, building materials production and the various types of metal fabrication and engineering remain as important components of manufacturing in the State.

Heavy industry and large-scale operations have been a more recent development, although it could be said that heavy industry commenced with the establishment in 1948 of the State Government's wood distillation, charcoal, iron and steel plant at Wundowie, east of Perth in the Shire of Northam. Perhaps the most significant change, however, came when the basis for an integrated industrial complex was established with the opening in 1954 of a large oil refinery at Kwinana, on Cockburn Sound south of Perth. This was followed soon after by a steel rolling mill and later by a series of large plants which have made Kwinana the State's major industrial centre. The interrelated complex of metals, fuels and chemicals plants is served by a fine harbour, a standard gauge railway line linked with mining centres and the other States, and a pipeline from the natural gasfields north of Perth.

The major part of the more recent development of heavy industry in Western Australia has been associated with mineral development (see Part 2 of this Chapter). Three of the plants in the Kwinana complex are directly concerned with metals processing. A blast furnace, which began operating in 1968, uses iron ore from Koolyanobbing, some 480 kilometres to the east. An alumina refinery, which commenced operations in 1964, processes bauxite mined in the Darling Range and railed about forty-eight kilometres from a crushing plant at Jarrahdale. A nickel refinery, which commenced operations in 1970, processes nickel concentrates and matte transported from Kambalda and Kalgoorlie. Major mineral-processing plants outside Kwinana include two plants pelletising iron ore fines in the north-west of the State, one at Dampier and the other at Cape Lambert, which commenced operations in 1968 and 1972, respectively. A nickel smelter, to produce nickel matte from concentrates, commenced operations at Kalgoorlie in 1973 and another

alumina refinery, at Pinjarra, began operating in 1972. A plant at Australind, near Bunbury, which extracts titanium dioxide from ilmenite mined in the surrounding districts, has been in operation since 1963.

Besides providing for heavy industry directly associated with minerals processing, the mining developments of recent years have also given impetus to other manufacturing activity, particularly to industries associated with the provision of capital equipment and other manufactured goods for the major mining projects.

MANUFACTURING STATISTICS

In the Australian Standard Industrial Classification manufacturing is used in the broad sense to relate to the physical or chemical transformation of materials or components into new products. Certain activities, however, which do not fit easily into this definition are included or excluded from manufacturing according to other criteria. Activities which are *included* as manufacturing are grading, testing, filtering, cooling and bulk handling of milk; cotton ginning; publishing, electrotyping, signwriting and book-binding; installation of lifts and escalators; repair activity usually associated with manufacturing (e.g. engine reconditioning, repair of industrial machinery, ship repair and major repair of aircraft and railway rolling stock); and blending, assembly, bottling and repacking except where otherwise stated. Activities which are *excluded* from manufacturing are washing, packing and dehydrating of fresh fruit; sun-drying of fruit; cleaning, filleting or freezing of fish; pulping of eggs; bottling of wine and spirits; repacking of flour, cereal food products and dried fruits; blending or repacking of tea; the making or installation of curtains; custom tailoring and dressmaking; boot and shoe repairs; hewing or rough-shaping of railway sleepers, posts, etc. in the forests; installation of joinery and erection of prefabricated wooden buildings; screening, crushing, dressing or other rudimentary treatment of minerals and construction materials; purification of natural gas; blending of lubricating oils and greases; glazing; motor vehicle repair (except engine reconditioning); repair of household appliances, sporting and photographic equipment, watches, clocks and jewellery, etc.; repair of tractors, and farm and construction machinery; and installation of structural steel, air-conditioning and heating equipment, industrial furnaces or shop fittings.

Production and distribution of electricity and gas are not regarded as manufacturing in the Australian Standard Industrial Classification (ASIC) but are included in a separate Industry Division (Division D: Electricity, Gas and Water). Further details of electricity and gas appear at the end of this Part.

The following tables summarise the results for Western Australia of the Census of Manufacturing Establishments conducted annually since 1971-72. Definitions of the data items used are contained in the introduction to this Chapter. While the statistics that follow relate mainly to ASIC Industry Sub-divisions, most data items presented are also available at Industry Group and Industry Class levels.

As from the 1975-76 Census, only a limited range of data—employment, and wages and salaries—is being collected from single establishment manufacturing enterprises with less than four persons employed. To facilitate comparisons with previous years, the 1974-75 Census data were published in such a way that a link was provided between past and future series (see page 416 of the 1977 issue of the Year Book).

The table below relates to manufacturing establishments from which the full range of data is collected under the new collection criteria (*i.e.* all manufacturing establishments owned by multi-establishment enterprises and single establishment manufacturing enterprises with four or more persons employed). The succeeding table relates to single establishment manufacturing enterprises with less than four persons employed (*i.e.* enterprises from which only employment, and wages and salaries data are being collected). As can be readily seen, enterprises in this category contribute only marginally to statistical aggregates other than number of establishments. Data in respect of the larger manufacturers (*i.e.* data in the previous table) therefore provide reliable information for the evaluation of trends in the manufacturing sector of the economy. All other Manufacturing Census

data presented in this Part relate to manufacturing establishments owned by multi-establishment enterprises and single establishment manufacturing enterprises with four or more persons employed.

**MANUFACTURING ESTABLISHMENTS
SUMMARY OF OPERATIONS ACCORDING TO INDUSTRY SUB-DIVISION: 1976-77**

(Manufacturing establishments of multi-establishment enterprises, and single establishment manufacturing enterprises employing four or more persons.)

ASIC code (b)	Industry sub-division Description	Number of establishments operating at 30 June	Persons employed (average over whole year) (a)			Wages and salaries
			Males	Females	Persons	
21-22	Food, beverages and tobacco	301	10,008	4,254	14,262	\$'000 123,083
23	Textiles	28	485	274	759	6,281
24	Clothing and footwear	55	245	1,260	1,505	9,282
25	Wood, wood products and furniture	399	6,554	1,207	7,761	59,637
26	Paper and paper products, printing	147	4,064	1,499	5,563	48,053
27	Chemical, petroleum and coal products	63	2,762	367	3,129	33,961
28	Non-metallic mineral products	161	4,584	379	4,963	48,269
29	Basic metal products	38	5,812	359	6,171	75,180
31	Fabricated metal products	342	6,614	1,110	7,724	63,757
32	Transport equipment	145	5,467	243	5,710	49,196
33	Other machinery and equipment	231	6,336	906	7,242	63,170
34	Miscellaneous manufacturing	125	1,406	555	1,961	14,647
	Total manufacturing	2,035	54,337	12,413	66,750	594,514

ASIC code (b)	Industry sub-division Description	Turnover	Stocks		Purchases, transfers in and selected expenses	Value added	Fixed capital expenditure
			Opening	Closing			
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
21-22	Food, beverages and tobacco	610,068	39,003	43,378	399,207	215,236	47,648
23	Textiles	25,615	3,561	3,833	15,661	10,226	1,446
24	Clothing and footwear	19,777	2,274	2,127	6,960	12,671	215
25	Wood, wood products and furniture	207,108	24,042	29,873	104,250	108,689	13,111
26	Paper and paper products, printing	144,570	15,591	19,833	67,871	80,940	4,321
27	Chemical, petroleum and coal products	230,364	27,854	34,201	148,752	87,960	10,300
28	Non-metallic mineral products	222,570	23,908	32,227	123,302	107,586	15,542
29	Basic metal products	777,103	122,829	149,330	598,034	205,571	21,434
31	Fabricated metal products	255,833	31,135	38,570	148,090	115,179	7,044
32	Transport equipment	118,129	11,632	16,009	56,681	65,825	4,678
33	Other machinery and equipment	207,568	42,583	52,448	103,050	114,384	4,536
34	Miscellaneous manufacturing	63,714	7,370	8,312	37,303	27,351	3,649
	Total manufacturing	2,882,421	351,782	430,140	1,809,162	1,151,619	133,923

(a) Includes working proprietors.

(b) Australian Standard Industrial Classification.

**MANUFACTURING ESTABLISHMENTS
SUMMARY OF OPERATIONS ACCORDING TO INDUSTRY SUB-DIVISION: 1976-77**

(Single establishment manufacturing enterprises with less than four persons employed.)

ASIC code (b)	Industry sub-division Description	Number of establishments operating at 30 June	Persons employed (average over whole year) (a)			Wages and salaries
			Males	Females	Persons	
21-22	Food, beverages and tobacco	84	110	70	180	\$'000 237
23	Textiles	15	21	10	31	96
24	Clothing and footwear	25	n.p.	n.p.	n.p.	n.p.
25	Wood, wood products and furniture	278	442	108	550	1,024
26	Paper and paper products, printing	103	129	78	207	371
27	Chemical, petroleum and coal products	27	38	8	46	136
28	Non-metallic mineral products	35	63	16	79	191
29	Basic metal products	4	n.p.	n.p.	n.p.	n.p.
31	Fabricated metal products	222	352	86	438	917
32	Transport equipment	84	154	27	181	464
33	Other machinery and equipment	133	198	61	259	581
34	Miscellaneous manufacturing	168	245	87	332	614
	Total manufacturing	1,178	1,767	585	2,352	4,720

(a) Includes working proprietors.

(b) Australian Standard Industrial Classification.

The remaining tables show data for the restricted scope of establishments for 1974-75 to 1976-77, but data for earlier years relate to all establishments regardless of size.

MANUFACTURING ESTABLISHMENTS—SUMMARY OF OPERATIONS

Item	Unit	1972-73	1973-74	1974-75 (a)	1975-76 (a)	1976-77 (a)
Number of establishments operating at 30 June	No.	2,814	2,818	1,974	2,054	2,035
Persons employed (including working proprietors)—						
Average over whole year—						
Males	No.	51,734	54,402	53,207	53,696	54,337
Females	No.	12,340	13,482	12,645	12,257	12,413
Total	No.	64,074	67,884	65,852	65,953	66,750
Wages and salaries	\$'000	275,455	346,942	434,272	508,931	594,514
Turnover	\$'000	1,375,859	1,741,029	2,032,374	2,432,654	2,882,421
Stocks—						
Opening	\$'000	164,330	190,532	217,754	298,226	351,782
Closing	\$'000	183,180	223,638	297,031	353,762	430,140
Purchases, transfers in, and selected expenses	\$'000	893,674	1,115,724	1,331,809	1,543,731	1,809,162
Value added	\$'000	501,034	658,412	779,842	944,459	1,151,619
Fixed capital expenditure	\$'000	94,361	86,995	102,849	157,779	133,923

(a) All manufacturing establishments owned by multi-establishment enterprises, and single establishment manufacturing enterprises with four or more persons employed. Excludes single establishment manufacturing enterprises with less than four persons employed.

MANUFACTURING ESTABLISHMENTS—WESTERN AUSTRALIA AND AUSTRALIA PERSONS EMPLOYED AND VALUE ADDED BY INDUSTRY SUB-DIVISION: 1976-77

(Manufacturing establishments of multi-establishment enterprises, and single establishment manufacturing enterprises employing four or more persons.)

ASIC code (b)	Industry sub-division	Description	Persons employed (average over whole year) (a)				Value added			
			Western Australia		Australia		Western Australia		Australia	
			No.	per cent of total	No.	per cent of total	\$'000	per cent of total	\$'000	per cent of total
21-22	Food, beverages and tobacco		14,262	21.37	195,881	16.66	215,236	18.69	3,501,794	18.21
23	Textiles		759	1.14	39,185	3.33	10,226	0.89	563,138	2.93
24	Clothing and footwear		1,505	2.25	84,020	7.15	12,671	1.10	894,178	4.65
25	Wood, wood products and furniture		7,761	11.63	77,883	6.62	108,689	9.44	1,118,290	5.81
26	Paper and paper products, printing		5,563	8.33	97,385	8.28	80,940	7.03	1,614,247	8.39
27	Chemical, petroleum and coal products		3,129	4.69	60,429	5.14	87,960	7.64	1,464,589	7.62
28	Non-metallic mineral products		4,963	7.44	47,596	4.05	107,586	9.34	999,327	5.20
29	Basic metal products		6,171	9.24	93,804	7.98	205,571	17.85	1,977,247	10.28
31	Fabricated metal products		7,724	11.57	102,903	8.75	115,179	10.00	1,541,766	8.02
32	Transport equipment		5,710	8.55	143,231	12.18	65,825	5.72	2,125,865	11.05
33	Other machinery and equipment		7,242	10.85	168,200	14.30	114,384	9.93	2,441,744	12.70
34	Miscellaneous manufacturing		1,961	2.94	65,314	5.55	27,351	2.38	990,184	5.15
	Total manufacturing		66,750	100.00	1,175,831	100.00	1,151,619	100.00	19,232,368	100.00

(a) Includes working proprietors.

(b) Australian Standard Industrial Classification.

Most of the manufacturing establishments in Western Australia are located in the Perth Statistical Division (see map at the end of Chapter III). The table below shows that in 1976-77 this Division had 81 per cent of the State's manufacturing establishments with 78 per cent of value added in all manufacturing establishments. While manufacturing is carried out in most local government areas within the Perth Statistical Division, major concentrations of establishments are found in certain localities. The large industrial complex at Kwinana has already been mentioned. The City of Stirling, however, had the largest number of establishments of all local government areas in the Division at 30 June 1977 including a major industrial area located at Osborne Park producing a wide range of products.

The City of Fremantle contains a major industrial area at O'Connor, east of the city centre, as well as a number of major factories north and south of Fremantle. Included in the City of Perth are a cement works, a variety of food and clothing factories, and numerous printing and publishing establishments. The City of Canning contains a major industrial area located at Welshpool and a brewery which was recently completed in the locality of Canning Vale. The localities of Coogee and Spearwood in the Town of Cockburn have a number of the larger factories, including wool scouring and meat products establishments. The Midland locality in the Shire of Swan contains

large Government railway workshops, which contribute significantly to employment in the area. Other local government areas with large manufacturing establishments are the Shires of Bayswater and Bassendean and the Cities of Subiaco and Belmont.

Measured in terms of employment (average over whole year), the most important concentrations of manufacturing activity outside the Perth Statistical Division were in the Town of Bunbury and the Shires of Manjimup and Harvey in the South-West Statistical Division, the Town of Albany in the Lower Great Southern Statistical Division and the Shire of Roebourne in the Pilbara Statistical Division.

MANUFACTURING ESTABLISHMENTS—WESTERN AUSTRALIA SUMMARY OF OPERATIONS BY STATISTICAL DIVISION: 1976-77

(Manufacturing establishments of multi-establishment enterprises, and single establishment manufacturing enterprises employing four or more persons.)

Statistical division (a)	Number of establishments operating at 30 June	Persons employed (average over whole year) (b)	Wages and salaries	Turnover	Closing stocks	Value added
			\$'000	\$'000	\$'000	\$'000
Perth Statistical Division	1,648	56,426	493,393	2,162,112	341,990	900,641
Other divisions—						
South-West	166	n.p.	n.p.	n.p.	n.p.	n.p.
Lower Great Southern	47	1,541	13,549	59,727	8,060	21,627
Upper Great Southern	22	205	1,238	5,519	268	2,536
Midlands	44	785	6,366	23,788	7,334	11,704
South-Eastern	41	799	7,845	124,996	11,352	21,963
Central	37	656	5,453	22,643	3,629	9,366
Pilbara	22	1,166	18,315	124,222	14,365	13,103
Kimberley	8	n.p.	n.p.	n.p.	n.p.	n.p.
Total	387	10,324	101,121	720,309	88,150	250,978
WESTERN AUSTRALIA	2,035	66,750	594,514	2,882,421	430,140	1,151,619

(a) For component local government areas, see lists at the end of Chapter III.

(b) Includes working proprietors.

The relationship between manufacturing in this State and manufacturing in Australia over recent years may be seen from the data in the following table. Western Australia is not a major manufacturing State and although, in recent years, there has been continuous development and expansion in this sector in Western Australia, the rate of expansion and development is only marginally greater than the rate for Australia as a whole.

MANUFACTURING ESTABLISHMENTS—WESTERN AUSTRALIA AND AUSTRALIA SUMMARY OF OPERATIONS

Area	Year	Number of establishments operating at 30 June	Persons employed (average over whole year) (a)	Wages and salaries	Turnover	Value added
				\$m	\$m	\$m
Western Australia	1972-73	2,814	64,074	275.5	1,375.9	501.0
	1973-74	2,818	67,884	346.9	1,741.0	658.4
	1974-75(b)	1,974	65,852	434.3	2,032.4	779.8
	1975-76(b)	2,054	65,953	508.9	2,432.7	944.5
	1976-77(b)	2,035	66,750	594.5	2,882.4	1,151.6
Australia	1972-73	36,437	1,297,095	5,820.0	26,352.4	10,725.9
	1973-74	37,143	1,338,379	7,176.4	31,246.7	13,149.1
	1974-75(b)	26,973	1,245,237	8,533.5	35,133.7	15,231.6
	1975-76(b)	27,507	1,200,440	9,472.4	39,485.3	16,921.0
	1976-77(b)	26,780	1,175,831	10,535.8	44,812.4	19,232.4
Western Australia as a percentage of Australia	1972-73	7.72	4.94	4.73	5.22	4.67
	1973-74	7.59	5.07	4.83	5.57	5.01
	1974-75(b)	7.32	5.29	5.09	5.78	5.12
	1975-76(b)	7.47	5.49	5.37	6.16	5.58
	1976-77(b)	7.60	5.68	5.64	6.43	5.99

(a) Includes working proprietors. (b) All manufacturing establishments owned by multi-establishment enterprises, and single establishment manufacturing enterprises with four or more persons employed. Excludes single establishment manufacturing enterprises with less than four persons employed.

The following table shows the principal products of manufacturing activity in the State. Owing to the confidentiality provisions of the *Census and Statistics Act 1905*, data for some important commodities including petroleum products, refined nickel, pig iron, beer and superphosphate are not available for publication.

PRODUCTION, SALES AND TRANSFERS OUT OF SELECTED COMMODITIES

(Manufacturing establishments of multi-establishment enterprises, and single establishment manufacturing enterprises employing four or more persons.)

Commodity	Unit	1975-76			1976-77				
		Production	Sales and transfers out		Production	Sales and transfers out			
			Quantity	Quantity		Value	Quantity	Quantity	Value
Aerated waters, canned and bottled	'000 litres	87,221	78,931	\$'000 24,585	87,325	87,079	\$'000 28,790		
Architectural metal products (a)	....	(b)	(b)	1,644	(b)	(b)	3,272	
Automotive batteries (new and rebuilt)—									
6 volt	number	15,110	18,578	442	6,780	6,702	179		
12 volt	number	24,857	25,530	733	21,945	21,526	655		
Bacon and ham	tonne	5,439	5,388	15,465	5,836	5,722	19,067		
Blocks, concrete (c), in terms of 16" x 8" x 8"	'000	4,701	4,537	4,114	4,726	4,374	4,727		
Boats and ships, total amount received during the year on vessels 50 tons gross and over	....	(b)	(b)	9,296	(b)	(b)	6,609	
Boats, fibreglass, small (less than 5 tons gross)	number	n.p.	n.p.	n.p.	2,178	2,128	7,294		
Boots, shoes, sandals and slippers (d)	pair	461,864	460,570	4,006	357,650	356,244	3,757		
Bread—									
900 gram loaves—wrapped	'000	5,815	5,563	} 29,610	5,583	5,378	} 34,966		
unwrapped	'000	9,352	9,146		8,867	8,519			
680 gram loaves—wrapped	'000	39,285	38,317		41,226	39,277			
unwrapped	'000	2,384	2,304		2,753	2,690			
450 gram loaves—wrapped	'000	8,239	7,197		8,073	7,651			
unwrapped	'000	5,080	4,923		4,159	4,077			
Bread rolls, hamburger buns, etc.	tonne	7,857	7,431		6,460	6,738			
Other sizes	tonne	1,806	1,776		1,282	1,263			
Bricks, clay (all sizes)	'000	328,356	345,695		32,569	385,942		364,211	38,509
Butter	tonne	4,531	4,652		n.p.	3,340		3,356	4,615
Cakes, pastries, pies and puddings (not canned)	....	(b)	(b)	13,380	(b)	(b)	15,297	
Constructional steel, fabricated	tonne	74,882	74,770	47,790	62,889	65,714	49,094		
Containers, bags and packets—									
Of paperboard—corrugated fibre	....	(b)	(b)	11,245	(b)	(b)	12,519	
solid fibre	....	(b)	(b)	2,930	(b)	(b)	3,156	
Paper bags and packets	....	(b)	(b)	4,591	(b)	(b)	5,805	
Cordials and syrups	'000 litres	8,426	8,076	3,483	6,214	6,422	3,238		
Flour, white (incl. sharps) (e)	tonne	78,447	76,664	11,405	n.p.	n.p.	n.p.		
Furniture—									
Metal or partly metal	....	(b)	(b)	12,726	(b)	(b)	14,038	
Wooden (f)	....	(b)	(b)	35,916	(b)	(b)	43,854	
Other	....	(b)	(b)	902	(b)	(b)	678	
Hoists, cranes and lifting machinery (g)	....	(b)	(b)	6,490	(b)	(b)	6,076	
Hot water systems, domestic (h)	number	16,543	16,675	1,915	17,710	17,723	1,901		
Ice cream (i)	'000 litres	18,971	18,744	8,843	18,849	17,978	10,009		
Mattresses, soft-filled	number	72,684	72,579	949	54,766	n.p.	n.p.		
Meat, fresh (for human consumption)—									
Carcasses, whole or butchered	....	(b)	(b)	65,489	(b)	(b)	74,045	
Boned	....	(b)	(b)	71,562	(b)	(b)	73,029	
Metal window frames	....	(b)	(b)	16,094	(b)	(b)	17,390	
Mining and drilling machinery and parts	....	(b)	(b)	11,748	(b)	(b)	10,923	
Offal, bones, etc.—									
Edible (heart, liver, brains, etc.)	....	(b)	(b)	6,187	(b)	(b)	5,846	
Inedible (welts, horns, hides, etc.)	....	(b)	(b)	7,427	(b)	(b)	10,748	
Paints, enamels and clears (j)	'000 litres	5,699	5,676	8,613	6,410	5,966	10,057		
Plaster sheets, fibrous	'000 sq m	1,112	1,135	3,201	1,180	1,162	3,427		
Plaster tiles, acoustic	'000 sq m	24	20	94	11	11	68		
Poultry, chickens, hens and stags	tonne	18,082	17,799	21,059	19,489	20,200	25,128		
Prefabricated steel garages, carports and sheds, etc.	....	(b)	(b)	12,050	(b)	(b)	13,040	
Ready-mixed concrete	'000 cu m	962	962	33,939	1,021	1,021	41,017		
Shop fittings	....	(b)	(b)	2,166	(b)	(b)	3,244	
Signs and advertising displays (excl. neon)	....	(b)	(b)	2,646	(b)	(b)	2,372	
Smallgoods	....	(b)	(b)	11,794	(b)	(b)	15,206	
Solar absorber units for hot water systems (effective area)	sq m	14,894	14,894	1,922	38,493	38,723	8,393		
Steam, gas and water fittings, valves and parts (non-ferrous metal)	....	(b)	(b)	6,000	(b)	(b)	7,054	
Stock and poultry foods—									
Meat and bone meal	tonne	48,640	50,431	5,650	49,914	50,570	8,591		
Poultry pellets, crumbles, mash, etc.	tonne	151,912	154,191	19,592	166,151	168,282	23,334		
Fallow, rendered, inedible	tonne	40,327	38,963	8,729	36,748	37,852	10,560		

For footnotes, see end of table

PRODUCTION, SALES AND TRANSFERS OUT OF SELECTED COMMODITIES—*continued*
(Manufacturing establishments of multi-establishment enterprises, and single establishment manufacturing enterprises employing four or more persons.)

Commodity	Unit	1975-76			1976-77		
		Production		Sales and transfers out	Production		Sales and transfers out
		Quantity	Quantity	Value	Quantity	Quantity	Value
Timber—				\$'000			\$'000
Undressed (k)—							
Sleepers	cu m	86,553	85,583	7,006	51,044	53,205	5,015
All other (excl. pallings) obtained from logs sawn in the mill	cu m	r 288,523	r 300,749	r 30,529	308,732	305,732	35,664
Dressed—							
Floorboards, Australian timber	cu m	9,784	9,798	1,966	9,308	9,352	2,083
Other dressed timber	cu m	46,615	46,809	8,354	48,506	48,242	8,825
Wool, scoured	tonne	13,969	—	—	15,818	—	—
Woven or linked wire fabric (l) .....	....	(b)	(b)	3,976	(b)	(b)	4,111

(a) Includes stairs, staircases, railings, gates other than wire, balustrades, ornamental metal work, etc. (b) Only value of sales and transfers out is collected. (c) Basic building and paving blocks for walls, partitions, foundations, flooring, paths, etc. and decorative blocks and similar fancy blocks. (d) Excludes footwear wholly of rubber. (e) Includes atta flour. (f) Includes prefabricated wooden furniture but excludes in-built furniture. (g) Includes electric hoists and hydraulic hoists for trucks. (h) Excludes solar absorber units. (i) Includes ice cream combined with other confections including those aerated milk-based confections which contain 10 per cent or more butterfat. (j) Includes architectural, decorative and industrial paints. Excludes water paints in powder form. (k) Includes preserved timber. (l) Steel and non-ferrous (including chain, wire, link mesh, fencing wire, crimped fabric and fine wire mesh).

The following table shows details of foreign control of Western Australian and Australian manufacturing industry. For definitions and explanations of foreign control statistics see the introduction to this Chapter. Readers requiring information in greater detail are referred to the publication *Foreign Ownership and Control in Manufacturing Industry* (Catalogue No. 5322.0) issued by the Australian Statistician, Canberra.

MANUFACTURING ESTABLISHMENTS—FOREIGN CONTROL AND AUSTRALIAN CONTROL
WESTERN AUSTRALIA AND AUSTRALIA: 1972-73
(Per cent)

Particulars	Establishments operating at 30 June	Employment (average over whole year)	Wages and salaries	Turnover	Value added	Fixed capital expenditure
Western Australia—						
Foreign control	5.7	22.8	26.6	32.2	29.3	29.3
Australian control	94.3	77.2	73.4	67.8	70.7	70.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Australia—						
Foreign control	6.1	28.5	31.3	36.2	34.3	42.0
Australian control	93.9	71.5	68.7	63.8	65.7	58.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

ELECTRICITY AND GAS PRODUCTION AND DISTRIBUTION
IN WESTERN AUSTRALIA

On 1 July 1975 the Government of Western Australia combined the State Electricity Commission and the Fuel and Power Commission to form a new organisation known as The State Energy Commission of Western Australia under the provisions of the *Acts Amendment (State Energy Commission) Act, 1975*. The new Commission is specifically charged with the responsibility for ensuring the effective and efficient utilisation of this State's energy resources and for providing its people with economical and reliable supplies of electricity and gas.

Prior to the formation of the State Energy Commission the production and distribution of electricity and gas was the sole responsibility of The State Electricity Commission of Western Australia, established in 1946.

Electricity

Before the establishment of the State Electricity Commission, electricity was generated and distributed by a large number of independent authorities operating numerous power stations, while a government-owned steam power station at East Perth supplied much of what was then the metropolitan area. Small units, of similar type but privately owned, operated in the major mining centres of Collie and Kalgoorlie. With other minor exceptions, all country areas were dependent on internal combustion equipment from which the local operating authorities supplied either alternating or direct current at various voltages.

Since 1946 numerous districts and towns have been connected to the Commission's grid system and many small independent power stations from which supply was previously drawn have been closed. The Commission also owns and operates diesel power stations at Port Hedland, Halls Creek, Roebourne, Kununurra, Esperance, Onslow and Fitzroy Crossing. Small systems too remote to be connected to the grid system or supplied from the Commission-owned diesel stations, and still controlled by local government authorities, are being absorbed in a leasing arrangement whereby the local distribution system and generating plant is operated by the Commission under an arrangement known as the Country Towns' Assistance Scheme. Under the scheme the Commission undertakes to operate, maintain, replace or upgrade plant and supply equipment as necessary. The benefits of the scheme, which include bulk purchase of fuel and lubricants, rationalisation of spare parts requirements for generation and distribution, centralised billing and administration, the availability of plant from the Commission's pool and the Commission's technical expertise, have enabled tariffs in country areas to be reduced so that the price of all metered units of electricity throughout the State is now uniform. At the present time there are thirty-nine country towns supplied under the provisions of the Country Towns' Assistance Scheme.

The Commission supplies most of the electricity sold throughout Western Australia and all electricity sold in the metropolitan area. In addition, significant amounts are generated by large mining and minerals processing enterprises for their own use. The Commission operates coal-burning power stations at East Perth (55 MW), South Fremantle (100 MW), Bunbury (120 MW), Muja (240 MW), and a coal-burning and oil-burning power station at Kwinana capable of producing 900 MW from four oil-burning units (4 x 120 MW), two dual coal-burning and oil-burning units (each capable of 120 MW when burning coal and 200 MW when burning oil) and a 20 MW gas turbine. Muja Power Station is currently being extended to house a further two 200 MW units which are expected to be in operation in 1980 and 1981, respectively. A small hydro-electric station of 2 MW capacity is situated near Collie at Wellington Dam, and at Geraldton in the mid-west a 20 MW gas turbine is also connected into the grid system.

The main interconnections with the grid system are two 330,000 volt transmission lines from the Kwinana Power Station, two 132,000 volt transmission lines from the Bunbury Power Station and two 132,000 volt transmission lines from the Muja Power Station. An additional 132,000 volt line connects the Muja and Bunbury Power Stations. Construction has commenced on the first of two 330,000 volt transmission lines to connect the Muja Power Station additions with the metropolitan area. Transmission lines of 132,000 volt or 66,000 volt connect major outlying centres such as Merredin, Geraldton and Albany to the grid system.

In December 1959, an amendment to the then State Electricity Commission Act was passed to enable consumers to contribute towards the extension of mains beyond the distance which can be supplied economically by the Commission. At 30 June 1978 approximately 14,310 consumers had been connected in country and metropolitan areas under the Contributory Extension Scheme. At the same date there was a total of 376,567 electricity consumers served by the Commission.

Gas

Town gas production in Western Australia ceased in December 1972 with the conversion of town gas appliances to burn natural gas from the gasfields in the region of Dongara, to the south of Geraldton. These natural gasfields are relatively small but are estimated to have sufficient reserves to supply the domestic market and a limited industrial market until the mid 1980s.

The State Energy Commission supplies natural gas to much of the metropolitan area and to the towns of Pinjarra and North Pinjarra some eighty-five kilometres to the south of the capital. In the Commission's supply area the total length of mains installed for the distribution of natural gas was 3,547 kilometres and the maximum daily output was 15.90 million MJ in the year ended 30 June 1978. At the same date there were 83,332 gas consumers served by the Commission.

Simulated natural gas is now being produced and supplied in the Bunbury area and tempered liquid petroleum gas is supplied to the Albany area, by the State Energy Commission. The Fremantle Gas and Coke Company Limited, a private gas supply company, supplies natural gas to customers within its franchise area which extends eight kilometres from the centre of Fremantle.

The State Energy Commission maintains an advisory service to assist its customers in such things as the selection and economical operation of both gas and electric appliances.

ELECTRICITY AND GAS STATISTICS

The electricity and gas industries, which are not included with manufacturing in the Australian Standard Industrial Classification, are the subject of a separate census which is conducted periodically. Results of the 1971-72 Census of Electricity and Gas Establishments were presented on page 416 of the 1976 Year Book, and the results of the 1974-75 census appear in the table below. The results of the Census of Electricity and Gas Establishments for the year ended 30 June 1978 will appear in a later edition of the Year Book.

ELECTRICITY AND GAS ESTABLISHMENTS—SUMMARY OF OPERATIONS: 1974-75

Number of establishments operating at 30 June	Persons employed (average over whole year) (a)			Wages and salaries	Turnover	Stocks		Purchases, transfers in and selected expenses	Value added
	Males	Females	Total			Opening	Closing		
18	4,964	399	5,363	\$'000 41,245	\$'000 145,175	\$'000 11,610	\$'000 15,149	\$'000 55,183	\$'000 93,531

(a) Includes working proprietors.

Production of electricity and gas in Western Australia over the five years ended 1977-78 is shown in the following table. Electricity generated by Government establishments has increased steadily over the period from 3,300 to 4,556 million kilowatt hours.

PRODUCTION OF ELECTRICITY AND GAS

Item	Unit	1973-74	1974-75	1975-76	1976-77	1977-78
Electricity generated—Government	million kWh	3,300	3,570	3,904	4,240	4,556
Gas available for issue through mains	million MJ	30,188	30,699	31,261	31,767	30,426

CHAPTER IX—TRADE, TRANSPORT AND COMMUNICATION

Part 1—External Trade

Overseas trade statistics are compiled from information contained in documents prepared by importers and exporters or their agents in accordance with the Customs Act. Particulars of Western Australia's overseas trade, as presented in this Part, have been derived from data supplied by the Australian Bureau of Statistics, Canberra. A comprehensive account of the statistics, definitions and details of trade between Australia and overseas countries is given in the annual bulletin *Overseas Trade* and other publications issued by the Australian Statistician, Canberra.

Statistics of Western Australia's trade with other Australian States are compiled by the Western Australian Office from information contained in documents collected under authority of the *Census and Statistics Act 1905* from importers, exporters and other persons concerned with the distribution of goods.

Classification of Commodities

Overseas imports and exports are classified according to the Australian Import and Export Commodity Classifications of some 6,000 import items and 2,000 export items. These classifications are based on the *United Nations Standard International Trade Classification, Revised*, which is closely related to the Customs Co-operation Council Nomenclature (previously known as the Brussels Tariff Nomenclature) used in the Australian Customs Tariff. The Standard International Trade Classification consists of 10 broad commodity categories designated 'Sections' and comprising 56 commodity 'Divisions' which are further divided into 177 commodity 'Groups'. The structure of the classification serves to provide a summary of data relating to 1,312 basic items of international trade. The numbers and names of Sections and Divisions appear in the list which follows.

Interstate imports and exports are classified according to Interstate Trade Commodity Classifications which are based on the Australian Commodity Classifications. The basic items of the Australian classifications are compressed or expanded according to their significance in Western Australia's trade. The Interstate Trade Commodity Classifications comprise some 900 items of import and 330 items of export within the structure of commodity Sections, Divisions and Groups of the Standard International Trade Classification.

Valuation of Items of Trade

All values in overseas trade statistics are determined on a 'free on board (f.o.b.) port of shipment' basis. This means that all charges (in particular the cost of freight and insurance) incurred after the goods have been exported from the port of shipment are excluded. Only transport and service charges incurred, or usually incurred, prior to export are included in the determination of trade values.

The procedure adopted to value overseas imports (up to 30 June 1976) and exports is as follows.

Imports. The recorded value of goods imported is the 'value for duty' as laid down for Customs purposes, *i.e.* the sum of:

- (a) (i) the actual money price paid or to be paid for the goods by the Australian importer plus any special deduction, or
- (ii) the current domestic value of the goods, whichever is the higher; and
- (b) all charges payable or ordinarily payable for placing the goods free on board at the port of export.

In the case of goods consigned for sale in Australia the value for duty shall be the amount which would be the value for duty if the goods were, at the date of exportation, sold to an Australian importer instead of being consigned for sale in Australia.

'Current domestic value' is defined as 'the amount for which the seller of the goods to the purchaser in Australia is selling or would be prepared to sell for cash, at the date of exportation of those goods, the same quantity of identically similar goods to any and every purchaser in the country of export for consumption in that country'.

From 1 July 1976 a new system of valuation based on the Brussels Definition of Value was introduced in connection with imports. The value for duty is now based on the normal price, *i.e.* the price the goods would fetch at the time when the duty becomes payable on a sale in the open market between a buyer and a seller independent of each other. The goods are valued in the country of exportation, that is freight and insurance are excluded.

Exports. The recorded value of goods exported includes the cost of the outside packages and is determined as follows.

- (a) Goods sold to overseas buyers before export are valued at the Australian f.o.b. port of shipment equivalent of the actual price at which the goods were sold.
- (b) Goods shipped on consignment are valued at the Australian f.o.b. port of shipment equivalent of the price paid for similar goods of Australian origin in the principal markets of the country to which they are dispatched for sale.

The basis of valuation for exports to other Australian States is f.o.b., or its equivalent, at the point of final shipment.

Statistics of imports from other Australian States are recorded in terms of landed cost.

Direction of Trade

The term *Country of Origin*, as used in recording the statistics of overseas trade, means the country of production; *Country of Destination* means the country to which goods were consigned at the time of export. In compiling statistics of Western Australia's interstate imports and exports, goods are classified according to the State or Territory from which or to which they were consigned.

Summary of Trade

Statistics of Western Australia's external trade are presented in the following series of tables. Particulars relate, in all cases, to the year ended 30 June. The figures shown for exports do not include ships' stores, details of which are given in a table near the end of this Part.

VALUE OF INTERSTATE AND OVERSEAS TRADE OF WESTERN AUSTRALIA (S'000)

Direction of trade	1972-73 r	1973-74	1974-75 r	1975-76	1976-77
INTERSTATE (a)—					
Imports	786,177	939,361	1,134,510	1,418,726	1,641,545
Exports	159,327	197,299	218,613	259,540	295,144
Excess of—					
Imports over exports	626,850	742,062	915,897	1,159,185	1,346,401
OVERSEAS—					
Imports	227,305	368,910	577,416	637,439	829,411
Exports	1,154,359	1,414,968	1,880,082	2,117,898	2,596,110
Excess of—					
Exports over imports	927,054	1,046,057	1,302,666	1,480,459	1,766,699
TOTAL (a)—					
Imports	1,013,483	1,308,272	1,711,926	2,056,165	2,470,955
Exports	1,313,686	1,612,267	2,098,695	2,377,439	2,891,254
Excess of—					
Imports over exports	300,203	303,995	386,769	321,274	420,299

(a) From 1975-76, excludes interstate value of horses. Details are not available for publication.

SUMMARY OF STATISTICAL CLASSIFICATION OF IMPORTS AND EXPORTS

Section number	Division number	Section and division headings	Section number	Division number	Section and division headings
0		FOOD AND LIVE ANIMALS			
	00	Live animals		55	CHEMICALS—continued
	01	Meat and meat preparations			Essential oils and perfume materials, toilet, polishing and cleansing preparations
	02	Dairy products and eggs		56	Fertilisers, manufactured
	03	Fish and fish preparations		57	Explosives and pyrotechnic products
	04	Cereals and cereal preparations		58	Plastic materials, regenerated cellulose and artificial resins
	05	Fruit and vegetables		59	Chemical materials and products, n.e.i.
	06	Sugar, sugar preparations and honey			
	07	Coffee, tea, cocoa, spices and manufactures thereof		6	MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIAL
	08	Feeding-stuff for animals (excluding unmilled cereals)		61	Leather, leather manufactures, n.e.i., and dressed fur skins
	09	Miscellaneous preparations chiefly for food		62	Rubber manufactures, n.e.i.
1		BEVERAGES AND TOBACCO		63	Wood and cork manufactures (except furniture)
	11	Beverages		64	Paper, paperboard and manufactures thereof
	12	Tobacco and tobacco manufactures		65	Textile yarn, fabrics, made-up articles and related products
2		CRUDE MATERIALS, IN-EDIBLE, EXCEPT FUELS		66	Non-metallic mineral manufactures, n.e.i.
	21	Hides, skins and fur skins, undressed		67	Iron and steel
	22	Oil-seeds, oil nuts and oil kernels		68	Non-ferrous metals
	23	Crude rubber (including synthetic and reclaimed)		69	Manufactures of metal, n.e.i.
	24	Wood, timber and cork			
	25	Pulp and waste paper		7	MACHINERY AND TRANSPORT EQUIPMENT
	26	Textile fibres and their waste		71	Machinery (except electric)
	27	Crude fertilisers and crude minerals (except coal, petroleum and precious stones)		72	Electric machinery, apparatus and appliances
	28	Metalliferous ores and metal scrap		73	Transport equipment
	29	Crude animal and vegetable materials, n.e.i.		8	MISCELLANEOUS MANUFACTURED ARTICLES
3		MINERAL FUELS, LUBRICANTS AND RELATED MATERIALS		81	Sanitary, plumbing, heating and lighting fixtures and fittings
	32	Coal, coke and briquettes		82	Furniture
	33	Petroleum and petroleum products		83	Travel goods, handbags and similar articles
	34	Petroleum gases and other gaseous hydrocarbons		84	Clothing and clothing accessories; articles of knitted or crocheted fabric
4		ANIMAL AND VEGETABLE OILS AND FATS		85	Footwear, gaiters, and similar articles and parts therefor
	41	Animal oils and fats		86	Professional, scientific and controlling instruments; photographic and optical goods
	42	Fixed vegetable oils and fats			watches and clocks
	43	Animal and vegetable oils and fats, processed, and waxes of animal or vegetable origin		89	Miscellaneous manufactured articles, n.e.i.
5		CHEMICALS			
	51	Chemical elements and compounds		9A	COMMODITIES AND TRANSACTIONS OF MERCHANDISE TRADE, NOT ELSEWHERE CLASSIFIED
	52	Mineral tar and crude chemicals from coal, petroleum and natural gas			
	53	Dyeing, tanning and colouring materials		9B	COMMODITIES AND TRANSACTIONS NOT INCLUDED IN MERCHANDISE TRADE
	54	Medicinal and pharmaceutical products			

IMPORTS AND EXPORTS

 VALUE OF IMPORTS INTO AND EXPORTS FROM WESTERN AUSTRALIA
 CLASSIFIED ACCORDING TO ORIGIN OR DESTINATION
 (\$'000)

Origin or destination	Imports			Exports		
	1974-75	1975-76 (a)	1976-77 (a)	1974-75	1975-76 (a)	1976-77 (a)
INTERSTATE—						
New South Wales (b)	481,219	575,686	677,933	86,832	105,426	128,953
Victoria	477,618	626,238	715,697	53,313	63,938	77,873
Queensland	36,971	43,570	48,860	16,647	19,035	18,633
South Australia	122,749	156,854	178,352	38,832	42,507	51,225
Tasmania	14,069	15,562	18,056	2,182	2,564	2,833
Northern Territory	1,884	816	2,649	20,807	26,070	15,627
Total, Interstate	1,134,510	1,418,726	1,641,545	218,613	259,540	295,144
OVERSEAS—						
Argentina	327	161	186	3,912	7,680	8,720
Bahrain	13,640	17,693	16,760	15,940	18,017	17,804
Bangladesh	663	452	1,196	27,864	11,757	7,254
Belgium-Luxembourg	2,703	3,019	5,148	20,451	21,253	39,817
Canada	16,067	15,471	29,709	10,945	26,325	34,689
China—excluding Taiwan Province	2,540	1,766	2,073	108,094	86,875	50,378
—Taiwan Province only	4,224	5,403	9,282	13,516	11,871	21,909
Christmas Island (Indian Ocean)	12,526	8,128	5,132	2,666	3,182	4,245
Denmark	1,890	1,400	1,454	59	43	587
Egypt, Arab Republic of	—	—	21	40,950	79,946	41,806
Ethiopia	6	—	—	—	105	8,863
Fiji	43	203	79	5,278	2,754	12,093
Finland	1,529	1,411	2,467	41	36	175
France	5,076	9,569	8,092	33,425	43,453	51,035
Germany, Federal Republic of	23,866	33,190	31,918	87,996	104,005	110,853
Gilbert and Tuvalu Islands	679	—	1,561	—	—	—
Greece	109	98	204	12,749	1,716	6,117
Hong Kong	4,839	5,396	7,660	5,932	17,161	39,916
India	2,491	2,097	3,873	24,024	25,223	72,346
Indonesia	941	845	5,550	40,031	33,518	43,362
Iran	39,984	53,913	57,861	63,196	36,590	42,071
Iraq	20,724	13,686	40,855	1	64	14,297
Italy	12,303	13,391	15,026	34,371	41,743	53,820
Japan	92,524	113,827	138,600	805,045	926,363	1,110,490
Korea, Democratic People's Republic of	8	12	8	5,519	10,429	2,787
Korea, Republic of	893	1,148	2,456	12,929	11,580	30,819
Kuwait	58,593	66,125	127,950	7,878	8,557	16,580
Malaysia	4,970	7,051	8,080	26,476	23,470	32,598
Mauritius	19	5	62	2,407	3,138	4,244
Mexico	162	44	80	1,714	2,353	1,720
Nauru, Republic of	15,938	10,747	6,122	—	—	—
Netherlands	3,744	5,289	3,564	35,236	50,680	64,677
Netherlands New Zealand	4,501	8,523	8,355	10,710	13,205	14,938
Norway	2,028	1,785	2,042	182	27,091	33,964
Oman	—	—	—	983	1,262	2,525
Papua New Guinea	693	808	1,707	623	2,180	2,143
Philippines, Republic of the	948	551	1,190	3,527	2,784	5,152
Poland	422	197	219	3,680	9,838	17,400
Qatar	3,134	9,416	27,920	678	1,256	1,752
Romania	22	4	94	321	5,857	12,134
Saudi Arabia	—	—	18,872	8,940	11,755	18,039
Singapore, Republic of	29,365	37,216	41,428	46,553	38,248	28,430
South Africa, Republic of	4,198	3,725	4,844	7,915	20,324	18,339
Spain	4,285	2,663	3,320	10,509	9,421	12,378
Sri Lanka	607	653	1,304	1,201	2,713	1,201
Sweden	4,587	4,513	6,756	7,771	9,354	11,842
Switzerland	3,270	3,554	2,735	326	426	517
Thailand	487	2,043	2,975	632	1,120	1,736
Turkey	50	68	71	1,465	2,316	5,151
Union of Soviet Socialist Republics	65	137	82	46,382	69,118	57,597
United Arab Emirates	9,177	12,189	—	4,743	9,055	10,798
United Kingdom	79,009	60,392	69,003	52,066	35,694	60,613
United States of America	64,825	78,780	94,163	134,820	162,545	276,733
Viet Nam, Socialist Republic of	3	—	—	780	14,843	7,051
Yemen Arab Republic	—	—	—	1,645	20,089	28,517
Yugoslavia	229	171	322	4,175	4,686	8,294
Zambia	1	—	151	81	2,972	4,747
Other countries	14,374	9,655	7,256	60,472	26,306	11,072
Other (c)	7,115	8,856	1,571	20,257	3,553	975
Total, Overseas	r 577,416	637,439	829,411	r 1,880,082	2,117,898	2,596,110
GRAND TOTAL	r 1,711,926	2,056,165	2,470,955	r 2,098,695	2,377,439	2,891,254

(a) Excludes interstate value of horses. Details are not available for publication. (b) Statistics relating to trade with the Australian Capital Territory are included with those of New South Wales. (c) The figures shown for Imports include the items *Australia (re-imported)* and *Origin not known*; those shown for Exports include the items *Destination unknown* and *For orders*.

The following table shows the proportional distribution of Western Australia's trade with overseas countries and with Australian States and Territories during each of the years 1974-75 to 1976-77.

VALUE OF IMPORTS INTO AND EXPORTS FROM WESTERN AUSTRALIA
PROPORTIONS ACCORDING TO ORIGIN OR DESTINATION
(Per cent of total)

Origin or destination	Imports			Exports		
	1974-75	1975-76	1976-77	1974-75	1975-76	1976-77
INTERSTATE—						
New South Wales (a)	42.42	40.58	41.30	39.72	40.62	43.69
Victoria	42.10	44.14	43.60	24.39	24.64	26.38
Queensland	3.26	3.07	2.98	7.61	7.33	6.31
South Australia	10.82	11.06	10.86	17.76	16.38	17.36
Tasmania	1.24	1.10	1.10	1.00	0.99	0.96
Northern Territory	0.17	0.06	0.16	9.52	10.04	5.29
Total, Interstate	100.00	100.00	100.00	100.00	100.00	100.00
OVERSEAS—						
Argentina	0.06	0.03	0.02	0.21	0.36	0.34
Bahrain	2.36	2.78	2.02	0.85	0.85	0.69
Bangladesh	0.11	0.07	0.14	1.48	0.56	0.28
Belgium-Luxembourg	0.47	0.47	0.62	1.09	1.00	1.53
Canada	2.78	2.43	3.58	0.58	1.24	1.34
China—excluding Taiwan Province	0.44	0.28	0.25	5.75	4.10	1.94
—Taiwan Province only	0.73	0.85	1.12	0.72	0.56	0.84
Christmas Island (Indian Ocean)	2.17	1.28	0.62	0.14	0.15	0.16
Denmark	0.33	0.22	0.18	—	—	0.02
Egypt, Arab Republic of	—	—	—	2.18	3.77	1.61
Ethiopia	—	—	—	—	—	0.34
Fiji	0.01	0.03	0.01	0.28	0.13	0.47
Finland	0.26	0.22	0.30	—	—	0.01
France	0.88	1.50	0.98	1.78	2.05	1.97
Germany, Federal Republic of	4.13	5.21	3.85	4.68	4.91	4.27
Gilbert and Tuvalu Islands	0.12	—	0.19	—	—	—
Greece	0.02	0.02	0.02	0.68	0.08	0.24
Hong Kong	0.84	0.85	0.92	0.32	0.81	1.38
India	0.43	0.33	0.47	1.28	1.19	2.79
Indonesia	0.16	0.13	0.67	2.13	1.58	1.67
Iran	6.92	8.46	6.98	3.36	1.73	1.62
Iraq	3.59	2.15	4.93	—	—	0.55
Italy	2.13	2.10	1.81	1.83	1.97	2.07
Japan	16.02	17.86	16.71	42.82	43.74	42.78
Korea, Democratic People's Republic of	—	—	—	0.29	0.49	0.11
Korea, Republic of	0.15	0.18	0.30	0.69	0.55	1.19
Kuwait	10.15	10.37	15.43	0.42	0.40	0.64
Malaysia	0.86	1.11	0.97	1.41	1.11	1.26
Mauritius	—	—	0.01	0.13	0.15	0.16
Mexico	0.03	0.01	0.01	0.09	0.11	0.07
Nauru, Republic of	2.76	1.69	0.74	—	—	—
Netherlands	0.65	0.83	0.43	1.87	2.39	2.49
New Zealand	0.78	1.34	1.01	0.57	0.62	0.58
Norway	0.35	0.28	0.25	0.01	1.28	1.31
Oman	—	—	—	0.05	0.06	0.10
Papua New Guinea	0.12	0.13	0.21	0.03	0.10	0.08
Philippines, Republic of the	0.16	0.09	0.14	0.19	0.13	0.20
Poland	0.07	0.03	0.03	0.20	0.46	0.67
Qatar	0.54	1.48	3.37	0.04	0.06	0.07
Romania	—	—	0.01	0.02	0.28	0.47
Saudi Arabia	—	—	2.28	0.48	0.56	0.69
Singapore, Republic of	5.09	5.84	4.99	2.48	1.81	1.10
South Africa, Republic of	0.73	0.58	0.58	0.42	0.96	0.71
Spain	0.74	0.42	0.40	0.56	0.44	0.48
Sri Lanka	0.11	0.10	0.16	0.06	0.13	0.05
Sweden	0.79	0.71	0.81	0.41	0.44	0.46
Switzerland	0.57	0.56	0.33	0.02	0.02	0.02
Thailand	0.08	0.32	0.36	0.03	0.05	0.07
Turkey	0.01	0.01	0.01	0.08	0.11	0.20
Union of Soviet Socialist Republics	0.01	0.02	0.01	2.47	3.26	2.22
United Arab Emirates	1.59	1.91	—	0.25	0.43	0.42
United Kingdom	13.68	9.47	8.32	2.77	1.69	2.33
United States of America	11.23	12.36	11.35	7.17	7.67	10.66
Viet Nam, Socialist Republic of	—	—	—	0.04	0.70	0.27
Yemen Arab Republic	—	—	—	0.09	0.95	1.10
Yugoslavia	0.04	0.03	0.04	0.22	0.22	0.32
Zambia	—	—	0.02	—	0.14	0.18
Other countries	2.49	1.47	0.87	3.22	1.28	0.43
Other (b)	1.26	1.39	0.19	1.06	0.17	0.04
Total, Overseas	100.00	100.00	100.00	100.00	100.00	100.00

(a) Statistics relating to trade with the Australian Capital Territory are included with those of New South Wales. (b) The figures shown for Imports include the items *Australia (re-imported)* and *Origin not known*; those shown for Exports include the items *Destination unknown* and *For orders*.

IMPORTS

The following table shows the value of the principal items of interstate and overseas imports into Western Australia during 1975-76 and 1976-77.

VALUE OF PRINCIPAL IMPORTS INTO WESTERN AUSTRALIA
SELECTED COMMODITIES
(\$'000)

Division	Description	1975-76			1976-77		
		Interstate	Overseas	Total	Interstate	Overseas	Total
00	Animals, live	(a) 3,311	18	(a) 3,330	(a) 5,214	542	(a) 5,756
11	Beverages, alcoholic	19,821	2,870	22,691	22,938	2,954	25,891
84	Clothing and clothing accessories (b)	91,924	3,447	95,371	102,715	5,238	107,953
27, 56	Fertilisers, crude and manufactured	993	19,601	20,594	3,203	23,143	26,346
	Food—						
04	Cereals and cereal preparations	13,780	638	14,418	16,864	665	17,529
06, 07	Confectionery	15,605	837	16,442	18,626	434	19,061
03	Fish and fish preparations	2,052	5,836	7,888	2,911	7,602	10,513
05	Fruit and fruit preparations (including nuts)	13,461	1,220	14,681	16,264	2,022	18,285
01	Meat and meat preparations	4,879	78	4,957	8,581	140	8,721
02	Milk and cream	4,775	7	4,782	4,862	2	4,864
05	Vegetables, fresh, preserved or prepared	12,137	1,405	13,542	13,449	1,980	15,429
	Other food	51,198	4,191	55,388	62,268	4,736	67,003
85	Footwear, gaiters, etc. and parts therefor	17,455	1,743	19,198	17,903	2,563	20,466
82	Furniture	9,142	2,423	11,566	10,859	3,783	14,642
66	Glass and glassware	11,117	2,359	13,476	10,707	4,064	14,772
	Machinery—						
72	Electric machinery, apparatus and appliances—						
	Batteries	5,118	390	5,508	6,016	466	6,482
	Domestic electric—						
	Cooking and heating	13,244	353	13,598	15,805	635	16,439
	Refrigerators and parts	10,866	2,696	13,562	11,631	2,540	14,171
	Washing machines and parts	8,093	1,218	9,310	7,713	1,561	9,273
	Power machinery and switchgear	17,749	9,854	27,603	19,131	6,859	25,990
	Telecommunication apparatus	53,536	11,773	65,308	58,866	12,423	71,290
	Wire and cable, insulated	9,659	166	9,825	9,423	584	10,007
71	Other than electric—						
	Agricultural—						
	Tractors	4,571	19,370	23,940	3,806	21,739	25,545
	Other	27,465	3,609	31,074	36,513	6,008	42,522
	Excavating, levelling, tamping and boring, for earth, minerals or ores	21,541	20,303	41,844	28,082	25,368	53,450
	Internal combustion engines	10,037	12,248	22,285	13,444	13,219	26,663
	Lifting, handling, loading or unloading	8,380	3,086	11,465	5,667	3,978	9,645
	Office	16,681	1,254	17,935	23,637	2,026	25,663
	Pumps for liquids	7,576	1,030	8,605	9,461	1,225	10,686
54	Medicinal and pharmaceutical products	29,681	910	30,590	36,296	520	36,816
69	Metal manufactures, n.e.i.—						
	Household cooking and heating appliances, non-electric	3,703	435	4,138	4,857	512	5,369
	Metals—						
67	Iron and steel—						
	Pig, ingot and other primary forms	4,358	534	4,892	4,950	361	5,311
	Other	79,553	16,217	95,770	80,472	15,598	96,070
	Non-ferrous	21,400	746	22,146	24,630	598	25,227
66	Mineral manufactures, non-metallic, n.e.i.	8,310	6,572	14,881	10,649	9,011	19,660
64	Paper, paperboard and manufactures thereof	30,702	12,898	43,600	35,583	16,426	52,008
33	Petroleum and petroleum products	25,706	212,551	238,257	29,996	332,237	362,233
53	Pigments, paints, varnishes, etc.	8,467	559	9,027	9,357	730	10,086
89	Plastic articles, n.e.i.	17,404	1,653	19,057	20,346	2,201	22,548
58	Plastic materials, regenerated cellulose and artificial resins	17,789	6,652	24,441	25,979	9,311	35,290
89	Printed matter	13,240	3,545	16,785	16,120	4,658	20,778
86	Scientific, medical, optical and photographic equipment	23,048	3,576	26,624	27,461	5,937	33,398
55	Soaps and cleansing preparations	14,508	257	14,764	17,181	486	17,667
65	Textile yarn, fabrics, made-up articles and related products—						
	Bags and sacks	255	2,375	2,629	377	4,346	4,723
	Fabrics (c)	16,502	6,059	22,561	18,533	7,661	26,194
	Floor coverings	13,978	3,923	17,901	17,566	5,437	23,003
24	Timber	62	6,126	6,188	79	5,642	5,721
12	Tobacco and tobacco manufactures	23,776	826	24,502	23,712	1,012	24,724
55	Tollet preparations (except soaps)	15,871	71	15,942	19,767	100	19,868
69	Tools for use in the hand or in machines	11,056	6,024	17,080	14,376	6,606	20,983
73	Transport equipment—						
	Road motor vehicles and components	210,589	44,662	255,251	243,945	66,273	310,219
	Other	24,861	23,514	48,375	27,502	8,705	36,206
62	Tyres and tubes	22,006	9,540	31,546	19,741	11,870	31,611
	All other commodities	295,837	133,194	429,031	345,513	154,674	500,187
	TOTAL	1,418,726 (a)	637,439	2,056,165 (a)	1,641,545 (a)	829,411	2,470,955 (a)

(a) Excludes interstate value of horses.
or special fabrics.

(b) Includes articles of knitted or crocheted fabric.

(c) Excludes narrow

The principal imports from each of the Australian States and the Northern Territory are given in the following table.

VALUE OF PRINCIPAL IMPORTS FROM AUSTRALIAN STATES—SELECTED COMMODITIES
(\$'000)

Division	Description	1975-76		1976-77					
		Total	N.S.W. (a)	Vic.	Qld	S.A.	Tas.	N.T.	Total
00	Animals, live—								
	Cattle (including buffaloes)	2,501	636	175	80	1,032	36	2,326	4,285
	Sheep and lambs	607	134	25	—	526	103	—	788
11	Beverages, alcoholic	19,821	6,489	5,330	431	10,641	47	—	22,938
84	Clothing and clothing accessories and articles of knitted or crocheted fabric	91,924	41,507	54,920	2,229	3,817	243	—	102,715
	Food—								
04	Cereals and cereal preparations	13,780	8,790	6,746	524	604	201	—	16,864
06, 07	Confectionery	15,605	4,965	8,932	16	693	4,020	—	18,626
05	Fruit and fruit preparations—								
	Dried (except citrus)	1,540	75	1,276	—	509	—	—	1,860
	Fresh (including citrus, dried)	2,970	672	54	881	1,112	—	—	2,719
	Other (including nuts)	8,951	1,201	5,219	2,768	2,497	—	—	11,685
01	Meat and meat preparations	4,879	1,520	5,851	429	672	—	109	8,581
02	Milk and cream	4,775	619	4,171	51	22	—	—	4,862
	Other food	64,684	17,043	46,267	9,683	4,356	1,150	129	78,628
85	Footwear, gaiters, etc. and parts therefor	17,455	3,849	12,007	467	1,408	173	—	17,903
82	Furniture	9,142	2,634	5,816	4	2,404	1	—	10,859
66	Glass and glassware	11,117	4,302	6,219	22	164	—	—	10,707
59	Insecticides, fungicides, etc.	9,083	8,899	1,454	243	151	—	—	10,747
	Machinery—								
72	Electric machinery, apparatus and appliances—								
	Batteries	5,118	3,691	1,521	320	484	—	—	6,016
	Domestic electric—								
	Cooking and heating	13,244	7,080	5,781	1,834	1,105	4	—	15,805
	Refrigerators and parts	10,866	4,216	2,482	—	4,932	—	—	11,631
	Washing machines and parts	8,093	4,615	425	—	2,673	—	—	7,713
	Power machinery and switchgear	17,749	8,764	6,008	363	3,996	—	—	19,131
	Telecommunication apparatus—								
	Radio broadcast receivers	3,811	2,772	1,549	4	36	—	—	4,361
	Television receivers—								
	Colour	30,523	32,447	6,995	—	5	—	—	39,448
	Black and white	2,087	577	39	—	1	—	—	616
	Other	17,114	5,713	6,331	526	1,780	91	—	14,442
	Wire and cable, insulated	9,659	4,344	4,850	5	224	—	—	9,423
	Other	23,227	13,011	14,935	521	1,936	1	—	30,404
71	Other than electric—								
	Agricultural—								
	Tractors	4,571	658	2,583	566	—	—	—	3,806
	Other	27,465	5,016	24,282	220	6,995	—	—	36,513
	Excavating, levelling, tamping and boring, for earth, minerals or ores	21,541	7,874	18,363	671	1,035	123	16	28,082
	Other	104,102	59,936	43,766	2,657	9,832	684	—	116,876
54	Medicinal and pharmaceutical products...	29,681	26,502	8,964	30	785	—	14	36,296
	Metals—								
67	Iron and steel—								
	Pig, ingot and other primary forms	4,358	1,667	102	—	3,051	131	—	4,950
	Universals, plates and sheets	39,128	31,697	14,414	9	65	—	—	46,186
	Other	40,426	25,108	1,744	31	7,147	235	22	34,286
68	Non-ferrous	21,400	14,902	6,050	93	435	3,149	—	24,630
66	Mineral manufactures, non-metallic, n.e.i.	8,310	7,036	3,230	29	353	—	—	10,649
64	Paper, paperboard and manufactures thereof	30,702	13,451	14,557	500	3,311	3,763	2	35,583
33	Petroleum and petroleum products	25,706	1,219	28,227	3	545	—	—	29,996
53	Pigments, paints, varnishes, etc.	8,467	4,662	3,882	297	516	—	—	9,357
58	Plastic materials, regenerated cellulose and artificial resins	17,789	12,585	13,073	121	199	—	—	25,979
86	Scientific, medical, optical and photographic equipment	23,048	15,295	11,374	173	617	2	—	27,461
55	Soaps and cleansing preparations	14,508	14,640	2,321	1	218	—	—	17,181
65	Textile yarn, fabrics, made-up articles and related products—								
	Fabrics (b)	16,502	8,279	8,911	125	297	921	—	18,533
	Floor coverings	13,978	6,246	9,877	199	1,068	176	—	17,566
	Other	17,805	5,724	9,662	140	1,530	506	—	17,562
12	Tobacco and tobacco manufactures	23,676	10,464	13,224	2	22	—	—	23,712
55	Toilet preparations (except soaps)	15,871	16,414	3,316	3	35	—	—	19,767
69	Tools for use in the hand or in machines...	11,056	7,309	6,228	175	665	—	—	14,376
73	Transport equipment—								
	Road motor vehicles and components	210,589	30,576	133,487	11,197	68,685	—	—	243,945
	Other	24,861	17,078	7,459	1,729	1,142	68	26	27,502
62	Tyres and tubes	22,006	5,826	11,538	1,361	1,016	—	—	19,741
	All other commodities	220,856	137,204	99,687	7,128	21,008	2,227	3	267,257
	TOTAL (c)	1,418,726	677,933	715,697	48,860	178,352	18,056	2,649	1,641,545

(a) Includes the value of imports from the Australian Capital Territory.

(b) Excludes narrow or special fabrics.

(c) Excludes value of horses; details are not available for publication.

VALUE OF OVERSEAS IMPORTS FROM PRINCIPAL COUNTRIES OF ORIGIN
DIVISIONS OF THE IMPORT COMMODITY CLASSIFICATION: 1976-77
(\$'000)

Division	Description	Japan	United States of America	United Kingdom	Singapore, Republic of	Germany, Federal Republic of	Canada	Total
00	Live animals	-	-	370	-	86	-	542
01	Meat and meat preparations	-	-	102	-	1	-	140
02	Dairy products and eggs	-	-	2	2	95	-	754
03	Fish and fish preparations	2,069	390	768	189	77	284	7,602
04	Cereals and cereal preparations	52	67	191	24	13	8	665
05	Fruit and vegetables	85	435	214	28	18	262	4,002
06	Sugar, sugar preparations and honey	-	9	182	1	-	2	349
07	Coffee, tea, cocoa, spices and manufactures thereof	2	6	99	38	18	-	2,817
08	Feeding-stuff for animals (excluding unmilled cereals)	55	285	4	-	32	-	880
09	Miscellaneous preparations chiefly for food	56	16	68	95	13	3	373
11	Beverages	5	128	1,615	1	129	25	2,964
12	Tobacco and tobacco manufactures	-	-	323	-	2	-	1,012
22	Oil-seeds, oil nuts and oil kernels	-	-	-	8	-	-	79
23	Crude rubber (including synthetic and reclaimed)	-	-	-	41	-	-	177
24	Wood, timber and cork	-	341	-	255	4	-	5,667
25	Pulp and waste paper	-	28	-	-	-	-	1,710
26	Textile fibres and their waste	363	2	339	4	-	-	1,149
27	Crude fertilisers and crude minerals (excluding coal, petroleum and precious stones)	512	220	55	-	62	11,589	28,534
28	Metalliferous ores and metal scrap	1,480	-	-	-	-	-	1,540
29	Crude animal and vegetable materials, n.e.i.	141	110	570	116	2	37	1,597
32	Coal, coke and briquettes	-	-	2	-	40	4	47
33	Petroleum and petroleum products	28	519	60	36,661	48	4	332,237
42	Fixed vegetable oils and fats	10	10	2	4	36	-	930
43	Animal and vegetable oils and fats, processed, and waxes of animal or vegetable origin	-	4	14	-	13	-	39
52	Mineral tar and crude chemicals from coal, petroleum and natural gas	2	198	3	-	-	-	203
53	Dyeing, tanning and colouring materials	67	222	451	4	178	11	1,350
54	Medicinal and pharmaceutical products	118	20	31	-	142	1	520
55	Essential oils and perfume materials; toilet, polishing and cleansing preparations	14	311	124	6	34	-	642
56	Fertilisers, manufactured	906	6,473	-	-	270	676	9,570
57	Explosives and pyrotechnic products.....	2	6	3	-	6	1	65
58	Plastic materials, regenerated cellulose and artificial resins	686	2,479	2,900	131	337	87	9,311
59	Chemical materials and products, n.e.i.	174	2,630	4,525	-	342	-	8,379
61	Leather, leather manufactures, n.e.i., and dressed fur skins	33	20	231	9	48	-	467
62	Rubber manufactures, n.e.i.	7,055	1,027	2,635	3	429	85	14,077
63	Wood and cork manufactures (excluding furniture)	47	247	81	444	25	280	3,846
64	Paper, paperboard and manufactures thereof	1,124	935	582	7	281	6,328	16,426
65	Textile yarn, fabrics, made-up articles and related products	2,850	1,781	5,239	1,013	611	262	22,191
66	Non-metallic mineral manufactures, n.e.i.	4,256	803	1,911	149	926	158	13,075
67	Iron and steel	11,444	1,778	763	6	311	1	15,959
68	Non-ferrous metals	71	73	201	-	80	121	598
69	Manufactures of metal, n.e.i.	2,587	4,335	2,465	161	1,035	110	15,229
71	Machinery, other than electric	24,776	42,073	12,770	170	11,635	2,903	113,620
72	Electric machinery, apparatus and appliances	15,728	4,775	4,125	598	1,434	1,126	34,022
73	Transport equipment	47,238	7,808	1,850	12	9,756	4,877	74,978
81	Sanitary, plumbing, heating and lighting fixtures and fittings	178	20	278	5	85	24	1,067
82	Furniture	197	172	847	373	60	15	3,783
83	Travel goods, handbags and similar articles.....	71	1	61	18	18	-	892
84	Clothing and clothing accessories and articles of knitted or crocheted fabric	267	54	996	101	116	2	5,238
85	Footwear, gaiters and similar articles and parts thereof	38	20	233	56	34	1	2,563
86	Professional, scientific and controlling instruments; photographic and optical goods; watches and clocks	1,048	1,834	1,155	30	1,261	243	6,939
89	Miscellaneous manufactured articles, n.e.i.	3,762	3,041	6,454	582	709	66	21,748
	Other (a).....	9,001	8,456	13,110	82	1,066	107	36,847
	TOTAL	138,600	94,163	69,003	41,428	31,918	29,709	829,411

(a) Includes details which are not available for publication.

EXPORTS
QUANTITY AND VALUE OF PRINCIPAL EXPORTS FROM WESTERN AUSTRALIA
SELECTED COMMODITIES: 1976-77

Division	Description	Unit	Interstate		Overseas		Total	
			Quantity	Value	Quantity	Value	Quantity	Value
00	Animals, live—			\$'000		\$'000		\$'000
	Cattle (including buffaloes)	number	474	35	15,747	2,498	16,221	2,533
84	Sheep and lambs	number	(a)	(a)	2,329,194	34,905	2,329,194	34,905
	Clothing and clothing accessories and articles of knitted or crocheted fabric ....	..	..	5,816	..	64	..	5,880
04	Food—							
	Cereals and cereal preparations—							
	Barley, unmilled	tonne	1	—	488,701	54,414	488,702	54,414
	Flour and meal of wheat or maslin	tonne	833	242	10,521	1,809	11,355	2,051
	Oats, unmilled	tonne	15	1	182,346	16,619	182,361	16,620
	Wheat, unmilled	tonne	3	—	3,009,098	316,257	3,009,101	316,258
03	Fish and fish preparations—							
	Chilled or frozen—							
	Prawns	tonne	235	1,471	2,309	15,393	2,544	16,864
	Rock lobster tails	tonne	—	—	4,071	47,061	4,071	47,061
	Other	tonne	101	225	568	3,053	669	3,278
	Other fish and fish preparations	tonne	1,026	1,347	12	24	1,038	1,372
05	Fruit—							
	Fresh—							
	Apples	tonne	887	281	11,923	3,602	12,810	3,883
	Other ....	..	..	94	..	1,308	..	1,402
06	Honey	tonne	1	1	2,546	1,938	2,548	1,939
01	Meat and meat preparations—							
	Fresh, chilled or frozen—							
	Beef and veal	tonne	196	199	52,854	53,092	53,051	53,291
	Lamb	tonne	248	222	18,327	16,236	18,575	16,458
	Mutton	tonne	—	—	41,798	32,454	41,798	32,455
	Pigmeat	tonne	765	1,151	527	817	1,292	1,968
	Other (b)	tonne	93	108	11,440	6,838	11,533	6,945
	Other meat and meat preparations	tonne	237	583	766	776	1,003	1,359
05	Vegetables, fresh or frozen ....	..	..	1,256	..	2,126	..	3,382
	Other food ....	..	..	4,651	..	10,334	..	14,986
85	Footwear, gaiters, etc. and parts therefor ....	..	..	2,250	..	2	..	2,252
82	Furniture ....	..	..	12,160	..	247	..	12,406
99	Gold mint bullion	kg	283	941	6,549	25,232	6,832	26,172
67	Iron and steel (c)	'000 tonnes	133	17,522	766	56,986	899	74,508
	Machinery—							
72	Electric—							
	Power machinery and switchgear ....	..	..	1,675	..	1,258	..	2,933
71	Other than electric—							
	Agricultural—							
	Tractors ....	..	..	12,671	..	1	..	12,672
	Other ....	..	..	5,848	..	552	..	6,400
	Other ....	..	..	35,121	..	6,893	..	42,014
28	Ores, metalliferous—							
	Ilmenite and leucoxene (d)	'000 tonnes	50	832	1,134	19,324	1,184	20,155
	Iron	'000 tonnes	7,207	57,882	77,732	843,105	84,939	900,987
	Tin	tonne	5	16	777	3,923	782	3,939
64	Paper, paperboard and manufactures thereof ....	..	..	4,040	..	134	..	4,173
33	Petroleum and petroleum products ....	..	..	32,528	..	43,075	..	75,603
27	Salt	'000 tonnes	—	—	4,090	28,158	4,090	28,158
21	Skins and hides—							
	Bovine and equine	tonne	199	165	11,846	8,282	12,045	8,447
	Sheep and lamb ....	..	..	167	..	15,586	..	15,754
	Other ....	..	..	60	..	448	..	508
41	Tallow	tonne	—	—	34,456	10,279	34,456	10,279
24	Timber—							
	Sleepers, railway	'000 cu m	6	783	30	4,203	36	4,986
	Other	'000 cu m	37	4,311	6	855	42	5,166
73	Transport equipment ....	..	..	8,797	..	1,800	..	10,597
26	Wool—							
	Degreased (washed, scoured, etc.)	tonne	265	724	14,630	39,298	14,895	40,022
	Greasy (including slipe)	tonne	1,138	2,112	153,642	289,030	154,779	291,142
	Other	tonne	—	—	1,651	5,988	1,651	5,988
	All other commodities (e) ....	..	..	76,855	..	569,835	..	646,689
	TOTAL (f) ....	..	..	295,144	..	2,596,110	..	2,891,254

(a) Excludes interstate exports which are not available for publication; included in *All other commodities*. (b) Includes edible offals, poultry, rabbits, horse, goat and kangaroo meats. (c) Principally pig-iron, cast iron, basic shapes and sections. (d) Excludes overseas exports of beneficiated ilmenite which are not available for publication; included in *All other commodities*. (e) See footnotes (a) and (d). (f) Excludes interstate value of horses. Details are not available for publication.

The following table shows the value and proportion of the principal items exported overseas and interstate during 1976-77.

VALUE OF PRINCIPAL EXPORTS FROM WESTERN AUSTRALIA
SELECTED COMMODITIES: 1976-77

Division	Description	Value (\$'000)			Proportion of total (per cent)		
		Interstate	Overseas	Total	Interstate	Overseas	Total
00	Animals, live—						
	Cattle (including buffaloes)	35	2,498	2,533	0.01	0.10	0.09
	Sheep and lambs	(a)	34,905	(a) 34,905	..	1.34	1.21
84	Clothing and clothing accessories and articles of knitted or crocheted fabric	5,816	64	5,880	1.97	—	0.20
	Food—						
04	Cereals and cereal preparations—						
	Barley, unmilled	—	54,414	54,414	—	2.10	1.88
	Flour and meal of wheat or maslin	242	1,809	2,051	0.08	0.07	0.07
	Oats, unmilled	1	16,619	16,620	—	0.64	0.57
	Wheat, unmilled	—	316,257	316,258	—	12.18	10.94
03	Fish and fish preparations—						
	Chilled or frozen—						
	Prawns	1,471	15,393	16,864	0.50	0.59	0.58
	Rock lobster tails	—	47,061	47,061	—	1.81	1.63
	Other	225	3,053	3,278	0.08	0.12	0.11
	Other fish and fish preparations	1,347	24	1,372	0.46	—	0.05
05	Fruit—						
	Fresh—						
	Apples	281	3,602	3,883	0.10	0.14	0.13
	Other	94	1,308	1,402	0.03	0.05	0.05
06	Honey	1	1,938	1,939	—	0.07	0.07
01	Meat and meat preparations—						
	Fresh, chilled or frozen—						
	Beef and veal	199	53,092	53,291	0.07	2.05	1.84
	Lamb	222	16,236	16,458	0.08	0.63	0.57
	Mutton	—	32,454	32,455	—	1.25	1.12
	Pigmeat	1,151	817	1,968	0.39	0.03	0.07
	Other (b)	108	6,838	6,945	0.04	0.26	0.24
	Other meat and meat preparations	583	776	1,359	0.20	0.03	0.05
05	Vegetables, fresh or frozen	1,256	2,126	3,382	0.42	0.08	0.12
	Other food	4,651	10,334	14,986	1.58	0.40	0.52
85	Footwear, gaiters, etc. and parts therefor	2,250	2	2,252	0.76	—	0.08
82	Furniture	12,160	247	12,406	4.12	0.01	0.43
99	Gold mint bullion	941	25,232	26,172	0.32	0.97	0.91
67	Iron and steel (c)	17,522	56,986	74,508	5.94	2.20	2.58
	Machinery—						
	Electric	1,675	1,258	2,933	0.57	0.05	0.10
71	Power machinery and switchgear						
	Other than electric—						
	Agricultural—						
	Tractors	12,671	1	12,672	4.29	—	0.44
	Other	5,848	552	6,400	1.98	0.02	0.22
	Other	35,121	6,893	42,014	11.90	0.27	1.45
28	Ores, metalliferous—						
	Ilmenite and leucoxene (d)	832	19,324	20,155	0.28	0.74	0.70
	Iron	57,882	843,105	900,987	19.61	32.48	31.16
	Tin	16	3,923	3,939	0.01	0.15	0.14
64	Paper, paperboard and manufactures thereof	4,040	134	4,173	1.37	0.01	0.14
33	Petroleum and petroleum products	32,528	43,075	75,603	11.02	1.66	2.61
27	Salt	—	28,158	28,158	—	1.08	0.97
21	Skins and hides—						
	Bovine and equine	165	8,282	8,447	0.06	0.32	0.29
	Sheep and lamb	167	15,586	15,754	0.06	0.60	0.54
	Other	60	448	508	0.02	0.02	0.02
41	Tallow	—	10,279	10,279	—	0.40	0.36
24	Timber—						
	Sleepers, railway	783	4,203	4,986	0.27	0.16	0.17
	Other	4,311	855	5,166	1.46	0.03	0.18
73	Transport equipment	8,797	1,800	10,597	2.98	0.07	0.37
26	Wool—						
	Degreased (washed, scoured, etc.)	724	39,298	40,022	0.25	1.51	1.38
	Greasy (including slips)	2,112	289,030	291,142	0.72	11.13	10.07
	Other	—	5,988	5,988	—	0.23	0.21
	All other commodities (e)	76,855	569,835	646,689	26.04	21.95	22.36
	TOTAL (f)	295,144	2,596,110	2,891,254	100.00	100.00	100.00

(a) Excludes interstate exports which are not available for publication; included in *All other commodities*. (b) Includes edible offals, poultry, rabbits, horse, goat and kangaroo meats. (c) Principally pig-iron, cast iron, basic shapes and sections. (d) Excludes overseas exports of beneficiated ilmenite which are not available for publication; included in *All other commodities*. (e) See footnotes (a) and (d). (f) Excludes interstate value of horses. Details are not available for publication.

In the table below, details are given of the value of the principal items exported to other Australian States and Territories.

Quarterly statistics of Western Australia's trade with overseas countries are published in the *Quarterly Summary of Overseas Trade Statistics* (Catalogue No. 5403.5). Annual statistics, in greater detail, appear in the publications *Statistics of Western Australia—Trade (Overseas)* and *Statistics of Western Australia—Trade (Interstate and Overseas)*. These publications are compiled and issued by the Western Australian Office of the Australian Bureau of Statistics.

VALUE OF PRINCIPAL EXPORTS TO AUSTRALIAN STATES—SELECTED COMMODITIES
(\$'000)

Division	Description	1975-76	1976-77						Total
		Total	N.S.W. (a)	Vic.	Qld	S.A.	Tas.	N.T.	
29	Animal casings (sausage) and the like	192	188	1	27	10	—	—	226
00	Animals, live—								
	Cattle (including buffaloes)	60	33	2	—	—	—	—	35
	Sheep and lambs	12	(b)	(b)	(b)	(b)	(b)	(b)	(b)
84	Clothing and clothing accessories and articles of knitted or crocheted fabric....	4,603	2,534	1,639	494	952	116	80	5,816
29	Clover seed	413	160	243	—	237	—	—	640
	Food—								
02	Butter, butterfats and oils, n.e.i.	311	—	—	—	—	—	301	301
06	Confectionery, except chocolate	702	185	141	38	61	9	—	435
03	Fish and fish preparations—								
	Chilled or frozen	1,819	1,044	354	5	293	—	—	1,696
	Other fish and fish preparations	1,478	577	181	92	471	25	—	1,347
01	Meat and meat preparations—								
	Fresh, chilled or frozen	1,149	976	161	11	106	—	425	1,680
	Other meat and meat preparations	517	25	43	—	117	—	398	583
05	Vegetables, fresh—								
	Potatoes	1,262	631	70	28	145	—	19	893
	Other	426	20	7	—	141	—	195	363
	Other food	4,266	1,206	1,451	305	1,097	115	364	4,537
85	Footwear, gaiters, etc. and parts therefor	3,406	832	582	409	295	119	12	2,250
82	Furniture	13,065	3,161	4,340	1,632	2,545	183	298	12,160
99	Gold mint bullion	585	18	916	1	6	—	—	941
67	Iron and steel (c)	13,137	4,793	4,286	293	6,221	58	1,871	17,522
	Machinery—								
72	Electric—								
	Power machinery and switchgear	1,119	735	580	195	107	1	57	1,675
	Other	1,160	490	337	103	119	14	99	1,162
71	Other than electric—								
	Agricultural—								
	Tractors	8,288	797	5,536	1,944	4,345	—	49	12,671
	Other	4,150	692	2,399	1,272	1,450	36	—	5,848
	Sorting, screening, crushing, mixing, for earth, stone, ores or other mineral substances	662	48	118	181	—	90	36	474
28	Other	23,151	14,398	7,355	5,657	6,055	316	865	34,647
	Ores, metalliferous—								
	Ilmenite and leucoxene	617	—	—	—	—	832	—	832
	Iron	49,505	57,677	—	—	205	—	—	57,882
	Tin	60	16	—	—	—	—	—	16
69	Metal manufactures, n.e.i.—								
	Household equipment of base metals....	22	21	7	1	38	—	3	71
	Other	6,955	1,727	1,142	719	1,803	211	823	6,425
33	Petroleum and petroleum products	39,544	10,366	6,119	—	11,107	—	4,936	32,528
62	Rubber manufactures, n.e.i.	305	72	54	59	39	7	3	234
21	Skins and hides—								
	Bovine and equine	89	96	39	—	30	—	—	165
	Sheep and lamb	785	8	105	11	44	—	—	167
	Other	264	50	—	5	5	—	—	60
24	Timber—								
	Sleepers, railway	609	—	—	—	783	—	—	783
	Other	3,772	845	464	—	2,869	—	133	4,311
73	Transport equipment—								
	Road motor vehicles (d)	2,593	589	1,233	991	600	4	9	3,427
	Other	8,252	3,184	453	549	723	132	330	5,370
26	Wool—								
	Degreased (washed, scoured, etc.)	362	—	724	—	—	—	—	724
	Greasy (including slipe)	1,614	267	1,214	64	556	12	—	2,112
	Other	28	—	—	—	—	—	—	—
	All other commodities (e)	58,233	20,493	35,574	3,546	7,649	554	4,321	72,138
	TOTAL (f)	259,540	128,953	77,873	18,633	51,225	2,833	15,627	295,144

(a) Includes the value of exports to the Australian Capital Territory. (b) Details are not available for publication; included in *All other commodities*. (c) Principally pig-iron, cast iron, basic shapes and sections. (d) Including components. (e) Includes some principal commodities, details of which are not available for publication separately. (f) Excludes value of horses. Details are not available for publication.

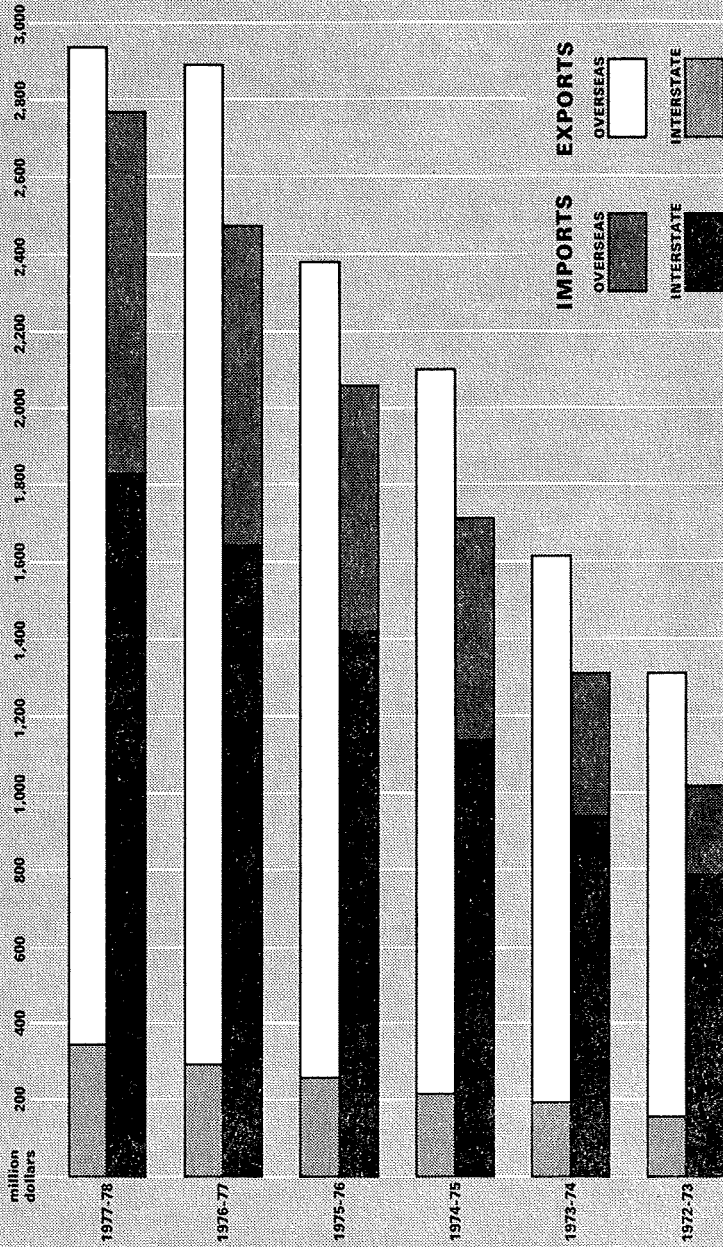
The value of overseas exports from Western Australia to the principal countries of destination in 1976-77 is given in the following table.

VALUE OF OVERSEAS EXPORTS TO PRINCIPAL COUNTRIES OF DESTINATION
DIVISIONS OF THE EXPORT COMMODITY CLASSIFICATION: 1976-77
(\$'000)

Division	Description	Japan	United States of America	Germany, Federal Republic of	India	Netherlands	United Kingdom	Total
00	Live animals	-	-	-	-	-	3	37,855
01	Meat and meat preparations	15,294	23,291	181	44	336	3,749	110,214
02	Dairy products and eggs	488	-	-	-	-	-	823
03	Fish and fish preparations	15,837	47,634	-	-	-	-	65,531
04	Cereals and cereal preparations	95,488	12	20,765	54,363	2,100	158	391,917
05	Fruit and vegetables	2	-	151	-	139	890	7,185
06	Sugar, sugar preparations and honey	7	8	216	5	-	780	1,966
07	Coffee, tea, cocoa, spices and manufactures thereof	-	-	-	-	-	-	36
08	Feeding-stuff for animals (excluding unmilled cereals)	2,578	32	-	-	-	-	6,242
09	Miscellaneous preparations chiefly for food	-	-	-	-	-	-	238
10	Tobacco and tobacco manufactures	-	-	-	-	-	-	64
11	Hides, skins and fur skins, undressed	1,281	11	1,892	-	139	337	24,316
21	Oil-seeds, oil nuts and oil kernels	-	-	-	-	-	-	7
22	Oil-seeds, oil nuts and oil kernels	-	149	76	-	5	3,043	5,064
24	Wood, timber and cork	-	-	-	-	-	-	18
25	Pulp and waste paper	-	-	-	-	-	-	7
26	Textile fibres and their waste	115,249	8,861	32,887	10,178	12,397	12,514	334,393
27	Crude fertilisers and crude minerals (excluding coal, petroleum and precious stones)	24,745	-	-	-	644	305	31,965
28	Metalliferous ores and metal scrap	735,437	30,026	48,424	179	27,971	24,093	1,030,147
29	Crude animal and vegetable materials, n.e.i.	103	137	189	-	73	143	3,263
32	Coal, coke and briquettes	27	-	-	-	-	-	27
33	Petroleum and petroleum products	1,682	-	-	-	-	-	43,075
41	Animal oils and fats	4,427	77	191	1,395	827	1,413	12,779
43	Animal and vegetable oils and fats, processed, and waxes of animal or vegetable origin	-	-	23	-	-	118	141
53	Dyeing, tanning and colouring materials	-	-	-	-	-	-	560
54	Medicinal and pharmaceutical products	-	-	-	-	-	-	396
55	Essential oils and perfume materials; toilet, polishing and cleansing preparations	-	-	-	21	-	-	160
56	Fertilisers, manufactured	-	-	-	-	-	-	7
57	Explosives and pyrotechnic products	-	-	-	-	-	-	8
58	Plastic materials, regenerated cellulose and artificial resins	2	-	-	2	-	-	89
59	Chemical materials and products, n.e.i.	78	120	-	-	-	68	616
61	Leather, leather manufactures, n.e.i., and dressed fur skins	-	6	-	-	-	40	345
62	Rubber manufactures, n.e.i.	-	-	-	1	-	-	42
64	Paper, paperboard and manufactures thereof	-	15	-	-	-	5	134
65	Textile yarn, fabrics, made-up articles and related products	-	-	-	-	-	-	1,957
67	Iron and steel	21,348	2,939	184	1	-	-	56,986
69	Manufactures of metal, n.e.i.	8	606	86	4	1	91	2,637
71	Machinery, other than electric	21	1,445	4	4	23	193	7,446
72	Electric machinery, apparatus and appliances	3	62	17	-	-	64	2,133
73	Transport equipment	3	40	13	9	7	58	1,800
81	Sanitary, plumbing, heating and lighting fixtures and fittings	-	4	-	-	-	-	302
82	Furniture	-	3	-	-	-	2	247
84	Clothing and clothing accessories and articles of knitted or crocheted fabric	4	6	2	-	-	1	64
86	Professional, scientific and controlling instruments; photographic and optical goods; watches and clocks	3	120	2	-	-	51	657
89	Miscellaneous manufactured articles, n.e.i.	8	80	6	-	1	32	704
	Other (a)	76,364	161,046	5,547	6,139	20,010	12,457	411,557
	TOTAL	1,110,490	276,733	110,853	72,346	64,677	60,613	2,596,110

(a) Includes details which are not available for publication.

Imports and Exports, 1972-73 to 1977-78



The following table gives a classification of Western Australia's principal export commodities according to their main countries of destination in 1976-77.

VALUE OF OVERSEAS EXPORTS OF PRINCIPAL COMMODITIES
MAIN COUNTRIES OF DESTINATION (a): 1976-77
(\$'000)

Division	Description and destination	Value	Division	Description and destination	Value
04	Food—			Other (b)—(continued)—	
	Cereals and cereal preparations—			Japan	1,188
	Barley, unmilled—		99	Singapore, Republic of	1,000
	Japan	15,901		Gold, mint bullion—	
	Germany, Federal Republic of	14,863		Hong Kong	25,232
	Belgium-Luxembourg	12,935	28	Ores, metalliferous—	
	China—Taiwan Province only	7,728		Ilmenite and leucocene (c)—	
	Netherlands	2,100		United Kingdom	5,664
	Ecuador	787		United States of America	4,330
	Flour of wheat—			France	2,835
	Mauritius	1,307		Japan	1,969
	Oats, unmilled—			Brazil	1,363
	Japan	8,613		Spain	931
	Germany, Federal Republic of	5,902		Iron—	
	Union of Soviet Socialist Republics	1,348		Japan	641,461
	Wheat, unmilled—			Germany, Federal Republic of	47,258
	Japan	69,469		Netherlands	23,823
	India	54,363		Italy	19,980
	Indonesia	39,164		Belgium-Luxembourg	19,725
	Egypt, Arab Republic of	39,133		Korea, Republic of	18,702
	Yemen Arab Republic	26,797		France	18,551
	China—excluding Taiwan Province	19,682		United Kingdom	15,368
	Iraq	13,511		China—excluding Taiwan Province	12,459
	Malaysia	10,406		United States of America	7,895
	Ethiopia	8,470		Spain	7,220
	Viet Nam, Socialist Republic of	7,051		Greece	5,140
	Bangladesh	5,680		China—Taiwan Province only	4,075
	Saudi Arabia	4,948		Philippines, Republic of the	1,247
	Zambia	4,732	33	Petroleum and petroleum products—	
	Zimbabwe	3,015		New Zealand	14,314
	Singapore, Republic of	2,964		Fiji	11,879
	Italy	2,964		Malaysia	5,186
	Korea, Democratic People's Republic of	2,252		Singapore, Republic of	4,994
	Union of Soviet Socialist Republics	1,731		Hong Kong	2,411
	United Arab Emirates	1,278		Papua New Guinea	2,015
	Sri Lanka	1,004		Japan	1,682
03	Fish, fresh, chilled or frozen—		27	Salt—	
	Rock lobster tails—			Japan	22,300
	United States of America	46,690		China—Taiwan Province only	2,524
	Prawns—			Korea, Republic of	1,981
	Japan	14,551	21	Skins and hides—	
	United States of America	721		France	10,401
05	Fruit, fresh—			Italy	6,301
	Apples—			Germany, Federal Republic of	1,892
	Singapore, Republic of	1,354		Poland	1,384
01	Meat, fresh, chilled or frozen—			Japan	1,281
	Beef and veal—		24	Timber—	
	United States of America	23,197		United Kingdom	3,043
	United Arab Emirates	2,848		South Africa, Republic of	1,471
	Union of Soviet Socialist Republics	2,510	26	Wool—	
	Malaysia	2,296		Degreased (washed, scoured, etc.)—	
	Kuwait	2,288		Japan	10,727
	Iran	2,273		United States of America	7,316
	Singapore, Republic of	2,098		Germany, Federal Republic of	6,365
	Saudi Arabia	1,894		United Kingdom	5,598
	Japan	1,527		Italy	4,653
	Canada	1,367		France	1,262
	Mauritius	1,342		Greasy (including slip)—	
	Poland	1,315		Japan	104,132
	Hong Kong	1,252		Union of Soviet Socialist Republics	47,105
	Bahrain	1,217		Germany, Federal Republic of	26,135
	Romania	1,053		France	14,349
	Sweden	1,018		Italy	12,863
	United Kingdom	996		Netherlands	12,252
	Mutton and lamb—			Poland	11,808
	Iran	16,373		India	9,516
	Japan	12,388		Yugoslavia	6,923
	Kuwait	4,622		United Kingdom	6,673
	United Arab Emirates	4,270		Korea, Republic of	6,062
	Oman	1,472		Belgium-Luxembourg	5,344
	Saudi Arabia	1,405		Turkey	5,151
	Malaysia	1,133		China—Taiwan Province only	4,237
	United Kingdom	984		Malaysia	4,095
	Singapore, Republic of	955		Spain	2,760
	Union of Soviet Socialist Republics	852		Egypt, Arab Republic of	2,455
	Other (b)—			Sweden	1,671
	United Kingdom	1,677		United States of America	1,538
				Romania	1,263

(a) For total values of exports overseas of the several commodities shown, see earlier table. (b) Comprises pigmeat, edible offals, poultry, poultry livers, rabbits, horse, goat, buffalo and kangaroo meats. (c) Excludes overseas exports of beneficiated ilmenite which are not available for publication.

AVERAGE EXPORT VALUES

The following table shows the annual average export values, during the five years ended 30 June 1977, of a number of Western Australia's principal export commodities. The figures are based on *total* exports (interstate and overseas) and represent the value f.o.b., or its equivalent, at the point of final shipment.

ANNUAL AVERAGE EXPORT VALUES OF SPECIFIED COMMODITIES
(\$)

Description	Unit	1972-73	1973-74	1974-75	1975-76	1976-77
Apples, fresh	kg	0.18	0.19	0.26	0.21	0.30
Cereals and cereal preparations—						
Barley	tonne	45.18	86.00	97.14	108.65	111.34
Oats	"	34.94	72.63	85.11	92.61	91.14
Wheat	"	49.67	98.75	126.39	116.89	105.10
Wheaten flour (a)	"	87.69	122.85	178.36	173.41	180.67
Meat, fresh, chilled or frozen—						
Beef	kg	1.10	1.24	0.84	0.91	1.00
Lamb	"	0.57	0.82	0.70	0.81	0.89
Mutton	"	0.67	0.88	0.65	0.61	0.78
Pork	"	0.84	0.97	1.33	1.51	1.52
Ores, metalliferous—						
Ilmenite and leucoxene (b)	tonne	12.94	13.42	14.73	15.45	17.02
Iron (c)	"	6.40	6.19	8.09	9.54	10.85
Potatoes	"	(d) 67.92	(e) 116.18	142.77	134.11	156.73
Rock lobster tails	kg	6.60	6.97	7.59	8.88	11.56
Salt (c)	tonne	2.88	3.25	4.16	5.53	6.88
Skins and hides—						
Bovine and equine	kg	0.64	0.48	0.43	0.39	0.70
Sheep and lamb, with wool, incl. pieces	"	0.78	1.06	0.76	0.78	1.15
Timber—						
Railway sleepers	cu m	77.49	78.92	92.17	111.52	138.77
Other (f)	"	55.66	72.91	81.76	96.47	121.78
Wool—						
Greasy (including slip)	kg	1.50	2.15	1.44	1.48	1.88
Degreased (washed, scoured, etc.)	"	1.57	2.45	1.70	1.88	2.69

(a) Figures include meal and flour of wheat and maslin.

(c) The average values shown relate to overseas exports only.

(e) See footnote (d).

(f) Excluding plywood and veneers.

(b) Excludes values of overseas exports of beneficiated ilmenite.

(d) Some interstate details for 1972-73 are included in 1973-74.

SHIPS' STORES

The following table shows the quantity and value of ships' stores loaded on board vessels at Western Australian ports during the years 1974-75 to 1976-77. The value of ships' stores is excluded from all tables appearing elsewhere in this Part.

EXPORTS IN THE FORM OF SHIPS' STORES (a)

Description	Unit	1974-75		1975-76		1976-77	
		Quantity	Value	Quantity	Value	Quantity	Value
Beverages, alcoholic	'000 litres	970	\$'000 354	1,083	\$'000 507	1,183	\$'000 749
Foodstuffs—							
Fresh, chilled or frozen—							
Eggs in shell	'000 dozen	93	81	63	65	114	136
Fish	tonne	98	184	100	188	127	313
Fruit	"	..	99	..	56	..	153
Meat	"	1,238	1,485	1,103	1,183	838	1,209
Vegetables	"	..	357	..	197	..	366
All other foodstuffs	"	..	1,643	..	1,947	..	1,769
Fuel for ships and aircraft (bunker oil, etc.)	"	..	37,302	..	38,045	..	54,953
Lubricants	"	..	581	..	1,092	..	1,340
All other ships' stores (b)	"	..	8,072	..	3,358	..	3,153
Total	..	..	50,157	..	46,638	..	64,141

(a) Includes interstate ships' stores valued at \$4,605,162 in 1974-75, \$3,562,375 in 1975-76 and \$3,239,381 in 1976-77. Where the value of overseas ships' stores recorded in any one entry is less than \$250, the stores concerned are not allocated according to commodity, but are included in the item *All other ships' stores*.

(b) See footnote (a).

OVERSEAS IMPORTS AND EXPORTS

The following table shows the total value of Australia's overseas imports and exports, together with the proportion handled at Western Australian ports, during each of the years 1967-68 to 1976-77.

OVERSEAS TRADE OF AUSTRALIA—TOTAL VALUE AND PROPORTION HANDLED AT WESTERN AUSTRALIAN PORTS

Year	Value of Australian trade (\$'000)			Proportion handled at Western Australian ports (per cent)		
	Imports	Exports	Total	Imports	Exports	Total
1967-68	3,264,473	3,044,675	6,309,148	6·34	15·61	10·81
1968-69	3,468,505	3,374,263	6,842,768	5·87	16·19	10·96
1969-70	3,881,227	4,137,222	8,018,449	6·24	16·32	11·44
1970-71	4,150,028	4,375,757	8,525,785	6·71	19·71	13·38
1971-72	4,008,365	4,893,368	8,901,733	7·07	19·34	13·81
1972-73	4,120,727	6,213,704	10,334,431	5·52	18·58	13·37
1973-74	6,085,004	6,914,395	12,999,399	6·06	20·46	13·72
1974-75	8,079,853	8,725,774	16,805,627	7·15	21·55	14·62
1975-76 r	8,240,593	9,639,583	17,880,176	7·74	21·97	15·41
1976-77	10,410,617	11,646,412	22,057,029	7·97	22·29	15·53

CUSTOMS AND EXCISE

The Customs Tariff

The first Commonwealth Customs Tariff was introduced on 8 October 1901, from which date uniform duties came into effect throughout Australia. The Australian Customs Tariff has been developed in conformity with the policy of protecting economic and efficient Australian industries and of granting preferential treatment to imports from certain countries. Duties are imposed on some goods, generally of a luxury nature, for revenue purposes. Customs collections are a major source of revenue, but in its protective character the tariff has an important influence on the Australian economy.

The Australian Customs Tariff currently in use was introduced on 1 July 1965. The nomenclature used in the Tariff is that of the Convention on Nomenclature for the Classification of Goods in Customs Tariffs, an international agreement signed at Brussels on 15 December 1950. The system of naming established by the Convention has come to be known as the 'Customs Co-operation Council Nomenclature' (previously known as the Brussels Tariff Nomenclature.)

Chapter IX—continued

Part 2—Internal Trade

CENSUSES OF WHOLESALE, RETAIL AND SELECTED SERVICE ESTABLISHMENTS

Statistics of internal trade in Western Australia are derived mainly from the programme of integrated economic censuses which was introduced in 1968-69 and is described in more detail in the introduction to Chapter VIII.

Wholesale and retail trade comprises Division F of the Australian Standard Industrial Classification (ASIC) which is also described in Chapter VIII. Wholesale trade is described in ASIC as the re-sale (as agent or principal) of new or used goods to retailers or other wholesalers, or to institutional, government, professional or business users. Retail trade is described as the re-sale of new or used goods to final consumers for personal or household consumption. The selected service industries surveyed in the programme are included in Division L of ASIC, 'Entertainment, Recreation, Restaurants, Hotels and Personal Services.'

CENSUS OF WHOLESALE ESTABLISHMENTS

The first Census of Wholesale Establishments was conducted in 1968-69 and detailed statistics for Western Australia were published in the bulletin *Economic Censuses 1968-69: Wholesale Establishments (Final), Western Australia*. Bulletins relating to each of the other States and Territories and Australia as a whole were also published. The data items were classified variously to each industry class within Sub-division 46-47 'Wholesale Trade' of ASIC; to broad types of operation (*i.e.* primary produce dealers or agents, wholesale merchants, manufacturers' sales branches holding stocks, commission agents or brokers, petroleum distributors, or repairers and lessors of machinery and equipment); to area (*i.e.* local government area and statistical division) and to size of establishment, based on wholesale sales.

A summary of the data of the 1968-69 Wholesale Census appeared in the *Western Australian Year Book*, issues No. 11—1972 to No. 15—1976.

CENSUSES OF RETAIL AND SELECTED SERVICE ESTABLISHMENTS

Five retail censuses had been conducted prior to the inclusion of a Census of Retail and Selected Service Establishments in the system of integrated economic censuses in 1968-69. These earlier censuses related to the years 1947-48, 1948-49, 1952-53, 1956-57 and 1961-62 and covered (i) the retail trading activities of all establishments selling to the general public from fixed premises such as shops, rooms, kiosks and yards and (ii) the service activities of establishments such as motor repair workshops, hairdressers, boot repairers, cafes and restaurants. Licensed clubs and laundries and dry cleaners were included in collections supplementary to retail censuses from 1952-53 onwards and motion picture theatres were included in collections supplementary to the 1956-57 and 1961-62 Retail Censuses. Statistics from these censuses were published in bulletins for each State and Territory and for Australia as a whole. The censuses were also used to provide a framework for conducting quarterly sample surveys of retail sales.

The 1968-69 Census of Retail and Selected Service Establishments included all establishments in Sub-division 48: 'Retail Trade' of ASIC and establishments from selected industry classes in Division L: 'Entertainment, Recreation, Restaurants, Hotels and

Personal Services'. The selected industry classes were 9113 Motion Picture Theatres; 9211 Cafes and Restaurants; 9212 Licensed Hotels, Motels and Wine Saloons; 9221 Licensed Bowling Clubs; 9222 Licensed Golf Clubs; 9223 Licensed Clubs n.e.c.; 9310 Laundry and Dry Cleaning Services; 9321 Men's Hairdressing; and 9322 Women's Hairdressing and Beauty Salons.

Since the 1968-69 Census was based on definitions from the ASIC it differed from previous censuses in that it was restricted to establishments primarily engaged in retailing or the selected services and excluded the retailing or service activities of other types of establishments (e.g. wholesalers, manufacturers). The use of ASIC also involved another change in that all the activities of each establishment included in the census were measured, including non-retail or non-service activities, whereas in previous censuses only the retail or service activities were included. For example, for a retail establishment also engaged in wholesaling, all employees were included in the 1968-69 Census whereas in previous censuses the employees engaged in wholesaling would have been excluded.

A further retail census also based on ASIC principles was conducted for the year 1973-74.

The 1973-74 Retail Census differed from the previous censuses in scope, coverage and data content. It was conducted primarily to provide the basic data needed to enable a new sample of retail establishments to be selected for the quarterly Survey of Retail Establishments following the 1973-74 Retail Census. For this reason, bread and milk vendors, footwear repairers, motion picture theatres and laundries and dry cleaners were excluded from the 1973-74 Retail Census although they were included in the scope of the previous census taken in 1968-69. Similarly, questions relating to purchases, stocks, capital expenditure, etc. which were included on the 1968-69 Census forms were not included on the 1973-74 Census forms.

In the 1968-69 Census, where ownership of an establishment changed hands during the census year and separate returns were received from the current and previous proprietors, both returns were included in the census. In the 1973-74 Retail Census, however, establishments which operated for part of the census year were included in the census only if they had operated for at least two months of the census year and were still operating at 30 June 1974.

Detailed results for each census have been published for each State and Territory and for Australia as a whole. Results of the 1968-69 Census were published in *Economic Censuses: 1968-69, Retail Establishments and Selected Service Establishments* in four parts as follows: *Details of Operations by Industry Class and Area, Industry and Commodity Details for Statistical Retail Areas, Industry and Commodity Details by Size of Establishment, and Commodity Sales*. Results of the 1973-74 Census were published in *Census of Retail Establishments and Selected Service Establishments, Final Bulletin, 1973-74*. A summary of the results of the 1973-74 Census was also published in the 1979 Year Book.

The next retail census will be undertaken for the year ended 30 June 1980 and will provide data similar to that published for 1968-69.

Commodity Statistics

Details of retail sales of groups of commodities were collected in the 1973-74 Census of Retail Establishments and Selected Service Establishments. Retail sales were defined as the sale to final consumers of new or used goods of a type used mainly for household and personal purposes. Sales by retailers of commodities such as basic building materials, builders' hardware and builders' supplies, timber, commercial refrigerators and freezers, agricultural tractors, farm machinery and implements, construction and earthmoving equipment, grain, feed, fertilisers and agricultural supplies, and business machines and equipment, were treated as wholesale sales since the goods are of a type used mainly for commercial purposes.

A table showing retail sales made by retail and selected service establishments which were in operation at 30 June 1974 was published in the 1979 Year Book.

SURVEY OF RETAIL ESTABLISHMENTS

During the periods between retail censuses, quarterly estimates of the value of retail sales by commodity groupings are derived from a sample of retailers throughout the six States of Australia. The sample is drawn from the population of retail establishments enumerated in the censuses which is maintained by the addition of new businesses and the deletion of businesses which cease trading.

Statistics for the current series of estimates are available for quarters from September quarter 1975 onwards and are based on the 1973-74 Census of Retail and Selected Service Establishments.

The table below shows estimates of retail sales by commodity group for the years 1975-76 to 1977-78.

RETAIL SALES—COMMODITY GROUPS
(\$ million)

Commodity group	Year		
	1975-76	1976-77	1977-78 p
Groceries	314.3	374.7	461.8
Butchers' meat	73.4	92.8	109.1
Other food (a)	161.8	193.9	226.8
Beer, wine and spirits	229.5	267.6	297.7
Clothing, drapery, etc.	240.1	272.7	302.7
Footwear	37.0	42.9	48.4
Hardware, china and glassware (b)	66.9	75.8	85.4
Electrical goods and musical instruments	160.5	184.6	181.1
Furniture, floor coverings, mattresses	96.3	113.6	116.4
Chemists' goods	80.9	83.7	92.5
Newspapers, books, stationery	48.3	58.4	66.7
Other goods (c)	137.0	152.2	163.0
Total	1,646.0	1,912.9	2,151.6

(a) Includes fresh fruit and vegetables, confectionery, soft drinks, ice cream, cakes, pastry, cooked provisions, fish and wrapped lunches. (b) Excludes basic building materials, builders' hardware and supplies, such as tools of trade, paint, etc. (c) Includes tobacco, cigarettes, sporting goods etc. but excludes grain and produce and business machines.

Seasonally adjusted retail sales statistics, estimates of the value of retail sales of goods at constant (average 1974-75) prices and further information regarding quarterly estimates of retail sales, together with comparable data for each State and Australia are published by the Australian Statistician in *Retail Sales of Goods* (Catalogue No. 8503.0). Preliminary quarterly estimates of total retail sales for each State and estimates of retail sales for three major commodity groupings for Australia are released in *Retail Sales of Goods, Australia* (Preliminary) (Catalogue No. 8502.0) and monthly estimates of total retail sales in Australia based on a sub-sample of those establishments included in the quarterly sample appear in *Retail Sales of Goods, Australia* (Catalogue No. 8501.0).

RETAIL FLOOR SPACE STATISTICS

During the period covered by the 1973-74 Census of Retail Establishments and Selected Service Establishments, the Metropolitan Region Planning Authority (M.R.P.A.) commissioned a firm of consultants to prepare a report which involved, among other things, the collection of statistics on floor space used for retailing. The title of this report is 'Perth Metropolitan Region Retail Shopping Survey 1973'. As the floor space data collected for this report related in general to establishments which were operating at 31 December 1973, the mid-point of the 1973-74 Census of Retail Establishments and Selected Service Establishments, the opportunity was taken by the Bureau to match the two sources of data and produce statistics relating turnover to floor space for the Perth Statistical Division. These statistics have been published by industry class and area in the publication *Western Australia, Retail Floor Space, 1973-74* issued by this Office.

In compiling the floor space statistics some adjustments were necessary because of differences in scope and coverage between the two data sources. Statistics by floor space therefore, differ from those previously published in the Bureau publication *Census of Retail Establishments and Selected Service Establishments, Final Bulletin, Western Australia, 1973-74* (Catalogue No. 8601.5) and the report 'Perth Metropolitan Region Retail Shopping Survey 1973'. Details of the adjustments necessary to reconcile the data sources are outlined in the bulletin *Western Australia, Retail Floor Space, 1973-74* (Catalogue No. 8605.5)

A table showing floor space details by industry class for the Perth Statistical Division was given in the *Western Australian Year Book*, No. 17—1979. More detailed information by area and shopping centre may be obtained from the publication *Western Australia, Retail Floor Space, 1973-74*.

CENSUS OF TOURIST ACCOMMODATION ESTABLISHMENTS

A Census of Tourist Accommodation covering aspects such as the amount, type, and geographical location of tourist accommodation available throughout Australia was conducted for the year ended 30 June 1974.

Tourist accommodation establishments, for the purpose of this census, have been defined as: (i) hotels, motels and guest houses, which provide short-term (*i.e.* for periods of less than two months) accommodation available to the general public and which provide breakfast; (ii) caravan parks and holiday flats which provide short-term accommodation available to the general public.

The census covered, in general, tourist accommodation establishments which were in operation at 30 June 1974 but excluded those establishments at which the number of guest rooms usually occupied by short-term guests was less than 40 per cent of the total number of guest rooms usually occupied and, also, establishments which have provision for tourist accommodation but which had nil takings from accommodation for the census period. Details for holiday flats were collected for the State of Queensland only.

Establishments included in the census were classified to a type of establishment dependent on the method of operation and the facilities available at the establishment. The establishments were classified as follows.

Licensed hotel—an establishment which provides tourist accommodation and is licensed to operate a public bar.

Licensed motel—an establishment which provides tourist accommodation and, in general, provides bath or shower and toilet in most guest rooms as well as vehicle parking for guests and is licensed to serve liquor with meals.

Unlicensed motel—an establishment which provides tourist accommodation and which provides bath or shower and toilet in most guest rooms as well as vehicle parking for guests but is not licensed to serve liquor. It should be noted that this category included establishments which had a licensed restaurant located at the establishment but which was leased to and operated by a separate enterprise.

Private hotel or guest house—an establishment which provides tourist accommodation but which does not provide both vehicle parking for guests and facilities (*i.e.* bath or shower and toilet) in most guest rooms and which is not licensed to serve liquor.

Caravan park—an establishment which provides tourist accommodation and is registered as a caravan park with a local government authority. Where an enterprise operated both a caravan park and a motel at the same location, separate details were collected for each and they were treated as two establishments.

Detailed information on the Census of Tourist Accommodation is available from the publication *Census of Tourist Accommodation Establishments, Western Australia, 1973-74* (Catalogue No. 8604.5) which includes items of data by type and size of establishment

and by local government area and statistical division. A summary table showing details of operations by type of establishment for Western Australia as a whole was given in the *Western Australian Year Book*, No. 17—1979.

TOURIST ACCOMMODATION SURVEY

Following the Census of Tourist Accommodation, the Australian Bureau of Statistics introduced a series of quarterly Tourist Accommodation Surveys, commencing with the September quarter 1975.

TOURIST ACCOMMODATION SURVEY HOTELS, MOTELS AND GUEST HOUSES

Year	At 31 December, number of—			Arrivals '000 persons	Occupancy rates (per cent) of—		Takings from accom- modation \$'000
	Establish- ments	Guest rooms	Bed spaces		Rooms	Beds	
LICENSED HOTELS WITH FACILITIES							
1976	123	3,038	5,866	412.8	54	40	10,012
1977	120	2,966	5,853	431.6	57	41	11,816
1978	122	3,097	6,106	441.4	54	39	13,818
MOTELS, PRIVATE HOTELS, ETC. WITH FACILITIES							
1976	96	4,087	10,031	653.1	59	40	14,381
1977	102	4,183	10,419	688.4	58	40	17,259
1978	110	4,645	11,535	676.7	53	36	18,650
ESTABLISHMENTS WITHOUT FACILITIES							
1976	259	4,165	6,699	270.8	39	32	4,656
1977	249	4,256	6,997	265.4	39	30	4,920
1978	238	4,009	6,590	226.6	36	28	4,870
TOTAL							
1976	478	11,290	22,596	1,336.7	50	37	29,048
1977	471	11,405	23,269	1,385.4	51	37	33,994
1978	470	11,751	24,231	1,344.7	48	35	37,338

TOURIST ACCOMMODATION SURVEY CARAVAN PARKS

Particulars	1976	1977	1978
Number of establishments at 31 December	176	197	200
Capacity—			
Powered sites	9,015	10,356	11,206
Unpowered sites	2,190	2,447	2,730
Cabins, flats, etc.	419	433	440
Total capacity at 31 December	11,624	13,236	14,376
Site occupancy rate	33	37	36
Guest nights	4,007.8	4,864.4	5,190.2
Arrivals	663.4	763.5	768.2
Takings from accommodation	4,367	5,773	7,265

The scope of the survey is the same as the census but the various types of establishment have been regrouped as follows:

Licensed hotels with facilities—establishments which provide tourist accommodation, are licensed to operate a public bar and provide bath or shower and toilet facilities in most guest rooms.

Motels, private hotels, etc. with facilities—licensed or unlicensed motels, private hotels or guest houses which provide bath or shower and toilet facilities in most guest rooms, but are not licensed to operate a public bar. Motels which are licensed to serve liquor with meals are included in this category.

Establishments without facilities—licensed hotels, private hotels or guest houses which provide tourist accommodation but which do not provide bath or shower and toilet facilities in most guest rooms.

Caravan parks have been included in the Western Australian survey from September quarter 1975 and in other States' surveys from September quarter 1977.

Detailed information (including monthly items of data by type of establishment and area) on the Tourist Accommodation Survey is available from the quarterly publication *Tourist Accommodation* (Catalogue No. 8603.5), issued by this Office.

The table above shows details from the survey aggregated to an annual basis for the years 1976, 1977, and 1978.

CONSUMER PROTECTION

The *Consumer Protection Act, 1971* provided for the formation of a Consumer Affairs Council and a Consumer Protection Bureau. The legislation was introduced to protect and advance the interests of consumers, as buyers, in their relationships with sellers. The Bureau commenced operations on 11 August 1972 and the inaugural meeting of the Council was held on 21 February 1973. In 1975 the title of the Consumer Protection Bureau was changed to the Bureau of Consumer Affairs by an amendment to the Act which then became the *Consumer Affairs Act, 1971-1975*. In November 1978, the *Consumer Affairs Act Amendment Act, 1978* established a Consumer Products Safety Committee to advise the Commissioner on the restriction or banning of dangerous consumer products.

The Consumer Affairs Council consists of twelve members representative of a wide cross-section of business and community interests. Broadly, the functions of the Council are to: recommend legislative and administrative action considered necessary in the interests of consumers; advise the Minister on any matters he may refer to the Council; and make recommendations to the Minister on the means by which matters affecting consumers and others interested in the supply of goods or services may receive adequate consideration and to supply information about such matters.

The Bureau of Consumer Affairs is headed by a Commissioner for Consumer Affairs and broadly its functions are to: promote the interests of consumers; collect, collate and disseminate information on matters of interest to consumers; receive and investigate complaints from consumers and if necessary take appropriate remedial action; advise and assist consumers who seek information; assist the Council as required; and disseminate information concerning consumer affairs to producers, manufacturers and suppliers of goods or services.

In conjunction with the Department of Labour and Industry the Bureau also administers directly the following Acts: Motor Vehicle Dealers Act, Door to Door (Sales) Act, Pyramid Sales Schemes Act, Trade Descriptions and False Advertisements Act, Hire-Purchase Act, Unsolicited Goods and Services Act, Clothes and Fabrics (Labelling) Act, and Trade Associations Registration Act.

In addition to the Acts directly administered by the Bureau, there are a number of others administered by other authorities which safeguard the interests of consumers. The Bureau works closely with these authorities when handling complaints involving Acts administered by them and in many cases refers complainants directly to them.

Before taking action on a complaint the Bureau requires either written or personal advice about the matter from the consumer and evidence that he has made a reasonable attempt to resolve the problem before approaching the Bureau. Subsequent to receiving an apparently justifiable complaint the Bureau contacts the firm or company involved (usually by letter) outlining the complaint and requesting information which will resolve

or clarify the situation. If the firm does not co-operate the Bureau has three direct courses of action open to it. The Commissioner may, under threat of prosecution, demand information from any party able to assist the investigation, or, he may, under warrant, enter the premises and take or copy any document useful to his investigation or, he may take or defend civil actions on behalf of the consumer if the matter is considered to be in the public interest and he has the approval of the Minister. Apart from direct action as outlined above the Commissioner may arrange for prosecution to be undertaken under an Act not administered by him or he may recommend to the Government that specific legislation be enacted in broad areas that affect the consumer.

Since 1 July 1977, the Bureau, in association with the other State Bureaus and the Trade Practices Commission, has been participating in the production of a national computerised index of consumer complaints. The system enables each agency to readily assess and compare trends on a State by State and national basis. The system provides for each formal complaint to be coded in accordance with the product or service classification and the practice classification as detailed in the table below. Provision is made for formal complaints to be classified once under the product or service classification and once or twice under the practice classification depending on the nature of the complaint. For example, a complaint alleging that a manufacturer refused to repair under warranty a newly-purchased washing machine would be recorded once under the product or service classification (to Consumer durables) and twice under the practice classification (to Quality of product or service and Guarantees and warranties).

BUREAU OF CONSUMER AFFAIRS COMPLAINTS ANALYSIS
1977-78

(Source: Bureau of Consumer Affairs)

Product classification	Complaints		Practice classification								Total (a)
	Number	Per cent	Advertising representations	Packaging and labelling	Sales methods	Prices or charges	Quality of product or service	Credit practices	Contracts	Guarantees and warranties	
Food, beverages and tobacco	28	0.6	10	1	2	6	9	-	1	-	29
Clothing, footwear and drapery	190	4.0	4	1	45	3	141	6	13	-	213
Consumer durables	795	16.8	30	-	49	27	529	9	50	121	815
Motor vehicles and transport equipment	1,642	34.8	52	2	21	71	552	10	149	793	1,650
Building and construction	858	18.1	16	3	6	70	662	1	91	16	865
Miscellaneous products	338	7.1	38	4	91	12	187	3	25	19	379
Transport and energy services	93	2.0	7	-	4	25	34	1	22	-	93
Insurance and finance	206	4.4	3	1	2	10	15	36	139	-	206
Real estate and accommodation	229	4.8	14	-	8	9	9	6	187	-	233
Miscellaneous services	350	7.4	20	2	14	67	166	4	80	-	353
Total	4,729	100.0	194	14	242	300	2,304	76	757	949	4,836

(a) Certain complaints have been recorded twice under the practice classification.

Chapter IX—continued

Part 3—Transport

Western Australia's main transport systems are based generally on Perth, the capital, and on Fremantle, the principal port. Subsidiary systems are centred on a number of outports north and south of Fremantle and on some inland towns.

The railway system extends from Fremantle, Perth and Midland for hundreds of kilometres into the mining, agricultural, pastoral and forest areas in the southern half of the State. There is also a well-developed road system in this area, and the coastal towns in the north-west and the north are connected by road with the south and with the pastoral and mining areas of the hinterland. The Western Australian Coastal Shipping Commission operates a shipping service which connects Fremantle with the north of the State, the Eastern States and the Northern Territory. International flights operate through the airport at Perth, which is also the centre of a comprehensive network of airline services to towns in Western Australia and to the capital cities of other States.

In recent years important mineral developments in the north-west have led to the provision of deep-water port facilities and the construction of railways and roads connecting them with the extensive iron ore deposits now being exploited.

The following table shows distances by road, rail, sea and air between Perth and selected towns and localities in Western Australia.

DISTANCES BETWEEN PERTH AND SELECTED TOWNS AND LOCALITIES
IN WESTERN AUSTRALIA

Town or locality	Road r	Rail r	Sea (a)	Air (b)	Town or locality	Road r	Rail r	Air (b)
North of 26°S. latitude—	kilo-	kilo-	nautical	route	South of 26°S. latitude—	kilo-	kilo-	route
Coastal—	metres	metres	miles	kilo-	Inland—continued	metres	metres	metres
Broome	2,213	..	1,193	1,681	Bruce Rock	244	308	..
Carnarvon	905	..	484	821	Collie	203	197	..
Dampier	1,557	..	857	(c)1,338	Coolgardie	559	..	..
Denham (Shark Bay)	829	..	479	..	Donnybrook	206	209	..
Derby	2,356	..	1,358	1,807	Forrest .....	..	1,300	1,176
Exmouth	1,264	..	683	(d)1,118	Harvey	141	138	..
Onslow	1,389	..	733	1,167	Hyden	336	554	..
Port Hedland	1,660	..	957	1,323	Kalgoorlie	596	655	539
Roebourne	1,556	..	(e) 885	..	Kambalda	633	704	..
Wyndham	3,198	..	1,761	2,324	Katanning	277	393	..
Inland—					Koolyanobbing	422	455	..
Fitzroy Crossing	2,532	..	..	2,028	Leonora	833	914	621
Goldsworthy	1,694	..	..	1,419	Madura	1,254	..	..
Halls Creek	2,823	..	..	2,252	Manjimup	301	314	..
Kununurra	3,182	..	..	2,376	Meekatharra	762	978	645
Marble Bar	1,477	..	..	1,317	Merredin	259	284	..
Newman	1,180	..	..	1,023	Moora	172	174	..
Nullagine	1,364	..	..	1,558	Mount Barker	359	517	..
Paraburdoo	1,531	..	..	997	Mukinbudin	290	358	..
Tom Price	1,555	..	..	1,082	Mullewa	450	544	..
Wittenoom Gorge	1,446	..	..	1,119	Nannup	281	289	..
South of 26°S. latitude—					Narrogin	190	292	..
Coastal—					Newdegate	405	523	..
Albany	406	578	353	400	Norseman	726	833	552
Augusta	317	..	..	..	Northam	97	120	..
Bunbury	173	184	104	192	Pinjarra	88	86	..
Busselton	231	236	..	..	Ravensthorpe	540	..	426
Esperance	724	1,033	560	587	Southern Cross	369	403	..
Eucla	1,436	..	..	..	Wagin	228	341	..
Fremantle	18	21	..	..	Wiluna	947	..	725
Geraldton	423	494	215	376	Wyalkatchem	192	237	..
Inland—					York	99	156	..
Bridgetown	264	278	..	..		

(a) From Fremantle. (b) Shortest regular route. (c) Distance to Karratha. (d) Distance to Learmonth.
(e) Distance to Port Walcott.

SHIPPING

Western Australia's sea-borne trade is conducted through the Port of Fremantle and a number of outports. Of these, Geraldton, Bunbury, Albany and Esperance are situated in the more highly developed south-western and southern parts of the State. The less closely-settled areas of the north-west and the north are served by ports and other landing points at Useless Loop (Shark Bay), Carnarvon, Cape Cuvier, Exmouth, Barrow Island, Dampier, Port Walcott (Cape Lambert and Point Samson), Port Hedland, Broome, Derby, Yampi and Wyndham.

The following table shows the number of entrances and the net tonnage of vessels entering each port during the years 1974-75 to 1976-77. The figures exclude particulars of naval vessels; yachts and other craft used for pleasure; foreign fishing vessels that neither load nor discharge cargo; fishing vessels registered in Australia; vessels engaged in geographic, seismic or oceanographic surveys; offshore oil-drilling rigs and vessels servicing them; and vessels of 200 registered net tons and under.

The importance of mineral developments in the north-west of the State is evident in the volume of shipping entered at each port. In terms of the net tonnage of vessels entered, the ports of Port Hedland and Dampier have exceeded the figure for the Port of Fremantle since 1973-74.

The net tonnage of a vessel, expressed in tons of 100 cubic feet, represents the volume of enclosed space that can be used for cargo and passengers.

SHIPPING—ENTRANCES OF VESSELS

Port	Entrances of vessels					
	1974-75		1975-76		1976-77	
	Number	Net tonnage of vessels	Number	Net tonnage of vessels	Number	Net tonnage of vessels
Port of Fremantle	1,345	'000 10,699	1,318	'000 10,754	1,313	'000 11,007
Other ports—						
Albany	127	855	125	743	126	779
Barrow Island (a)	33	537	23	411	18	290
Broome	81	282	74	254	56	191
Bunbury	154	937	111	799	171	1,637
Carnarvon (b)	79	678	70	582	77	689
Dampier	532	12,487	540	12,591	492	13,218
Derby	57	158	59	165	47	128
Esperance	66	397	50	315	74	489
Exmouth	9	53	9	55	10	61
Geraldton	109	811	144	883	141	975
Port Hedland	639	15,749	561	13,066	478	12,146
Port Walcott (c)	173	4,716	171	4,538	143	5,053
Wyndham	70	276	72	277	74	299
Yampi	130	1,577	117	1,130	102	954
Total	2,259	39,513	2,126	35,809	2,009	36,909
All ports	3,604	50,212	3,444	46,564	3,322	47,916

(a) Buoyed sea terminal, Lambert and Point Samson.

(b) Includes Cape Cuvier and Useless Loop.

(c) Includes Cape

Cargo is now recorded on returns either in terms of tonnes or of cubic metres depending on the basis on which freight is charged. In the following table the statistics for cargo recorded in tonnes are shown separately from cargo recorded in cubic metres. The aggregates for weight and measure cargo are not added to a figure for total cargo because they are unlike quantities and comparisons of total cargo between ports, trade routes or periods of time could be affected by variations in the cargo mix and in the basis on which freight is charged.

CARGO DISCHARGED AND SHIPPED AT EACH PORT: 1976-77

Port	Overseas		Interstate		Intrastate		Total	
	Tonnes	Cubic metres	Tonnes	Cubic metres	Tonnes	Cubic metres	Tonnes	Cubic metres
DISCHARGED								
Port of Fremantle	4,788,358	450,423	1,209,446	7,864	814,252	8,224	6,812,056	466,511
Other ports—								
Albany	77,901	—	20,918	—	102,735	—	201,554	—
Barrow Island (a)	—	—	—	—	—	—	—	—
Broome	5,662	180	9	1	9,638	8,199	15,309	8,380
Bunbury	130,203	429	—	—	155,928	—	286,131	429
Carnarvon (b)	22,058	—	—	—	16,616	—	38,674	—
Dampier	257,400	—	—	—	2,497	2,070	259,897	2,070
Derby	10,724	—	—	7	1,853	9,994	12,577	10,001
Esperance	42,360	—	36,018	—	116,410	—	194,788	—
Exmouth	2,082	910	—	—	17,941	—	20,023	910
Geraldton	17,256	—	—	—	87,246	—	104,502	—
Port Hedland	71,414	2,214	1,620	704	116,500	5,988	189,534	8,906
Port Walcott (c)	367,265	—	—	—	3,582	—	370,847	—
Wyndham	15,674	960	6	92	6,908	16,277	22,588	17,329
Yampi	2,007	234	10,871	—	38,643	7,744	51,521	7,978
Total	1,022,006	4,927	69,442	804	676,497	50,272	1,767,945	56,003
All ports	5,810,364	455,350	1,278,888	8,668	1,490,749	58,496	8,580,001	522,514
SHIPPED								
Port of Fremantle	6,001,897	139,072	1,116,054	35,174	677,807	49,015	7,795,758	223,261
Other ports—								
Albany	741,133	42,362	—	—	—	—	741,133	42,362
Barrow Island (a)	—	—	214,908	—	423,647	—	638,555	—
Broome	5,698	—	1	29	932	1,064	6,631	1,093
Bunbury	1,964,034	52,707	96,100	—	—	957	2,060,134	53,664
Carnarvon (b)	1,577,924	—	—	—	—	—	1,577,924	—
Dampier	36,870,264	—	—	1	2	65	36,870,266	66
Derby	—	—	2	52	21	1,991	23	2,043
Esperance	413,418	47,112	—	—	—	—	413,418	47,112
Exmouth	679	—	—	—	10,343	—	11,022	—
Geraldton	920,025	48,926	—	—	7	—	920,032	48,926
Port Hedland	27,440,746	—	5,815,963	133	578	2,183	33,257,287	2,316
Port Walcott (c)	13,520,501	14,257	—	—	20	4	13,520,521	14,261
Wyndham	15,282	—	—	3	572	3,942	15,854	3,945
Yampi	2,685,232	—	69,409	—	36,285	4,105	2,790,926	4,105
Total	86,154,936	205,364	6,196,383	218	472,407	14,311	92,823,726	219,893
All ports	92,156,833	344,436	7,312,437	35,392	1,150,214	63,326	100,619,484	443,154

(a) Buoyed sea terminal.

(b) Includes Cape Cuvier and Useless Loop.

(c) Includes Cape Lambert and Point Samson.

Apart from general cargo, overseas and interstate consignments discharged were principally petroleum products, rock phosphate, iron and steel products, coke, caustic soda, limestone and sulphur. Outward cargoes, with the exception of refined petroleum products and steel products shipped from the Port of Fremantle (Outer Harbour), consisted largely of primary products, alumina and minerals. Cargo shipped from Esperance comprised mainly cereal grains, nickel ore and salt; and from Albany cereal grains, wool and sheep. From Bunbury the principal cargoes shipped were mineral sands, cereal grains, woodchips and alumina. Mineral sands and cereal grains were the main items shipped from Geraldton. In the northern part of the State, Dampier, Port Hedland, Port Walcott and Yampi are the major ports for the shipment of iron ore. The buoyed sea terminal at Barrow Island provides facilities for the loading of crude petroleum. From other ports in the area, cargo shipped consisted mainly of salt, gypsum and meat.

The Western Australian Coastal Shipping Commission was established in 1965 to carry on the services formerly maintained by the State Shipping Service. The Commission's ships operate along the north-west and northern coasts, calling regularly at ports between Fremantle and Darwin (Northern Territory). Besides general cargo, the freight discharged at north-west and northern ports consists mainly of refined petroleum products, building

and construction materials, refrigerated cargo, vehicles, drilling equipment and materials, and livestock. Cargoes carried south to Fremantle are mainly primary products (such as meat, grains and prawns) and vehicles.

The Commission also maintains a regular link between Fremantle and Melbourne and Tasmanian ports, bringing newsprint, other paper products and steel into the State and carrying Western Australian goods eastward.

In the following table vessels entered at and cleared from each Western Australian port during 1976-77 are classified according to the direction of the voyage on which each vessel was engaged. 'Direction' is determined by reference to the port of commencement of the inward voyage or the port of termination of the outward voyage.

SHIPPING—ENTRANCES AND CLEARANCES: 1976-77

Port	From or to overseas countries			From or to other Australian States		From or to other Western Australian ports	Total	
	Direct	Via other Australian States	Via other Western Australian ports	Direct	Via other Western Australian ports		Number	Net tonnage of vessels ('000)
ENTRANCES								
Port of Fremantle	667	306	176	82	30	52	1,313	11,007
Other ports—								
Albany	55	22	40	1	1	7	126	779
Barrow Island (a)	—	—	1	2	—	15	18	290
Broome	6	—	17	—	2	31	56	191
Bunbury	76	26	48	5	—	16	171	1,637
Carnarvon (b)	58	—	19	—	—	—	77	689
Dampier	459	4	12	—	—	17	492	13,218
Derby	8	—	10	—	1	28	47	128
Esperance	24	11	23	4	—	12	74	489
Exmouth	3	1	3	—	—	3	10	61
Geraldton	87	15	32	—	—	7	141	975
Port Hedland	338	25	22	50	1	42	478	12,146
Port Walcott (c)	140	1	—	—	—	2	143	5,053
Wyndham	17	18	6	17	—	16	74	299
Yampi	51	1	14	2	—	34	102	954
Total	1,322	124	247	81	5	230	2,009	36,909
All ports	1,989	430	423	163	35	282	3,322	47,916
CLEARANCES								
Port of Fremantle	840	184	118	68	30	60	1,300	10,883
Other ports—								
Albany	71	14	30	—	—	8	123	760
Barrow Island (a)	—	—	1	4	1	12	18	290
Broome	1	—	22	—	7	27	57	199
Bunbury	92	8	48	7	1	11	167	1,578
Carnarvon (b)	64	—	13	—	—	—	77	689
Dampier	463	—	9	—	—	17	489	13,209
Derby	—	—	19	—	8	21	48	130
Esperance	32	5	21	3	—	9	70	485
Exmouth	—	—	7	—	—	3	10	61
Geraldton	50	14	67	—	1	6	138	946
Port Hedland	329	28	35	54	16	22	484	12,183
Port Walcott (c)	137	1	3	—	—	2	143	5,053
Wyndham	9	8	24	1	1	30	73	296
Yampi	47	13	6	15	—	21	102	954
Total	1,295	91	305	84	35	189	1,999	36,833
All ports	2,135	275	423	152	65	249	3,299	47,716

(a) Buoyed sea terminal.

(b) Includes Cape Cuvier and Useless Loop.

(c) Includes Cape Lambert and Point Samson.

Administration of Ports

The State Government, through the Harbour and Light Department, controls the ports at Broome, Carnarvon, Derby, Port Walcott (Cape Lambert and Point Samson) and Wyndham. The ports at Albany, Bunbury, Esperance, Fremantle, Geraldton and

Port Hedland are controlled by separately-constituted authorities established by Act of Parliament. Private operators control the ports (or landing points) at Barrow Island, Cape Cuvier, Dampier, Exmouth, Useless Loop and Yampi.

In terms of a proclamation made under the provisions of the *Shipping and Pilotage Act, 1967*, Busselton ceased to be a port for the purposes of the Act with effect from 1 September 1972. The port of Onslow ceased commercial shipping operations with effect from 1 March 1973.

Description of Principal Ports

A brief description of the principal ports, at 30 June 1977, is given below. Reference to previous articles on ports appears in the *Appendix*.

Albany. The Port of Albany (35°S latitude) is the most southerly port in Western Australia and comprises the waters of Princess Royal Harbour and King George Sound. The effect of tidal movements is negligible and as there is little trouble from fog or storm it is an all-weather port. It embraces an area of 11,800 hectares having an abundance of natural deep water and affording excellent protection to shipping and shore works. Access to Princess Royal Harbour from King George Sound is by means of a channel of 12·2 metres minimum depth and 152 metres wide. Wharfage consists of five berths situated on the northern side of the harbour. A timber jetty, adjacent to the entrance channel, provides two berths, one of which is 244 metres in length with a depth alongside of 10·1 metres, and the other 183 metres in length with a depth alongside of 7·6 metres. The remaining berths consist of three land-backed berths with a continuous length of 609 metres and a depth alongside of 10·3 metres at No. 1 and No. 2 berths and a depth alongside of 12·2 metres at No. 3 berth.

Bunbury. The port of Bunbury (33°S latitude) is situated in Koombana Bay, 104 nautical miles south of Fremantle, and comprises an inner and outer harbour. It is an all-weather port with a tidal rise and fall of 0·8 metres influenced by weather conditions.

Access to the inner harbour is by means of a dredged channel approximately 2·4 kilometres in length, 12·2 metres in depth and 121 metres wide. The maximum loaded draft permitted in the inner harbour is 11·6 metres. Separate berths, linked by conveyor to shipside storage, provide for the loading of alumina and woodchips at the rate of 2,000 tonnes and 1,000 tonnes per hour, respectively.

The deepest permissible loaded draft of the outer harbour, 8·7 metres, is subject to a small increase at the harbour master's discretion. Wharf berth accommodation totals 1,100 metres consisting of four jetty berths, each 183 metres in length, and two land-backed berths each 184 metres in length. A conveyor with a capacity of 900 tonnes per hour is used for loading mineral sands and a bulk grain loading facility has a capacity of some 400 tonnes per hour. The cargo transit shed has a cool storage capacity of 2,300 cubic metres.

Esperance. The port of Esperance (33°S latitude) is situated in Esperance Bay on the south coast of Western Australia. The port has two land-backed berths of concrete and steel construction. Together, they provide a continuous structure 457 metres long, dredged to a depth alongside of 11·1 metres, with a land area backing of approximately forty-seven hectares.

The approach channel to the land-backed berths is 244 metres wide and is dredged to a depth of 11·1 metres. The deepest permissible loading draft is ten metres. Two privately-owned ship loaders are available; one with a loading capacity rate of 860 tonnes per hour, handles salt and bulk grains, the latter product being drawn from a 133,000 tonne capacity storage terminal. The other conveyor, which has a capacity of some 200 tonnes per hour, is used for the loading of nickel concentrates. An underground pipeline enables petroleum discharged at No. 2 berth to be conveyed three kilometres to inland storage tanks.

Fremantle. The port of Fremantle (32°S latitude) is the principal port of Western Australia. It is an all-weather port, virtually tideless and little troubled by storm or fog. The

port provides modern facilities for the handling of ships, passengers and cargo and is connected to the road and rail systems of Western Australia and Australia generally. It has an area of 44,700 hectares and comprises an Inner Harbour and an Outer Harbour.

The Inner Harbour is constructed within the mouth of the Swan River, about nineteen kilometres from Perth. It is protected by two breakwaters, one 1,474 metres in length and the other 620 metres. The harbour is approached through a short entrance channel dredged to a depth of eleven metres at low water. It encloses eighty-one hectares of water dredged throughout to eleven metres at low water and is the centre of the general cargo trade of the port. There are twenty land-backed berths, with a total quayage of about 4,000 metres. Transit sheds occupy an area of 56,800 square metres and large paved areas are provided for the open storage of cargo. Conveyor facilities with a maximum loading rate of 1,620 tonnes per hour serve a bulk grain terminal of 250,000 tonnes capacity.

The Outer Harbour has 18,900 hectares of deep water and is protected from the west by islands and reefs. It embraces three main anchorages of depths up to nineteen metres. Gage Roads, the most northerly of these anchorages, serves as an approach to the Inner Harbour. Owen Anchorage is centrally situated between Success and Parmelia Banks. The largest and most protected of the anchorages, Cockburn Sound, lies to the south and serves the Kwinana industrial area.

There are six jetties in Cockburn Sound. Five of these are owned and operated by private companies concerned with specialised cargoes. They comprise a jetty for the export of grain, an oil refinery jetty, two jetties to serve a blast furnace and a steel-rolling mill, and a jetty for the export of refined alumina and the import of caustic soda. The sixth jetty, a common-user facility, built by the Port Authority is used mainly for imports of rock phosphate and sulphur.

All Inner Harbour berths are equipped to supply bunker fuel direct to ships from privately-owned storage tanks close to the port and an oil lighter is available to service ships berthed in the Inner Harbour or anchored in the Outer Harbour. Ships can also take on bunker fuel oil at the oil refinery jetty and bulk cargo jetty in the Outer Harbour.

Geraldton. The port of Geraldton (28°S latitude) is situated in Champion Bay on the west coast, 215 nautical miles in a north-westerly direction from Fremantle. The outer harbour, which is ten metres deep, provides a good holding anchorage and the inner harbour, enclosed by a breakwater, affords ample protection for shipping and shore works. The depth of the inner harbour is 9.4 metres, but the rock base of the entrance channel restricts the loaded draught of vessels to 8.7 metres. With the use of tides vessels may load to 9.1 metres at mean sea level (0.8 m tide), or to 9.3 metres at mean higher high water (1.1 m tide). The port has one berth of 99 metres with depth alongside of 8.8 metres and four berths, lengths 203 metres, 203 metres, 181 metres and 213 metres respectively, with depth alongside of 9.4 metres. The cargo transit shed has a floor area of 2,230 square metres and extensive paved areas are available for open storage of cargo. Bulk grain-loading facilities with a capacity of 800 tonnes per hour serve a terminal of 150,000 tonnes capacity. A conveyor system used for loading minerals has a rated capacity of 1,200 tonnes per hour.

Port Hedland. Port Hedland (20°S latitude) is situated on the north-west coast of Western Australia, 957 nautical miles from Fremantle. Access to the harbour is by means of a dredged channel approximately thirteen kilometres in length, 11.8 metres minimum depth and 183 metres wide. The channel, subject to tidal movements, is navigable by vessels drawing up to 17.3 metres. Wharf facilities service five berths. Three privately-owned berths with a total length of 1,039 metres and a depth alongside ranging from 14.8 metres to 17.3 metres are served by three shiploaders, two of them each having a capacity of 6,100 tonnes of iron ore per hour and the third a capacity of 4,570 tonnes per hour. Of the two remaining berths, one is 183 metres in length with a depth alongside of 11.2 metres. It is served by a privately-operated salt-loading facility with a capacity of 1,500 tonnes per hour. The fifth berth, a land-backed general cargo berth 213 metres long with a depth alongside of 11.2 metres, was completed in 1974.

RAILWAYS

Railways open for general and passenger traffic in the southern part of the State are operated by the Western Australian Government Railways Commission. The system is linked with railways of other States by the Australian Government Trans-Australian Railway between Kalgoorlie in Western Australia and Port Pirie in South Australia. There are, in addition, private railways for the haulage of iron ore in the northern part of the State and timber in the south-west.

Origin and Development

The first railway in the Colony, built in 1871 from Busselton into the nearby forest, was a private line constructed for the transport of timber. By the end of 1900, the Colony had a railway system for general and passenger traffic which comprised 2,181 kilometres of government line and 446 kilometres of privately-owned line. The State Government system reached a maximum of 7,051 kilometres in 1940 but this figure was reduced, particularly during the 1960s, by the closure of certain non-paying lines.

At 30 June 1978 there were 6,494 kilometres of railway open for general and passenger traffic in Western Australia. Of this total, 5,764 kilometres were owned by the State Government and operated by the Western Australian Government Railways Commission, and 730 kilometres were owned by the Australian Government and operated by the Australian National Railways. At the same date private railways used for the transport of iron ore were those between Newman and Port Hedland (421 kilometres), Shay Gap and Port Hedland (180 kilometres), Paraburdoo and Dampier (382 kilometres), and Pannawonica and Cape Lambert (167 kilometres).

The Western Australian Government Railways Commission

The *Government Railways Act, 1904-1978* constitutes a Commission, in the person of the Commissioner of Railways, who is responsible, subject to the Minister, for the administration of the Act.

The *Government Railways Act Amendment Act, 1978* provides the Railways Commission with statutory authority to borrow funds in its own right, subject to specific approval of the Treasurer or the Governor. In addition the Act provides for the Commission to engage in such other financial transactions as are appropriate for trading corporations generally in the normal course of business. The payment of interest and the repayment of loans are to be guaranteed by the Treasurer on behalf of the State.

Previously funds were provided from the General Loan Fund or from the Consolidated Revenue Fund, the financial procedure being basically the same as for other Departments. The loan liability of the Western Australian Government Railways Commission to the Treasury was \$209,615,236 at 30 June 1978, the net increase during 1977-78 being \$5,042,070.

WESTERN AUSTRALIAN GOVERNMENT RAILWAYS (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
FINANCE					
Capital investment at 30 June (b)	\$'000 171,768	\$'000 177,475	\$'000 191,434	\$'000 204,573	\$'000 209,615
Operating revenues—					
Passenger fares	5,430	3,954	4,313	4,439	4,541
Parcels and mails	2,035	2,326	2,780	2,834	2,530
Paying goods and livestock	67,755	87,009	108,430	113,078	122,418
Miscellaneous	4,641	15,021	16,788	17,960	21,098
Total operating revenues	79,861	108,309	132,312	138,311	150,588
Operating expenses	74,403	96,406	110,893	123,382	140,426
Excess of operating revenues over expenses....	5,457	11,904	21,419	14,928	10,162
Depreciation	9,577	9,937	10,314	11,085	10,815
Interest charges	12,556	13,609	14,231	14,936	15,403
Total deficit (c)	16,568	11,676	3,041	11,129	16,075

WESTERN AUSTRALIAN GOVERNMENT RAILWAYS (a)—continued

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
RAILWAY OPERATIONS					
Route kilometres at 30 June—					
1,067 mm gauge (d)	5,387	4,713	4,798	4,787	4,387
1,435 mm gauge	678	1,235	1,233	1,237	1,229
Dual gauge	127	127	132	141	148
Employees at 30 June	9,962	10,102	9,999	10,119	10,065
	'000	'000	'000	'000	'000
Number of—					
Train kilometres run (e)	13,551	13,812	13,782	13,696	13,441
Passenger-journeys—					
Suburban (f)	11,332	10,006	9,141	8,016	8,877
Country (g)	592	469	416	414	390
Total (g)	11,925	10,474	9,557	8,430	9,268
Tonnes of freight—					
Paying goods and livestock	15,059	16,348	17,812	19,003	18,625
Departmental (h)	212	222	439	369	501
Total	15,271	16,570	18,251	19,373	19,126
Tonne kilometres—					
Paying goods and livestock	4,142,536	4,269,270	4,548,354	4,532,552	4,273,064
Departmental	45,465	41,445	64,899	48,891	49,724
Total	4,188,001	4,310,715	4,613,253	4,581,443	4,322,788

(a) Includes details of road services. (b) Including Stores Funds. (c) Actual deficits after adjustment of \$107,536 in 1973-74, \$33,498 in 1974-75, \$85,046 in 1975-76, \$35,305 in 1976-77 and \$18,905 in 1977-78 resulting from fluctuations in rates of exchange. (d) Excludes route kilometres of 1,067 mm gauge line which parallels the 1,435 mm gauge line. (e) Revenue and non-revenue train kilometres. (f) Responsibility for the financial and policy direction of the suburban railways passed to the Metropolitan (Perth) Passenger Transport Trust from 1 July 1974. (g) Figures for 1974-75 and subsequent years are not strictly comparable with those for earlier years due to a change in the method of calculation. (h) Departmental freight comprises mainly oil, ballast, timber and rails.

In addition to its railway services, the Commission operates an extensive system of road services for the carriage of passengers, mail and freight.

Suburban railway passenger services are operated by the Commission on behalf of and at the direction of the Metropolitan (Perth) Passenger Transport Trust under the provisions of the *Metropolitan (Perth) Passenger Transport Trust Act Amendment Act, 1973* which came into operation by proclamation on 22 March 1974. The Commissioner of Railways, as provided by the Act, is an *ex-officio* member of the Trust.

Administrative and operational control of suburban railway passenger services remains with the Commissioner of Railways but, as from 1 July 1974, the Trust accepted responsibility for finance and policy direction in terms of the 1973 legislation.

WESTERN AUSTRALIAN GOVERNMENT RAILWAYS
PAYING GOODS AND LIVESTOCK CARRIED (a)

Freight classification	1973-74	1974-75	1975-76	1976-77	1977-78
	tonnes	tonnes	tonnes	tonnes	tonnes
Wheat	2,285,237	3,294,646	3,499,682	3,051,656	2,996,451
Other grain	384,504	370,203	374,033	403,254	385,459
Grain products	36,239	42,151	34,626	28,568	21,568
Fertilisers	796,802	501,302	471,525	525,321	453,392
Fruit and vegetables	84,350	77,505	78,145	62,452	53,335
Wool	118,486	137,226	147,602	144,935	116,124
Timber	298,436	293,111	277,976	271,174	220,640
Coal, etc.	133,840	808,020	1,140,419	1,178,776	1,285,291
Ores and minerals	8,834,771	8,585,118	9,319,702	10,246,562	9,904,469
Oil in tank wagons	386,583	396,062	426,022	552,389	404,175
Other classifications	1,633,632	1,776,179	1,987,564	2,467,581	2,756,330
Total (b)	15,059,241	16,348,224	17,812,263	19,003,270	18,624,824

**WESTERN AUSTRALIAN GOVERNMENT RAILWAYS
PAYING GOODS AND LIVESTOCK CARRIED (a)—continued**

Freight classification	1973-74	1974-75	1975-76	1976-77	1977-78
Number of livestock carried—					
Sheep	975,455	1,073,590	1,037,192	1,219,735	407,447
Cattle	56,194	51,511	31,967	51,178	24,795
Pigs	45,474	30,017	16,038	12,280	11,231
Horses	287	492	168	230	196

(a) Includes details of road services.

(b) Includes weight of livestock carried.

Goods and Livestock Carried. The previous table shows the quantity of paying goods and livestock carried during each year in the period from 1973-74 to 1977-78. The classification used in the table is that adopted by the Railways Commission in dissecting its freight transport statistics.

Railways Rolling Stock. The following table shows the numbers of the various categories of rolling stock of the Western Australian Government Railways in service at 30 June for the years 1974 to 1978.

**WESTERN AUSTRALIAN GOVERNMENT RAILWAYS
ROLLING STOCK IN SERVICE**

Category	At 30 June—									
	1974	1975	1976	1977	1978	1974	1975	1976	1977	1978
	1,067 mm gauge					1,435 mm gauge				
Locomotives—										
Steam	2	2	2	2	2	—	—	—	—	—
Diesel	164	163	163	159	159	42	43	43	43	43
Total	166	165	165	161	161	42	43	43	43	43
Coaching stock	173	170	145	140	140	9	9	9	9	9
Goods stock (a)	10,239	10,192	9,943	9,720	9,419	1,219	1,254	1,263	1,262	1,274
Service stock (b)	531	501	431	410	400	56	54	24	24	38

(a) Includes brake vans, goods wagons, livestock wagons, mineral wagons, etc.

(b) Includes ballast wagons, workmen's vans, ash disposal wagons, water tanks, etc.

Iron Ore Railways

In recent years the exploitation of extensive inland deposits of iron ore in Western Australia has necessitated the construction of a number of railways for the transport of ore from the mines to the coast. Conditions applying to the construction and operation of these railways are incorporated in agreements made between the State Government and mining companies and ratified by Act of Parliament.

The following summary relates to railways in use for the transport of iron ore at 30 June 1978. The quantity of ore carried on these railways was 80.6 million tonnes in 1973-74, 88.4 million tonnes in 1974-75, 81.5 million tonnes in 1975-76, 83.8 million tonnes in 1976-77 and 83.3 million tonnes in 1977-78. At 30 June 1978 there were 126 locomotives and 5,370 ore wagons in service.

RAILWAYS USED FOR TRANSPORT OF IRON ORE

Railway	Enabling Act	Length (route kilometres)	Gauge	Date operative (a)
Shay Gap-Port Hedland (b)	No. 97 of 1964 (c)	180	1,435 mm	1966—23 May
Paraburdoo-Dampier (b)	No. 24 of 1963 (d)	382	1,435 mm	1966—1 July
Koolyanobbing-Kwinana (e)	No. 27 of 1961 (f)	490	1,435 mm	1967—10 April
Northam-Wundowie (g) .....	.....	33	1,067 mm	1967—10 April
Newman-Port Hedland (b)	No. 75 of 1964 (h)	421	1,435 mm	1969—18 January
Pannawonica-Cape Lambert (b)	No. 91 of 1964 (i)	167	1,435 mm	1972—6 July

(a) Date on which first load of iron ore was dispatched from mine. (b) Privately owned and operated. (c) *Iron Ore (Mount Goldsworthy) Agreement Act, 1964.* (d) *Iron Ore (Hamersley Range) Agreement Act, 1963.* (e) Part of the Western Australian Government Railways' system; open for general and passenger traffic. (f) *Railways (Standard Gauge) Construction Act, 1961.* (g) Part of the Western Australian Government Railways' system; used only for the transport of iron ore from Koolyanobbing to the charcoal iron and steel industry at Wundowie. (h) *Iron Ore (Mount Newman) Agreement Act, 1964.* (i) *Iron Ore (Cleveland-Cliffs) Agreement Act, 1964.*

Australian National Railways

The former Commonwealth Railways comprised four separate systems. These were the Trans-Australian Railway, operating partly in Western Australia and partly in South Australia; the Central Australia Railway, partly in South Australia and partly in the Northern Territory; the North Australia Railway, wholly in the Northern Territory; and the Australian Capital Territory Railway. Commonwealth and State legislation was enacted in 1975 to transfer the Tasmanian Government Railways and the non-metropolitan South Australian Railways to the Commonwealth Government. The Australian National Railways Commission came into existence on 1 July 1975 to control the two transferred systems and the former Commonwealth Railways. Services operating on the North Australia Railway were withdrawn from 30 June 1976.

Construction of the Trans-Australian Railway was begun at Port Augusta, the original South Australian terminus of the line, in 1912 and work was completed in 1917. Of the total length of 1,783 kilometres between Kalgoorlie and Port Pirie (South Australia), 730 kilometres are in Western Australia. Although statistical details of activities on each of the systems are available, it is not possible to give separate particulars of the operations in Western Australia of the Trans-Australian Railway. Some statistics relating to the Australian National Railways are shown in the next table.

Operations of Government Railways in Australia

The following table gives a summary of operations during the year ended 30 June 1977 on each of the railway systems owned by the State and Australian Governments.

GOVERNMENT RAILWAYS IN AUSTRALIA—SUMMARY OF OPERATIONS, 1976-77

Railway system of—	Route kilometres at 30 June	Revenue train kilometres run	Passenger-journeys	Goods and livestock carried	Gross earnings	Average number of employees (a)
State Governments—		'000	'000	'000 tonnes	\$'000	
New South Wales	9,755	57,039	184,421	33,777	351,875	39,973
Victoria	6,579	33,489	102,654	10,971	163,512	24,409
Queensland	9,796	30,206	31,054	34,237	262,561	24,520
South Australia	3,894	10,742	12,866	6,402	54,284	7,341
Western Australia	6,165	12,846	248	19,003	137,323	9,778
Tasmania	864	1,667	140	1,644	8,780	1,839
Australian Government—						
Trans-Australian	1,853	3,868	111	1,572	n.a.	2,273
Central Australia	1,219	1,242	9	2,127	10,838	1,514
Australian Capital Territory	8	24	67	210	322	36
Australia	40,133	151,125	331,568	109,943	n.a.	111,683

(a) Excluding construction staff except for Victoria and Western Australia where construction staff are included.

It will be noted that particulars of route kilometres shown for the New South Wales, Victorian and South Australian systems differ from the details given for those States in the table in the next section *Railway Gauges*, which is compiled according to the State or Territory in which the several lengths of line are situated. The Victorian and South Australian systems include lines extending into New South Wales, the aggregate length of such lines in New South Wales being 375 kilometres.

Railway Gauges

The next table shows route kilometres of government railways of each gauge in each of the Australian States and Territories at 30 June 1977.

Except where otherwise indicated, the figures shown relate to lines owned by the several State railway authorities.

A summary providing a brief history of the standardisation of gauges on major trunk routes between Perth and Sydney appears in *Western Australian Year Book*, No. 16—1977 (pages 460-1) and earlier issues.

GOVERNMENT RAILWAYS IN EACH STATE AND TERRITORY OF AUSTRALIA
ROUTE KILOMETRES OPEN AT 30 JUNE 1977

State or Territory	Route kilometres of gauge—				Total route kilometres
	1,600 mm	1,435 mm	1,067 mm	762 mm	
State Government systems in—					
New South Wales	(a) 328	(b) 9,802	—	—	10,130
Victoria	(c) 5,912	325	—	14	6,251
Queensland	—	111	9,685	—	9,796
South Australia	2,533	351	963	—	3,847
Western Australia	—	1,378	(d) 4,787	—	6,165
Tasmania	—	—	864	—	864
Australian Government systems in—					
South Australia	—	1,473	591	—	2,064
Western Australia	—	730	—	—	730
Northern Territory	—	—	278	—	278
Australian Capital Territory	—	8	—	—	8
Total route kilometres	8,773	14,178	17,168	14	40,133

(a) Part of the Victorian railway system. (b) Includes 47 kilometres of 1,435 mm gauge line from Broken Hill to Cockburn operated by the South Australian Government Railways. (c) Excludes 325 kilometres of 1,600 mm gauge line which almost parallels the 1,435 mm gauge line between Melbourne and the Murray River. (d) Excludes 141 kilometres of 1,435 mm/1,067 mm dual gauge line which is included in the 1,435 mm gauge line.

ROADS AND ROAD TRAFFIC

Work connected with road construction and maintenance and associated projects in Western Australia is undertaken by the State Government, through the Main Roads Department, and by local government authorities, comprising City Councils, Town Councils and Shire Councils.

Under the provisions of the Main Roads Act, the Main Roads Department was established in 1930 to replace the Main Roads Board originally constituted as a central road authority in 1926. The Department operates under the *Main Roads Act, 1930-1977* and is administered by a Commissioner of Main Roads responsible to the Minister for Works. The Act was amended in 1975 to introduce, from 1 July 1976, a new road classification system ranking roads in order of 'highways', 'main roads' and 'secondary roads', thus bringing the terminology in the Act more into line with the functional classifications accepted by the National Association of Australian State Road Authorities. The previous concept of a 'controlled-access' road has been replaced by the power to declare 'control of access' over section or part of, highways and main roads.

Main roads are those which provide communication between a large producing area, either actual or potential, and its market or nearest port or railway station; between two or more such areas; between large centres of population; or between the capital city and a large producing area or a large centre of population. Highways are defined similarly to main roads but represent a higher functional category. The new secondary road classification applies to many of the roads previously known as important secondary roads together with some of the more important of the roads formerly designated developmental roads. The Act provides that, on the recommendation of the Commissioner, any road may be declared by the Governor to be, or cease to be a highway, main road or secondary road.

The construction and maintenance of highways and main roads are the responsibility of the Main Roads Department. The Department also makes substantial financial provision for the construction and maintenance of secondary roads. The Act also provides that the Commissioner may allocate funds for the construction or improvement of unclassified roads, which are roads of less importance than highways, main roads and secondary roads. The construction and maintenance of strategic roads and roads of access to Commonwealth property is undertaken by the Department for the Australian Government.

Within its own district, each local government authority is responsible for the provision and upkeep of roads other than those provided by the Main Roads Department. In addition, the local authority is required by the Main Roads Act to maintain any secondary road situated in its district.

The following table, derived from data provided by the Main Roads Department, shows the length of public roads open for vehicular traffic at 30 June 1977, classified according to statistical division. Included in the total are 7,717 kilometres of highways, 7,602 kilometres of main roads and 8,772 kilometres of secondary roads.

ROADS OPEN FOR VEHICULAR TRAFFIC AT 30 JUNE 1977
CLASSIFIED ACCORDING TO STATISTICAL DIVISION
(Kilometres)

Statistical division	Formed roads				Unformed roads (b)	Grand total
	Sealed or primed	Gravel surface	Formed only (a)	Total		
Perth Statistical Division	7,383	470	328	8,181	2,740	10,921
Other statistical divisions—						
South-West	4,156	3,370	2,206	9,732	19,126	28,858
Lower Great Southern	2,688	3,177	4,738	10,603	2,238	12,841
Upper Great Southern	2,920	5,018	5,376	13,314	3,790	17,104
Midlands	7,082	9,579	9,589	26,250	3,833	30,083
South-Eastern	2,719	4,238	4,141	11,098	6,689	17,787
Central	3,576	4,467	12,398	20,441	8,592	29,033
Pilbara	1,007	553	3,908	5,468	3,376	8,844
Kimberley	1,062	1,495	3,592	6,149	1,693	7,842
Total	25,210	31,897	45,948	103,055	49,337	152,392
WESTERN AUSTRALIA	32,593	32,367	46,276	111,236	52,077	163,313

(a) Comprises roads, mainly of natural surfaces, formed but not metalled or otherwise prepared.

(b) Roads, unprepared except for certain clearing, used for vehicular traffic.

Vehicle Registration, Licences and Traffic Control

Prior to 1973, the registration of motor vehicles under the provisions of the *Traffic Act, 1919-1974* was shared between the Police Department and local government authorities. The Police Department was responsible for the issuing of motor drivers' licences throughout the State.

With the passage of the *Acts Amendment (Road Safety and Traffic) Act, 1973*, responsibility for motor drivers' licences passed to a new organisation, the Department of Motor Vehicles, which also controlled the registration of vehicles except in those local government areas where registration functions had not been voluntarily relinquished to the Department.

The *Road Traffic Act, 1974-1977*, which came into operation on 1 June 1975, repealed the *Traffic Act, 1919-1974*, consolidated and amended the law relating to road traffic and established the Road Traffic Authority. The Department of Motor Vehicles was abolished from the same date and its functions were taken over by the Authority. Registration of motor vehicles is presently the responsibility of the Road Traffic Authority but at 31 December 1978 fifty-eight local authorities continued to act as agents of the Authority.

Persons who have not previously held a driver's licence under the Act are issued with a probationary licence, the period of probation being one year. At the end of this period the probationary licence becomes an ordinary licence. Persons who have previously held a licence in a place outside the State are issued with an ordinary licence provided that the previous licence had been held for a period of one year.

The Act provides that the Road Traffic Authority may suspend or cancel a driver's licence under certain conditions, one of them being the number or nature of the convictions under the Act or its Regulations.

Traffic control in general (except for certain powers in relation to the parking of vehicles) has been assumed progressively by the Road Traffic Authority and at 31 December 1978 only one local authority (the Shire of Denmark) retained traffic control.

A more detailed account of events preceding the creation of the Road Traffic Authority appears in the *Western Australian Year Book*, No. 14—1975.

The Authority comprises seven members, namely the Commissioner of Main Roads; the Commissioner of Police; the Director General of Transport (or their respective deputies); three persons appointed by the Governor to represent, respectively, the Local Government Association of Western Australia, the Country Shire Councils' Association of W.A., and the Country Town Councils' Association and the permanent head of the Authority appointed under and subject to the *Public Service Act, 1904-1978*.

In addition to vehicle registration and the licensing of drivers of motor vehicles, the Authority is charged with responsibility for the collection and analysis of road traffic statistics and the undertaking of research into the causes and prevention of road accidents. In discharging its functions under the Act, the Authority is required, *inter alia*, to maintain a comprehensive knowledge of significant developments in traffic administration and research projects conducted elsewhere and to achieve the most efficient use of resources by eliminating duplication of work performed by any other body or authority, whether established within the State or elsewhere.

Section 231 of the *Local Government Act, 1960-1978* authorises local authorities to make by-laws in relation to the parking of vehicles and, in the case of the Perth City Council, certain powers in this regard are granted in terms of the *City of Perth Parking Facilities Act, 1956-1976*.

MOTOR VEHICLES ON REGISTER (a) AND RATIO TO POPULATION

At 31 December—	Motor cars and station wagons	Light and heavy commercials, omnibuses	Motor cycles and scooters	Total	Estimated number of vehicles per 1,000 of population		Estimated number of persons per vehicle	
					Motor cars and station wagons	All motor vehicles (a)	Motor cars and station wagons	All motor vehicles (a)
	('000)	('000)	('000)	('000)				
PERTH STATISTICAL DIVISION								
1968	189.9	41.5	6.4	237.8	302	378	3.3	2.6
1969	211.0	45.1	7.0	263.1	320	399	3.1	2.5
1970	230.0	49.3	7.5	286.8	333	416	3.0	2.4
1971 (b)	250.9	52.5	8.8	312.1	346	430	2.9	2.3
1972 (b)	264.5	55.5	10.7	330.7	356	445	2.8	2.2
1973 (b)	281.6	59.5	12.7	353.8	369	464	2.7	2.2
1974 (b)	299.2	63.0	14.9	377.1	378	477	2.6	2.1
1975 (b)	317.0	68.8	16.4	402.2	391	496	2.6	2.0
1976	340.9	75.3	17.1	433.3	410	521	2.4	1.9
1977	362.1	83.1	17.3	462.5	423	540	2.4	1.9
WESTERN AUSTRALIA (c)								
1968	263.6	93.2	9.3	366.1	281	390	3.6	2.6
1969	289.7	98.2	10.2	398.1	297	408	3.4	2.5
1970	311.8	100.2	11.2	423.2	307	417	3.3	2.4
1971 (b)	336.6	103.4	13.0	453.0	318	427	3.1	2.3
1972 (b)	355.3	105.8	15.7	476.9	329	441	3.0	2.3
1973 (b)	377.3	110.3	19.2	506.8	342	459	2.9	2.2
1974 (b)	400.0	114.9	23.0	537.9	352	473	2.8	2.1
1975 (b)	424.3	136.3	27.2	587.8	366	507	2.7	2.0
1976	455.6	147.7	28.2	631.5	385	534	2.6	1.9
1977	488.3	159.3	28.2	675.8	403	558	2.5	1.8

(a) Excluding tractors, trailers, caravans, and plant and equipment such as bulldozers, road graders and rollers, and mobile cranes.

(b) Figures revised in accordance with final results of the Census of Motor Vehicles on register at 30 September 1976.

(c) Includes Australian Government-owned vehicles (other than those of the defence services) listed with the Commonwealth Motor Vehicle Registry, Canberra. At 31 December 1977 there were in Western Australia 2,704 such vehicles comprising 345 motor cars, 533 station wagons, 1,076 utilities and panel vans, 559 trucks, 43 omnibuses and 148 motor cycles.

The previous table shows the number of motor vehicles, classified according to type, on register in the Perth Statistical Division (see map at the end of Chapter III) and in the whole of Western Australia from 1968 to 1977. Vehicles owned by the Australian Govern-

ment are not licensed under the Traffic Act but are included in the figures. The table also gives the estimated number of vehicles per 1,000 of population and the number of persons per vehicle.

Finance for Roads

The principal source of revenue for road works in Western Australia is in the form of Australian Government financial assistance authorised by a series of Acts, the first of which, the Main Roads Development Act, was passed in 1923. The legislation currently in operation for the provision of grants to the States for or in connection with roads are the *States Grants (Roads) Act 1977* and the *Transport Planning and Research (Financial Assistance) Act 1977*.

The *States Grants (Roads) Act 1977* provides grants to the States for approved expenditures on national roads, roads other than national roads and on minor traffic engineering and road safety improvements. For national roads, the Act authorised grants of \$194.4 million each year for the three-year period from 1 July 1977 to 30 June 1980. An amendment to the Act in 1978 increased this amount to \$207.9 million for each of the years 1978-79 and 1979-80. Western Australia's share of the total for these years amounts to \$22.5 million comprising \$16.3 million for the construction of national highways, \$4.5 million for the maintenance of national highways and \$1.7 million for the construction of national commerce roads. For roads other than national roads, the original grant of \$280.6 million for each of the three years was varied by the amending Act to \$300.1 million for 1978-79 and 1979-80. Of this amount, \$41.9 million is allocated each year to Western Australia comprising \$10.1 million for the construction of rural arterial roads, \$15.4 million for the construction and maintenance of rural local roads, \$12.0 million for the construction of urban arterial roads, \$2.5 million for the construction of urban local roads and \$1.9 million for minor traffic engineering and road safety improvements. Payment of moneys provided by the *States Grants (Roads) Act 1977* is contingent on a State's expenditure on roads from its own resources. To qualify for the full amount of the grants Western Australia's 'quota' to be spent on road works during the period to which the Act relates amounts to \$42.6 million for each of the years 1978-79 and 1979-80.

The *Transport Planning and Research (Financial Assistance) Act 1977* authorises the Australian Government to grant financial assistance to the States for approved projects of planning and research in relation to land transport. The Act applies to the year commencing on 1 July 1977 or any succeeding year and provides for the States to bear a proportion of the costs of projects. Of \$8 million allocated to the States for 1977-78, Western Australia's share amounts to \$0.74 million.

The *Road Traffic Act, 1974-1977*, which replaced the *Traffic Act, 1919-1974*, and the *Main Roads Act, 1930-1977* provide for a system of receipt and disbursement of moneys to be spent on roads. Other Western Australian Acts which provide revenue for road purposes are the *Road Maintenance (Contribution) Act, 1965-1978* and the *Transport Commission Act, 1966-1977*.

The *Road Traffic Act, 1974-1977* requires that there shall be paid to the Main Roads Trust Account, maintained under the Main Roads Act, all fees received for the issue, renewal and transfer of motor vehicle licences (other than recording fees) and for the issue of excess load permits. In addition, one-half of the fees received on the issue or renewal of drivers' licences are paid to the Account.

The *Main Roads Act, 1930-1977* provides that there shall be paid to the Main Roads Trust Account moneys received from the Australian Government as financial assistance in relation to roads; amounts payable under the provisions of the Traffic Act or any other Act; moneys appropriated by the Parliament; and payments by local government authorities in respect of permanent works and the maintenance of main roads and developmental roads. Moneys standing to the credit of the Account are used to meet expenditure by the Commissioner of Main Roads on the administration of the Act and the construction of roads and associated works, and to provide funds to local government authorities for roads and road works.

The *Main Roads Act Amendment Act, 1977* established a system of grants to local government authorities for each of the three financial years during the period ending 30 June 1980. The Act allocates each local government authority to one of five groups and provides for payment of a base grant to each local government authority for road construction and maintenance, and for payments of additional grants for approved programmes. The conditions relating to matching expenditures and, where applicable, to additional grants vary according to the groups. The total amount available to local government authorities in each year is \$14.0 million. In addition, a provision of the *Main Roads Act Amendment Act, 1975* empowers the Commissioner of Main Roads to borrow money for the purpose of road construction and associated activities, subject to the approval of the Minister.

Grants payable from the Main Roads Trust Account are an important source of funds available to local government authorities for road construction and maintenance. Other moneys may be provided from the ordinary revenue of a local authority or from loans raised for road purposes.

ROAD PASSENGER TRANSPORT SERVICES

Details of the operations of government and municipal omnibus services in Western Australia during the five years ended 30 June 1978 are given in the following table.

OMNIBUS SERVICES (a)

Year	Route kilometres operated (b)	Omnibuses at end of year	Omnibus kilometres run '000	Passenger-journeys '000	Employees at end of year	Operating revenues (c) \$'000	Operating expenses \$'000	Depreciation \$'000	Interest \$'000
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METROPOLITAN (PERTH) PASSENGER TRANSPORT TRUST

1973-74	1,336	781	36,584	58,311	1,952	10,125	14,861	844	743
1974-75	1,374	792	37,612	58,723	1,923	11,942	19,478	905	800
1975-76	1,402	818	38,142	59,514	1,950	11,933	21,665	948	793
1976-77	1,433	835	38,475	57,259	2,007	14,096	25,298	1,129	792
1977-78	1,452	853	38,808	57,072	2,047	13,875	27,859	1,323	1,055

WESTERN AUSTRALIAN GOVERNMENT RAILWAYS

1973-74	6,971	52	2,749	176	134	722	1,091	111	58
1974-75	6,971	51	2,678	149	147	878	1,309	100	48
1975-76	6,200	49	2,821	154	139	940	1,467	83	24
1976-77	6,916	48	2,675	163	137	988	1,473	64	19
1977-78	6,916	50	2,711	157	136	1,111	1,649	58	15

THE EASTERN GOLDFIELDS TRANSPORT BOARD

1973-74	30	19	831	694	17	173	177	19	-
1974-75	29	18	709	514	17	167	188	21	-
1975-76	29	17	590	617	20	196	211	21	-
1976-77	28	20	674	608	25	287	298	29	-
1977-78	45	20	675	626	25	378	347	36	-

(a) Excludes tourist services.

(b) Excludes school bus routes.

(c) Passenger fares and subsidies only.

Motor omnibus services (as well as a passenger ferry service) in the metropolitan area are operated by the Metropolitan (Perth) Passenger Transport Trust, constituted under the *Metropolitan (Perth) Passenger Transport Trust Act, 1957-1973*. For the purposes of the Act, the metropolitan area is defined by a proclamation of 6 June 1973 as being 'all the land within a circle having a radius of 50 kilometres from the Perth Town Hall' and in addition, an area bounded by the South-Western Highway and the ocean, extending southward to an east-west line 1.6 kilometres south of the town of Pinjarra.

Road transport of passengers outside the metropolitan area is provided by the railways road services which cover long-distance routes between Perth and country centres and by The Eastern Goldfields Transport Board, which serves the Kalgoorlie-Boulder urban area under an agreement with the Kalgoorlie and Boulder local government authorities. In addition, at 30 June 1978 private operators, employing 350 buses, were licensed to provide tourist, town, area and charter services.

In certain country areas, children are taken to and from school by motor bus at government expense. In 1977-78 the cost to the Government of school transport services was \$8,559,479. The number of omnibuses engaged was 743. They travelled a daily total of 83,728 kilometres and carried 23,974 children daily.

MOTOR VEHICLE USAGE

A survey conducted by the Australian Bureau of Statistics throughout Australia in late 1976 collected data on motor vehicle usage relating to the twelve months ended 30 September 1976. This survey was similar to others carried out in 1963 and 1971.

The survey was based on a sample of approximately 53,000 vehicles, of which some 80 per cent were trucks and other commercial types in order to ensure adequate representation of the various types in this diverse sector. Buses were excluded, being the subject of a separate survey, results of which appear in the publication *Survey of Bus Fleet Operations, twelve months ended 30 June 1976*, (Catalogue No. 9203.0), published by the Australian Statistician, Canberra.

Because the survey results are based on a sample, representing some 6.6 million vehicles on register at 30 September 1976, they are subject to sampling variability when compared with results which would have been obtained from a complete census of all registered motor vehicles using the same questionnaires and procedures.

Results of the survey showed, in Western Australia, an average annual distance travelled of 15,900 kilometres for all vehicles. Cars and station wagons averaged 16,000 kilometres, while articulated trucks averaged 49,400 kilometres.

Detailed information appears in the publication *Survey of Motor Vehicle Usage, twelve months ended 30 September 1976*, (Catalogue No. 9208.0), published by the Australian Statistician, Canberra.

ROAD TRAFFIC ACCIDENTS

Statistics of road traffic accidents are prepared from information concerning accidents in public thoroughfares, as reported to officers of the Road Traffic Authority in the areas controlled by the Authority and, outside those areas, to traffic inspectors employed by local government authorities and/or police officers. Accidents involving casualties are those which result in the death of any person within a period of thirty days after the accident, or in which any person suffers bodily injury to an extent requiring surgical or medical treatment.

The following table shows, for each year during the period 1973 to 1977, the number of accidents involving casualties which occurred in Western Australia and the total for Australia as a whole.

ROAD TRAFFIC ACCIDENTS INVOLVING CASUALTIES WESTERN AUSTRALIA AND AUSTRALIA

Particulars	1973	1974	1975	1976	1977 (a)
WESTERN AUSTRALIA					
Accidents involving casualties—					
Total	5,404	4,742	5,104	5,287	6,224
Per 10,000 motor vehicles on register (b)	111	91	90	87	95
Per 100,000 of mean population (c)	496	424	445	452	520
Number of persons killed—					
Total	358	334	304	308	290
Per 10,000 motor vehicles on register (b)	7	6	5	5	4
Per 100,000 of mean population (c)	33	30	26	26	24
Number of persons injured—					
Total	7,377	6,277	6,832	7,059	8,353
Per 10,000 motor vehicles on register (b)	151	120	121	117	127
Per 100,000 of mean population (c)	676	562	596	603	698

**ROAD TRAFFIC ACCIDENTS INVOLVING CASUALTIES
WESTERN AUSTRALIA AND AUSTRALIA—continued**

Particulars	1973	1974	1975	1976	1977 (a)
AUSTRALIA					
Accidents involving casualties—					
Total	70,151	67,473	65,788	64,282	67,549
Per 10,000 motor vehicles on register (b)	124	112	104	98	99
Per 100,000 of mean population (c)	524	496	478	462	480
Number of persons killed—					
Total	3,679	3,572	3,694	3,583	3,578
Per 10,000 motor vehicles on register (b)	7	6	6	5	5
Per 100,000 of mean population (c)	27	26	27	26	25
Number of persons injured—					
Total	95,204	91,338	89,499	87,808	91,616
Per 10,000 motor vehicles on register (b)	169	152	141	134	134
Per 100,000 of mean population (c)	711	672	650	631	651

(a) From August 1977 casualty accidents and persons injured include cases, previously excluded, where the persons injured did not require medical treatment. (b) Based on final results of the census of motor vehicles on register at 30 September 1976. (c) Based on latest available population figures.

The total number of persons killed in road traffic accidents in Australia in 1977 was 3,578 with 290 of the fatalities occurring in Western Australia.

In the next table road traffic accident casualties which occurred in Western Australia during the five years ended 31 December 1977 are classified according to type of road user. The figures shown in the category 'Other' refer to such persons as bystanders, train drivers, riders of horses and drivers of animal-drawn vehicles. The number of pedestrians killed in the State in 1977 amounted to fifty-eight or 20 per cent of the total fatalities.

**ROAD TRAFFIC ACCIDENTS
CASUALTIES ACCORDING TO TYPE OF ROAD USER**

Type of road user	1973	1974	1975	1976	1977 (a)
PERSONS KILLED					
Drivers of motor vehicles	145	119	122	107	93
Motor cyclists (b)	24	43	24	32	27
Pedal cyclists	7	1	7	7	10
Passengers—					
Pillion	2	4	3	5	6
Other	93	100	91	96	95
Pedestrians	86	65	52	59	58
Other	1	2	5	2	1
Total	358	334	304	308	290
PERSONS INJURED					
Drivers of motor vehicles	3,134	2,614	2,867	2,932	3,746
Motor cyclists (b)	615	642	678	764	778
Pedal cyclists	199	196	204	249	268
Passengers—					
Pillion	97	113	109	124	132
Other	2,626	2,118	2,280	2,311	2,745
Pedestrians	687	581	675	655	655
Other	19	13	19	24	29
Total	7,377	6,277	6,832	7,059	8,353

(a) See footnote (a) to previous table.

(b) Includes riders of motor scooters.

The following table gives a classification of casualties according to the ages of persons killed and persons injured during each year of the period from 1973 to 1977.

ROAD TRAFFIC ACCIDENTS—CASUALTIES CLASSIFIED ACCORDING TO AGE

Year	Age last birthday (years)										Total
	0-4	5-6	7-16	17-20	21-29	30-39	40-49	50-59	60 and over	Not stated	
PERSONS KILLED											
1973	11	4	31	61	78	44	41	30	58	-	358
1974	11	1	28	78	71	35	27	31	52	-	334
1975	15	4	29	64	58	38	36	18	42	-	304
1976	7	5	29	71	56	42	23	27	46	2	308
1977 (a)	13	4	30	47	75	27	24	24	44	2	290
PERSONS INJURED											
1973	239	113	746	1,656	1,552	801	598	456	471	745	7,377
1974	205	91	630	1,333	1,479	695	507	391	446	500	6,277
1975	218	147	731	1,520	1,501	725	545	423	474	548	6,832
1976	200	150	732	1,629	1,705	718	499	402	457	567	7,059
1977 (a)	218	133	847	1,929	2,006	900	624	490	513	693	8,353

(a) From August 1977 casualty accidents and persons injured include cases, previously excluded, where the persons injured did not require medical treatment.

Road traffic accidents during the years ended 31 December 1976 and 1977 are classified in the next table according to nature of accident and type of vehicle involved. It should be noted that, as accidents (and casualties) may involve more than one type of vehicle and, in such cases, are classified to each type involved, it is not appropriate to derive totals by adding the figures shown in the second part of the table.

ROAD TRAFFIC ACCIDENTS
NATURE OF ACCIDENT AND TYPE OF VEHICLE INVOLVED

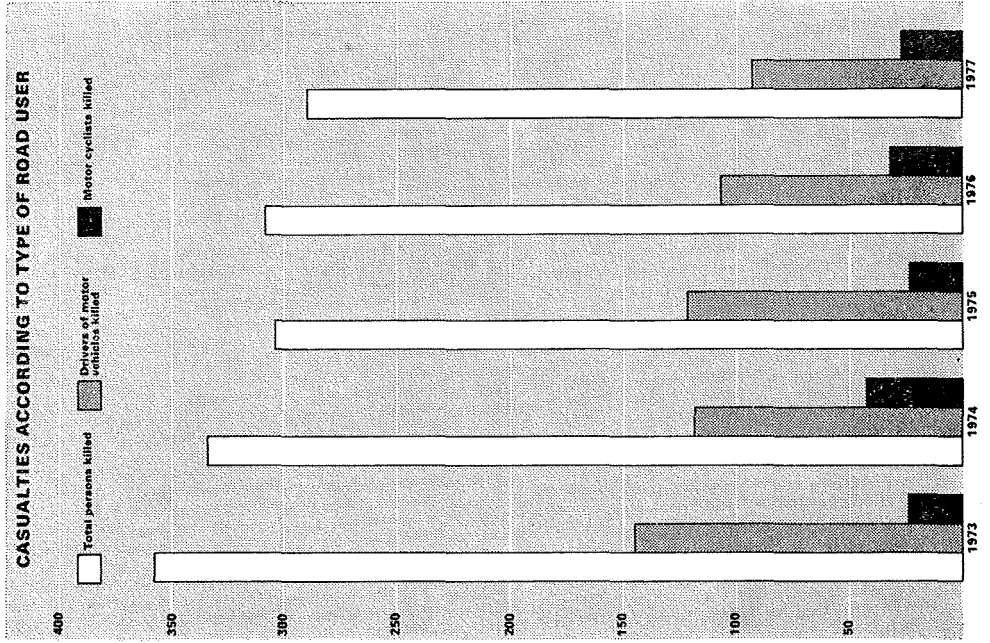
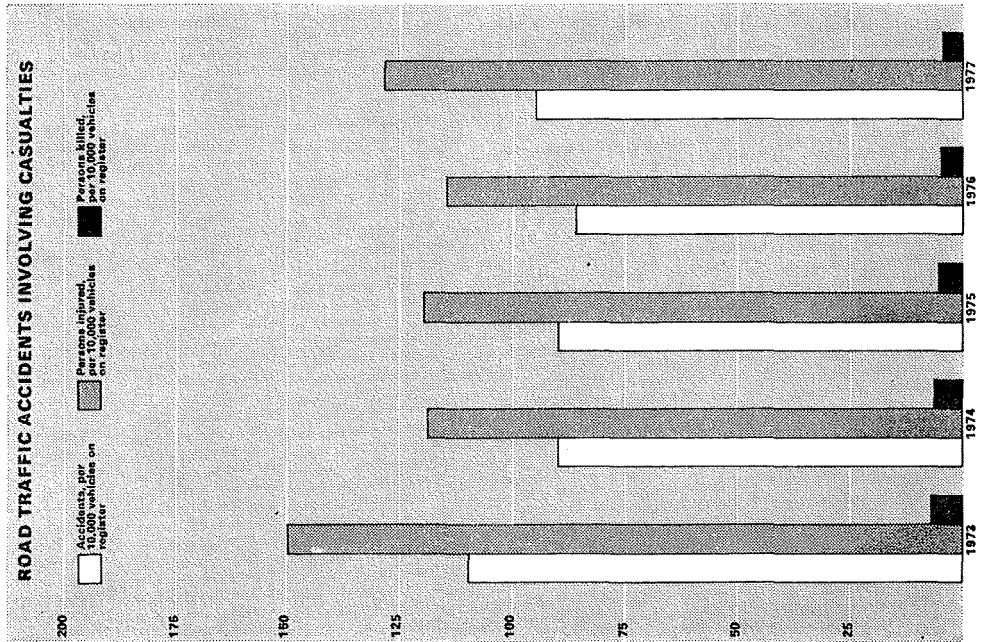
Nature of accident and type of vehicle involved	1976			1977 (a)		
	Accidents involving casualties	Casualties		Accidents involving casualties	Casualties	
		Persons killed	Persons injured		Persons killed	Persons injured
NATURE OF ACCIDENT						
Vehicle colliding with—						
Moving or stationary vehicle (b)	2,836	115	4,043	3,530	87	5,056
Railway vehicle	11	2	15	8	3	15
Pedestrian	654	56	630	668	58	638
Parked vehicle	71	5	98	116	3	151
Fixed object	12	-	13	13	1	17
Animal or animal-drawn vehicle	28	1	40	31	-	40
Vehicle overturning or leaving road	1,514	119	2,034	1,699	132	2,248
Passenger accident	40	3	39	29	2	28
Other accidents	121	7	147	130	4	160
Total	5,287	308	7,059	6,224	290	8,353

TYPE OF VEHICLE INVOLVED (c)

Motor vehicle—						
Car, other than taxi	4,379	239	5,990	5,266	219	7,242
Taxi	54	-	73	51	1	68
Van; utility	827	55	1,177	955	33	1,341
Truck	252	30	312	300	20	385
Semi-trailer	61	8	74	68	19	74
Omnibus	52	2	68	61	5	99
Motor cycle, motor scooter	862	39	953	875	34	1,004
Other (d)	31	4	33	45	4	42
Pedal cycle	252	7	256	285	10	287

(a) See footnote (a) to previous table. (b) Excludes parked vehicles. Includes pedal cycles. (c) See letterpress immediately preceding table. (d) Includes unidentified vehicles.

Road Traffic Accidents Involving Casualties 1973 to 1977



For additional information on road traffic accidents in this State, the reader is referred to the publication *Road Traffic Accidents involving Casualties* issued quarterly (Catalogue No. 9401.5) and annually (Catalogue No. 9402.5) by the Western Australian Office of the Australian Bureau of Statistics or to the publication *Statistics of Western Australia—Transport and Communication* (Catalogue No. 9101.5).

PASSENGER FERRY SERVICE

The Metropolitan (Perth) Passenger Transport Trust operates a passenger ferry service across the Swan River from Perth to South Perth and makes boats available for charter. Particulars of private charter excursions, other than those which relate to operating revenues and expenses, are excluded from the figures in the following table which gives a summary of operations over the period 1973-74 to 1977-78.

PASSENGER FERRY SERVICE

Year	Ferries at end of year	Kilometres run (a)	Passenger-journeys (a)	Employees at end of year	Operating revenues	Operating expenses	Depreciation	Interest
1973-74	5	35,510	396,802	10	\$ 91,334	\$ 96,455	\$ 4,614	\$ 8,979
1974-75	5	35,756	353,924	10	110,602	127,398	4,974	10,209
1975-76	5	36,456	372,778	10	121,728	138,570	5,099	10,840
1976-77	5	38,158	342,077	11	134,929	140,753	5,346	8,910
1977-78	5	40,098	336,407	11	158,866	160,745	4,646	6,630

(a) Excludes private charter operations.

AIR TRANSPORT

The supervision and control of civil air transport throughout Australia is the responsibility of the Federal Department of Transport. Its regulatory functions include the licensing of air crew, engineering staff, airlines, charter and aerial work operators, flying schools and aerodromes; and the establishment and operation of air traffic control procedures. The Federal Minister for Transport has the responsibility for the approval of fares and freight rates. The Department is responsible for the conduct of search and rescue operations; the determination of air rules and enforcement of safety regulations; the setting of requirements for and the issue of certificates of airworthiness for all civil aircraft; the provision and maintenance of government aerodromes, aeronautical communication systems and radio navigational aids; and the specification of required meteorological services. It also co-operates with the State Transport Commission which has a statutory licensing function in respect of air transport facilities within the State.

An extensive system of regular air services operates in Western Australia for the transport of passengers, freight and mail. The International Airport, twelve road kilometres from central Perth, is used by:

- (i) seven international operators providing regular jet service to and from Africa, Europe, India, Indonesia, Malaysia, Singapore and Hong Kong;
- (ii) two interstate operators providing up to eight jet services per day between Perth and other Australian capital cities;
- (iii) one intrastate operator providing frequent jet services to eleven other towns in Western Australia and to three towns in the Northern Territory; and
- (iv) commuter operators connecting Perth with eighteen country centres.

Other commuter services connect thirty-two townships and stations with ports on jet routes.

During the past ten years the average annual passenger traffic growth at Perth Airport has exceeded 10 per cent.

In addition to the aircraft capacity provided by airline and commuter operators there is a large fleet of light aircraft available for charter work and all kinds of aerial work including aerial surveys, spotting, aerial agriculture, etc. This fleet which includes executive twin-jet type aircraft and helicopters numbered 276 in January 1979 when there were another 384 private (non-commercial) aircraft based in Western Australia.

Perth Airport is equipped with modern electronic and electrical navigation and approach aids to enable operations in periods of low visibility, and thirteen airports in the State have been equipped with visual approach slope indicator lighting systems to permit regular jet operations at those ports. There are ten communication and flight service centres and three air traffic control establishments at various ports throughout Western Australia.

In March 1979 the Australian Government owned and maintained twenty aerodromes in Western Australia and there were thirty-one licensed aerodromes owned privately or by local authorities. Strips suitable for use by light aircraft and scattered throughout the State were estimated to exceed 1,000 in number. The Royal Flying Doctor Service, which has occasion to operate to and from many of those strips, has a number of bases in Western Australia and details of its activities are given in Chapter V, Part 3.

Airport Operations. The following table, compiled from information published by the Federal Department of Transport, Air Transport Group, provides a summary of operations at principal airports in Western Australia during each of the years 1974 to 1976. The figures refer only to regular public transport operations on scheduled services by licensed airlines and do not include charter and commuter services.

Commuter service is a term used to describe regular flights by charter firms with small aircraft operating to fixed and published timetables.

CIVIL AVIATION—TRAFFIC HANDLED AND AIRCRAFT MOVEMENTS AT PRINCIPAL AIRPORTS

Airport	Passengers (a)			Freight (tonnes) (b)			Aircraft movements (c)		
	1974	1975	1976	1974	1975	1976	1974	1975	1976
Broome	20,755	11,790	15,370	464	249	238	2,290	1,795	1,779
Carnarvon	15,430	15,937	15,676	100	100	87	1,395	1,421	1,293
Derby	24,029	24,479	24,126	841	804	803	2,893	2,743	2,598
Geraldton	32,265	32,509	30,819	71	84	99	1,743	1,645	1,808
Kalgoorlie	29,036	31,426	25,619	203	192	159	841	790	694
Karratha (d)	48,886	44,435	45,499	799	827	853	3,059	2,954	2,818
Kununurra	21,155	17,733	18,396	564	458	476	1,968	2,526	1,996
Learmonth	9,184	7,903	7,290	94	66	73	853	798	691
Newman	20,479	25,630	24,427	268	275	249	1,750	1,778	1,729
Paraburdoo	34,745	37,192	24,380	495	513	479	2,807	2,692	1,909
Perth—									
Internal (e)	667,684	681,264	657,981	11,316	10,803	11,769	12,141	12,069	10,880
International	138,636	165,498	196,542	1,961	1,625	2,288	2,907	3,423	3,598
Port Hedland	63,771	63,419	61,142	1,524	1,763	2,165	4,536	4,360	3,731
Tom Price	12,393	13,211	5,798	211	229	126	1,962	2,172	110

(a) Total of embarkations and disembarkations. (b) Total of freight loaded and unloaded. (c) Total of arrivals and departures. (d) Formerly Dampier. (e) Interstate and intrastate.

Casualty Accidents. The following table shows the number of accidents involving civil aircraft which resulted in death or serious injury.

CIVIL AVIATION—ACCIDENTS INVOLVING CASUALTIES (a)

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
WESTERN AUSTRALIA					
Number of—					
Accidents (a)	4	3	3	6	6
Persons killed	7	1	6	—	10
Persons seriously injured	—	2	1	9	3

CIVIL AVIATION—ACCIDENTS INVOLVING CASUALTIES (a)—continued

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
AUSTRALIA					
Number of—					
Accidents (a)	34	24	32	33	47
Persons killed	46	25	54	39	58
Persons seriously injured	19	16	24	24	27

(a) Accidents involving civil aircraft which resulted in death or serious injury. Excludes parachutists killed on contact with earth after an uninterrupted fall. Excludes accidents outside Australia involving aircraft on the Australian register.

The statistics relate to the following classes of operation: regular public transport; charter flights; aerial agriculture; training; other aerial work; private; and gliding.

TRANSPORT CO-ORDINATION

State Transport Co-ordination Act

The *State Transport Co-ordination Act, 1966*, which came into operation on 19 June 1967, repeals the *State Transport Co-ordination Act, 1933-1961*. The Act provides for the appointment of a Director General of Transport, a Transport Advisory Council and a Transport Users' Board.

The duties of the Director General are to recommend to the Minister transport policy or changes in transport policy and measures for achieving policy objectives and the co-ordination of the various forms of transport service; to implement such policies and measures; to provide for research in transport planning and operation and in the economics of every form of transport; to co-ordinate capital works programmes for public transport services; to inquire into existing transport services; to recommend the provision of road transport services; to examine and report on any proposal for the construction of a new railway; to recommend the closure or partial suspension of any transport service, including a railway; and to advise the Minister on the administration of specified Acts relating to transport.

The Transport Advisory Council comprises the Director General of Transport (as Chairman), the Commissioner of Railways, the Commissioner of Main Roads, the Commissioner of Transport, the Chairman of the Metropolitan (Perth) Passenger Transport Trust, the Chairman of the Western Australian Coastal Shipping Commission, a representative of the West Australian Road Transport Association, and a representative of operators of regular air transport services. The duties of the Council are to formulate proposals in respect of, and make recommendations on, any matter referred to it by the Minister or the Director General of Transport, or that it may bring forward of its own motion.

The Transport Users' Board consists of the Director General of Transport (as Chairman) and four persons appointed by the Governor on the nomination of the Minister. These four members must be persons who, in the opinion of the Minister, are capable of assessing the financial and economic effect on transport users of any proposed or existing transport policy, two of them being persons particularly versed in the transport needs of rural industries. The Transport Users' Board is charged with the duty of considering and, where it so resolves, of making recommendations on, any matter affecting a transport service operating in the State, or concerning the lack or inadequacy of a transport service.

Transport Commission Act

The *Transport Commission Act, 1966-1977* provides for the appointment of a Commissioner of Transport. Under the direction of the Minister, the Commissioner is required to call tenders for the provision of road transport where, in the opinion of the Minister, the requirements of a district are not adequately served by any form of transport; to administer and direct the payment of such subsidies with respect to the provision of transport as may be authorised pursuant to the Act; and to consider and determine all

applications for licences in respect of public vehicles. In regard to such licences the Commissioner may specify any particular conditions concerning the granting or holding of a licence, and may determine, in respect of any particular licence or group of licences, the conditions that shall be imposed on the granting and holding of such licences.

The public vehicles licensed by the Commissioner are omnibuses (other than those operated by the Metropolitan (Perth) Passenger Transport Trust), commercial goods vehicles, and aircraft.

In the licensing of omnibuses the Commissioner is empowered to prescribe the routes to be operated, the stopping places at which passengers may be picked up or set down, the fares to be charged, the timetables to be observed and the maximum number of passengers to be carried at any one time on any vehicle. The Commissioner may impose such other conditions as he thinks proper in the public interest.

All commercial goods vehicles operating on public roads are required to be licensed, except those which operate solely in the area within a radius of thirty-five kilometres from the General Post Office, Perth, or within a radius of thirty-five kilometres from the owner's place of business (or, where such place of business is situated more than sixty-five kilometres from the General Post Office, Perth, within a radius of forty kilometres). Exemptions from licensing provisions also apply to vehicles used for the transport of specified types of goods, mainly primary produce including forest products, minerals and livestock, or for the transport of goods within particular areas or between particular points.

Aircraft licences issued by the Commissioner relate to regular services and charter flights. Aircraft exempted from the licensing provisions of the Act are those operated solely in connection with the Royal Flying Doctor Service or in the course of aerial spraying, crop dusting, seed sowing, fertiliser distribution, photography, geophysical surveying, dingo baiting or fish spotting.

The *Road and Air Transport Commission Act Amendment Act, 1970* widens the scope of the original Act to include control of the operations of ships engaged in the coasting trade. Under the provisions of the 1970 legislation, ships other than those operated by the Western Australian Coastal Shipping Commission may not engage in the coasting trade unless authorised to do so by a licence or permit granted by the Commissioner of Transport.

Financial transactions are recorded in a Transport Commission Fund account as required by the Act. The principal revenues of the Fund are receipts from licence and permit fees and amounts received from the Treasury for distribution in the form of subsidy to transport operators and others in certain areas. The expenditure from the Fund includes amounts necessary to meet administration costs, disbursements to the Main Roads Department and to local government authorities for the maintenance and improvement of roads, moneys required to be held in trust for the provision and maintenance of landing grounds, and the payment of subsidies. Subsidies are paid principally on the cartage of grain and fertilisers, but also on the air transport of perishable goods to remote parts of the State and on travel, mainly by air, by students normally resident in those areas.

Taxi-cars (Co-ordination and Control) Act

The *Taxi-cars (Co-ordination and Control) Act, 1963-1978* constitutes a Taxi Control Board of seven members to provide for the co-ordination and control of taxi-cars and the registration and conduct of taxi-car drivers in the Metropolitan Traffic Area and such other areas as may be declared. The Act provides that the Board shall consist of the Commissioner of Transport (as Chairman); a representative appointed, from time to time, by the Road Traffic Authority; and five persons, appointed by the Governor, comprising one to represent the interests of local authorities, chosen from a panel of names that is obtained by each local authority submitting the name of one person; three industry members, including at least one taxi-car owner and one full-time driver, elected by taxi-car owners or full-time operators of taxi-cars; and one nominated by the Metropolitan (Perth) Passenger Transport Trust.

The principal functions of the Board are the formulation of schemes for the co-ordination and control of taxis; the determination of the number and kind of taxis to be licensed; the issue of licences; the determination of fares and other charges; the supervision of the operation of taxis and the regulation of stands; the registration of, and the control of the conduct and dress of, drivers; and the enforcement of regulations made under the Act.

It is provided that the number of taxis that may be licensed to operate within the metropolitan area shall not at any time exceed one for every 800 of the population of the area.

The Act establishes a Taxi Control Fund for the receipt of fees payable on the issue, renewal or transfer of licences. The expenses of the administration of the Act are paid from the Fund.

Chapter IX—continued
Part 4—Communication

POSTS, TELEGRAPHS AND TELEPHONES

The first postmasters in the Colony of Western Australia were appointed at Perth and Fremantle in 1830 and a Postal Department was established by the Colonial Government in 1834. Telegraphic communication, between Perth and Fremantle, was inaugurated in 1869 by means of a private line, which was purchased by the Government in 1871. A telephone exchange system, installed and operated by the Government, was opened at Perth in 1887.

In 1901, following the federation of the Australian Colonies, the post, telegraph and telephone services of the State Governments were transferred to the Commonwealth Government. The Post and Telegraph Act of 1901 placed the services under the control of a Commonwealth Minister to be known as the Postmaster-General. The *Postal Services Act 1975*, *Telecommunications Act 1975*, and *Postal and Telecommunications Commissions (Transitional Provisions) Act 1975* established two statutory authorities, the Australian Postal Commission and the Australian Telecommunications Commission to control, respectively, from 1 July 1975, the postal and telecommunications services previously provided by the Postmaster-General's Department. Figures shown in the tables in the next two sections for the years ended 30 June 1976 to 1978, have been extracted from the annual reports of the new Commissions. Any figures shown for earlier years refer to the operations of and services previously provided by the Postmaster-General's Department.

Australian Postal Commission

The following table shows the number of persons employed by the Australian Postal Commission in Western Australia, and the number of post offices throughout the State at 30 June 1976 to 1978. Full-time employees are those directly under the control of the Commission. The remainder, shown as 'Other employees', provide services, which may or may not occupy their full time, under contract or in return for payments appropriate to work performed. 'Non-official' post offices are conducted by persons who are not officers of the Australian Postal Commission, and are frequently operated in conjunction with some other business activity. Comparable figures are not available for earlier years.

AUSTRALIAN POSTAL COMMISSION
NUMBERS OF EMPLOYEES AND OFFICES—WESTERN AUSTRALIA

Particulars	At 30 June—		
	1976	1977	1978
Full-time employees—			
Permanent officers	2,053	2,010	2,037
Temporary officers	309	340	321
Total	2,362	2,350	2,358
Other employees—			
Non-official postmasters and staff	396	380	383
Mail contractors (a)	308	319	313
Part-time employees	302	278	290
Total	1,006	977	986
Total, Employees	3,368	3,327	3,344
Post offices—			
Official	162	164	163
Non-official	381	376	376
Total	543	540	539

(a) Includes persons employed by contractors to drive vehicles on mail runs.

The total number of employees of the Postal Commission throughout Australia at 30 June 1978 was 43,506. At the same date there were 5,571 official and non-official post offices.

The net result of the operations throughout Australia of the Commission for the years ended 30 June 1976 to 1978 are shown in the following table. The amounts appearing under the heading of *Interest* represent interest on funds provided by the Treasury. Owing to changes in accounting practices, comparable figures for earlier years are not available.

AUSTRALIAN POSTAL COMMISSION
STATEMENT OF REVENUE AND EXPENDITURE—AUSTRALIA
(*\$'000*)

Particulars	1975-76	1976-77	1977-78
Revenue—			
Mail services	402,221	435,790	456,739
Money order and postal order services	7,481	6,881	6,242
Commission on agency services	85,892	101,739	95,636
Other revenue	10,044	17,186	20,110
Total, Revenue	505,638	561,596	578,727
Expenditure—			
Operating and general	354,995	395,675	426,100
Transportation	46,723	50,168	55,343
Depreciation	7,959	9,341	11,786
Superannuation	43,994	54,253	60,250
Long service leave	13,514	16,383	17,083
Interest	6,791	6,877	6,098
Total, Expenditure	473,976	532,697	576,660
Operating surplus available for appropriation	31,662	28,899	2,067

Details of postal articles handled in Western Australia during the years 1973-74 to 1977-78 are shown in the following table.

POSTAL ARTICLES HANDLED (a)—WESTERN AUSTRALIA
(Thousands)

Year	Ordinary postal articles (b)		Parcels (c)	Registered articles (d)
	Letter-form	Other		
POSTED FOR DELIVERY WITHIN AUSTRALIA				
1973-74	162,110	13,851	1,218	510
1974-75 (b)	145,862	19,318	1,055	480
1975-76 (b)	125,588	16,648	782	310
1976-77 (b)	129,828	16,355	1,076	248
1977-78 (b)	142,559	15,259	1,433	278
POSTED FOR DELIVERY OVERSEAS				
1973-74	8,778	579	72	100
1974-75 (b)	7,959	957	75	110
1975-76 (b)	7,016	808	63	87
1976-77 (b)	7,229	822	66	82
1977-78 (b)	5,950	1,003	72	84
RECEIVED FROM OVERSEAS				
1973-74	7,318	3,173	177	83
1974-75 (b)	6,166	4,184	176	97
1975-76 (b)	5,852	3,060	165	100
1976-77 (b)	6,397	2,312	160	99
1977-78 (b)	7,517	2,374	144	111

(a) Excludes matter received from other Australian States. (b) As from 1 October 1974 the classification was amended to standard letters and non-standard articles and consequently the figures from 1974-75 are not comparable with those for earlier years. (c) Includes registered, cash on delivery and duty parcels. (d) Excludes registered parcels; see footnote (c).

Australian Telecommunications Commission

The following table shows the number of persons employed by the Australian Telecommunications Commission in Western Australia at 30 June 1976 to 1978.

AUSTRALIAN TELECOMMUNICATIONS COMMISSION NUMBER OF EMPLOYEES—WESTERN AUSTRALIA

Particulars	At 30 June—		
	1976	1977	1978
Full-time employees—			
Permanent officers	5,922	5,779	5,618
Temporary officers	1,544	1,567	1,666
Total	7,466	7,346	7,284
Other employees—			
Part-time employees	177	162	166
Employees paid by other Government authorities	27	50	53
Contract employees	97	94	81
Total	301	306	300
Total, Employees	7,767	7,652	7,584

The annual net results of the operations of the Commission throughout Australia for 1975-76 to 1977-78 are shown in the following table. The amounts appearing under the heading of *Interest* represent interest on funds provided by the Treasury.

AUSTRALIAN TELECOMMUNICATIONS COMMISSION PROFIT AND LOSS STATEMENT—AUSTRALIA (\$'000)

Particulars	1975-76	1976-77	1977-78
Earnings—			
Telephone rents	416,831	454,111	495,420
Telephone calls	839,580	r 967,331	1,078,830
Telephone connection fees and rearrangement charges	58,447	77,465	80,719
Telegrams	29,423	31,511	31,303
Telex rents	14,090	16,219	18,655
Telex calls	17,417	20,021	26,081
Other earnings	48,401	108,334	125,490
Total earnings	1,424,189	1,674,991	1,856,499
Expenses—			
Maintenance of plant	278,125	355,196	386,723
Operating	236,148	275,278	288,573
General and administrative	62,621	71,520	105,160
Accommodation	50,224	64,678	74,705
Depreciation	312,358	340,817	366,514
Superannuation	70,395	100,381	106,669
Long service leave	22,336	24,090	25,949
Interest	239,588	278,629	317,288
Total expenses	1,271,795	1,510,589	1,671,580
Profit	152,393	164,403	184,918

The total number of employees of the Telecommunications Commission throughout Australia at 30 June 1978 was 90,026.

Figures relating to the cash receipts and expenditure of the Commission in Western Australia during the years 1975-76 to 1977-78 are given in the following table. Some additional items of revenue and expenditure are not apportioned to States and therefore do not appear in the table. The figures shown relate to actual collections and payments made and as such they do not represent the net results of the Commission's operations in Western Australia for the year.

AUSTRALIAN TELECOMMUNICATIONS COMMISSION
CASH RECEIPTS AND EXPENDITURE—WESTERN AUSTRALIA
(\$'000)

Cash receipts			Cash expenditure		
Particulars	1976-77	1977-78	Particulars	1976-77	1977-78
Telephone	130,915	146,391	Salaries and wages	72,800	79,349
Telegraph	6,248	7,097	Material	26,809	33,626
Proceeds of sales	1,402	1,546	Buildings, sites, properties	11,778	11,108
Recoverable works	2,359	2,334	Accommodation services	4,561	4,812
Miscellaneous	31	—25	Other administrative expenses	17,556	17,468
Total	140,956	157,343	Total	133,503	146,362

Telegraphs and Telephones. Telegrams can be lodged at any post office, telephone office or from any public telephone equipped for multi-coin operation. In addition, telegrams can be dispatched from any subscriber's telephone or teleprinter exchange (telex) equipment. The number of telegraph offices in the State and of telegrams transmitted from Western Australia during the years 1973-74 to 1977-78 are set out below.

Telephone services comprise ordinary exchange services (*i.e.* those which provide direct access to the exchange system by means of exclusive use of an exchange line), duplex services, party-line services, private branch exchange services and public telephones. The numbers shown as 'Telephone instruments in service' relate to those through which direct access to the exchange system may be obtained.

At 30 June 1978, the pair length of conductors in telegraph and telephone cables in Western Australia was 2,723,197 kilometres. The pair length of aerial wires was 70,749 kilometres and the length of pole routes was 22,240. There were 9,944 tube kilometres of coaxial cable.

The teleprinter exchange service (telex) was introduced in Perth in December 1956. This service enables a subscriber's teleprinter to be connected with that of any other subscriber in the local network or networks in other States.

TELEGRAPHS—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of—					
Offices (a)	646	623	609	595	584
Telegrams—	'000	'000	'000	'000	'000
Within Australia—Dispatched	2,035	1,926	1,502	r 1,241	1,021
Beyond Australia—Dispatched	193	193	176	182	190

(a) At 30 June.

TELEPHONES AND EXCHANGES (a)—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of—					
Exchanges	742	733	729	723	709
Services—					
Metropolitan (b)	166,142	177,607	189,369	203,503	} 254,382
Outer Metropolitan (c)	} 78,502	20,520	24,281	28,471	
Country		64,343	66,574	71,435	77,466
Total	244,644	262,470	280,224	303,409	331,848
Telephone instruments in service—					
Total	352,471	376,589	404,041	436,033	472,788
Per 100 of population	32.5	33.5	35.2	36.8	38.8

(a) At 30 June. (b) Services connected to exchanges located within 16 kilometres of the General Post Office, Perth. (c) Services connected to exchanges located between 16 kilometres and 32 kilometres of the General Post Office, Perth.

TELEPRINTER EXCHANGE NETWORK (TELEX)—WESTERN AUSTRALIA

Particulars	1973-74	1974-75	1975-76	1976-77	1977-78
Number of—					
Services at 30 June	1,434	1,573	1,803	2,034	2,364
Internal calls (a)	2,702,000	3,027,000	3,159,000	3,208,000	3,602,000

(a) Includes Post Office official traffic.

RADIOCOMMUNICATION

The Overseas Telecommunications Commission (Australia) is the authority responsible for the operation of telecommunication services between Australia and other countries, with ships at sea and to and between Australia's external Territories.

The Commission was established under the provisions of the *Overseas Telecommunications Act 1946* which implemented a recommendation of the 1945 Commonwealth Telecommunications Conference for national ownership of the external telecommunication services of the British Commonwealth countries concerned. In 1966 the Commonwealth countries completed a review of the machinery for their collaboration in telecommunications and, as a result, the Commonwealth Telecommunications Organisation was established. The purpose of this body is to promote the efficient exploitation and development of the Commonwealth external telecommunications system.

A number of countries, including Australia, agreed in 1964 to establish a global commercial communications satellite system and Australia, represented by the Commission, is a member of the management body of the ninety-three nation International Telecommunications Satellite Consortium (INTELSAT).

The Commission operates three 'standard' earth stations (at Carnarvon in Western Australia, Ceduna in South Australia and Moree in New South Wales) which can communicate via satellite with stations in other countries. The standard station at Carnarvon was brought into service on 1 October 1969, enabling a non-standard earth station at Carnarvon to be released for the full-time performance of telemetry, tracking and command functions for the INTELSAT organisation.

The transmission facilities used by the Commission in its external operations are submarine cables, satellites and high frequency radio. It operates a coastal radio service and, in association with the Telecommunications Commission within Australia and with communication carriers in other Commonwealth and foreign countries, provides public message telegram, telephone, telex, photo-telegram, leased circuit and television services to most countries and places throughout the world.

The coastal radio service provides, as its principal function, essential maritime communications, including distress signals, navigation warnings, air-sea rescue service and radio-medical service messages, meteorological messages and time signals, as well as naval traffic as required. It provides also, by radiotelegraph and radiotelephone, commercial communications with ships at sea and, by radiotelephone, message communication with small vessels. Western Australian coastal radio stations are located at Perth, Broome, Carnarvon, Esperance and Geraldton.

The licensing of civil radiocommunication stations and the transmission of radio messages within Australia are the responsibility of the Australian Telecommunications Commission. The Royal Flying Doctor Service of Australia, to which reference is made in Part 3 of Chapter V, provides general telegraph facilities in remote areas through its extensive radio network.

At 30 June 1978 there were 460,015 civil radiocommunication stations authorised throughout Australia. They comprised 6,245 fixed stations, 23,991 land stations, 420,391 mobile stations, 9,378 amateur stations and 10 space services.

The numbers of each type of radiocommunication station authorised to operate in Western Australia at 30 June 1978 are given in the next table. The following definitions are relevant in considering the figures shown in the table. *Fixed Stations*—Stations established at fixed locations for communication with other stations similarly established.

Outposts—Stations established in outback areas for communication with control stations such as those of the Royal Flying Doctor Service. *Land Stations*—Stations established at fixed locations for communication with mobile stations. *Coast Stations*—Land stations for communication with ocean-going vessels. *Mobile Stations*—Equipment installed in aircraft (aeronautical), motor vehicles (land mobile services), harbour vessels (harbour mobile services) and ocean-going vessels (ship), and mobile equipment of organisations such as the Royal Flying Doctor Service. *Radiodetermination Stations*—Stations employed for the determination of position, or the obtaining of information relating to position, by means of the propagation of radio waves. *Space Services*—Radiocommunication services, between earth stations and space stations, between space stations or between earth stations when signals are re-transmitted by space stations, or transmitted by reflection from objects in space, excluding reflection or scattering by the ionosphere or within the earth's atmosphere.

CIVIL RADIOCOMMUNICATION STATIONS AUTHORISED AT 30 JUNE 1978

Type of station	Number	Type of station	Number
TRANSMITTING AND RECEIVING—		TRANSMITTING AND RECEIVING—cont.	
Fixed stations—		Mobile stations—	
Aeronautical	17	Aeronautical	681
Services with other countries	15	Land mobile services	38,884
Outpost	391	Harbour mobile services	1,450
Other	424	Outpost	903
Land stations—		Radiodetermination	11
Aeronautical	59	Ship	2,022
Base stations—		Earth and space services	2
Land mobile services	2,657	Amateur	706
Harbour mobile services	134	TOTAL	48,612
Coast	84	RECEIVING ONLY (fixed)	123
Experimental	128		
Repeater	44	GRAND TOTAL	48,735

BROADCASTING AND TELEVISION

Prior to the passage of the *Broadcasting and Television Amendment Act (No. 2) 1976* broadcasting and television services throughout Australia were controlled by the Australian Broadcasting Control Board under the direction of the Minister for Post and Telecommunications. The 1976 legislation constituted the Australian Broadcasting Tribunal which replaced the Australian Broadcasting Control Board as from 1 January 1977. The *Broadcasting and Television Amendment Act (No. 2) 1976* placed under the Tribunal's general control the National Broadcasting Service, the National Television Service, the Commercial Broadcasting Service, the Commercial Television Service, the Public Broadcasting Service and the Public Television Service. Other relevant Acts are the *Broadcasting Stations Licence Fees Act 1964*, the *Television Stations Licence Fees Act 1964* and the *Parliamentary Proceedings Broadcasting Act 1946*. Under the last-mentioned Act the Australian Broadcasting Commission is obliged to broadcast the proceedings of the Senate or the House of Representatives as determined by a Parliamentary Joint Committee.

The principal functions of the Australian Broadcasting Tribunal, which consists of a minimum of three and a maximum of six full-time members, are to determine the standards to be observed by licensees in respect of the broadcasting or televising of programmes, the conditions subject to which advertisements may be broadcast or televised and the hours during which programmes may be transmitted. The Tribunal is required to hold public inquiries into applications for licences for commercial broadcasting and television stations in areas for which the Minister proposes to grant licences. It is also the responsibility of the Tribunal to determine, subject to any direction of the Minister, the situation, operating power and operating frequencies of broadcasting and television stations.

The Australian Broadcasting Commission, which is constituted under the *Broadcasting and Television Act 1942*, controls the activities of, and provides programmes for, the National Broadcasting Service and the National Television Service which use transmitters operated by the Australian Telecommunications Commission. The operations of the Australian Broadcasting Commission are financed by appropriations made by the Australian Parliament.

The income of licensees of commercial broadcasting and television stations is derived from advertisements and other forms of publicity.

Commercial broadcasting stations are operated under licences granted and renewed by the Minister for Post and Telecommunications after taking into consideration any recommendations which have been made by the Australian Broadcasting Tribunal. The initial period of a licence is five years and renewals are granted for a period of one year.

Commercial television stations are also operated under licences granted and renewed by the Minister for Post and Telecommunications. The initial grant of a licence is for a period of five years and thereafter the licence is renewable annually.

Public broadcasting and television services operate on a non-profit basis and may be licensed to provide services for people within a specified area or to provide programmes having a specified nature or purpose.

Broadcasting and Television Stations

In 1923, the first radio broadcasting station commenced operations in Australia and, in the following year, station 6WF (Western Farmers) opened in Perth. The following table shows details of stations operating in Western Australia at 30 June 1977. At that date there were nineteen national, fourteen commercial and three public broadcasting stations in the State.

BROADCASTING STATIONS AT 30 JUNE 1977

NATIONAL STATIONS				COMMERCIAL STATIONS			
Type and location	Call sign	Frequency (kHz)	Hours of service per week (a)	Type and location	Call sign	Frequency (kHz)	Hours of service per week (a)
Medium frequency—				Medium frequency—			
Perth	6WF	720	133	Perth	6IX	1,080	168
"	6WN	810	133	"	6KY	1,210	168
Albany	6AL	650	133	"	6PM	990	168
Broome	6BE	670	133	"	6PR	880	168
Busselton	6BS	680	133	Albany	6VA	780	122
Carnarvon	6CA	850	133	Bridgetown	6BY	900	119
Dalwallinu	6DL	530	133	Bunbury	6TZ	960	131
Derby	6DB	870	133	Collie	6CI	1,130	131
Esperance	6ED	840	133	Geraldton	6GE	1,010	117
Exmouth	6XM	1,190	126	Kalgoorlie	6KG	980	117
Geraldton	6GN	830	133	Katanning	6WB	1,070	119
Kalgoorlie	6GF	660	133	Merredin	6MD	1,100	119
Kununurra	6KW	760	126	Narrogin	6NA	920	119
Newman	6MN	570	n.a.	Northam	6AM	860	120
Northam	6NM	600	133				
Port Hedland	6PH	600	133	PUBLIC STATIONS (c)			
Wagin	6WA	560	133	Medium frequency—			
Wyndham	6WH	1,020	126	Perth (d)	6NR	930	n.a.
				Dampier (e)	6HI	1,260	n.a.
High Frequency—				Frequency modulation—			
Perth	VLW	(b)	133	Perth (f)	6UWA-FM	(f)	n.a.

(a) To the nearest quarter hour. (b) The station operates two transmitters, of 10,000 and 50,000 watts. Frequencies are varied as required to obtain optimum results. (c) Stations licensed under the *Wireless Telegraphy Act 1905*. (d) Operated by the Western Australian Institute of Technology. (e) Operated by Hamersley Iron Pty. Limited as an emergency broadcasting station only at times of potential natural disasters. (f) Operated by the University of Western Australia on a frequency of 92.1 MHz.

Television commenced in Australia on 16 September 1956 when station TCN, Sydney began regular transmission. By 30 June 1976 the number of stations in operation had increased to a total of 132, comprising eighty-four national stations and forty-eight commercial stations.

The first television station in Western Australia commenced full-scale transmission in Perth on 16 October 1959 and, at 30 June 1977, three metropolitan and twenty-one country television stations were operating in the State. Details are shown in the following table, in which particulars are given of both national and commercial stations.

Television transmissions by means of either a translator station or a repeater station are provided to some areas of the State not served by the stations shown in the next table. Translator stations are low-powered stations which receive signals from a parent station or another translator station and re-transmit those signals on a different frequency channel. They serve mainly isolated areas where there is not satisfactory reception from high-powered stations. Repeater stations are stations of low operating power designed to transmit only programmes recorded on magnetic tape.

TELEVISION STATIONS AT 30 JUNE 1977

Call sign and channel	Area served	Location of transmitter	Hours of service per week (a)	Date of commencement of operations (b)
NATIONAL STATIONS				
ABW-2	Perth	Bickley	91½	7 May 1960
ABAW-2	Southern Agricultural	Mount Barker	91½	6 June 1966
ABCW-4	Central Agricultural	Mawson Trig	91½	28 March 1966
ABCMW-8	Morawa	Billeranga Hills	91½	8 March 1975
ABCNW-7	Carnarvon	Carnarvon	91½	30 June 1972
ABDW-10	Dampier	Dampier	91½	17 December 1973
ABEW-10	Esperance	Microwave Terminal Wireless Hill	91½	21 October 1974
ABGNW-1	Narrogin	Narrogin Microwave Repeater	91½	1 August 1976
ABGW-6	Geraldton	Geraldton	91½	8 December 1969
ABKAW-7	Karratha	Karratha	91½	17 December 1973
ABKW-6	Kalgoorlie	Kalgoorlie	91½	27 January 1970
ABMW-10	Moora	Quarrell Range	91½	30 September 1974
ABNW-7	Norseman	Norseman Microwave Repeater	91½	14 April 1971
ABPHW-7	Port Hedland	Finucane Island	91½	3 October 1973
ABRBW-9	Roebourne	Roebourne	91½	17 December 1973
ABSW-5	Bunbury	Mount Lennard	91½	10 May 1965
ABSBW-9	Southern Cross-Bullfinch	Ghooli Microwave Repeater	91½	16 July 1973
ABW-7	Newman	Newman	91½	27 June 1977
COMMERCIAL STATIONS				
STW-9	Perth	Bickley	103	12 June 1965
TVW-7	Perth	Bickley	101½	16 October 1959
BTW-3	Bunbury	Mount Lennard	41½	10 March 1967
GSW-9	Southern Agricultural	Mount Barker	41½	23 August 1968
GTW-11	Geraldton	Geraldton	28	21 January 1977
VEW-8	Kalgoorlie	Kalgoorlie	30	18 June 1971

(a) To nearest quarter hour.

(b) Date on which full-scale transmission began.

At 30 June 1977 ten translator stations were in operation in Western Australia—at Kambalda, receiving signals from national station ABKW-6 and commercial station VEW-8 Kalgoorlie, at Albany, receiving signals from national station ABAW-2 and commercial station GSW-9, at Mullewa, receiving signals from the national station ABGW-6 Geraldton, at Wongan Hills, receiving signals from the national station ABMW-10 Moora, at Koolyanobbing, receiving signals from the national station ABSBW-9 Southern Cross-Bullfinch, and at Katanning, Merredin and Wagin receiving signals from the national station ABW-2 Perth. At the same date television repeater stations were operating at Cockatoo Island,

Koolan Island, Mount Nameless, Newman, Paraburdoo and Tom Price. Commercial translator stations have been approved for Katanning, Mawson, Northam and Wagin. National translator stations have been approved for Goldsworthy, Manjimup, Pannawonica, Paraburdoo, Pemberton, Shay Gap and Tom Price.

Analysis of Programmes

The particulars shown in the following tables have been taken from the Report of the Australian Broadcasting Control Board for the year ended 30 June 1977. Regular surveys have been conducted by the Board in order to measure the nature and range of programmes available to the public.

Broadcasting. The analysis of broadcasting programmes for Australia as a whole, as shown in the following table, is based on a survey conducted by the Board in October 1976. In each case programmes of all commercial stations in State capital cities were monitored on a sampling basis for one minute in each ten minutes of transmission between 6.00 a.m. and 10.30 p.m. for a full week.

In order to present a complete picture of programmes available, the survey includes the programmes of five commercial provincial stations, four representative ABC stations—two AM and one FM in the metropolitan area and one AM country station—one ethnic station, one music broadcasting society station and six other specialised non-commercial stations.

BROADCASTING STATIONS—ANALYSIS OF PROGRAMMES
ALL STATIONS: AUSTRALIA (a)
(Per cent)

Programme category	Metropolitan				Country		
	National	Commercial	Non-commercial	All stations	National	Commercial	All stations
Entertainment—							
Light and popular music	24.6	56.5	42.7	44.4	34.2	60.7	53.1
Incidental matter (b)	4.7	6.1	5.3	5.6	6.3	5.8	6.0
Foreign language material	1.4	0.1	10.5	1.8	—	0.4	0.3
Drama	2.5	0.1	1.3	1.0	1.0	0.4	0.6
Variety	1.5	1.3	0.7	1.3	3.1	1.2	1.7
Classical music and the arts (c)	31.5	—	27.6	13.7	9.3	—	2.7
Total	66.1	64.1	88.2	67.7	53.9	68.5	64.3
News and sport—							
News	9.8	8.7	3.3	8.4	14.9	8.4	10.2
Sport	2.4	5.0	0.1	3.6	9.4	8.4	8.7
Total	12.3	13.8	3.4	12.0	24.3	16.8	19.0
Information and services—							
Family (d)	0.6	1.2	0.5	0.9	0.3	0.7	0.6
Children's	1.3	—	—	0.4	1.0	—	0.3
Information (e)	6.4	2.5	4.5	4.0	8.5	1.0	3.2
Social and political	11.6	1.6	2.9	5.0	7.2	0.8	2.6
Religious	1.3	0.7	—	0.8	2.0	2.6	2.4
Charitable	—	0.2	0.1	0.1	—	—	—
Educational (f)	0.3	—	0.3	0.1	2.9	—	0.8
Total	21.6	6.2	8.4	11.5	21.8	5.2	9.9
Advertisements	0.1	15.9	—	8.8	—	9.5	6.8
Grand Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) See letterpress immediately preceding table.
announcements; programme notes; miscellaneous patter.
and art criticism.

(b) Matter occurring between major programme units, including station
(c) Serious music and opera; readings of prose and poetry; literary
(d) Includes programmes dealing with cooking; house and garden; hobbies; care of pets; health and physical
(e) Includes such topics as aspects of science; other countries and peoples; agriculture and other industries.
(f) Programmes designed as an aid to formal teaching; kindergarten sessions.

Television. The analysis of television programmes for the year 1976-77, as shown in the following table, is based on a complete coverage of programmes televised by commercial stations and a sample station of the national network. Details of commercial

television programmes have been derived from data supplied regularly by each station to the Board and details of national television programmes are obtained from information supplied by the Australian Broadcasting Commission. For the purpose of the table the programmes analysed are those of all metropolitan commercial stations, twenty-two country commercial stations, and, in the case of the National Service, those of ABV-2 Melbourne. These are considered to be reasonably representative of the commercial and national television services.

Colour television was introduced officially into Australia on 1 March 1975. Limited transmissions of programmes in colour had been permitted, however, by the Australian Broadcasting Control Board for several months previously.

TELEVISION STATIONS—ANALYSIS OF PROGRAMMES: AUSTRALIA (a)
(Per cent)

Programme category	Metropolitan stations			Country stations		
	Commercial	National	All stations	Commercial	National	All stations
Drama—						
Serious	0.1	1.4	0.4	0.2	1.4	0.8
Adventure	10.0	3.6	8.6	11.7	3.6	7.7
Crime and suspense	11.2	1.4	9.1	11.0	1.4	6.2
Domestic and comedy	20.6	11.7	18.7	22.9	11.7	17.3
Western	4.6	1.1	3.8	4.1	1.1	2.6
Miscellaneous	7.6	3.3	6.7	6.2	3.3	4.8
Total	54.1	22.5	47.3	56.1	22.5	39.4
Light entertainment—						
Cartoons	7.0	2.0	5.8	5.2	2.0	3.6
Light music	1.8	3.3	2.2	2.4	3.3	2.9
Personality programmes	3.3	1.1	2.8	3.5	1.1	2.3
Talent programmes	1.5	0.2	1.2	1.1	0.2	0.6
Variety	5.4	2.4	4.8	5.5	2.4	3.9
Total	19.0	9.0	16.8	17.7	9.0	13.3
Sport	7.5	12.1	8.5	6.2	12.1	9.1
News	4.0	6.9	4.6	6.6	6.9	6.8
Children—						
Kindergarten	2.5	19.0	6.1	1.0	19.0	10.0
Other	3.7	2.5	3.4	3.4	2.5	2.9
Total	17.7	40.5	22.6	17.2	40.5	28.8
Family activities	3.3	1.4	2.9	3.5	1.4	2.5
Information	2.0	7.8	3.3	1.8	7.8	4.8
Current affairs	2.0	8.0	3.3	2.2	8.0	5.1
Political matter	—	0.1	—	0.1	0.1	0.1
Religious matter	1.2	1.8	1.3	1.0	1.8	1.4
The arts	0.1	1.1	0.3	—	1.1	0.5
Education—						
Formal	0.6	7.7	1.7	—	7.7	3.8
Other	—	0.1	0.5	0.4	0.1	0.3
Total	9.2	28.0	13.3	9.0	28.0	18.5
GRAND TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

(a) Advertising and other non-programme matter have been included as part of the programme in which it occurs. During 1976-77, for all metropolitan stations, advertisements occupied an average of 16.1 per cent of the total time.

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CHAPTER X—INDUSTRIAL CONDITIONS, EMPLOYMENT AND PRICES

Part 1—Industrial Conditions

INDUSTRIAL AUTHORITIES

Federal Authorities

A Commonwealth Court of Conciliation and Arbitration was established under the provisions of the *Commonwealth Conciliation and Arbitration Act* 1904. By an amendment made to the Conciliation and Arbitration Act in 1956 the Commonwealth arbitration system was reorganised by the creation of two separate authorities to deal with matters formerly within the sole jurisdiction of the Court. The amendment had the effect of allocating to a Commonwealth Industrial Court the judicial functions, and to a Commonwealth Conciliation and Arbitration Commission the arbitral functions, previously carried out by the Commonwealth Court of Conciliation and Arbitration.

Under the provisions of the *Conciliation and Arbitration Act* 1973 the name of the Commonwealth Industrial Court was changed to Australian Industrial Court, and that of the Commonwealth Conciliation and Arbitration Commission to Australian Conciliation and Arbitration Commission, with effect from 13 November 1973. The *Conciliation and Arbitration Amendment Act* (No. 3) 1976, which provides for the transfer of jurisdiction from the Australian Industrial Court to the Federal Court of Australia and for the abolition of the Australian Industrial Court, came into operation by proclamation on 1 February 1977.

Federal Court of Australia. The Federal Court of Australia, as constituted by the *Federal Court of Australia Act* 1976 consists of a Chief Judge and such other Judges as are appointed under the Act, and comprises an Industrial Division and a General Division. The Industrial Division deals with all proceedings under the Conciliation and Arbitration Act and related legislation. The Federal Court of Australia Act provides that, except in respect of certain specified situations, the jurisdiction of the Industrial Division shall be exercised by a Full Court comprising not less than three Judges. A single Judge may refer a question of law for the opinion of a Full Court. The Australian Conciliation and Arbitration Commission may also refer a question of law for the opinion of the Court. Appeal from a judgment of a Full Court may, in certain circumstances, be made to the High Court of Australia.

Australian Conciliation and Arbitration Commission. The Australian Conciliation and Arbitration Commission, according to the provisions of the *Conciliation and Arbitration Act* 1904, comprises a President and such numbers of Deputy Presidents and of Commissioners 'as are necessary from time to time'. The President and the Deputy Presidents are described as 'Presidential Members' of the Commission. The powers of the Commission include the prevention or settlement, by conciliation or arbitration, of industrial disputes which extend beyond the limits of any one State, but the Commission is authorised to conciliate or arbitrate in respect of any dispute or industrial matter associated with Australian Government undertakings or projects. A Full Bench of the Commission consists of not less than three members, including at least two Presidential Members. The power to make awards or certify agreements making provision for, or altering, standard hours, rates of wages (including a minimum wage), annual leave or long service leave is exercisable only by a Full Bench, except where the provision or alteration gives effect to matters, or is in accordance with principles, determined by a Full Bench. The Principal Registry of the Commission is in Melbourne, Victoria, and there is a Deputy Industrial Registrar in each State.

Western Australian Authorities

A Court of Arbitration was established in Western Australia in 1901 under the provisions of the *Industrial Conciliation and Arbitration Act, 1900*. The Court comprised a President, a representative of associations of employers and a representative of associations of workers. The Court of Arbitration was replaced, with effect from 1 February 1964, by the Western Australian Industrial Appeal Court and The Western Australian Industrial Commission, authorities constituted in terms of the *Industrial Arbitration Act, 1912-1977*.

Western Australian Industrial Appeal Court. The Western Australian Industrial Appeal Court consists of three Judges, one of whom is President of the Court. The President and the other members are nominated by the Chief Justice of Western Australia. Certain of the functions, powers and jurisdiction conferred on the Court may be exercised by any member, on the nomination of the President, sitting or acting alone. An appeal lies to the Court from any decision of the Western Australian Industrial Commission or the Commission in Court Session, but only on the ground that such decision is erroneous in law or is in excess of jurisdiction.

The Western Australian Industrial Commission. The Western Australian Industrial Commission consists of a Chief Industrial Commissioner and 'such number of other Commissioners as may, from time to time, be necessary'. At 31 December 1978, the Commission comprised a Chief Industrial Commissioner, one Senior Commissioner and five other Commissioners. The Act provides that a Commissioner sitting or acting alone constitutes the Commission and may exercise all the powers and jurisdiction of the Commission.

The Commission is empowered to inquire into any industrial matter or industrial dispute in any industry and to make orders or awards fixing the prices for work done by and the rates of wages payable to workers; fixing the number of hours and the times to be worked in order to entitle those workers to the wages so fixed; limiting the hours of piece workers; fixing the rates for overtime, work on holidays, shift work, week-end work and other special work, including allowances as compensation for overtime; determining any industrial matter; and declaring what deduction may be made from the prices or wages of workers for board or residence or board and residence provided for workers and for any customary provisions or payments in kind conceded to such workers.

The Commission in Court Session is constituted by not less than three Commissioners sitting or acting together. Appeals from decisions of a single Commissioner are heard and determined by the Commission in Court Session. Such appeals are restricted to the evidence and matters raised in the proceedings before the single Commissioner.

The following table shows particulars relating to The Western Australian Industrial Commission.

THE WESTERN AUSTRALIAN INDUSTRIAL COMMISSION

Particulars	At 30 June—				
	1974	1975	1976	1977	1978
Awards in force	396	393	402	414	393
Industrial agreements in force	146	150	184	180	205
Unions of workers—					
Number	90	85	85	80	77
Membership	167,542	178,171	180,137	185,186	184,578
Unions of employers—					
Number	13	14	15	15	15
Membership	1,745	2,181	2,026	2,021	2,156

Western Australian Coal Industry Tribunal. The Western Australian Coal Industry Tribunal, as constituted under the *Mining Act, 1904-1973*, consists of five members appointed by the Governor. One member is chairman of the Tribunal, and there are two members

representing employees, and two representing employers. The Tribunal has power to consider and determine industrial disputes, not extending beyond the limits of the State, and other matters relating to the coal-mining industry.

EMPLOYER ORGANISATIONS

The first employers' organisation in Western Australia was the West Australian Chamber of Commerce which was founded in 1853 and was replaced by the Fremantle Chamber of Commerce in 1873. The Perth Chamber of Commerce (Incorporated) was founded in 1890. Other Chambers of Commerce operate in various parts of the State.

The West Australian Chamber of Manufactures (Incorporated) commenced in 1890, but disbanded and was formed again in 1899. The Western Australian Employers' Federation (Incorporated) was founded in 1913 to handle labour relations for all private industry throughout the State. On 1 October 1975, the two bodies amalgamated under the name of The Confederation of Western Australian Industry (Incorporated), and, at 30 September 1978, had 8,600 individual members and 110 member associations. The Confederation is controlled by a Board of Management elected by a Manufacturing Industry Council and a Labour Relations Council.

The Confederation represents employers in all aspects of the negotiation of industrial awards and agreements, in the settlement of industrial disputes, including arbitration, and in direct relationships with the trade unions. It is a foundation member of the Confederation of Australian Industry (C.A.I.) which came into existence on 1 December 1977 and replaced the Associated Chambers of Manufactures and the Australian Council of Employers' Federation. Through C.A.I. it has overseas affiliation with the International Organisation of Employers.

EMPLOYEE ORGANISATIONS

The trade unions in Western Australia cover all forms of occupations from the unskilled to the professional worker. The great majority of union organisations are national in character with State branches registered with both the Federal and State industrial authorities.

Major organisations are the Trades and Labor Council of Western Australia, the State branches of the Australian Council of Salaried and Professional Associations, the Australian Public Service Federation, and the Council of Australian Government Employee Organisations. These four groups cover most of the wage and salary earners employed in the private and governmental sectors of industry and commerce.

The Trades and Labor Council of Western Australia, which is the State branch of the Australian Council of Trade Unions (A.C.T.U.), has provincial councils at Albany, Geraldton, Kalgoorlie and Port Hedland. At 30 June 1978 it had affiliated with it seventy-five State resident unions having a membership of approximately 121,000.

The Trades and Labor Council, representing the largest group of wage and salary earners, frequently acts on behalf of employees in matters before the Western Australian industrial authorities such as wages, hours, holidays, long service leave, and other associated matters of a standard or uniform nature.

The next table gives particulars of the number of trade unions in Western Australia and the number of members at the end of December of the years 1974 to 1978. The table also shows the estimated percentage of trade union members to total wage and salary earners in employment. The percentages should be regarded as giving only a broad indication of the extent of union membership among wage and salary earners because they are based on estimates of *employed* wage and salary earners that are subject to revision. The degree of unemployment among reported union members would affect the percentages for a particular year and comparisons between years.

TRADE UNIONS—NUMBER AND MEMBERSHIP

Date	Number of unions	Number of members ('000)			Proportion of total wage and salary earners (a) (per cent)		
		Males	Females	Persons	Males	Females	Persons
End of December—							
1974	151	153.0	63.4	216.4	61	46	55
1975	147	155.0	59.3	214.3	60	43	54
1976 r	147	160.6	72.7	233.3	61	50	57
1977	149	162.5	76.3	238.8	61	51	57
1978	147	160.1	74.7	234.8	61	48	56

(a) Approximate; see accompanying letterpress above.

APPRENTICESHIP AND INDUSTRIAL TRAINING

The first registration of an apprentice in Western Australia was made on 25 May 1903 to the trade of book binding. At 30 June 1978 the total number of apprentices registered in this State was 12,038 in a wide variety of trades.

The following table shows the number of new registrations effected during the twelve months ended 30 June 1978, together with the total number of apprentices registered in this State at the end of that period.

APPRENTICESHIP—NEW REGISTRATIONS AND NUMBER OF EFFECTIVE REGISTRATIONS TO VARIOUS TRADES (a)

Trade	Registrations effected during year ended 30 June 1978	Effective registrations at 30 June 1978
Metal trades—		
Blacksmithing	13	41
Jobbing, moulding and coremaking	16	53
Boilermaking	82	230
Sheetmetal	106	303
Fitting	135	381
Fitting and turning	212	591
First class machining	23	44
First class welding (engineering)	59	149
Fitting and first class machining	55	92
Motor mechanics	762	2,036
Refrigeration fitting	72	160
Plant mechanics	20	45
Turning and iron machining	10	46
Steel construction	21	47
Boilermaking and first class welding	108	237
Steel construction and first class welding	27	62
Scientific instrument making and repairing	31	63
Other	111	232
Electrical trades—		
Electrical fitting	293	742
Electrical installing	213	559
Automotive electrical fitting	52	160
Radio and television servicing	35	109
Other	—	—
Building trades—		
Bricklaying	90	221
Carpentry and joinery	398	819
Plumbing	242	522
Plastering	32	72
Painting and decorating	119	258
Glazing	17	54
Other	56	97
Printing trades—		
Composing	17	45
Letterpress printing	29	61
Other	103	176
Vehicle building trades—		
Bodymaking	41	127
Trimming	16	45
Painting (vehicle building)	111	247
Panel beating	125	289
Other	15	30

For footnote see end of table.

APPRENTICESHIP—NEW REGISTRATIONS AND
NUMBER OF EFFECTIVE REGISTRATIONS TO
VARIOUS TRADES (a)—*continued*

Trade	Registrations effected during year ended 30 June 1978	Effective registrations at 30 June 1978
Food trades—		
General butchering	183	431
Baking	46	113
Pastry cooking	20	50
Cooking	137	245
Other	5	14
Other trades—		
Cabinetmaking	161	434
Woodmachining	41	101
Upholstering	18	55
Male hairdressing	52	95
Ladies hairdressing	307	737
Shipwrighting	18	42
Other	182	276
GRAND TOTAL	5,037	12,038

(a) Because of changes in the statistical collection procedures of the Division of Industrial Training, these figures are not comparable with figures published in the 1979 and earlier editions of the Western Australian Year Book.

Prior to 6 February 1978, all industrial aspects of apprenticeship were under the jurisdiction of the Western Australian Industrial Commission, as provided for by the *Industrial Arbitration Act, 1912-1977*.

The *Industrial Training Act, 1975* came into operation on 6 February 1978 and provided for the establishment of the Industrial Training Advisory Council, comprising seven members representing the Department of Labour and Industry, The Confederation of Western Australian Industry (Incorporated), the Trades and Labor Council of Western Australia, the Technical Education Division of the Education Department and a State instrumentality. The functions of the Council are to liaise with employer and employee organisations and bodies in the State which provide courses of industrial training and to advise the Government on matters affecting industrial training. It also recommends trades to be prescribed by regulation as an apprenticeship trade, an industrial training trade, or as both. An apprentice is any person bound to an employer or an industrial training advisory board to learn an apprenticeship trade prescribed under the Act. There is no minimum age prescribed although, in practice, the minimum age is the school leaving age which is at the end of the year during which the student turns fifteen. At 30 April 1979, eighty-eight such trades had been prescribed. An industrial trainee is any person who undertakes a course of training in an industrial training trade prescribed under the Act.

The Act also establishes a Division of Industrial Training in the Department of Labour and Industry to administer all aspects of industrial training and, through the Registrar of Industrial Training, to maintain a Register of Apprentices and a Register of Industrial Trainees. The Western Australian Industrial Commission retains responsibility for remuneration, working conditions and settlement of industrial disputes arising out of matters of apprenticeship and industrial training.

The Council is required to appoint an industrial training advisory board in respect of each trade or group of trades which is prescribed as an apprenticeship trade or an industrial training trade. The Act also allows for a trade or group of trades to be defined by regulation as a 'special trade' in which case an apprentice or industrial trainee is indentured to the industrial training advisory board appointed in relation to that trade and is placed with an employer by that board. At 6 February 1978, the building trade, which comprised the bricklaying, stonemasonry, plastering and tiling apprenticeship trades, had been prescribed as a 'special trade'.

Apprentices or industrial trainees are employed on probation for a period of three months. This period counts as service if the person subsequently becomes an apprentice or industrial trainee in that trade. Under certain circumstances, the employment of an apprentice or industrial trainee may be transferred from one employer to another. Every apprentice or industrial trainee is required to regularly attend all technical training classes prescribed in relation to that trade. Apprenticeships may be for a period of 3, 3½, 4 or 5 years. Where a minor satisfactorily completes an approved pre-apprenticeship course conducted by the Technical Education Division of the Education Department, the period of apprenticeship may be three years.

Federal awards are of much less significance than State awards in apprenticeship matters in Western Australia. Section 52 of the Conciliation and Arbitration Act enables the Australian Conciliation and Arbitration Commission to issue awards covering the rates of pay and conditions of employment of apprentices. A number of such awards provide that Statutes or Regulations relating to apprenticeships in force in the State in which the apprentice is employed shall apply, except where they are inconsistent with the terms of the award.

INCIDENCE OF INDUSTRIAL AWARDS

The next table indicates the approximate proportions of Western Australian employees covered by awards, determinations and registered industrial agreements under Federal and State jurisdiction. The proportions not so covered (including those working under unregistered industrial agreements) are also shown. The figures summarise part of the data obtained from surveys of the Australian wage structure in April 1954, May 1963, May 1968 and May 1974.

PROPORTION OF EMPLOYEES AFFECTED BY AWARDS, ETC. (a)
(Per cent)

Survey	Males				Females				Persons			
	Employees affected by awards, etc.		Other employees	Total	Employees affected by awards, etc.		Other employees	Total	Employees affected by awards, etc.		Other employees	Total
	Federal	State			Federal	State			Federal	State		
April 1954	12.5	77.1	10.4	100.0	18.7	71.8	9.5	100.0	13.9	75.9	10.2	100.0
May 1963	13.3	76.5	10.2	100.0	14.8	74.4	10.8	100.0	13.6	76.0	10.4	100.0
May 1968	16.9	70.7	12.4	100.0	15.7	76.1	8.2	100.0	16.6	72.1	11.3	100.0
May 1974	18.8	64.1	17.1	100.0	14.5	76.0	9.6	100.0	17.4	68.0	14.7	100.0

(a) Awards or determinations of, and collective agreements registered with, Federal or State industrial authorities.

The estimates shown in the table were derived from returns collected from:

- (i) a stratified random sample of most private employers subject to pay-roll tax;
- (ii) all public hospitals and marketing boards;
- (iii) all Australian Government and State Government departments and semi-government authorities; and
- (iv) a stratified random sample of local government bodies.

Because of coverage difficulties, certain employees were excluded from the surveys. For further information relating to the survey of May 1974 and for statistics in greater detail, the reader is referred to the publication *Incidence of Industrial Awards, Determinations and Collective Agreements, May 1974* (Catalogue No. 6315.0), published by the Australian Statistician, Canberra.

For a number of reasons, the results of the four surveys are not strictly comparable, and the statistics presented in the previous table should therefore be regarded as providing only a broad indication of trends.

The term 'awards, etc.' as used in the table means awards or determinations of, and agreements registered with, Federal or State industrial authorities. Changes in the proportions of employees reported as affected by Federal awards and by State awards reflect changes in industry and occupational structure, including the creation of new industries; changes in the coverage of individual Federal and State awards; and the creation of new awards relating to employees not previously affected by awards.

INDUSTRIAL DISPUTES

Statistics of industrial disputes are compiled by the Australian Statistician from data obtained from the following sources: direct collections from employers and trade unions concerning individual disputes; reports from government departments and authorities; reports of State and Federal industrial authorities; and information contained in trade journals, employer and trade union publications, and newspaper reports.

INDUSTRIAL DISPUTES (a)

Year	Number of disputes	Number of workers involved			Number of working days lost	Estimated loss in wages
		Directly	Indirectly (b)	Total		
1973	160	'000	'000	'000	'000	\$'000
1974	257	35.3	2.3	37.6	117.3	2,422.3
1975	236	186.1	2.0	188.1	256.9	5,827.7
1976	250	47.5	6.3	53.8	100.7	3,075.2
1977	229	92.4	8.3	100.7	252.1	8,461.9
		49.1	5.8	54.9	220.5	8,582.0

(a) Excludes disputes involving cessation of work of less than 10 man-days. (b) Persons thrown out of work at the establishments where the stoppages occurred, but not themselves parties to the dispute.

INDUSTRIAL DISPUTES (a)—ACCORDING TO INDUSTRY: 1977

Industry (b)	Number of disputes	Number of workers involved			Number of working days lost	Estimated loss in wages
		Directly	Indirectly (c)	Total		
Agriculture, forestry, fishing and hunting	—	'000	'000	'000	'000	\$'000
Mining—	—	—	—	—	—	—
Coal mining	—	—	—	—	—	—
Other mining	145	19.1	3.0	22.1	134.6	5,640
Manufacturing—	—	—	—	—	—	—
Food, beverages and tobacco	12	1.8	2.4	4.1	19.1	575
Wood, wood products and furniture	—	—	—	—	—	—
Paper and paper products, printing and publishing	1	0.3	—	0.3	0.2	7
Metal products, machinery and equipment	5	2.7	—	2.7	6.3	302
Other manufacturing	1	0.1	—	0.1	2.1	63
Electricity, gas and water	3	2.4	—	2.4	2.4	96
Construction	17	4.9	—	4.9	13.8	512
Wholesale and retail trade	2	6.4	—	6.4	17.6	562
Transport and storage; communication—	—	—	—	—	—	—
Road transport; other transport and storage; communication	5	1.6	—	1.6	4.3	127
Railway transport; air transport	10	2.4	0.4	2.8	3.6	137
Water transport—	—	—	—	—	—	—
Stevedoring services	11	4.6	—	4.7	11.7	408
Water transport (except stevedoring services)	7	0.6	—	0.6	0.8	32
Entertainment, recreation, restaurants, hotels and personal services	1	—	—	—	—	—
Other industries (d)	9	2.3	—	2.3	4.1	119
Total	229	49.1	5.8	54.9	220.5	8,582

(a) Excludes disputes involving cessation of work of less than 10 man-days. (b) The statistics in this table are compiled on the basis of the *Australian Standard Industrial Classification*, 1969 edition. (c) Persons thrown out of work at the establishments where the stoppages occurred, but not themselves parties to the dispute. (d) Includes *Finance, Insurance, Real estate and business services; Public administration and defence and Community services.*

In the two previous tables details of industrial disputes in Western Australia during the years 1973 to 1977 are given, together with an analysis, according to industry group, of disputes which were in progress in 1977. The statistics exclude disputes involving

stoppages of work of less than ten man-days in the establishment where the stoppage occurred. Effects on other establishments resulting from lack of materials, disruption of transport services, power cuts, etc. are not measured by these statistics.

Particulars of all disputes in progress during the year are included in the annual figures, whether the dispute commenced in that year or was in progress at the beginning of the year. Consequently, details of 'the number of disputes' and 'workers involved' in disputes which commenced in any year, and were still in progress during the following year, are included in the figures for both years.

Particulars of some stoppages (e.g. those involving a large number of establishments) may be estimated and the statistics therefore should be regarded as giving a broad measure of the extent of stoppages of work (as defined).

The table below gives an analysis of disputes which were in progress during 1977, according to duration of stoppages.

INDUSTRIAL DISPUTES (a) ACCORDING TO DURATION—1977

Duration (working days)	Mining	Manufacturing	Construction	Stevedoring	Other industries	All industries
NUMBER OF DISPUTES (a)						
Up to 1 day	72	7	5	7	18	109
Over 1 and up to 2 days	37	5	3	—	11	56
Over 2 and up to 3 days	12	3	2	1	3	21
Over 3 but less than 5 days	12	1	2	2	2	19
5 to less than 10 days	10	2	3	1	2	18
10 to less than 20 days	—	1	1	—	1	3
20 to less than 40 days	2	—	1	—	—	3
40 days and over	—	—	—	—	—	—
Total	145	19	17	11	37	229
WORKERS INVOLVED (b) ('000)						
Up to 1 day	8.9	2.1	0.6	1.6	7.0	20.3
Over 1 and up to 2 days	4.5	0.6	2.0	—	1.2	8.3
Over 2 and up to 3 days	1.5	0.7	0.2	1.2	6.7	10.3
Over 3 but less than 5 days	0.9	1.6	1.9	1.9	0.7	6.9
5 to less than 10 days	3.6	2.2	0.1	—	0.4	6.3
10 to less than 20 days	—	0.1	—	—	0.1	0.2
20 to less than 40 days	2.6	—	0.1	—	—	2.7
40 days and over	—	—	—	—	—	—
Total	22.1	7.2	4.9	4.7	16.1	54.9
WORKING DAYS LOST ('000 MAN-DAYS)						
Up to 1 day	4.5	1.4	0.3	0.4	5.7	12.2
Over 1 and up to 2 days	6.4	0.7	2.4	—	1.7	11.4
Over 2 and up to 3 days	3.8	1.7	0.4	3.6	18.9	28.4
Over 3 but less than 5 days	3.1	5.3	6.7	7.6	3.3	26.0
5 to less than 10 days	27.2	16.3	0.7	0.1	2.2	46.5
10 to less than 20 days	—	2.1	0.6	—	0.9	3.6
20 to less than 40 days	89.6	—	2.8	—	—	92.3
40 days and over	—	—	—	—	—	—
Total	134.6	27.7	13.8	11.7	32.7	220.5
ESTIMATED LOSS IN WAGES (\$'000)						
Up to 1 day	179	47	10	12	184	433
Over 1 and up to 2 days	264	29	88	—	70	452
Over 2 and up to 3 days	164	61	14	137	581	957
Over 3 but less than 5 days	142	270	239	256	161	1,068
5 to less than 10 days	1,102	477	36	3	53	1,670
10 to less than 20 days	—	63	22	—	25	110
20 to less than 40 days	3,790	—	103	—	—	3,892
40 days and over	—	—	—	—	—	—
Total	5,640	947	512	408	1,075	8,582

(a) Excludes disputes involving cessation of work of less than 10 man-days. (b) Includes workers indirectly involved, i.e. persons thrown out of work at the establishments where the stoppages occurred, but not themselves parties to the dispute.

WAGES AND EARNINGS

The Basic Wage

Commonwealth Basic Wage. The *Western Australian Year Book*, No. 7—1968 and earlier issues contain an account of the development of the Commonwealth basic wage from its inception until it was abandoned in 1967. In a unanimous judgment given on 5 June 1967 the Commonwealth Conciliation and Arbitration Commission announced 'the elimination of basic wages and margins and the introduction of total wages'. An increase of \$1 per week was awarded to all adult employees and the judgment stated that 'total wages will be arrived at by adding an amount of \$1 per week to the weekly award wages of all adult males and females . . .' and further, that the Commission had 'on this occasion deliberately awarded the same increase to adult females and adult males'. The increase was declared to become operative from the beginning of the first pay-period commencing on or after 1 July 1967.

A table showing Commonwealth basic wage rates at 31 December of each year from 1923 to 1966 is given in the *Statistical Summary from 1829* appearing in the *Western Australian Year Book*, No. 9—1970 and earlier issues.

State Basic Wage. Reference is made in the *Western Australian Year Book*, No. 7—1968 and earlier issues to the work of the former Court of Arbitration in the field of wage determination from the declaration of the first State basic wage in 1926.

The Western Australian Industrial Commission came into operation on 1 February 1964, replacing the Court of Arbitration as the authority responsible for the State basic wage determinations in Western Australia. The *Industrial Arbitration Act, 1912-1977* requires that such determinations shall be made by the Commission in Court Session. The Commission so constituted made its first adjustment to the basic wage on 27 April 1964 and the last such adjustment came into operation from 31 May 1974. The Chief Industrial Commissioner, in his annual report to the Parliament on the operations of the Commission during the year ended 30 June 1977, made the following comment. 'The need for the retention of Part VII—Basic Wage [of the *Industrial Arbitration Act, 1912-1977*] in its present form appears no longer to exist. The last occasion on which the basic wages for male and female workers changed was 31st May 1974 and it does not seem likely that cause for change in the wages will arise in view of existing methods of wage fixation.' An account of adjustments between 1964 and 1974 is provided in the 1976 Year Book and earlier issues.

STATE BASIC WAGE—ADULT WEEKLY RATES
(\$)

Date of operation	Males	Females	Date of operation	Males	Females
1964—22 September	30·80	23·10	1968—25 October	(a)	(a)
26 October	31·12	23·34	22 November (b)	35·45	27·08
1965—26 April	31·47	23·60	1969—24 November	36·45	27·88
26 July	31·78	23·84	1970—26 October	38·45	29·40
16 November	31·96	23·97	1971—26 October	39·45	30·90
1966—25 January	32·38	24·28	1972—26 June	40·45	32·40
2 May	32·65	24·49	1973—8 June	44·00	36·00
2 August	33·26	24·95	17 September	44·00	39·00
24 October	33·50	25·13	1974—31 May	48·50	43·50
1967—1 July	(a)	(a)			

(a) Special loading of 60 cents per week added to award rates for adult males and adult females operative from the beginning of the first pay-period commencing on or after 1 July 1967. Loading increased to \$1·95 operative from the beginning of the first pay-period commencing on or after 25 October 1968 until 22 November 1968 when loading was absorbed in basic wage.

(b) Rates prescribed under the provisions of the *Industrial Arbitration Act Amendment Act, 1968*.

The previous table shows variations, from 22 September 1964, in the State basic wage rates payable to adult male and female workers employed under State industrial awards or registered agreements, or in accordance with the provisions of the Factories and Shops Act.

A similar table showing variations in the rates during the period from 27 April 1953 appears in *Statistics of Western Australia—Labour and Prices* (Catalogue No. 6101·5). A table showing rates applying at 31 December of each year from 1926 is given in the *Statistical Summary* following this Chapter.

Equal Pay for Male and Female Workers

State Awards. It is provided in Part X of the *Industrial Arbitration Act, 1912-1977* that, where The Western Australian Industrial Commission 'is satisfied that male and female workers are performing work of the same or a like nature and of equal value, the same rates of wages shall . . . be fixed irrespective of the sex of the workers'.

Federal Awards. Two benches of the Commonwealth Conciliation and Arbitration Commission sat jointly from 25 February to 22 May 1969 to take evidence and hear argument on trade union claims for equal pay between the sexes. Both benches reached a common conclusion and on 19 June 1969 published their decision and reasons for their decision. The Commission stated it was prepared to implement the principle of equal pay for equal work by introducing into Federal awards and determinations the principles contained in State Acts on equal pay. It decided that no increases should be granted to adult females without an examination of the work done and that implementation of equal pay should be spread over a period.

On 15 December 1972 the Commonwealth Conciliation and Arbitration Commission, in its decision in the National Wage and Equal Pay Cases 1972, outlined the principle of 'equal pay for work of equal value' to be applied to all Federal awards and determinations. The Commission stated that the principle meant the fixation of award rates of pay for both adult and junior females by a consideration of the work performed irrespective of the sex of the worker, and that the eventual outcome should be a single award rate for an occupational group or classification payable to both male and female employees.

Minimum Wage Rates

The basic wage, as the term implies, establishes a 'base' to which additions may be made to provide rates actually payable in certain industries and occupations and in particular areas. Minimum rates, incorporating these additional payments, may be prescribed by awards of The Western Australian Industrial Commission, or may be negotiated by industrial agreement. These agreements are registered with the Commission and are binding upon the parties. The additions made to the basic wage rate take the form of 'margins' and 'loadings'. Margins are amounts awarded to particular classifications of employees for features attaching to their work, such as skill, experience, arduousness and other like factors. Loadings are amounts awarded for various kinds of disabilities associated with the performance of work, or to meet particular circumstances. They include payments such as industry loadings and other general loadings prescribed in awards, determinations or agreements for the occupation concerned.

Awards of the Australian Conciliation and Arbitration Commission take cognisance of particular features or circumstances such as those mentioned above but no longer contain identifiable components in the form of basic wage, margins, and loadings (see letterpress *Commonwealth Basic Wage* above).

In its decision of 8 July 1966 in the Basic Wage, Margins and Total Wages Cases of 1966, the Commonwealth Conciliation and Arbitration Commission announced that it intended to grant relief to low-wage earners by inserting a provision in awards prescribing a minimum wage. The provisions inserted in the awards state that no adult male employee shall be paid at less than the prescribed minimum rates as ordinary rates of pay in respect of the ordinary hours of work prescribed in the award. The minimum weekly wage rates prescribed were the appropriate basic wages plus \$3.75 per week. As a result of this decision the minimum weekly wage as prescribed in Federal awards for adult male workers in Perth became \$36.55, with effect from the beginning of the first pay-period commencing on or after 11 July 1966.

In its decision in the National Wage Case 1974, the Australian Conciliation and Arbitration Commission, in prescribing a minimum wage for adult females, also made provision for parity between the minimum wage for adult males and adult females to be achieved in three stages: 85 per cent of the male minimum wage to be paid to adult females from the beginning of the first pay-period commencing on or after 23 May 1974; 90 per cent from the beginning of the pay-period in which 30 September 1974 falls; and 100 per

cent from the beginning of the pay-period in which 30 June 1975 occurs. The minimum weekly wage payable to adult males was increased from \$60·10 to \$68·10 with effect from the beginning of the first pay-period commencing on or after 23 May 1974. The minimum weekly wage payable to adult females from that date was therefore \$57·90 (*i.e.* 0·85 x \$68·10).

The Western Australian Industrial Commission adopted the minimum wage concept in 1967 when it determined a minimum wage of \$36·55, with effect from 5 April 1967, in respect of adult males employed under specified awards and agreements. In terms of orders operative from 31 May 1974, the Commission introduced for adult females employed under specified awards and agreements a minimum wage of \$57·90 per week.

The following table shows variations in the minimum weekly wage rates applicable to adult workers under Federal and State awards. Between July 1966 and December 1978, the minimum weekly wage rate prescribed in Federal awards for adult male workers in Perth increased from \$36·55 to \$120·10.

**MINIMUM WEEKLY WAGE RATES
FEDERAL AND STATE AWARDS
(\$)**

Federal awards		State awards	
Perth		Western Australia	
Date of operation	Amount	Date of operation	Amount
Adult males (a)—		Adult males—	
1966—11 July	36·55	1967— 5 April (a)	36·55
1967— 1 July	37·55	1967— 1 July (a)	37·55
1968—25 October	38·90	1968—25 October (a)	38·90
1969—19 December	42·40	1969—19 December (a)	42·40
1971— 1 January	46·40	1970—26 October	49·00
1972—19 May	51·10	1971—26 October	51·50
1973—29 May	60·10	1972—26 June	53·50
1974—23 May	68·10	1973— 8 June	57·00
1975— 1 January	76·10	1973—17 September	61·50
15 May	80·10	1974—31 May	69·00
Adult females (b)—		1975— 1 May (a)	82·50
1974—23 May	57·90	1976—15 May (a)	94·20
30 September (c)	61·30	15 August (a) (e)	97·40
1975— 1 January	68·50	15 November (a) (e)	99·80
15 May	72·10	1977—15 February (a) (e)	106·40
30 June (d)	80·10	15 May (a) (e)	108·80
Adult males and females (a)—		15 August (a) (e)	111·40
1975—18 September	82·90	29 December (a)	114·10
1976—15 February	88·20	1978—28 February	116·90
1 April	93·20	7 June	118·30
15 May	96·00	12 December	123·00
15 August	98·50	Adult females—	
22 November	100·70	1974—31 May	57·90
1977—31 March	106·40	1975— 1 May (a)	72·10
24 May	108·40	30 June (a)	80·10
22 August	110·60	1976—15 May (a)	91·50
12 December	112·30	15 August (a) (e)	94·60
1978—28 February	114·00	15 November (a) (e)	97·00
7 June	115·00	1977—15 February (a) (e)	103·60
12 December	120·10	15 May (a) (e)	106·00
		15 August (a) (e)	108·60
		29 December (a)	111·20
		1978—28 February	114·00
		7 June	115·50
		12 December	120·10

(a) Rates operative from beginning of first pay-period commencing on or after the date shown. (b) Rates operative from beginning of first pay-period commencing on or after the date shown, except as indicated in footnotes (c) and (d). (c) Rate payable from beginning of pay-period in which 30 September 1974 occurred. (d) Rate payable from beginning of pay-period in which 30 June 1975 occurred. (e) Subject to application to The Western Australian Industrial Commission to amend an award or agreement.

The statistics shown in the following table, which refers to Western Australian experience, relate generally to wages and hours prescribed in awards or determinations of the Federal and State industrial authorities or in agreements registered with them.

The minimum wage rates and index numbers shown in the table embrace a representative range of occupations and are based on the occupation and industry structures in Australia in 1954. The weekly wage rates given in the table, and used in the compilation of the indexes, represent the lowest rates payable for a full week's work (excluding overtime), as prescribed in representative industrial awards, determinations and agreements. The hourly wage rates are obtained by relating the weekly wage rates and the weekly hours of work prescribed in awards, etc. The rural industries are excluded from the table, because of coverage difficulties.

Because the indexes are designed to measure movements in prescribed minimum rates of 'wages' as distinct from 'salaries', those awards, determinations and agreements which relate solely or mainly to salary-earners are excluded.

WEIGHTED AVERAGE MINIMUM WEEKLY AND HOURLY WAGE RATES

Date	Weekly wage rates		Hourly wage rates		Index numbers (a)			
	Adult males	Adult females (b)	Adult males (c)	Adult females (b)	Weekly wage rates		Hourly wage rates	
					Males	Females (b)	Males (c)	Females (b)
End of June—	\$	\$	cents	cents				
1974	90·46	75·41	225·02	189·55	320·3	378·8	318·0	377·8
1975	106·35	98·29	264·31	247·07	376·6	493·7	373·6	492·5
1976	125·89	115·34	313·73	289·92	445·7	579·4	443·4	577·9
1977	r 141·99	131·85	r 354·19	331·42	r 502·8	662·3	r 500·6	660·6
1978p	152·65	141·06	381·09	354·57	540·5	708·6	538·6	706·7

(a) Base of series: weighted average weekly wage rate—Australia, 1954 = 100.
(b) Excludes mining and quarrying and building and construction.

(c) Excludes shipping and stevedoring.

The wage rates shown should not be regarded as actual current averages, but as indexes expressed in money terms, indicative of trends.

A more detailed description of the minimum wage rates index and more extensive tables are published by the Australian Statistician, Canberra in the monthly bulletin *Wage Rates* (Catalogue No. 6312·0). A table showing minimum rates of wages payable in a selection of occupations in Western Australia at 31 December 1977 appears in *Award Rates of Pay and Prescribed Hours of Work* (Catalogue No. 6316·0).

Wage Indexation

In its National Wage decision of 30 April 1975, the Australian Conciliation and Arbitration Commission approved wage indexation, *i.e.* the adjustment of award wage and salary rates in accordance with changes in the Consumer Price Index (see letterpress *The Consumer Price Index* in Part 3 of this Chapter) in principle, but only if applied in conjunction with appropriate wage fixing principles and the necessary "supporting mechanisms" to ensure their viability'. The Commission laid down eight principles of wage determination, and a prime consideration in subsequent decisions has been 'whether there has been substantial compliance with the principles'.

The Western Australian Industrial Commission, in its decision of 1 July 1975, adopted full wage indexation for a trial period relating to movements in the Consumer Price Index for the March, June, September and December 1975 quarters. Full indexation was subsequently granted also in respect of the March 1976 quarter. However, the Commission, in its decision of 20 August 1976, stated that 'the economic opinions put before us . . . lead us to conclude that the automatic quarterly adjustment of all wages and salaries in accordance with movements in the Consumer Price Index is not sustainable indefinitely as a feature of our wage fixing system without generating inflation, or unemployment, or both'. In that and subsequent decisions the Commission granted an increase which amounted to less than full indexation.

The following table shows details of wage indexation increases granted by the Australian Conciliation and Arbitration Commission in respect of Federal awards, and The Western Australian Industrial Commission in respect of State awards.

WAGE INDEXATION INCREASES

Federal awards		State awards	
Date operative (a)	Increase (per week)	Date operative (a)	Increase (per week)
1975—15 May	3·6%	1975—15 May	3·6%
18 September	3·5%	15 August	3·5%
1976—15 February	6·4%	1976—15 February	6·4%
15 May	(b) 3·0%	15 May	3·0%
15 August	(c) 1·5%	15 August	(c) 1·5%
22 November	2·2%	15 November	2·2%
1977—31 March	\$5·70	1977—15 February	\$6·60
24 May	(d) 1·9%	15 May	\$2·40
22 August	2·0%	15 August	\$2·60
12 December	1·5%	29 December	(e) 1·5%
1978—28 February	(f) 1·5%	1978—28 February	(f) 1·5%
7 June	1·3%	7 June	1·3%
12 December	4·0%	12 December	4·0%

(a) Operative from the beginning of the first pay-period commencing on or after the date shown. (b) Increase of 3 per cent up to a maximum of \$3·80 per week. (c) Increase of \$2·50 for wage rates up to \$166 per week and 1·5 per cent for wage rates over \$166 per week. (d) Increase of 1·9 per cent up to a maximum of \$3·80 per week. (e) Increase of \$2·10 for wage rates up to \$140 per week and 1·5 per cent for wage rates over \$140 per week. (f) Increase of 1·5 per cent up to a maximum of \$2·60 per week.

Average Weekly Earnings

Statistics of average weekly earnings are derived from information concerning employment and wages and salaries as recorded on pay-roll tax returns, from other direct collections, and from estimates of the unrecorded balance. The figures relate to civilians only.

Particulars of wages and salaries paid are not available separately for males and females from these sources. Average weekly earnings have therefore been calculated for each State in terms of male units, *i.e.* total male employees plus a proportion of female employees, the proportion being determined by the estimated ratio of female to male average earnings.

The figures used in calculating the averages shown in the following table comprise: award and over-award wages and salaries; earnings of employees not covered by awards; overtime earnings; bonuses and allowances; commissions; directors' fees; and payments made retrospectively or in advance during the years specified. Earnings of part-time as well as full-time employees, and of juniors as well as adults, are included. *It is important to bear in mind that the figures relate to the whole civilian wage and salary earner field and therefore comprise payments to all grades of employees from junior workers to persons at the highest levels of executive and administrative activity.*

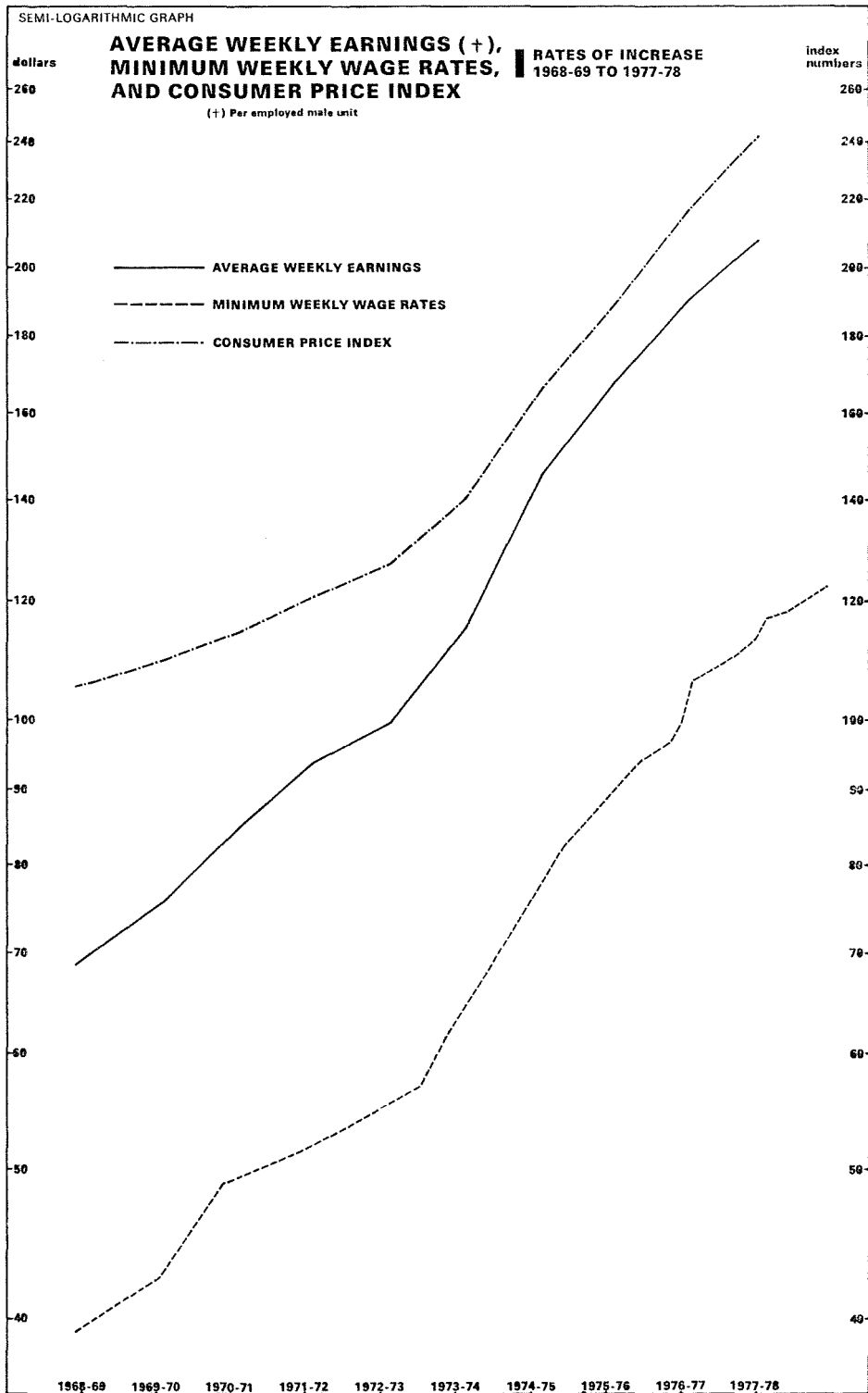
AVERAGE WEEKLY EARNINGS PER EMPLOYED MALE UNIT
AUSTRALIAN STATES AND TERRITORIES
(\$)

Year	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory (a)	Australian Capital Territory (a)	Australia (b)
1968-69	72·30	72·40	64·50	64·80	69·00	65·70	|	|	70·40
1969-70	78·50	78·40	69·40	70·30	75·70	70·90	|	|	76·30
1970-71	87·30	86·40	78·00	77·20	84·90	78·50	n.a.	n.a.	84·80
1971-72	96·30	93·90	87·40	86·00	93·60	87·50	|	|	93·40
1972-73	104·60	102·80	97·10	93·40	98·80	95·20	|	|	101·80
1973-74	121·20	118·80	113·50	110·40	115·00	110·50	|	|	118·30
1974-75	152·10	147·80	142·50	138·60	145·60	140·20	168·50	184·30	148·30
1975-76	172·70	170·50	163·50	158·50	169·10	157·80	190·00	209·00	169·60
1976-77	193·60	r 191·10	184·50	179·50	190·80	r 181·20	r 216·70	237·70	r 190·70
1977-78	213·40	209·30	202·20	197·40	209·20	199·00	240·70	259·10	209·50

(a) Figures not available separately for years prior to 1974-75; included in those shown for Australia.

(b) See footnote (a).

Quarterly figures corresponding to those shown in the above table are published by the Australian Statistician in the bulletins *Average Weekly Earnings* (Catalogue No. 6302·0) and the *Monthly Review of Business Statistics* (Catalogue No. 1304·0).



SURVEYS OF EARNINGS AND HOURS

Sample surveys in respect of most private employers subject to pay-roll tax (*i.e.* those currently paying more than \$60,000 per year in wages and salaries) have been conducted as at the last pay-period in May and October during recent years.

In addition to obtaining data for the calculation of average weekly earnings, average weekly hours paid for, and average hourly earnings, the surveys obtain information on overtime and ordinary-time earnings and hours for full-time employees (other than managerial, etc. staff).

The results of the surveys are based on returns from stratified random samples of private employers subject to pay-roll tax. Employees in rural industry and in private domestic service are excluded because most employers in these industries are not subject to pay-roll tax. Also excluded from the surveys are employees of religious, benevolent and other similar organisations exempt from pay-roll tax. The survey in respect of October 1972 included government employees for the first time.

Definitions of the terms used in the following tables may be found in the publications *Earnings and Hours of Employees, October 1977* (Catalogue No. 6304·0) and *Earnings and Hours of Employees—Distribution and Composition, May 1977* (Catalogue No. 6306·0), published by the Australian Statistician, Canberra. The two following tables refer to the results for Western Australia.

AVERAGE EARNINGS AND HOURS (a)—PRIVATE EMPLOYMENT
ALL INDUSTRY GROUPS (b)

Particulars	October—				
	1973	1974	1975	1976	1977
Average weekly earnings (c)—	\$	\$	\$	\$	\$
Adult males	112·80	146·20	169·90	190·70	215·40
Junior males	51·90	70·80	81·50	96·10	107·00
Adult females	71·70	98·30	121·50	139·40	151·70
Junior females	44·60	64·20	78·50	93·60	99·70
Average weekly hours paid for (c)—	hrs	hrs	hrs	hrs	hrs
Adult males	44·0	42·7	42·3	42·4	42·5
Junior males	40·9	40·7	40·4	40·3	40·7
Adult females	39·4	39·2	39·0	39·0	39·1
Junior females	39·0	39·1	39·1	39·3	39·1
Average hourly earnings (c)—	\$	\$	\$	\$	\$
Adult males	2·56	3·42	4·02	4·50	5·07
Junior males	1·27	1·73	2·02	2·38	2·63
Adult females	1·84	2·52	3·12	3·57	3·88
Junior females	1·14	1·64	2·01	2·38	2·55

(a) Excludes managerial, professional and higher supervisory staff. Full-time employees only are included. (b) Excludes rural industry and private domestic service. (c) Last pay-period in October.

AVERAGE WEEKLY OVERTIME AND ORDINARY-TIME EARNINGS (a)
PRIVATE EMPLOYMENT: OCTOBER 1977 (b)
(\$)

Particulars	Average weekly overtime earnings (a)	Average weekly ordinary-time earnings (a)	Average weekly total earnings
Adult males—			
Manufacturing—			
Metal products, machinery and equipment	35·10	182·50	217·60
Other	24·80	167·10	192·00
Total, Manufacturing	29·30	173·90	203·30
Non-manufacturing	35·70	186·90	222·60
All industry groups (c)	33·30	182·10	215·40
Junior males—all industry groups (c)	7·40	99·60	107·00
Females—all industry groups (c)—			
Adult	5·40	146·30	151·70
Junior	1·60	98·20	99·70

(a) Averages for all employees represented in the survey. (b) Excludes managerial, professional and higher supervisory staff. Full-time employees only are included. (c) Excludes rural industry and private domestic service.

HOURS OF WORK AND LEAVE PROVISIONS

Standard Hours of Work. In the fixation of weekly wage rates most industrial tribunals prescribe the number of hours constituting a full week's work for the wages specified.

Following applications for the introduction of a working week of forty hours, in place of the existing general standard of forty-four hours, the Commonwealth Court of Conciliation and Arbitration began hearing evidence in October 1945. In its judgment given on 8 September 1947 the Court granted the reduction to forty hours from the beginning of the first pay-period commencing in January 1948. On 6 November 1947 the Western Australian Court of Arbitration approved that, on application, provision for a working week of forty hours could be incorporated in awards of the Court with effect from 1 January 1948.

The forty-hour week has operated in Australia generally from 1 January 1948 (in New South Wales from 1 July 1947). However, the number of hours constituting a full week's work (excluding overtime) differs between occupations and/or between States. The weighted average standard hours of work (excluding overtime) prescribed in awards, determinations and agreements for a full working week, in respect of adult male workers in all industry groups except rural, and shipping and stevedoring, at 30 September 1978 were: New South Wales, 39·71; Victoria, 39·90; Queensland, 39·82; South Australia, 39·90; Western Australia, 39·78; Tasmania, 39·87; Australia, 39·80. Corresponding figures for adult female workers at 30 September 1978 were: New South Wales, 39·53; Victoria, 39·81; Queensland, 39·70; South Australia, 39·77; Western Australia, 39·78; Tasmania, 39·63; Australia, 39·67.

Annual Leave and Public Holidays. On 18 April 1963 the Commonwealth Conciliation and Arbitration Commission gave a judgment which had the effect of granting a general increase from two weeks to three weeks in the period of paid annual leave for employees covered by Federal awards.

In December 1971, the Commission announced its findings on claims for (i) an increase from three weeks to four weeks in the standard period of annual leave, (ii) a bonus of an extra week's pay to employees on annual leave, and (iii) an increase in the award amount of weekly payment when on annual leave. The first two claims were rejected and a decision on the third claim was deferred until after the hearing of the National Wage Cases 1971-72. On 7 June 1972 the Commission gave its decision on this claim. It decided that, in general, payments for annual leave should include over-award payments for ordinary hours of work, shift-work premiums, service grants and certain allowances, in addition to normal award rates of pay. For those awards under which the application was made in this case, the date of operation was set as 1 November 1972.

Following a general inquiry concerning annual leave and public holidays, the Western Australian Court of Arbitration in June 1963 adopted three weeks as the new standard for the normal period of annual leave in State awards, with four weeks for seven-day shift workers. Existing awards and agreements which already provided annual leave in excess of this standard were to be examined separately to ascertain whether special circumstances existed to justify leave greater than the normal standard.

In the inquiry the State Government sought a reduction in the number of public holidays and a review of other conditions where these were more favourable than the Court's standard. Private employers opposed any increase in annual leave but, alternatively, submitted that, if there was to be an increase, then the new standard should be two weeks and four days per annum or the number of public holidays in each year should be reduced by one. Both these submissions were rejected and the standard number of public holidays was retained at ten with the provision that, where an award provided for more than ten public holidays a year, that award, unless the union consented to a reduction to ten, would be excluded from the order amending the annual leave provisions until it was established that special circumstances justified the continuance of the greater number of holidays.

In November, 1963 the Court refused an application by employers for the right to split the annual leave into two parts, since it decided to follow the decision of most other State tribunals and allow the additional leave in conformity with conditions similar to

those prescribed by the Commonwealth Conciliation and Arbitration Commission. The right to split the leave would be allowed by the Court only in exceptional circumstances, unless all the parties concerned agreed to the inclusion of such a provision.

As from 1 January 1973, employees of the Australian Government and the State Government were granted four weeks' paid annual leave, together with an annual leave loading of 17.5 per cent of their weekly salary, up to a specified maximum amount. Subsequently, these entitlements were extended to most awards and agreements so that most employees now receive at least four weeks' paid annual leave and an annual leave loading payment.

Long Service Leave. The *Long Service Leave Act, 1958-1973* (State) confers entitlement to long service leave with pay on employees for whom such leave is not otherwise provided. Entitlement accrues only in relation to continuous service with one employer, but continuity of service is not affected by the transfer of a business from one employer to another. Leave of thirteen weeks on ordinary pay is granted in respect of the first fifteen years of service. For each subsequent ten years the entitlement is eight and two-thirds weeks, with *pro rata* conditions applying in the case of termination of employment for any reason other than serious misconduct. An employee who has completed at least ten years' service but less than fifteen years is entitled to *pro rata* leave, on the basis of thirteen weeks for fifteen years, if his employment is terminated by the employer for any reason other than serious misconduct; or by the employee on account of sickness, injury, or domestic or other pressing necessity. An employee forfeits his right to long service leave if he engages in alternative employment for reward during the period of leave. In the case of termination by death of an employee payment in lieu of leave may be made to his personal representative.

The *Long Service Leave Act Amendment Act, 1973*, which came into operation on 1 March 1974, provides that the 'standard' period of thirteen weeks' leave after fifteen years' service may be varied as the result of an agreement between The Confederation of Western Australian Industry (Incorporated) and the Trades and Labor Council of Western Australia or by a determination of the Western Australian Industrial Commission in Court Session.

WORKERS' COMPENSATION

The *Workers' Compensation Act, 1912-1978* (State) provides compensation to workers in Western Australia for injuries suffered in the course of their employment, for death resulting from such injuries, and for disabilities due to specified industrial diseases associated with their employment. The provisions of the Act do not extend to employees of the Australian Government, for whom compensation is provided by the *Compensation (Commonwealth Government Employees) Act 1971*.

Every employer, other than a self insurer, is required to effect insurance with an approved insurer for the full amount of the liability to pay compensation under the Act to all workers in his employment.

The Act establishes a Workers' Compensation Board of three members, including a chairman, appointed by the Governor. The Chairman, who has the status of Judge, must be a legal practitioner of not less than eight years' practice and standing. Of the remaining members, one is nominated by The Confederation of Western Australian Industry (Incorporated), and one by the Trades and Labor Council of Western Australia. The Board has exclusive jurisdiction to inquire into, hear, and determine all questions and matters arising under the Act, and its actions and decisions are final, except that where any question of law arises in any proceedings before the Board, it may state a case for the decision of the Full Court of the Supreme Court. The Act also provides that a Supplementary Workers Compensation Board may be appointed by the Governor if he is satisfied the Board is unable to deal expeditiously with all its business.

The amounts of payments, allowances and benefits under the Act are calculated by reference to a 'prescribed amount' as defined in section 5 of the Act. The prescribed amount is the sum ascertained by multiplying by 208 the estimate, as published each year by

the Australian Statistician, of the seasonally adjusted average weekly earnings per employed male unit for the March quarter in Western Australia. In the following paragraphs the amounts shown are those which were in operation at 1 July 1978, the prescribed amount at that date being \$44,866.

Where total incapacity for work results from the injury, the weekly payment is an amount equal to the weekly earnings, as defined, which the worker would have received had he not been incapacitated. Where the work being performed by the injured person is subject to an industrial award or agreement, weekly earnings are taken as the total wages, salary or other remuneration (excluding overtime and allowances but including over-award payments) payable, at the time of the incapacity, for a week's work under that award or agreement. Where the work is not subject to an industrial award or agreement, or where it is subject to a system of payment by results, weekly earnings are taken as the total wages, salary or other remuneration (excluding overtime and allowances but including over-award payments) under a relevant industrial award or agreement which can be fairly applied to that type of work. In the case of partial incapacity the weekly payment is the amount by which the weekly earnings so computed exceed the weekly amount which the worker is earning or is able to earn in some suitable employment or business after the accident.

The total liability of the employer in respect of weekly payments is limited to \$44,866. Additional compensation is payable up to a maximum of 10 per cent of the prescribed amount, *i.e.* \$4,486.60 (or more, if the Board finds that, in particular circumstances, this amount is inadequate) for expenses incurred in respect of first aid and ambulance services, medicines, medical or surgical attendance, hospital treatment and the like. In the event of the death of the worker, funeral expenses are compensable up to a maximum of \$500.

The Act provides for compensation in the form of a lump-sum payment, up to a maximum of \$44,866, in respect of specified injuries resulting in such disabilities as loss of sight, hearing or mental powers, or loss of a limb or limbs. Lump-sum payments are made only by election of the injured worker, after which all right to weekly payments ceases.

Where death results from the injury and the worker leaves any dependants who were wholly dependent on his earnings, the maximum amount of compensation is 85 per cent of the prescribed amount, *i.e.* \$38,136.10, together with an additional weekly payment of \$7.50 in respect of each dependent child or step-child. It is provided that if a worker leaves a widow, a mother, or a child or step-child wholly dependent on his earnings, the minimum payment shall be 25 per cent of the prescribed amount, *i.e.* \$11,216.50. If a worker dies leaving no dependants, reasonable expenses in connection with medical attendance and burial are payable to the person by whom the expenses were properly incurred.

Disability or death caused by certain specified industrial diseases due to the nature of a worker's employment is compensable at the same rates and under the same conditions as those applying in the case of injury.

INDUSTRIAL ACCIDENTS

Statistics of industrial accidents in Western Australia are compiled on two bases, namely (i) those which resulted in absence from work for one day or more, and (ii) those which resulted in absence from work for one week or more. This allows comparison to be made with information relating to other States or countries, which publish statistics compiled variously on one or other of these bases.

The statistics contained in the following tables are derived from details of claims for workers' compensation paid by insurers and self-insurers. They relate to claims *reported to have been closed* during the year ended 30 June 1978.

The figures do not represent all industrial accidents which actually occurred during the year because: (i) they refer to claims closed; (ii) in the case of non-fatal accidents, they include only those which resulted in absence from work for one day or more (or one week

or more); (iii) only accidents coming within the scope of the *Workers' Compensation Act, 1912-1978* are included in the statistics, which therefore exclude industrial accidents resulting in the death of, or injury to, self-employed persons and persons employed by the Australian Government. (Compensation for Australian Government employees is provided by the *Compensation (Commonwealth Government Employees) Act 1971.*); and (iv) the statistics include only accidents occurring at work site or in the course of the worker's normal duties and do not therefore include 'journey' cases, *i.e.* death of, or injury to, an employee while travelling between his place of residence and the place of employment. During the year ended 30 June 1978, 620 claims were reported closed in respect of 'journey' cases resulting in absence from work for one day or more, the total time lost being 2,371 weeks and the cost of claims, \$627,267. In respect of 'journey' cases resulting in absence from work for one week or more, 398 cases were reported closed. The total time lost was 2,260 weeks and the cost of claims was \$558,857.

The statistics relate only to accidents, and particulars of cases of industrial disease are therefore excluded.

For the purpose of these statistics, each claim is treated as a separate industrial accident and data are prepared from details of claims reported closed during the year under review (in this instance, the year ended 30 June 1978). In respect of reopened claims, the additional time lost and additional costs are included in the tables but, to avoid duplication, such cases have been excluded from the numbers of accidents shown. Reopened claims reported closed in 1977-78 numbered 2,238 and represented 7,693 weeks' time lost.

The following definitions should be borne in mind when considering the data shown in the tables. *Cost of claims* means the *total* amount of payments made (principally in the form of compensation for loss of wages, and for medical and hospital expenses, and lump sum settlements) in respect of claims reported closed during the year. The figures do not therefore necessarily represent amounts actually paid in the year under review. *Time lost* means the *total* time lost (*i.e.* from date of injury) in respect of claims reported closed during the year. The term is therefore not necessarily restricted to time lost during the year under review, since the accident may have occurred in an earlier year.

Statistics in greater detail, as well as analyses according to additional characteristics, are available in the publications, *Industrial Accidents (Series A)* (Catalogue No. 6301·5), which relates to accidents resulting in death or absence from work for one day or more, and *Industrial Accidents (Series B)* (Catalogue No. 6302·5), relating to accidents resulting in death or absence from work for one week or more. These publications are issued annually by the Western Australian Office of the Australian Bureau of Statistics.

Details of the number of industrial accidents, cost of claims and time lost are shown in the next table for the year 1977-78.

INDUSTRIAL ACCIDENTS—1977-78

Particulars	Accidents resulting in absence from work for—					
	One day or more			One week or more		
	Males	Females	Persons	Males	Females	Persons
Fatal accidents—						
Number	23	—	23	23	—	23
Cost of claims (a)—						
Total	585	—	585	585	—	585
Average per accident	25,455	—	25,455	25,455	—	25,455
Non-fatal accidents—						
Number	27,989	3,116	31,105	15,900	1,961	17,861
Cost of claims (a)—						
Total	19,084	2,222	21,306	17,737	2,101	19,839
Average per accident	682	713	685	1,116	1,071	1,111
Time lost (a)—						
Total	81,082	11,488	92,570	75,191	10,894	86,084
Average per accident	2·9	3·7	3·0	4·7	5·6	4·8

(a) See definitions above.

The following table gives details of fatal and non-fatal industrial accidents for 1977-78, according to broad industry groups.

INDUSTRIAL ACCIDENTS—INDUSTRY GROUPS: 1977-78

Industry group	Fatal accidents		Non-fatal accidents			
	Number	Cost of claims (a) (\$'000)	Number	Per cent of total	Cost of claims (a) (\$'000)	Time lost (a) (weeks)
TIME LOST—ONE DAY OR MORE						
Agriculture, forestry, fishing and hunting	2	18	922	3.0	544	2,873
Mining	7	182	2,805	9.0	2,571	8,615
Manufacturing	2	59	10,923	35.1	6,684	29,684
Electricity, gas and water	2	21	541	1.7	439	1,511
Construction	3	83	5,550	17.8	3,902	17,019
Wholesale and retail trade	—	—	3,403	10.9	1,901	8,635
Transport and storage	4	158	2,717	8.7	2,103	9,202
Finance, insurance, real estate and business services	—	—	324	1.0	172	896
Community services	2	66	2,414	7.8	1,708	8,026
Entertainment, recreation, restaurants, hotels, etc.	1	—	1,124	3.6	889	4,469
Other industries	—	—	382	1.2	394	1,641
Total	23	585	31,105	100.0	21,306	92,570
TIME LOST—ONE WEEK OR MORE						
Agriculture, forestry, fishing and hunting	2	18	720	4.0	521	2,763
Mining	7	182	1,541	8.6	2,416	8,019
Manufacturing	2	59	6,042	33.8	6,155	27,286
Electricity, gas and water	2	21	270	1.5	410	1,387
Construction	3	83	3,011	16.9	3,626	15,809
Wholesale and retail trade	—	—	1,973	11.0	1,738	7,900
Transport and storage	4	158	1,693	9.5	1,985	8,691
Finance, insurance, real estate and business services	—	—	203	1.1	158	834
Community services	2	66	1,423	8.0	1,602	7,551
Entertainment, recreation, restaurants, hotels, etc.	1	—	754	4.2	852	4,274
Other industries	—	—	231	1.3	376	1,569
Total	23	585	17,861	100.0	19,839	86,084

(a) For definition see letterpress above.

The final table in this Part deals with non-fatal accidents and shows the duration of time lost from work by males and females.

NON-FATAL ACCIDENTS—DURATION OF TIME LOST (a): 1977-78

Duration of time lost	Males		Females		Persons		
	Number	Time lost (weeks)	Number	Time lost (weeks)	Number	Time lost	
						Weeks	Per cent of total
1 day but under 1 week	12,089	5,892	1,155	594	13,244	6,486	7.0
1 week but under 2 weeks	7,786	9,966	919	1,174	8,705	11,139	12.0
2 weeks but under 4 weeks	4,235	11,101	526	1,379	4,761	12,480	13.5
4 weeks but under 6 weeks	1,494	7,047	188	893	1,682	7,940	8.6
6 weeks but under 8 weeks	763	5,176	74	500	837	5,676	6.1
8 weeks but under 13 weeks	824	8,069	89	905	913	8,974	9.7
13 weeks but under 26 weeks	487	8,633	104	1,829	591	10,462	11.3
26 weeks but under 52 weeks	180	6,357	36	1,332	216	7,689	8.3
52 weeks but under 104 weeks	106	7,756	18	1,271	124	9,027	9.8
104 weeks but under 156 weeks	20	2,671	5	664	25	3,335	3.6
156 weeks or more	5	1,174	2	495	7	1,669	1.8
Total—One day or more	27,989	73,842	3,116	11,036	31,105	84,877	91.7
Reopened claims (b)	—	7,241	—	452	—	7,693	8.3
Total	27,989	81,082	3,116	11,488	31,105	92,570	100.0

(a) For definition see letterpress above.

(b) Additional time lost which cannot be allocated to appropriate groups. The number of reopened claims reported was 2,238.

Chapter X—continued

Part 2—Employment

NOTE. In addition to the employment data appearing in this Part, references to the numbers of persons engaged in particular activities are to be found elsewhere in the Year Book. In Chapter V, for example, Part 1 shows numbers engaged in teaching, Part 3 contains details of hospital staffs, and employment in building appears in Part 5. In Chapter VIII, Part 1 gives employment in fishing, Part 2 provides information on employment at mines, and Part 3 includes tables relating wholly, or in part, to employment in factories. Chapter IX, Part 2 gives numbers employed in retail and selected service establishments, and Part 3 shows numbers engaged in various types of transport undertakings.

The most detailed and comprehensive statistics of employment of the population are those which are derived from the periodic Population Census. Among the most useful of the tabulations based on these enumerations are those which classify the population according to occupational status, industry, and occupation.

THE LABOUR FORCE

The labour force comprises persons aged fifteen years and over who were in one of the following categories: those who worked for payment or profit at any time during the week preceding the survey; those who had a job from which they were temporarily absent; those who were temporarily laid off without pay for the whole of the week; and those who did not work, did not have a job and were actively looking for work.

Persons helping but not receiving wages or salary who usually worked less than fifteen hours per week are excluded from the labour force. Bonded trainees (including trainee teachers) and cadets engaged in full-time study at educational institutions are also excluded, even though the institution is conducted by their employer.

The unemployed members of the labour force are those persons who did no work during the week preceding the survey and either looked for work (having no job) or were temporarily laid off from a job.

The approach adopted at the 1976 Census in determining the labour force conforms closely to the recommendations of the Eighth International Conference of Labour Statisticians held at Geneva in 1954. Accordingly, any labour force activity, however little, during the week preceding the survey results in the person being counted in the labour force. Thus many persons whose main activity is not a labour force one (*e.g.* housewife, full-time student) are drawn into the labour force by virtue of part-time or occasional labour force activity in that week. On the other hand, the definition excludes persons who may frequently or usually participate in the labour force but who, during that week happened to have withdrawn from the labour force.

The comprehensive tables resulting from the 1976 Census include detailed analyses of the labour force according to such characteristics as age, marital status, birthplace, occupational status, industry and occupation. Only some of these tables, in condensed form, have been included in this Chapter. The reader requiring additional information is referred to the census bulletins published by the Australian Statistician, Canberra.

Population classified according to Occupational Status

OCCUPATIONAL STATUS—CENSUS, 30 JUNE 1976

Occupational status	Males	Females	Persons	Proportion of total population		
				Males	Females	Persons
	'000	'000	'000	Per cent	Per cent	Per cent
In labour force—						
Employed—						
Employer	21.8	9.4	31.2	1.9	0.8	2.7
Self-employed	32.9	13.5	46.4	2.9	1.2	4.1
Employee on wage or salary	264.3	143.0	407.3	23.1	12.5	35.6
Helper, unpaid	1.4	6.3	7.7	0.1	0.5	0.7
Total, Employed	320.4	172.3	492.7	28.0	15.0	43.0
Unemployed	11.6	8.7	20.3	1.0	0.8	1.8
Total, In labour force	332.0	181.0	513.0	29.0	15.8	44.8
Not in labour force (15 years of age or more)	81.7	224.5	306.2	7.1	19.6	26.7
Under 15 years of age	167.4	158.2	325.6	14.6	13.8	28.4
TOTAL POPULATION	581.2	563.7	1,144.9	50.8	49.2	100.0

LABOUR FORCE—OCCUPATIONAL STATUS, MARITAL STATUS AND SEX
CENSUS, 30 JUNE 1976
(Thousands)

Occupational status	Never married		Now married		Widowed		Other marital status (a)		Total	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Employer	1.8	0.2	18.9	8.7	0.2	0.2	0.9	0.2	21.8	9.4
Self-employed	4.9	0.4	26.4	12.5	0.3	0.4	1.2	0.2	32.9	13.5
Wage or salary earner	76.1	45.3	173.0	84.2	2.1	3.9	13.0	9.7	264.3	143.0
Helper, unpaid	0.8	0.6	0.5	5.4	0.1	0.2	0.1	0.1	1.4	6.3
Unemployed, looking for first job	1.1	1.3	0.6	0.4	—	—	0.1	0.1	1.9	1.9
Unemployed, other	5.4	3.6	3.3	2.4	0.1	0.1	0.9	0.8	9.7	6.9
Not in labour force	34.2	34.0	38.0	144.0	6.0	34.8	3.6	11.7	81.7	224.5
Total, 15 years and over	124.4	85.4	260.8	257.6	8.8	39.6	19.8	22.8	413.7	405.5

(a) Comprises the categories *Permanently separated* and *Divorced*.

LABOUR FORCE—EMPLOYMENT STATUS, AGE AND SEX
CENSUS, 30 JUNE 1976
(Thousands)

Age (years)	Employed		Unemployed		Not in labour force		Total	
	Males	Females	Males	Females	Males	Females	Males	Females
15-19	29.7	23.8	2.6	3.3	21.5	24.7	53.9	51.9
20-24	43.2	29.1	2.8	2.0	5.6	18.5	51.6	49.6
25-29	48.3	22.6	1.5	0.8	2.8	25.8	52.7	49.2
30-34	39.8	18.7	0.9	0.6	1.7	19.7	42.4	39.0
35-39	34.9	19.5	0.8	0.5	1.5	14.7	37.1	34.7
40-44	30.0	16.9	0.7	0.4	1.4	12.2	32.0	29.4
45-49	30.0	16.1	0.7	0.4	1.6	13.0	32.3	29.5
50-54	26.1	12.2	0.6	0.3	2.2	14.5	28.9	26.9
55-59	19.2	7.7	0.4	0.2	2.8	14.8	22.4	22.7
60-64	13.3	3.6	0.4	0.1	6.8	18.3	20.6	22.0
65 and over	6.0	2.2	0.1	0.1	33.8	48.3	39.9	50.6
Total	320.4	172.3	11.6	8.7	81.7	224.5	413.7	405.5

Classification according to Industry

For census purposes, industry may be defined as the *branch of productive activity, business or service carried out by the establishment in which a person is employed*. It is concerned with the activity of persons, firms or businesses considered as a group producing the same commodity, performing the same process or providing the same service. All persons engaged in any such branch of economic activity are classified industrially as belonging to that particular branch irrespective of their personal occupation within the industry. Examples are: *Mining*, which includes, in addition to miners and prospectors, such persons as laboratory technicians, transport workers and office staff employed by mining companies; *Water Transport*, which covers staff members of shipping companies and agencies, as well as ships' crews; and professional activities such as law and architecture which include not only qualified practitioners but also persons employed by them as, for example, receptionists, law clerks and draftsmen.

Classification according to industry at the 1976 Census has been made on the basis of the 1969 preliminary edition of the *Australian Standard Industrial Classification*, prepared by the Australian Statistician, Canberra. For the Population Census an 'undefined' category was added to certain Divisions of the classification to facilitate the coding of imprecise or generalised descriptions of industrial activities on the census schedules. The classification divides the labour force into thirteen Divisions which are in turn divided into Sub-divisions, Groups and Classes.

In the table below, the employed population is classified according to occupational status within each of the thirteen industry divisions.

EMPLOYED POPULATION—OCCUPATIONAL STATUS AND INDUSTRY
CENSUS, 30 JUNE 1976
(Thousands)

Industry division	Occupational status				Total
	Employer	Self-employed	Employee on wage or salary	Helper, unpaid	
MALES					
Agriculture, forestry, fishing and hunting	5.8	13.3	11.4	0.6	31.1
Mining	0.1	0.1	14.9	—	15.0
Manufacturing	1.8	1.5	50.3	—	53.7
Electricity, gas and water	—	—	7.0	—	7.0
Construction	3.3	6.2	28.7	—	38.3
Wholesale and retail trade	5.9	4.7	42.6	0.1	53.3
Transport and storage	0.6	2.4	19.8	—	22.9
Communication	—	—	7.0	—	7.0
Finance, insurance, real estate and business services	1.9	1.8	15.8	—	19.5
Public administration and defence	—	—	18.5	—	18.5
Community services	1.0	0.2	25.7	0.1	27.0
Entertainment, recreation, restaurants, hotels and personal services	1.1	1.3	8.0	—	10.4
Inadequately described and not stated	0.3	1.3	14.5	0.5	16.7
Total males employed	21.8	32.9	264.3	1.4	320.4
FEMALES					
Agriculture, forestry, fishing and hunting	2.7	6.5	2.1	2.1	13.4
Mining	—	—	1.7	—	1.7
Manufacturing	0.6	0.4	11.8	0.1	12.9
Electricity, gas and water	—	—	0.3	—	0.3
Construction	0.8	0.9	2.0	0.1	3.8
Wholesale and retail trade	3.2	2.7	30.6	0.3	36.8
Transport and storage	0.2	0.5	2.5	0.1	3.2
Communication	—	—	2.3	—	2.3
Finance, insurance, real estate and business services	0.4	0.8	13.7	0.1	15.0
Public administration and defence	—	—	6.7	—	6.7
Community services	0.2	0.2	45.1	0.1	45.5
Entertainment, recreation, restaurants, hotels and personal services	0.9	0.7	13.6	0.1	15.4
Inadequately described and not stated	0.3	0.9	10.8	3.3	15.2
Total females employed	9.4	13.5	143.0	6.3	172.3

EMPLOYED POPULATION—INDUSTRY: CENSUS, 30 JUNE 1976

Industry division and sub-division (a)	Males '000	Females '000	Persons	
			Number '000	Per cent of total
Agriculture, forestry, fishing and hunting—				
Agriculture	27.1	12.8	40.0	8.1
Other and undefined	3.9	0.6	4.5	0.9
Total, Agriculture, forestry, fishing and hunting	31.1	13.4	44.5	9.0
Mining—				
Metallic minerals	11.2	1.2	12.4	2.5
Other and undefined	3.9	0.5	4.4	0.9
Total, Mining	15.0	1.7	16.7	3.4
Manufacturing—				
Food, beverages and tobacco	9.2	3.9	13.1	2.7
Wood, wood products and furniture (except sheet metal)	7.2	1.4	8.6	1.7
Paper and paper products, printing and publishing	3.9	1.6	5.4	1.1
Glass, clay and other non-metallic mineral products	4.8	0.4	5.3	1.1
Basic metal products	5.8	0.4	6.1	1.2
Fabricated metal products	6.9	1.1	8.0	1.6
Other industrial machinery and equipment and household appliances	6.1	1.0	7.1	1.4
Other and undefined	9.8	3.1	13.0	2.6
Total, Manufacturing	53.7	12.9	66.6	13.5
Electricity, gas and water	7.0	0.3	7.4	1.5
Construction—				
General construction	22.2	2.0	24.2	4.9
Special trade contracting	13.7	1.6	15.3	3.1
Total, Construction (b)	38.3	3.8	42.1	8.5
Wholesale and retail trade—				
Wholesale trade	22.5	8.6	31.1	6.3
Retail trade	30.7	28.2	58.8	11.9
Total, Wholesale and retail trade (b)	53.3	36.8	90.1	18.3
Transport and storage—				
Road transport	9.4	1.6	11.0	2.2
Railway transport	5.7	0.3	5.9	1.2
Other and undefined	7.9	1.3	9.2	1.9
Total, Transport and storage	22.9	3.2	26.1	5.3
Communication	7.0	2.3	9.3	1.9
Finance, insurance, real estate and business services—				
Finance and investment	5.6	5.2	10.7	2.2
Real estate and business services	11.3	7.8	19.2	3.9
Other and undefined	2.6	2.0	4.6	0.9
Total, Finance, insurance, real estate and business services	19.5	15.0	34.5	7.0
Public administration and defence—				
Public administration	15.0	6.3	21.3	4.3
Other and undefined	3.5	0.4	3.9	0.8
Total, Public administration and defence	18.5	6.7	25.1	5.1
Community services—				
Health	7.6	23.9	31.5	6.4
Education, libraries, museums and art galleries	12.0	17.9	29.8	6.1
Other and undefined	7.4	3.7	11.1	2.3
Total, Community services	27.0	45.5	72.5	14.7
Entertainment, recreation, restaurants, hotels and personal services—				
Restaurants, hotels and clubs	5.8	9.7	15.5	3.2
Personal services	1.7	3.5	5.2	1.1
Other and undefined	2.9	2.2	5.1	1.0
Total, Entertainment, recreation, hotels and personal services	10.4	15.4	25.8	5.2
Inadequately described and not stated	16.7	15.2	31.9	6.5
TOTAL, EMPLOYED POPULATION	320.4	172.3	492.7	100.0

(a) Only those sub-divisions in which more than 4,927 persons (1 per cent of the total) were recorded are shown separately.
(b) Including 'undefined', i.e. persons who could not be accurately assigned to one of the sub-divisions shown.

EMPLOYED POPULATION—INDUSTRY: CENSUS, 30 JUNE 1976
CLASSIFICATION ACCORDING TO STATISTICAL DIVISION
(Thousands)

Statistical division	Primary (including mining)	Manufacturing	Construction	Wholesale and retail trade	Transport, storage, and communication	Community services	Entertainment, restaurants, hotels etc. (a)	Other industries (b)	Total (all industries)
MALES									
Perth Statistical Division	6.2	44.5	28.2	42.2	21.2	21.5	7.8	44.9	216.5
Other divisions—									
South-West	5.6	4.5	2.6	2.9	1.8	1.1	0.5	3.1	22.2
Lower Great Southern	4.2	1.2	1.1	1.6	0.9	0.7	0.3	1.3	11.3
Upper Great Southern	4.1	0.2	0.5	0.8	0.6	0.3	0.1	0.7	7.4
Midlands (c)	7.9	0.8	1.1	1.9	1.3	0.8	0.3	1.9	16.0
South-Eastern	4.6	0.8	1.2	1.3	0.9	0.7	0.3	2.1	11.8
Central	5.1	0.8	1.7	1.7	1.4	0.9	0.4	2.6	14.6
Pilbara	7.0	0.4	1.5	0.5	1.0	0.5	0.6	4.2	15.8
Kimberley	1.2	0.3	0.4	0.3	0.3	0.6	0.1	1.0	4.1
Total	39.9	9.2	10.1	11.1	8.7	5.5	2.6	16.8	103.9
Total, all divisions	45.9	53.7	38.3	53.3	29.4	27.0	10.4	61.6	319.5
Migratory (d)	0.2	—	—	—	0.5	—	—	0.1	0.9
Total males employed	46.1	53.7	38.3	53.3	29.9	27.0	10.4	61.7	320.4
FEMALES									
Perth Statistical Division	2.6	11.3	3.0	28.9	4.0	35.7	11.1	28.5	125.1
Other divisions—									
South-West	2.0	0.6	0.2	2.1	0.3	2.4	0.9	2.0	10.5
Lower Great Southern	1.9	0.3	0.1	1.0	0.2	1.0	0.5	1.1	6.1
Upper Great Southern	2.0	0.1	—	0.5	0.1	0.7	0.2	0.5	4.1
Midlands (c)	3.4	0.2	0.1	1.3	0.2	1.4	0.6	1.2	8.3
South-Eastern	0.8	0.1	0.1	0.9	0.2	1.3	0.5	0.9	4.9
Central	1.6	0.2	0.1	1.3	0.3	1.4	0.7	1.5	7.0
Pilbara	0.7	—	0.1	0.5	0.2	0.9	0.7	1.1	4.2
Kimberley	0.2	0.1	—	0.2	0.1	0.7	0.2	0.4	1.9
Total	12.5	1.6	0.8	7.9	1.5	9.8	4.3	8.8	47.2
Total, all divisions	15.1	12.9	3.8	36.8	5.5	45.5	15.3	37.2	172.2
Migratory (d)	—	—	—	—	—	—	—	—	0.1
Total females employed	15.2	12.9	3.8	36.8	5.5	45.5	15.4	37.2	172.3
PERSONS									
Perth Statistical Division	8.8	55.9	31.2	71.2	25.1	57.2	18.9	73.3	341.6
Other divisions—									
South-West	7.6	5.1	2.8	5.0	2.1	3.6	1.4	5.0	32.6
Lower Great Southern	6.1	1.6	1.2	2.7	1.1	1.7	0.7	2.3	17.4
Upper Great Southern	6.1	0.3	0.6	1.3	0.7	1.0	0.3	1.2	11.5
Midlands (c)	11.3	1.0	1.2	3.2	1.6	2.2	0.9	3.1	24.4
South-Eastern	5.3	0.9	1.3	2.2	1.1	2.0	0.9	3.0	16.7
Central	6.7	1.0	1.8	3.0	1.6	2.2	1.1	4.1	21.6
Pilbara	7.7	0.5	1.6	1.0	1.3	1.4	1.3	5.2	20.0
Kimberley	1.4	0.4	0.4	0.5	0.4	1.2	0.3	1.4	6.0
Total	52.4	10.7	10.9	18.9	10.3	15.3	6.9	25.6	151.1
Total, all divisions	61.0	66.6	42.1	90.1	34.9	72.5	25.8	98.8	491.7
Migratory (d)	0.3	—	—	—	0.5	—	—	0.1	1.0
Total persons employed	61.2	66.7	42.1	90.1	35.4	72.5	25.8	98.9	492.7

(a) Includes Sport and recreation and Personal services.

(b) Comprises Electricity, gas and water; Finance, insurance, real estate and business services; Public administration and defence; and Inadequately described and not stated.

(c) Includes Houtman Abrolhos (unincorporated).

(d) Comprises persons (both passengers and crew) who, at midnight on census night, were enumerated on board ships in Western Australian ports, or ships which had left an Australian port before census night for a next port of call in Western Australia. It includes also those who were enumerated on long-distance trains, motor coaches or aircraft.

Classification according to Occupation

Occupation is defined as the nature of the work which a person performs, and implies *personal* performance. It may be based on the material treated, the process carried out or the type of service rendered by an *individual* worker. Thus the occupation of a person is the kind of work that he or she personally performs, as distinct from industry, which is defined as the *branch of productive activity, business or service carried out by the establishment in which a person is employed* and is not concerned with the nature of personal performance.

The Classification of Occupations used in the tabulation of the 1976 Census data has been adapted from and closely adheres to the principles embodied in the International Standard Classification of Occupations issued by the International Labour Office, Geneva, 1958 and as revised in 1968. The International Standard Classification of Occupations was prepared after extensive discussions and research by world experts in this field to provide an adequate classification framework for countries interested in occupational classification and, at the same time, provide a basis for international comparison of occupational data obtained mainly from Censuses of Population. The Australian Classification of Occupations contains 11 Major Groups, 73 Minor Groups and 395 Occupation Codes. In accordance with the International Standard Classification, occupations have been grouped according to the general similarity of the characteristics of the work which they entail.

Complete descriptions of Major Groups, Minor Groups and Codes, together with a list of occupation titles included under each heading, are contained in the *Classification and Classified List of Occupations—Revised: June 1976*, published by the Australian Statistician, Canberra.

EMPLOYED POPULATION—OCCUPATIONS: CENSUS, 30 JUNE 1976
(Thousands)

Major and minor group	Males	Females	Persons
Professional, technical and related workers—			
Architects, engineers and surveyors, professional	4.4	—	4.4
Chemists, physicists, geologists and other physical scientists	0.9	—	1.0
Biologists, veterinarians, agronomists and related scientists	0.9	0.2	1.1
Medical practitioners and dentists	1.8	0.3	2.0
Nurses, including probationers or trainees	0.5	9.2	9.7
Professional medical workers, n.e.c.	0.9	0.9	1.8
Teachers	7.7	10.4	18.2
Clergy and related members of religious orders	0.8	0.3	1.1
Law professionals	0.6	0.1	0.6
Artists, entertainers, writers and related workers	1.7	1.0	2.7
Draftsmen and technicians, n.e.c.	6.4	1.6	8.1
Other professional, technical and related workers	4.8	2.1	6.9
Total	31.5	26.1	57.6
Administrative, executive and managerial workers—			
Administrative and executive officials, government, n.e.c.	1.4	—	1.5
Employers, workers on own account, directors, managers, n.e.c.	24.8	4.3	29.1
Total	26.3	4.3	30.6
Clerical workers—			
Book-keepers and cashiers	1.9	4.5	6.3
Stenographers and typists	0.1	10.3	10.4
Other clerical workers	23.4	36.8	60.1
Total	25.3	51.5	76.8
Sales workers—			
Insurance, real estate salesmen, auctioneers and valuers	3.2	0.4	3.7
Commercial travellers and manufacturers' agents	3.5	0.3	3.8
Proprietors and shopkeepers, workers on own account, n.e.c., retail and wholesale trade, salesmen, shop assistants and related workers	11.5	19.8	31.3
Total	18.2	20.6	38.8
Farmers, fishermen, hunters, timber getters and related workers—			
Farmers and farm managers	19.9	9.7	29.6
Farm workers, including farm foremen	12.0	3.3	15.3
Wool classers	0.2	—	0.2
Fishermen and related workers	1.7	0.1	1.8
Timber getters and other forestry workers	0.9	—	0.9
Total	34.5	13.1	47.6

EMPLOYED POPULATION—OCCUPATIONS: CENSUS, 30 JUNE 1976—*continued*
(Thousands)

Major and minor group	Males	Females	Persons
Miners, quarrymen and related workers—			
Miners, mineral prospectors and quarrymen	4.6	—	4.6
Well drillers, oil, water and related workers	0.3	—	0.3
Mineral treaters	1.1	—	1.1
Total	6.0	—	6.0
Workers in transport and communication—			
Deck and engineer officers, ship	0.4	—	0.4
Deck and engine room hands, ship and boatmen	0.9	—	0.9
Aircraft pilots, navigators and flight engineers	1.2	—	1.2
Drivers and firemen, rail transport	1.1	—	1.1
Drivers, road transport	14.8	1.2	16.0
Guards and conductors, railway	0.4	—	0.4
Inspectors, supervisors, traffic controllers and dispatchers, transport	1.8	—	1.8
Telephone, telegraph and related telecommunication operators	0.3	2.2	2.5
Postmasters, postmen and messengers	1.7	0.4	2.1
Workers in transport and communication, n.e.c.	1.4	0.1	1.5
Total	23.3	3.9	27.2
Tradesmen, production-process workers and labourers, n.e.c.—			
Spinners, weavers, knitters, dyers and related workers	0.2	0.1	0.3
Tailors, cutters, furriers and related workers	1.1	1.8	2.9
Leather cutters, lasters, sewers (except gloves and garments) and related workers	0.2	0.1	0.4
Furnacemen, rollers, drawers, moulders and related metal making and treating workers	1.2	—	1.2
Precision instrument makers, watchmakers, jewellers and related workers	1.4	0.1	1.5
Toolmakers, metal machinists, mechanics, plumbers and related metal workers	31.4	0.2	31.6
Electricians and related electrical and electronics workers	11.9	0.1	12.0
Metal workers, metal and electrical production-process workers, n.e.c.	4.1	0.4	4.5
Carpenters, woodworking machinists, cabinetmakers and related workers	10.6	0.3	11.0
Painters and decorators	4.3	—	4.3
Bricklayers, plasterers and construction workers, n.e.c.	12.1	0.1	12.2
Compositors, printing machinists, engravers, bookbinders and related workers	2.1	0.5	2.6
Potters, kilnmen, glass and clay formers and related workers	0.8	0.1	0.9
Millers, bakers, butchers, brewers and related food and drink workers	6.6	1.7	8.4
Chemical, sugar and paper production process workers	1.1	0.1	1.2
Paper products, rubber, plastic and production process workers, n.e.c.	1.8	0.7	2.4
Packers, wrappers, labellers	0.5	1.3	1.8
Stationary engine, excavating and lifting equipment operators	7.1	—	7.1
Storemen and freight handlers	9.0	0.4	9.4
Labourers, n.e.c.	15.9	1.0	16.9
Apprentices, factory workers, foremen, machinists, (so described) n.e.c.	1.9	0.5	2.4
Total	125.4	9.7	135.1
Service, sport and recreation workers—			
Fire brigade, police and other protective service workers	4.5	0.1	4.6
Housekeepers, cooks, maids and related workers	2.2	11.9	14.1
Waiters, bartenders	1.0	4.2	5.2
Building caretakers, cleaners	2.9	5.6	8.5
Barbers, hairdressers and beauticians	0.4	1.8	2.2
Launderers, dry cleaners and pressers	0.2	1.1	1.4
Athletes, sportsmen and related workers	0.5	0.2	0.6
Photographers, and camera operators	0.2	—	0.3
Undertakers, and crematorium workers	0.1	—	0.1
Service, sports, recreation workers, n.e.c.	2.2	5.1	7.3
Total	14.3	30.1	44.3
Members of armed services	2.8	0.1	3.0
Occupation inadequately described or not stated	12.9	12.9	25.8
TOTAL, EMPLOYED POPULATION	320.4	172.3	492.7

Labour Force Survey

The Australian Statistician prepares estimates of the civilian labour force based on results of the population survey which is carried out on a sample basis throughout Australia each month. (Prior to February 1978, the survey was conducted in February, May, August and November each year.) Selected private dwellings (houses, flats, etc.) and other dwellings (hotels, motels, etc.) are visited in the course of each survey. Information is obtained by means of personal interviews carried out by specially trained enumerators. The results of the survey are published by the Australian Statistician in the monthly and annual releases entitled *The Labour Force* (Catalogue Nos. 6203.0 and 6204.0 respectively) and in the annual *Labour Statistics* (Catalogue No. 6101.0). Until

the issue in May 1975 of *The Labour Force, November 1974*, which gave details for each State and Territory, all published figures related to Australia as a whole, and particulars for individual States were not available.

The following table shows estimates of the employment status of the civilian population of Western Australia since August 1974. The figures relate to all persons aged fifteen years and over except members of the permanent armed forces and certain diplomatic personnel customarily excluded from census and estimated populations.

CIVILIAN POPULATION 15 YEARS OF AGE AND OVER—EMPLOYMENT STATUS

Month	Employed		Unemployed		Total labour force		Not in labour force ('000)	Civilian population aged 15 and over ('000)
	Number ('000)	Per cent of labour force	Number ('000)	Per cent of labour force	Number ('000)	Per cent of population		
MALES								
1974—August	328.3	97.5	8.3	2.5	336.6	82.8	70.0	406.6
1975—August	338.1	97.4	8.9	2.6	347.1	83.6	68.2	415.2
1976—August	343.1	96.8	11.3	3.2	354.4	83.3	71.1	425.5
1977—August	347.3	96.2	13.6	3.8	361.0	82.7	75.7	436.7
1978—February.....	344.3	94.4	20.4	5.6	364.7	82.3	78.7	443.4
May	343.3	95.5	16.2	4.5	359.6	80.5	87.0	446.6
August	335.8	94.2	20.8	5.8	356.6	79.3	93.1	449.7
November	338.3	94.7	19.1	5.3	357.3	78.9	95.8	453.2
FEMALES								
1974—August	159.4	97.3	4.4	2.7	163.8	41.5	230.5	394.2
1975—August	166.0	95.4	8.1	4.6	174.1	43.1	229.7	403.7
1976—August	175.0	94.0	11.2	6.0	186.3	44.9	228.2	414.5
1977—August	178.7	93.3	12.8	6.7	191.5	44.9	235.3	426.8
1978—February.....	175.4	89.2	21.3	10.8	196.8	45.3	237.4	434.1
May	188.5	92.0	16.3	8.0	204.8	46.8	232.9	437.7
August	182.5	91.8	16.3	8.2	198.8	45.1	241.8	440.6
November	183.3	92.0	15.8	8.0	199.1	44.8	244.9	444.0
PERSONS								
1974—August	487.7	97.5	12.7	2.5	500.4	62.5	300.4	800.8
1975—August	504.1	96.7	17.0	3.3	521.1	63.6	297.8	818.9
1976—August	518.1	95.8	22.5	4.2	540.6	64.4	299.3	840.0
1977—August	526.0	95.2	26.4	4.8	552.5	64.0	311.1	863.5
1978—February.....	519.7	92.6	41.8	7.4	561.4	64.0	316.0	877.5
May	531.8	94.2	32.6	5.8	564.4	63.8	319.9	884.3
August	518.3	93.3	37.1	6.7	555.4	62.4	334.9	890.3
November	521.6	93.7	34.9	6.3	556.5	62.0	340.7	897.2

ESTIMATES OF EMPLOYMENT

In addition to employment data provided by the census and the labour force survey, there are available monthly estimates of the number of wage and salary earners in civilian employment. The prime purpose of this series is to measure, as nearly as possible with available data, *current monthly trends* in employment in the defined field.

The estimates, except those relating to government employment, are based on comprehensive data referred to as 'benchmarks', derived for the purpose from the results of the 1971 Population Census and other relevant sources. Month-to-month changes shown by current returns are linked to the benchmark data to derive the monthly estimates. The figures used for this purpose are obtained from three main sources: (i) current pay-roll tax returns, which are lodged by all employers paying more than \$60,000 per annum in wages, other than those specifically exempted under the pay-roll tax legislation; (ii) current returns from government bodies; and (iii) some other current returns of employment (e.g. for hospitals). The balance, *i.e.* unrecorded private employment, is estimated.

The figures relate only to civilian wage and salary earners, not to the total labour force. They therefore exclude employers, self-employed persons, unpaid helpers, members of the defence forces and the unemployed. Employees in agriculture and in private domestic service are not included in the estimates because the available data are inadequate.

As the results of each successive population census become available it is the practice to derive from them new benchmarks for the monthly employment series, and to revise the published estimates for all periods subsequent to the date of the previous census. Benchmarks for June 1971 were established by analysing data from the 1971 Census and other relevant sources such as special returns from government bodies and economic censuses and surveys.

The estimated monthly changes are derived mainly from returns from employers relating to establishments or enterprises, while the benchmark figures were derived from particulars recorded for individuals on population census schedules, which do not in all cases provide sufficiently precise information to allow accurate coding of industry. Industry dissections of the census totals of wage and salary earners were therefore adjusted to make them consistent as far as possible with industry coding at the establishment level.

Current data supplied by reporting enterprises or establishments generally refer to persons on the pay-roll for the last pay-period in each month. Persons who are on paid leave or who work during part of the pay-period and are unemployed or on strike during the rest of the period are generally counted as employed. Those not shown on employers' pay-rolls because they are on leave without pay, on strike or stood down for the entire period are excluded.

Government Employment

Employees of government and semi-government authorities are included in the figures shown in the previous table. Estimates of the numbers employed by Australian Government, State Government, and local government authorities are available separately. They include not only those engaged in administrative activities but also employees on services such as railways, road transport, air transport, shipping, education, health, public hospitals (other than those run by religious or charitable institutions), migrant hostels, banks, postal and telecommunications, broadcasting and television, police, factories, marketing authorities, electricity generation and supply, water conservation, irrigation, road and bridge construction, harbour works and other public works. In the following table, government employment so defined is shown for the month of June in the period from 1974 to 1978.

GOVERNMENT AUTHORITIES—CIVILIAN EMPLOYEES IN WESTERN AUSTRALIA (a)
(Thousands)

June	Australian Government (b)			State Government (b) (c)			Local government (c)			Total (b)		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
1974	16.3	6.2	22.5	56.3	31.6	87.9	6.5	1.2	7.7	79.1	39.0	118.1
1975	16.8	6.8	23.6	58.1	34.4	92.5	8.8	1.4	10.2	83.7	42.6	126.3
1976	r 16.7	6.6	23.3	59.1	36.6	95.7	6.7	1.3	8.0	r 82.5	44.6	r 127.1
1977	r 16.5	6.6	23.0	61.1	39.6	100.7	6.7	1.4	8.2	r 84.3	47.6	r 131.9
1978	15.3	6.8	22.1	62.2	41.7	103.9	7.3	1.7	8.9	84.8	50.2	135.0

(a) Included in the figures shown in the previous table.
(c) Excludes a small number of employees engaged in agriculture.

(b) Includes employees of semi-government authorities.

Employment according to Industry

The table below shows the number of wage and salary earners in civilian employment in Western Australia in various industry divisions and sub-divisions. The industry classification used is the Australian Standard Industrial Classification, which is described in the publication *Australian Standard Industrial Classification* (Preliminary Edition), 1969, Volume 1, issued by the Australian Statistician, Canberra. This industry class-

ification is not directly comparable with those adopted for population censuses before 1971 and used in estimates of civilian employment published in the 1975 Year Book and earlier issues.

WAGE AND SALARY EARNERS IN CIVILIAN EMPLOYMENT—INDUSTRY
(Excluding defence forces and employees in agriculture and private domestic service)
(Thousands)

ASIC (a) subdivision	Industry division and sub-division	June 1974	June 1975	June 1976	June 1977	June 1978
MALES						
03-04	Forestry, fishing and hunting	1.8	1.7	1.7	1.8	2.0
11-16	Mining	19.0	20.3	19.6	20.5	18.6
21-34	Manufacturing	53.3	53.0	54.4	54.3	53.9
36-37	Electricity, gas and water	6.2	6.7	6.5	7.2	8.1
41, 42	Construction	33.1	35.2	31.6	31.4	32.6
46-47	Wholesale trade	21.6	21.0	22.0	22.0	23.9
48	Retail trade	23.7	23.4	24.9	26.8	29.0
51-55	Transport and storage	20.3	20.0	20.0	19.9	20.7
56	Communication	5.9	6.0	5.9	5.9	6.4
61-63	Finance, insurance, real estate and business services	14.4	14.2	14.2	14.6	15.9
71-72	Public administration and defence	13.8	14.4	14.6	14.8	14.2
	Community services—					
81	Health	5.6	6.0	6.6	7.0	7.8
82	Education, libraries, museums and art galleries	9.1	9.7	10.3	11.4	12.0
83-84	Other	7.1	7.4	7.5	7.8	8.2
91-93, 99	Entertainment, recreation, restaurants, hotels and personal services	8.1	8.8	8.4	8.6	9.4
	Total	243.0	247.9	248.4	253.8	262.6
FEMALES						
03-04	Forestry, fishing and hunting	0.2	0.2	0.2	0.2	0.2
11-16	Mining	1.8	2.1	2.1	2.2	2.2
21-34	Manufacturing	12.5	11.5	11.9	11.6	11.4
36-37	Electricity, gas and water	0.5	0.5	0.6	0.5	0.6
41, 42	Construction	1.6	1.5	1.6	1.7	2.0
46-47	Wholesale trade	9.0	8.6	8.7	8.5	9.6
48	Retail trade	27.6	26.6	26.9	28.7	34.4
51-55	Transport and storage	2.7	2.6	2.7	2.8	3.2
56	Communication	2.4	2.4	2.3	2.2	2.2
61-63	Finance, insurance, real estate and business services	13.3	12.9	13.5	14.3	16.3
71-72	Public administration and defence	7.3	8.2	8.6	8.7	8.6
	Community services—					
81	Health	22.5	23.4	24.2	25.7	29.8
82	Education, libraries, museums and art galleries	13.6	15.5	16.4	18.2	19.5
83-84	Other	2.8	2.9	3.0	3.3	3.9
91-93, 99	Entertainment, recreation, restaurants, hotels and personal services	14.4	14.3	14.2	14.1	16.5
	Total	132.3	133.1	136.8	142.9	160.3
PERSONS						
03-04	Forestry, fishing and hunting	2.0	1.9	1.9	2.0	2.2
11-16	Mining	20.8	22.4	21.7	22.7	20.8
21-34	Manufacturing	65.8	64.5	66.3	65.9	65.3
36-37	Electricity, gas and water	6.7	7.2	7.1	7.7	8.7
41, 42	Construction	34.7	36.7	33.2	33.1	34.6
46-47	Wholesale trade	30.6	29.6	30.7	30.5	33.5
48	Retail trade	51.4	50.0	51.8	55.5	63.4
51-55	Transport and storage	23.0	22.6	22.7	22.7	23.9
56	Communication	8.3	8.4	8.2	8.1	8.6
61-63	Finance, insurance, real estate and business services	27.7	27.1	27.7	28.9	32.2
71-72	Public administration and defence	21.1	22.6	23.2	23.5	22.8
	Community services—					
81	Health	28.1	29.4	30.8	32.7	37.6
82	Education, libraries, museums and art galleries	22.7	25.2	26.7	29.6	31.5
83-84	Other	9.9	10.3	10.5	11.1	12.1
91-93, 99	Entertainment, recreation, restaurants, hotels and personal services	22.5	23.1	22.6	22.7	25.9
	Total	375.3	381.0	385.2	396.7	422.9

(a) Australian Standard Industrial Classification.

The figures appearing against the item 'Other' under the heading 'Community services' comprise employees in the industry sub-divisions *Welfare and charitable services and religious institutions and Other community services* including police and prisons. Between June 1974 and June 1978 the number of wage and salary earners in civilian employment in Western Australia rose from 375,300 to 422,900.

UNEMPLOYMENT

A full count of unemployed persons in Western Australia is available only from population censuses. For the purpose of the Censuses of 30 June 1971 and 1976, unemployed members of the labour force were those persons who did no work during the week preceding the census enumeration and either looked for work (having no job) or were temporarily laid off from a job. In addition, estimates of the number of unemployed are made monthly from data obtained during the Labour Force Surveys (see letterpress *Labour Force Survey* at the beginning of this Part).

Department of Employment and Youth Affairs

Monthly figures are compiled by the Department of Employment and Youth Affairs from the operations of its Commonwealth Employment Service. These data provide indicators of movement in the level of unemployment and the number of unfilled vacancies.

UNEMPLOYED PERSONS AND UNFILLED VACANCIES CLASSIFIED ACCORDING TO OCCUPATIONAL GROUP

Occupational group	At end of June (a)—								
	1976			1977			1978		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
UNEMPLOYED PERSONS (b) (c)									
Rural	726	11	737	801	22	823	1,218	57	1,275
Professional and semi-professional	289	176	465	412	312	724	576	498	1,074
Clerical and administrative	1,049	4,693	5,742	1,498	4,809	6,307	2,170	6,237	8,407
Skilled building and construction	473	—	473	832	—	832	1,682	1	1,683
Skilled metal and electrical	826	1	827	1,011	5	1,016	1,349	2	1,351
Other skilled (d)	193	39	232	320	42	362	594	102	696
Semi-skilled	3,320	855	4,175	4,597	949	5,546	6,768	1,127	7,895
Unskilled manual	5,156	19	5,175	6,005	43	6,048	6,780	75	6,855
Service occupations (e)	1,013	2,264	3,277	1,386	2,529	3,915	2,008	3,199	5,207
Total	13,045	8,058	21,103	16,862	8,711	25,573	23,145	11,298	34,443
UNFILLED VACANCIES (f)									
Rural	46	4	50	70	6	76	41	3	44
Professional and semi-professional	38	81	119	89	86	175	108	88	196
Clerical and administrative	169	152	321	252	246	498	114	228	342
Skilled building and construction	121	—	121	61	—	61	29	—	29
Skilled metal and electrical	320	—	320	296	2	298	183	—	183
Other skilled (d)	67	6	73	43	11	54	29	2	31
Semi-skilled	257	71	328	256	41	297	161	42	203
Unskilled manual	87	5	92	83	12	95	58	4	62
Service occupations (e)	59	143	202	74	132	206	52	154	206
Total	1,164	462	1,626	1,224	536	1,760	775	521	1,296

(a) At the Friday nearest to the end of June. (b) Persons who claimed when registering with the Commonwealth Employment Service that they were not employed and who were seeking full-time employment. Includes those referred to employers but whose employment was still unconfirmed, and those who had recently obtained employment without notifying the Commonwealth Employment Service. Includes also persons receiving unemployment benefit. (c) Includes persons seeking apprenticeships, cadetships and other forms of training. (d) Includes skilled workers in mining and in the following trades: stone, glass, chemicals, leather, rubber, clothing, textiles, footwear, food, drink, tobacco, wood, furnishing, paper, and printing. (e) Includes hairdressers; private domestic, hotel and guest-house workers; caretakers and cleaners; and protective service occupations. (f) Includes apprenticeships, cadetships and other forms of training.

The department makes a count of the number of persons, registered with the Employment Service for employment on the Friday nearest to the end of the month, who claimed at the time of registering that they were not employed and who were seeking full-time

employment. Included in the figures are persons who have been referred to employers but whose employment was still unconfirmed, and those who had recently obtained employment without notifying the department. Also available from the Department of Employment and Youth Affairs is the number of vacancies, registered by employers, which were recorded as unfilled at the end of the month.

The previous table gives a classification, according to occupational group, of unemployed persons and unfilled vacancies in Western Australia at the end of June of the years 1976 to 1978. The figures are taken from the *Monthly Review of the Employment Situation*, which is published by the Department of Employment and Youth Affairs and contains similar statistics, together with additional information, for each of the Australian States, the Northern Territory and for Australia as a whole.

Applications for unemployment benefit are received by the Department of Employment and Youth Affairs acting on behalf of the Department of Social Security. Persons seeking unemployment benefit must register with the Commonwealth Employment Service (see below), which is responsible for certifying that suitable employment is not available before benefits can be paid. Statistics of the number of persons receiving unemployment benefits are given in Chapter V, Part 4.

COMMONWEALTH EMPLOYMENT SERVICE

The Commonwealth Employment Service is established under the provisions of the *Re-establishment and Employment Act 1945*. The main functions of the Service are to assist people seeking employment to obtain positions best suited to their training, experience, abilities and qualifications, and to assist employers seeking labour to obtain employees best suited to the kinds of work being offered.

Specialised facilities are provided for young people, including training and the payment of living-away-from-home allowances for apprentices; persons with physical and mental handicaps; former members of the defence forces; Aborigines; rural workers; and persons with professional and technical qualifications. Professional counselling is provided without charge by a staff of qualified psychologists and is available to any person, but is provided particularly for those persons referred by offices of the Commonwealth Employment Service and those who are disadvantaged or suffering any major handicap with respect to employment. A Career Reference Centre has been established in Perth to enable members of the public to obtain information on courses and provide them with the opportunity of investigating at leisure their career choices. The Centre provides information in a more extensive manner than is possible in an employment interview or when a visit is made to a school.

The Commonwealth Employment Service administers the National Employment and Training System which came into operation on 1 October 1974. The system provides subsidised training in the form of full-time, part-time and in-plant courses covering a wide range of occupations and industries. Correspondence courses are also available. Provision is made for the payment to trainees of living allowances, reimbursements of expenditure on fees, books and equipment, and certain other benefits. Employers who provide properly supervised training are eligible for a subsidy from the Australian Government. The Special Youth Employment Training Programme operates as part of the National Employment and Training System and allows for subsidies to employers who employ and provide on-the-job training for up to six months for young people aged 15 to 24 years who have previously experienced significant difficulty in obtaining employment. The primary consideration under the National Employment and Training System is to direct assistance to those who, because of a lack of skill, are experiencing employment difficulties.

The Commonwealth Rebate for Apprentice Full Time Training scheme applies to all apprentices taken on after 14 January 1977. It aims to encourage employers to train apprentices by subsidising the cost of releasing apprentices during paid working hours to attend or study a basic trade course of technical education or a formal off-the-job training course. The technical education rebate can apply during any year of apprenticeship but the off-the-job rebate can apply only during the first three years of apprenticeship.

The Commonwealth Employment Service is responsible for placing in employment migrant workers sponsored by the Australian Government under migration schemes. This function includes arranging for them to move to their initial employment.

In association with placement activities, regular surveys of the labour market are carried out, and detailed information is supplied to interested Australian Government and State Government departments and instrumentalities and to the public. Employers, employees and other interested persons are advised on labour availability, industrial training and employment opportunities in various occupations, industries and areas and on other matters concerning employment.

In Western Australia at 1 January 1979, the Commonwealth Employment Service operated fourteen offices in Perth and suburbs, and there were offices at Albany, Bunbury, Collie, Esperance, Geraldton, Kalgoorlie, Kwinana, Mandurah, Manjimup, Merredin, Northam and Port Hedland.

The Commonwealth Employment Service also has a Professional Employment Office in Perth, which deals with the placement of the more highly qualified executive and professional applicants. Experts for overseas service under technical aid programmes are recruited by the Service.

Chapter X—continued

Part 3—Prices

RETAIL PRICES AND PRICE INDEXES

Prices of a limited range of commodities are recorded in the Blue Books of Western Australia from the early years of settlement. Retail prices of food and groceries and average rentals of houses for years extending back to 1901 have been collected by the Australian Statistician, but it was not until 1911 that a systematic collection of retail price statistics was begun. These statistics were used to compile the 'A' Series Index, which covered food, groceries and house rents and was first compiled in 1912 with the year 1911 as base = 1,000. Four other indexes covering a wider range of commodities and services were compiled by the Australian Statistician at different times before the current Consumer Price Index was introduced in 1960 (retrospectively to the September quarter of 1948).

Retail price indexes aim to measure the changes which occur in the general level of prices in a selected field. The basic principle of a price index is to select commodities and services representative of the field to be covered, and to combine their prices at regular intervals by the use of 'weights' which represent the relative importance of the several commodities and services in the selected field taken as a whole.

The items and standards priced are revised from time to time to keep them in harmony with changing conditions. Before each quarterly collection the standards of all items are reviewed after extensive inquiries among manufacturers, wholesalers and retailers. Where changes in the items or standards priced become necessary, suitable adjustments are made in compiling price series to ensure that they reflect only changes in prices for representative goods of constant quality and not differences in prices of differing standards.

Information concerning retail price indexes and their development in Australia is given in the *Official Year Book of Australia* (Catalogue No. 1301.0) and the *Labour Report*, No. 58—1973 (Ref. No. 6.7) published by the Australian Statistician, Canberra.

The Consumer Price Index. The Consumer Price Index measures quarterly changes in the price of a 'basket' of goods and services which account for a high proportion of expenditure by metropolitan wage-and-salary-earner households. The 'basket' covers a wide range of goods and services, arranged in the following groups: Food, Clothing, Housing, Household equipment and operations, Transportation, Tobacco and alcohol, Health and personal care, and Recreation. Each group is in turn divided into sub-groups and expenditure classes (*i.e.* groupings of like items). There are 105 expenditure classes, each with its own weight or measure of relative importance. In calculating the Index, price changes for the various expenditure classes are combined using those weights. Changes in the weighting pattern have been made at approximately five-yearly intervals to account for changes in spending patterns.

The Consumer Price Index is designed to measure price changes affecting a high proportion of metropolitan wage-and-salary-earner households (*i.e.* households located in the State capital cities or in Canberra) which derive at least three quarters of their total income from wages and salaries. The population group for the Consumer Price Index does, however, exclude the top 10 per cent (in terms of income) of such households as well as those whose total income is less than the minimum adult wage.

The Index actually comprises nine series of price indexes linked to form a continuous series. The ninth series (*i.e.* the current series) was introduced as from September quarter 1976, with a weighting pattern based on estimated expenditures in 1974-75 obtained from the first household expenditure survey conducted by the Australian Bureau of Statistics

(see letterpress *Household Expenditure* later in this Part). A broad outline of the weighting pattern was published in the December quarter 1976 issue of the publication *Consumer Price Index*, and a more detailed statement listing groups, sub-groups and expenditure classes is available from the Australian Statistician on request.

Since the Consumer Price Index is designed to measure the impact of changing prices on metropolitan wage-and-salary-earner households, price movements are monitored in the kinds of retail outlets or other establishments where such households would normally purchase goods and services. This involves collecting prices from many sources including supermarkets, department stores, footwear stores, restaurants, garages, dental surgeries and hairdressers. Items such as bus, rail and air fares, electricity and gas charges, telephone charges, and local government rates are collected from the appropriate authorities and information on rents is obtained from property management companies. Approximately 80,000 separate price quotations are collected each quarter.

Food items are priced at the middle of each month except in the case of some fresh items (fruit, vegetables and fish) where prices are collected more frequently and averaged to obtain monthly prices. Most of the other items are priced quarterly, usually at the middle of the mid month of the quarter (February, May, August and November). Some items are collected during the first month of each quarter and some items, such as local authority rates, need to be priced only once a year.

The Consumer Price Index is compiled for each of the six State capital cities and for Canberra. The separate city indexes measure price movements within each city individually. They enable comparisons to be drawn between cities as to differences in the degree of price movement, but not as to differences in the price level.

CONSUMER PRICE INDEX (a)

Group and selected sub-group	Index number				
	1973-74	1974-75	1975-76	1976-77	1977-78
PERTH					
Food	141.7	160.9	180.2	205.5	235.6
Dairy produce	123.1	142.9	167.1	183.0	198.6
Cereal products	146.8	178.9	211.5	238.4	258.7
Meat and seafoods (b)	152.9	156.9	166.2	192.2	226.6
Fruit and vegetables (c)	n.a.	n.a.	n.a.	108.0	130.0
Soft drinks, ice cream and confectionery	156.5	192.9	221.0	244.4	272.6
Meals out, take-away food (c)	n.a.	n.a.	n.a.	106.1	120.8
Other food	121.1	142.8	159.5	183.1	215.2
Clothing	143.3	174.2	202.3	232.9	258.6
Housing	149.1	174.2	209.7	244.5	269.4
Household equipment and operation	n.a.	154.5	184.1	198.9	217.8
Transportation	n.a.	158.2	184.9	206.2	224.8
Tobacco and alcohol	n.a.	167.6	206.4	226.3	237.6
Health and personal care (d)	n.a.	188.2	156.6	308.1	365.6
Recreation (c)	n.a.	n.a.	n.a.	104.3	113.5
All groups	140.6	166.1	189.6	219.4	243.1

SIX STATE CAPITAL CITIES COMBINED (e)

Food	149.5	164.0	180.2	201.2	223.2
Dairy produce	126.8	150.4	167.8	180.0	199.7
Cereal products	148.7	183.4	212.1	231.8	252.1
Meat and seafoods (b)	165.4	159.0	167.7	188.4	207.1
Fruit and vegetables (c)	n.a.	n.a.	n.a.	105.8	115.4
Soft drinks, ice cream and confectionery	154.2	189.4	217.5	240.7	270.4
Meals out, take-away food (c)	n.a.	n.a.	n.a.	104.2	115.3
Other food	119.0	140.2	155.1	178.1	209.5
Clothing	143.0	173.0	201.0	232.5	257.4
Housing	157.8	187.4	221.1	251.8	274.6
Household equipment and operation	n.a.	153.8	178.3	196.3	212.6
Transportation	n.a.	173.0	203.8	221.9	240.1
Tobacco and alcohol	n.a.	170.4	211.1	229.8	240.0
Health and personal care (d)	n.a.	186.5	151.6	265.8	318.3
Recreation (c)	n.a.	n.a.	n.a.	104.1	113.4
All groups	146.6	171.1	193.3	220.0	241.0

(a) Unless otherwise indicated, base of each index is Year 1966-67 = 100. (b) Excludes 'seafoods' prior to October 1976. (c) Base: September quarter 1976 = 100. (d) Base: December quarter 1968 = 100. (e) Weighted average.

In tables dealing with the Consumer Price Index, the figures appearing after the decimal point have little significance for general statistical purposes. They are inserted to avoid distortions that would occur in rounding off the figures to the nearest whole number.

Details of movements in the Consumer Price Index are published quarterly by the Australian Statistician, Canberra for the groups individually and for all groups combined. In addition, index numbers for the Food Group and its component sub-groups are issued monthly in the publication *Consumer Price Index—Monthly Food Group Index Numbers* (Catalogue No. 6402.0). A detailed description of the Consumer Price Index appears in the *Labour Report*, No. 58—1973 (Ref. No. 6.7).

Retail Prices. The average retail prices of selected items of food and groceries in Perth are shown in the following table. The quantity units shown are those that were applicable in December quarter 1978 and they may have varied during the period covered by the table. The prices shown therefore, do not necessarily relate to a constant unit of quantity, and in some cases are averages for periods of less than one year.

AVERAGE RETAIL PRICES OF SELECTED ITEMS—PERTH
(Cents)

Commodity	Unit	1974	1975	1976	1977	1978
Food—						
Milk, bottled, delivered	2 x 600 ml	28.7	35.1	42.3	45.7	49.8
Milk, evaporated	410 g can	21.1	25.1	26.5	27.6	30.0
Cheese, processed	250 g	32.1	41.6	44.9	49.1	53.8
Butter	500 g	58.9	67.1	81.6	86.2	88.2
Bread, milk loaf, sliced	680 g	n.a.	41.3	46.5	49.8	53.5
Biscuits, dry	225 g	28.5	34.3	39.7	43.8	46.2
Breakfast cereal, corn based	500 g	53.3	59.9	72.4	77.8	82.0
Flour, self-raising	1 kg	27.6	36.1	42.4	45.2	46.2
Rice	500 g	21.9	25.4	30.2	33.9	37.8
Beef—Rib (without bone)	1 kg (a)	155.6	136.2	144.6	170.6	198.2
Rump steak	" "	299.4	271.2	286.4	370.2	402.8
T-bone, with fillet	" "	237.9	216.3	241.2	297.4	322.8
Chuck steak	" "	162.9	139.1	148.2	188.7	210.0
Silverside, corned	" "	177.3	165.6	168.0	221.6	253.8
Sausages	" "	86.6	85.1	93.7	121.3	142.8
Lamb—Leg	" "	182.3	199.7	215.4	269.0	310.0
Loin chops	" "	186.7	199.1	220.5	276.5	316.5
Forequarter chops	" "	167.6	177.3	192.0	247.1	279.0
Pork—Leg	" "	198.9	239.2	292.6	319.0	344.5
Chops	" "	201.9	235.7	281.3	301.8	322.8
Chicken, frozen	" "	n.a.	n.a.	145.6	168.5	178.5
Bacon	250 g pkt	59.2	71.2	91.6	102.1	117.2
Beef, corned	340 g can	n.a.	n.a.	88.9	97.9	98.5
Salmon, pink	220 g can	66.5	74.9	81.4	100.4	100.0
Oranges	1 kg	n.a.	n.a.	n.a.	n.a.	63.0
Bananas	" (a)	n.a.	n.a.	n.a.	n.a.	98.8
Potatoes	1 kg (a)	25.6	26.7	34.4	36.2	41.5
Tomatoes	1 kg	n.a.	n.a.	n.a.	n.a.	146.2
Carrots	"	n.a.	n.a.	n.a.	n.a.	58.8
Onions	1 kg (a)	35.1	37.7	47.0	43.9	47.0
Peaches	825 g can	44.8	49.9	57.9	62.1	64.8
Pineapple pieces	450 g can	n.a.	n.a.	39.4	41.7	47.2
Peas, frozen	500 g pkt	n.a.	n.a.	52.4	57.0	59.2
Chocolate, block	200 g	n.a.	n.a.	n.a.	n.a.	78.5
Eggs, 55 g	1 dozen	76.1	89.1	101.8	107.5	114.8
Sugar	2 kg	46.5	50.2	53.7	59.2	66.0
Jam, strawberry	500 g jar	n.a.	n.a.	67.2	76.4	89.0
Tea	250 g	32.4	42.3	47.7	85.9	84.0
Coffee, instant	150 g jar	n.a.	n.a.	163.6	291.1	295.8
Tomato sauce	300 ml	27.9	36.2	38.0	39.4	42.0
Margarine, table, poly-unsaturated	500 g	62.3	73.2	72.5	82.0	80.8
Baked beans (in tomato sauce)	450 g	n.a.	n.a.	n.a.	33.4	36.0
Baby food	125 g can	13.1	14.8	17.0	18.1	20.2
Household supplies—						
Laundry detergent	750 g					115.8
Dishwashing detergent	750 ml					101.0
Facial tissues	pkt of 150					64.8
Toilet paper	2 x 500 sheet rolls					64.2
Pet food	405 g					33.5
Alcoholic beverages—						
Beer	740 ml bottle	n.a.	n.a.	n.a.	n.a.	77.5
Draught beer, public bar	200 ml glass					38.0
Scotch, nip, public bar	30 ml					80.2
Personal care products—						
Toilet soap	2 x 125 g					56.5
Toothpaste	110 g					60.2

(a) Prior to 1978 prices were compiled on an imperial basis and have been converted to metric equivalents.

If a detailed analysis of price movements is to be undertaken reference should be made to the appropriate copies of the publication *Average Retail Prices of Selected Items* (Catalogue No. 6403.0).

Household Expenditure. During the financial years 1974-75 and 1975-76, the Australian Bureau of Statistics conducted two surveys in order to obtain information about the expenditure patterns of private households. The 1974-75 survey was confined to a sample of households in the six State capital cities and Canberra (collection in Darwin being suspended in December 1974 due to cyclone 'Tracy') while the coverage of the 1975-76 survey was extended to include other urban, and rural regions. Perhaps the most important reason for the collection of data relating to expenditure at the household level is to provide information for use in improving the representativeness of the items and the weighting pattern used to compile the Consumer Price Index. Household expenditure statistics also provide data needed for a wide range of policy and research purposes. These include the planning of welfare services; assessing the need for, and effect of, programmes in fields such as housing, education and health; assessing the impact of taxation and government benefits; and improving estimates of private final consumption expenditure in the National Accounts.

The 1974-75 survey obtained data from a sample of 9,095 households in the six State capital cities and Canberra, while the 1975-76 survey sampled 5,896 households in the whole of Australia (except remote and sparsely settled areas). Apart from this difference in geographic coverage, the subject content and general methodology of the two surveys were virtually identical. Detailed results of the two surveys have been published in a series of bulletins issued by the Australian Statistician, Canberra.

The following tables show particulars of household expenditure by States, Territories and Regions.

HOUSEHOLD EXPENDITURE BY STATES AND TERRITORIES, 1975-76

Particulars	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.
Number of households in sample	1,583	1,327	846	550	506	422	324	311
Estimated total number of households in population ('000)	1,471.2	1,163.0	607.2	374.6	355.4	121.8	12.7	53.7
Average number of persons per household	3.11	3.10	3.09	2.86	3.12	3.24	3.25	3.34
Average age of household head (years)	46.20	45.95	46.61	45.82	43.79	45.68	36.82	38.06
Average weekly household income (\$)	220.78	232.10	220.39	217.27	226.85	210.11	336.51	315.52

AVERAGE WEEKLY HOUSEHOLD EXPENDITURE (\$)

Commodity or service—	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.
Food—								
Bread, cakes and cereals	4.05	3.91	3.53	3.62	3.44	3.77	3.75	3.90
Meat and fish	7.92	8.64	8.08	7.20	7.44	7.88	9.74	8.91
Dairy products, oils and fats	5.18	5.27	5.04	4.53	5.10	5.02	5.87	5.52
Fruit and vegetables	4.94	4.92	4.82	4.22	4.67	4.18	8.24	5.66
Other food	11.96	12.34	10.10	12.37	11.59	10.49	17.50	14.35
Total, Food	34.05	35.07	31.56	31.93	32.24	31.35	45.08	38.34
Current housing costs (a)	24.98	24.18	20.91	19.80	25.12	18.34	30.43	34.26
Fuel and power	3.87	4.75	3.40	3.43	3.58	4.42	3.35	5.64
Alcohol and tobacco	10.72	10.75	8.57	9.16	10.47	9.03	20.26	11.56
Clothing and footwear	14.14	16.56	11.17	14.23	12.92	15.01	11.42	17.84
Household equipment and operation	16.68	17.92	16.00	17.25	17.66	18.88	23.09	27.03
Medical care and health expenses	5.37	5.54	5.11	5.36	4.74	4.45	4.48	5.42
Transport and communication	33.98	34.14	30.94	32.42	33.52	35.47	49.97	43.99
Recreation and education	14.50	17.02	14.47	17.26	16.68	13.99	21.44	25.28
Miscellaneous goods and services	14.47	14.56	15.39	14.03	12.22	13.53	27.60	18.76
Total expenditure	172.78	180.49	157.52	164.87	169.15	164.48	237.12	228.13
Selected other payments (b)	52.30	46.43	44.35	41.68	51.23	41.24	54.32	104.94

(a) Included in current housing costs are both principal and interest components of any housing loan repayments. Excluded are outright purchase of, or deposit on, dwellings or land, and other payments of a capital nature. (b) The main components of this item are income tax, superannuation contributions, life insurance premiums, purchases of, and deposits on, dwellings and land, and gambling payments. Receipts from sales of dwellings and land, and gambling winnings are offset against payments.

HOUSEHOLD EXPENDITURE BY REGIONS

Particulars	1974-75	1975-76			
	All capital cities (a)	All capital cities (b)	Urban regions (c)	Rural regions (d)	Australia
Number of households in sample	9,095	2,813	2,225	831	5,869
Estimated total number of households in population ('000)	2,634.7	2,692.8	1,105.2	361.6	4,159.5
Average number of persons per household	3.08	3.07	3.05	3.35	3.09
Average age of household head (years)	44.98	45.24	46.65	47.40	45.80
Average weekly household income (\$)	205.92	239.28	201.48	194.63	225.35

AVERAGE WEEKLY HOUSEHOLD EXPENDITURE (\$)

Commodity or service—					
Food—					
Bread, cakes and cereals	3.54	3.89	3.72	3.72	3.83
Meat and fish	7.90	8.36	7.52	7.45	8.06
Dairy products, oils and fats	4.68	5.17	4.78	5.80	5.12
Fruit and vegetables	4.69	5.05	4.32	4.73	4.82
Other food	11.57	12.69	10.69	8.62	11.80
Total, Food	32.38	35.16	31.03	30.31	33.64
Current housing costs (e)	22.71	26.95	19.95	10.38	23.65
Fuel and power	3.54	4.10	3.96	3.59	4.02
Alcohol and tobacco	9.25	10.83	9.94	6.76	10.24
Clothing and footwear	13.91	15.74	12.30	10.28	14.35
Household equipment and operation	14.65	18.65	14.88	14.38	17.28
Medical care and health expenses	5.84	5.38	5.08	5.37	5.30
Transport and communication	26.26	34.80	31.65	30.90	33.62
Recreation and education	13.80	16.86	14.20	12.61	15.78
Miscellaneous goods and services	14.62	15.66	12.59	11.32	14.47
Total expenditure	157.00	184.14	155.57	135.90	172.35
Selected other payments (f)	40.62	53.78	41.70	33.63	48.81

(a) The Six State Capital Statistical Divisions and the Canberra Statistical District (excluding Queanbeyan) as defined for the purpose of the 1971 Census of Population and Housing. (b) As for footnote (a) but includes Greater Darwin. (c) All towns and urban centres with a population of more than 500 persons (excluding the capital cities) as defined for purposes of the 1971 Census of Population and Housing. (d) Localities with a population of less than 500 persons and rural areas (remote areas with less than 0.15 dwellings per square mile (approximately 0.06 dwellings per square kilometre) were excluded from the survey). (e) Included in current housing costs are both principal and interest components of any housing loan repayments. Excluded are outright purchase of, or deposit on, dwellings or land, and other payments of a capital nature. (f) The main components of this item are income tax, superannuation contributions, life insurance premiums, purchases of, and deposits on, dwellings and land, and gambling payments. Receipts from sales of dwellings and land, and gambling winnings, are offset against payments.

WHOLESALE PRICE INDEXES OF MATERIALS USED IN BUILDING

Two building material indexes are compiled and published by the Australian Statistician. They are the Price Index of Materials used in House Building and the Price Index of Materials used in Building other than House Building. Figures for both indexes are available from July 1966 on a monthly basis and for each financial year from 1966-67, and they were first published in November 1970 and April 1969 respectively. Index numbers are produced for each State capital city and for the six State capital cities combined. The reference base for the indexes is the year 1966-67 = 100. They are fixed-weights indexes calculated by the method known as 'the weighted arithmetic mean of price relatives'.

Prices used in the indexes relate to specified standards, and are obtained in all State capital cities from representative suppliers of materials used in building. In the main they are collected as at the mid-point of the month to which the index refers.

The separate city indexes measure price movements in each State capital city individually. They enable comparisons to be drawn between capitals as to the difference in the degree of price movement from period to period but not as to differences in price level. Figures are published to one decimal place to avoid distortions that would occur in rounding off the index numbers to the nearest whole number.

Information additional to that shown in the following sections, as well as detailed group index numbers for each State capital city, is given in the *Labour Report*, No. 58—1973 (Ref. No. 6·7), and the monthly publications *Price Index of Materials used in House Building* (Catalogue No. 6408.0) and *Price Index of Materials used in Building other than House Building* (Catalogue No. 6407.0) issued by the Australian Statistician, Canberra.

House Building. The Wholesale Price Index of Materials used in House Building measures changes in prices of selected materials used in the construction of houses. Its composition is in accordance with the usage of materials in actual houses which were selected as representative for the purpose. The index does not purport to represent buildings of any kind other than houses. The house building construction types included are those which use brick, brick veneer, timber, or asbestos-cement sheeting as the principal material for the outer walls. In all cases the selection of materials was based on local usage. The index includes some fifty items which are combined in eleven groups in addition to the 'All groups' index. Some items carry the weight of similar items not directly priced. They are described in terms of fixed specifications with the aim of recording price changes for representative materials of constant quality. The items and weights were derived from reported values of each material used in selected representative houses constructed in or about the year 1968-69 in each State capital city. The selection took account, within the four major construction types, of a range of characteristics of these houses, e.g. internal partitions, windows, roofing, etc., as well as whether such things as paths and fences were included in the job.

WHOLESALE PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING
(Base of each Index: Year 1966-67 = 100·0)

Group	Value weight (per cent)	Index number				
		1973-74	1974-75	1975-76	1976-77	1977-78
PERTH						
Concrete mix, cement and sand	7·94	129·1	148·7	174·8	197·6	219·8
Cement products	8·14	138·3	178·8	214·6	248·3	280·8
Clay bricks, tiles, etc.	16·44	151·5	190·7	223·4	251·8	274·9
Timber, board and joinery	29·60	146·9	179·2	212·9	240·9	269·0
Steel products	6·07	153·4	193·8	232·6	263·1	286·1
Other metal products	7·69	146·9	165·6	179·9	197·5	205·4
Plumbing fixtures, etc.	4·59	131·2	159·0	181·5	224·5	251·4
Electrical installation materials	1·76	150·6	172·8	187·1	204·0	213·8
Installed appliances	4·12	116·2	140·5	159·5	172·4	176·7
Plaster and plaster products	4·01	115·6	128·3	147·7	170·5	185·8
Miscellaneous materials	9·64	136·7	164·3	194·0	230·8	259·8
All groups	100·00	141·8	172·4	201·9	229·8	253·4

SIX STATE CAPITAL CITIES COMBINED (a)

Concrete mix, cement and sand	5·73	137·5	165·7	195·1	217·8	239·0
Cement products	8·10	154·3	193·1	227·0	258·9	284·6
Clay bricks, tiles, etc.	12·85	146·8	180·3	205·1	227·8	245·8
Timber, board and joinery	36·16	169·1	203·5	226·2	254·1	275·0
Steel products	5·86	153·8	192·1	229·3	263·2	287·7
Other metal products	7·20	146·3	170·3	187·1	207·9	220·1
Plumbing fixtures, etc.	3·74	143·2	174·5	201·5	224·3	239·1
Electrical installation materials	1·63	146·4	168·3	183·5	201·8	215·5
Installed appliances	5·13	117·7	146·4	165·9	181·9	193·3
Plaster and plaster products	5·64	122·2	147·8	167·7	178·8	191·8
Miscellaneous materials	7·96	135·0	161·5	187·9	210·7	230·4
All groups	100·00	151·3	183·4	208·1	232·9	252·0

(a) Weighted average.

Building other than House Building. The Wholesale Price Index of Materials used in Building other than House Building measures changes in prices of selected materials used in the construction of buildings other than houses and 'low-rise' flats (in general, those up to three storeys). Its composition is in accordance with the materials usage in actual

building projects which were selected as representative for the purpose. The building 'use-types' (e.g. office building, factory, etc.) directly represented are 'high-rise' flats (in general, those of more than three storeys); offices; factories; health buildings (i.e. hospitals, nurses' quarters, clinics, etc.); education buildings (i.e. schools, universities, kindergartens, etc.); and commercial premises including hotels, hostels, etc., shops, and other business premises. The index includes seventy-two items, which are combined in eleven groups as shown in the next table.

Although the selected materials (or many of them) are also used in house (and low-rise flat) building, in building repair, maintenance and alteration work, and in 'engineering construction' work (e.g. projects such as roads, dams, bridges and the like), the weighting pattern of the index, being designed for the specific purpose mentioned earlier, is not applicable to these other activities of the construction industry. In addition, since the weights are based on an average materials usage over the stated range of building use-types, the index is not necessarily applicable to any specific building or any of the separate use-types.

The items and weights were derived from reported values of each material used in selected representative buildings constructed in or about the year 1966-67. The selection took account of building use-type and construction characteristics (e.g. type of frame, wall, floor, etc.) within use-types.

**WHOLESALE PRICE INDEX OF MATERIALS USED IN BUILDING
OTHER THAN HOUSE BUILDING**
(Base of each Index: Year 1966-67 = 100·0)

Group	Value weight (per cent)	Index number				
		1973-74	1974-75	1975-76	1976-77	1977-78
PERTH						
Concrete mix, cement and sand	10·41	125·0	143·0	169·1	194·0	216·1
Cement products	3·64	144·1	171·3	212·2	240·7	258·3
Bricks, stone, etc.	5·28	147·8	185·1	216·3	241·5	264·2
Timber, board and joinery	11·90	151·1	186·9	219·2	249·5	274·0
Steel and iron products	30·58	151·0	198·5	243·5	274·6	302·5
Aluminium products	6·01	128·4	156·0	186·8	209·0	230·5
Other metal products	2·59	146·8	151·4	158·4	178·1	180·7
Plumbing fixtures	1·19	136·6	158·6	176·8	197·4	215·0
Miscellaneous materials	7·09	133·5	156·5	179·5	206·8	228·2
Electrical installation materials (a)	8·61	138·3	157·4	177·4	199·6	215·3
Mechanical services components (b)	12·70	143·6	181·5	201·7	226·0	247·9
Special purpose index (c)	78·69	143·3	178·0	212·7	240·9	264·6
All groups	100·00	142·9	176·7	208·3	235·4	258·3
SIX STATE CAPITAL CITIES COMBINED (d)						
Concrete mix, cement and sand	10·41	136·4	164·6	193·0	215·6	235·3
Cement products	3·64	147·7	183·9	220·0	244·7	268·4
Bricks, stone, etc.	5·28	146·3	179·4	202·7	224·0	241·0
Timber, board and joinery	11·90	160·2	194·7	219·3	243·6	263·2
Steel and iron products	30·58	148·8	189·2	223·4	251·7	273·4
Aluminium products	6·01	138·4	169·2	193·6	213·7	230·8
Other metal products	2·59	158·5	162·7	173·3	195·0	198·1
Plumbing fixtures	1·19	159·6	197·7	232·1	251·2	263·7
Miscellaneous materials	7·09	134·2	163·4	186·8	204·2	221·9
Electrical installation materials (a)	8·61	138·3	157·4	177·4	199·6	215·3
Mechanical services components (b)	12·70	143·9	181·3	201·3	225·4	247·2
Special purpose index (c)	78·69	147·0	181·3	210·1	234·5	253·9
All groups	100·00	145·8	179·2	206·2	230·3	249·7

(a) Based on Sydney and Melbourne prices. (b) Based mainly on Sydney and Melbourne prices. (c) All groups, excluding Electrical installation materials and Mechanical services components. (d) Weighted average.

A single weighting pattern, relating to the whole of Australia, is applied (with minor exceptions) to local price measures in calculating indexes for each State capital city. The index for the six State capital cities combined is a weighted average of individual city

indexes. The relative weighting of the capitals is in proportion to the estimated value on completion of building other than house building in the separate States during the three years ended June 1967.

OTHER PRICE INDEXES

In addition to the price indexes already described, the Australian Statistician compiles indexes relating to prices of selected export commodities, electrical installation materials, metallic materials, materials used in manufacturing industry and articles produced by manufacturing industry. Data are published in the monthly releases *Export Price Index* (Catalogue No. 6405.0), *Price Index of Electrical Installation Materials* (Catalogue No. 6409.0), *Price Index of Metallic Materials* (Catalogue No. 6410.0), *Price Index of Materials used in Manufacturing Industry* (Catalogue No. 6411.0) and *Price Indexes of Articles Produced by Manufacturing Industry* (Catalogue No. 6412.0). Further reference to these indexes will be found in the *Official Year Book of Australia* (Catalogue No. 1301.0) and the *Labour Report* No. 58—1973 (Ref. No. 6.7), published by the Australian Statistician, Canberra.

STATISTICAL SUMMARY

In the next twenty-three pages, an historical summary of some of the more important statistics relating to Western Australia is shown. This is intended to present a general picture of the development of the State.

The first year shown on each page is the earliest for which any series on that page is available.

Figures shown in these tables are the latest available at the time of publication; in some cases they may not be strictly comparable with those shown in earlier years.

ESTIMATED POPULATION, NATURAL INCREASE AND MIGRATION (a)

NOTE. A line drawn across a column indicates a break in continuity in the series. Figures above the line exclude full-blood Aborigines; those below the line refer to total population, i.e. including Aborigines.

Year	Population at 31 December			Population increase				Mean population		Population of Perth Statistical Division (f)
	Males	Females	Persons	Recorded natural increase (b)	Estimated net migration (c)	Total increase (d)		Year ended—		
						Number	Per cent (e)	30 June	31 December	
1829	769	234	1,003	n.a.	n.a.	n.a.	n.a.	—	—	—
1830	877	295	1,172	n.a.	n.a.	169	16.85	—	n.a.	—
1840	1,434	877	2,311	34	123	157	7.29	—	—	—
1850	3,576	2,310	5,886	132	1,109	1,241	26.72	—	—	n.a.
1860	9,597	5,749	15,346	379	130	509	3.43	n.a.	15,092	—
1870	15,511	9,624	25,135	475	7	482	1.96	—	24,894	—
1880	16,985	12,576	29,561	551	129	422	1.45	—	29,350	—
1890	28,854	19,648	48,502	1,021	1,821	2,842	6.22	—	47,081	20
1900	110,088	69,879	179,967	3,214	6,495	9,709	5.70	—	175,113	73
1910	157,971	118,861	276,832	4,845	6,312	11,157	4.20	266,686	271,019	115.7
1920	176,895	154,428	331,323	4,761	1,298	3,463	1.06	327,152	330,023	167.0
1930	232,868	198,742	431,610	5,426	453	4,973	1.17	425,785	429,079	235.1
1931	232,397	201,289	433,686	4,868	2,792	2,076	0.48	431,022	432,347	239.9
1932	233,049	203,271	436,320	4,250	1,616	2,634	0.61	433,596	435,041	238.9
1933	234,744	205,898	440,642	4,084	238	4,322	0.99	436,798	438,780	232.1
1934	236,140	207,589	443,729	3,725	638	3,087	0.70	440,736	442,354	234.3
1935	238,739	210,884	449,623	4,001	1,893	5,894	1.33	444,275	446,874	237.7
1936	240,827	213,373	454,200	4,249	328	4,577	1.02	449,728	452,294	241.0
1937	244,050	216,492	460,542	4,544	1,798	6,342	1.40	454,532	457,328	244.4
1938	246,943	219,741	466,684	4,907	1,235	6,142	1.33	460,642	463,808	247.7
1939	249,065	223,315	472,380	4,696	1,000	5,696	1.22	466,896	469,780	252.2
1940	248,734	225,342	474,076	4,598	2,902	1,696	0.36	472,060	473,397	255.5
1941	246,842	226,371	473,213	4,906	5,769	863	0.18	474,180	473,988	260.0
1942	246,816	229,839	476,655	3,791	349	3,442	0.73	474,833	476,619	265.6
1943	246,389	231,875	478,264	5,137	3,528	1,609	0.34	476,989	476,745	272.3
1944	249,301	235,474	484,775	5,857	654	6,511	1.36	478,271	481,498	281.2
1945	251,590	238,498	490,088	5,418	105	5,313	1.10	484,720	487,510	289.0
1946	255,310	241,663	496,973	7,277	392	6,885	1.40	489,982	492,771	297.9
1947	261,653	247,109	508,762	8,119	3,670	11,789	2.37	497,006	502,951	307.3
1948	268,304	253,695	521,999	8,246	4,991	13,237	2.60	508,747	514,621	315.8
1949	280,273	263,911	544,184	8,721	13,464	22,185	4.25	521,932	532,603	331.4
1950	294,758	277,891	572,649	9,170	19,295	28,465	5.23	545,134	557,878	351.7
1951	304,454	285,885	590,339	9,506	8,184	17,690	3.09	570,346	580,317	362.8
1952	316,700	296,235	612,935	10,204	12,392	22,596	3.83	589,887	600,615	378.1
1953	326,372	305,371	631,743	8,018	18,808	26,826	3.07	611,191	621,034	390.1
1954	334,342	314,365	648,707	10,564	6,400	16,964	2.69	630,705	639,963	402.2
1955	343,838	324,771	668,609	11,244	8,658	19,902	3.07	648,222	657,323	416.8
1956	350,333	330,935	681,268	11,344	1,315	12,659	1.89	666,998	674,459	427.4
1957	356,195	339,039	695,234	11,627	2,339	13,966	2.05	680,949	687,448	438.9
1958	361,441	345,755	707,196	11,177	785	11,962	1.72	693,568	699,915	449.3
1959	366,253	352,438	718,691	11,614	119	11,495	1.63	705,869	711,737	459.5
1960	372,665	358,368	731,033	11,229	1,113	12,342	1.72	717,316	722,900	470.3
1961	384,773	370,440	755,213	11,349	2,571	13,920	1.90	729,770	737,596	482.7
1962	395,891	381,357	777,248	11,254	10,499	22,035	2.92	755,770	766,205	500.3
1963	407,024	391,871	798,895	11,314	10,068	21,647	2.79	777,413	788,457	517.8
1964	417,023	401,098	818,121	10,256	8,705	19,226	2.41	798,824	808,300	534.0
1965	427,330	410,918	838,248	9,912	9,963	20,127	2.46	817,157	826,481	550.9
1966	440,913	423,180	864,093	10,292	15,553	25,845	3.08	837,290	849,189	571.8
1967	458,438	438,550	896,988	11,244	21,651	32,895	3.81	863,539	879,815	597.7
1968	479,938	457,862	937,800	12,073	28,739	40,812	4.55	896,761	915,757	629.2
1969	500,378	476,242	976,620	13,404	25,416	38,820	4.14	935,985	955,660	659.7
1970	520,174	493,878	1,014,052	14,075	23,357	37,432	3.83	975,063	994,201	689.6
1971	542,344	517,389	1,059,733	16,433	16,352	33,033	3.26	1,013,455	1,042,308	725.1
1972	552,368	528,504	1,080,872	14,736	5,907	21,139	1.99	1,058,175	1,070,661	743.6
1973	563,645	539,588	1,103,233	12,665	9,200	22,361	2.07	1,080,368	1,090,632	763.0
1974	580,981	556,868	1,137,849	12,429	21,691	34,616	3.14	1,103,377	1,117,742	791.2
1975	591,123	567,908	1,159,031	12,366	8,320	21,182	1.86	1,133,077	1,146,858	810.3
1976	603,185	580,508	1,183,693	12,930	11,463	24,662	2.13	1,158,176	1,170,312	832.1
1977	616,718	594,380	1,211,098	12,752	14,653	27,405	2.32	1,183,294	1,197,043	855.9
1978	626,897	604,781	1,231,678	12,817	7,763	20,580	1.70	1,210,459	1,222,134	873.9

(a) Estimates for years prior to 1976 are based on final census results; those for 1976 and later are subject to revision. (b) Excess of births registered over deaths registered, including deaths of defence personnel, whether in Australia or overseas, between September 1939 and June 1947. (c) Interstate and overseas. (d) Minus sign (—) denotes decrease. For years 1971 to 1975 includes an adjustment to balance net migration and recorded births and deaths with the June 1976 estimates of population aged 0-4 years. (e) The rates represent total increase in population during the year expressed as a proportion per cent of the population at the end of the previous year. (f) At 31 December.

VITAL STATISTICS

See NOTE at head of previous tabs.

Year	Marriages registered	Live births registered	Deaths registered (b)	Natural increase (c)	Rate per 1,000 of mean population (a)				Infant mortality	
					Marriages	Births	Deaths (b)	Natural increase (c)	Number (d)	Rate (e)
1840	25	54	20	34	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1850	37	186	54	132	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1860	151	588	209	379	10.01	38.96	13.85	25.11	n.a.	n.a.
1870	153	853	378	475	6.15	34.27	15.18	19.08	100	117.23
1880	214	933	382	551	7.29	31.79	13.02	18.77	72	77.17
1890	278	1,561	540	1,021	5.90	33.16	11.47	21.69	140	89.69
1900	1,781	5,454	2,240	3,214	10.17	31.15	12.79	18.35	688	126.15
1910	2,107	7,585	2,740	4,845	7.77	27.99	10.11	17.88	593	78.18
1920	2,932	8,149	3,388	4,761	8.88	24.69	10.27	14.42	538	66.02
1921	2,656	7,807	3,480	4,327	7.95	23.37	10.42	12.95	611	78.26
1922	2,446	8,131	3,167	4,964	7.17	23.82	9.28	14.54	452	55.59
1923	2,376	7,854	2,930	4,924	6.77	22.39	8.35	14.04	442	56.28
1924	2,596	8,301	3,263	5,038	7.15	22.86	8.99	13.87	414	49.87
1925	2,746	8,185	3,315	4,870	7.36	21.95	8.89	13.06	463	56.57
1926	2,844	8,301	3,350	4,951	7.47	21.79	8.79	13.00	409	49.27
1927	3,108	8,482	3,393	5,089	7.93	21.63	8.65	12.98	389	45.86
1928	3,309	8,704	3,640	5,064	8.12	21.36	8.63	12.43	419	48.14
1929	3,367	9,051	3,930	5,121	8.00	21.51	9.34	12.17	508	56.13
1930	3,205	9,200	3,774	5,426	7.47	21.44	8.20	12.64	430	46.74
1931	2,741	8,549	3,681	4,868	6.34	19.77	8.51	11.26	355	41.53
1932	2,904	7,965	3,715	4,250	6.68	18.31	8.54	9.77	355	44.57
1933	3,374	7,874	3,790	4,084	7.69	17.95	8.64	9.31	290	36.83
1934	3,682	7,801	4,076	3,725	8.32	17.64	9.21	8.42	319	40.89
1935	3,940	8,119	4,118	4,001	8.82	18.17	9.22	8.95	326	40.15
1936	4,242	8,479	4,230	4,249	9.38	18.75	9.35	9.39	358	42.22
1937	4,169	8,609	4,065	4,544	9.12	18.82	8.69	9.94	323	37.52
1938	4,153	9,141	4,234	4,907	8.95	19.71	9.13	10.58	309	33.80
1939	4,195	9,036	4,336	4,700	8.93	19.23	9.23	10.00	369	40.84
1940	5,234	9,121	4,486	4,635	11.06	19.27	9.48	9.79	403	44.18
1941	5,077	10,118	4,769	5,349	10.71	21.35	10.06	11.29	357	35.28
1942	5,441	9,901	5,076	4,825	11.42	20.77	10.65	10.29	365	36.86
1943	4,528	10,481	4,587	5,894	9.50	21.98	9.62	12.36	342	32.63
1944	4,506	10,870	4,478	6,392	9.36	22.58	9.30	13.28	354	32.57
1945	3,788	10,672	4,712	5,960	7.77	21.89	9.67	12.23	315	29.52
1946	5,171	12,105	4,753	7,352	10.49	24.57	9.65	14.92	376	31.06
1947	5,282	12,874	4,723	8,151	10.50	25.60	9.39	16.21	398	30.92
1948	5,186	12,931	4,685	8,246	10.08	25.13	9.10	16.02	331	25.60
1949	4,951	13,511	4,790	8,721	9.30	25.37	8.99	16.37	357	26.42
1950	5,434	14,228	5,058	9,170	9.74	25.50	9.07	16.44	386	27.13
1951	5,390	14,794	5,288	9,506	9.29	25.49	9.11	16.38	425	28.73
1952	5,389	15,413	5,209	10,204	8.97	25.66	8.67	16.99	384	24.98
1953	5,032	15,862	5,072	10,790	8.10	25.54	8.17	17.37	378	23.83
1954	5,204	15,928	5,364	10,564	8.13	24.89	8.38	16.51	359	22.54
1955	5,145	16,623	5,379	11,244	7.83	25.29	8.18	17.11	373	22.44
1956	5,080	16,916	5,572	11,344	7.53	25.08	8.26	16.82	384	22.70
1957	4,897	16,924	5,297	11,627	7.12	24.62	7.71	16.91	357	21.09
1958	5,038	16,731	5,554	11,177	7.20	23.90	7.94	15.97	360	21.52
1959	5,387	17,111	5,497	11,614	7.57	24.04	7.72	16.32	345	20.16
1960	5,323	16,926	5,697	11,229	7.36	23.41	7.88	15.53	366	21.62
1961	5,150	17,078	5,729	11,349	6.98	23.15	7.77	15.39	336	19.67
1962	5,466	17,064	5,810	11,254	7.23	22.58	7.69	14.89	380	22.27
1963	5,755	17,290	5,976	11,314	7.40	22.23	7.68	14.55	353	20.42
1964	6,023	16,685	6,429	10,256	7.55	20.93	8.06	12.86	328	19.66
1965	6,448	16,186	6,274	9,912	7.91	19.85	7.70	12.16	351	21.68
1966	7,002	17,194	6,902	10,292	8.25	20.25	8.13	12.12	343	19.95
1967	7,430	18,023	6,779	11,244	8.44	20.48	7.71	12.78	314	17.42
1968	8,086	19,541	7,468	12,073	8.83	21.34	8.16	13.18	398	20.37
1969	8,993	20,754	7,350	13,404	9.41	21.72	7.69	14.03	453	21.83
1970	9,227	21,618	7,543	14,075	9.28	21.74	7.59	14.16	459	21.23
1971	9,382	24,239	7,806	16,433	9.00	23.26	7.49	15.77	464	19.14
1972	9,120	22,177	7,441	14,736	8.52	20.71	6.95	13.76	348	15.69
1973	9,102	20,510	7,845	12,665	8.35	18.81	7.19	11.61	394	19.21
1974	9,295	20,207	7,778	12,429	8.32	18.08	6.96	11.12	327	16.18
1975	9,026	20,338	7,972	12,366	7.87	17.73	6.95	10.78	271	13.32
1976	9,517	20,670	7,740	12,930	8.13	17.66	6.61	11.05	273	13.21
1977	10,063	20,651	7,899	12,752	8.41	17.25	6.60	10.65	251	12.15
1978	9,404	20,611	7,794	12,817	7.69	16.86	6.38	10.49	230	11.16

(a) Rates for years prior to 1976 are based on final census results; those for 1976 and later are subject to revision. (b) Excludes deaths of defence personnel, whether in Australia or overseas, between September 1939 and June 1947. (c) Excess of Live births registered over Deaths registered; see also note (b). (d) Deaths under 1 year of age; included in Deaths registered. (e) Per 1,000 live births.

PUBLIC REVENUE AND EXPENDITURE: CONSOLIDATED REVENUE FUND (\$'000)

Year (a)	Revenue					Total revenue	Expenditure					Total expenditure
	Common-wealth funds	Public utilities	Departmental (b)	Taxation	Territorial (c)		Public utilities	Interest and sinking fund	Departmental			
									Education	Health	Other	
1840					5	34						30
1850					4	38		n.a.	n.a.			33
1860					35	140			3			123
1870	n.a.	n.a.	n.a.	n.a.	40	196	n.a.		7	n.a.	n.a.	226
1880					72	360			19			409
1890					217	829		40	23			803
1900		2,612	182	244	380	5,751	1,863	880	138	198	2,049	5,231
1910	1,407	3,916	551	673	649	7,315	2,440	2,006	367	328	1,533	6,895
1920	1,197	6,364	1,188	1,688	818	11,727	5,156	4,124	829	642	1,931	13,063
1921	1,188	7,517	1,618	1,911	875	13,579	6,290	4,459	980	590	2,231	14,953
1922	1,168	7,787	1,822	1,762	870	13,814	6,120	4,875	1,112	540	2,172	15,278
1923	1,166	8,000	2,092	1,975	807	14,415	5,847	5,150	1,126	538	2,100	15,226
1924	1,171	8,776	2,173	2,347	925	15,731	6,065	5,668	1,161	544	2,229	16,190
1925	1,176	9,154	2,576	2,448	1,004	16,763	6,195	6,193	1,171	587	2,191	16,880
1926	1,177	9,280	2,831	2,836	1,083	17,616	6,577	6,596	1,010	610	2,400	17,815
1927	2,306	9,941	3,274	2,423	1,102	19,502	6,958	6,590	1,294	604	3,351	19,445
1928	1,618	10,589	3,205	2,593	1,222	19,616	7,467	6,358	1,337	606	3,246	19,669
1929	1,623	10,772	3,312	2,740	1,029	19,896	7,885	6,671	1,358	634	3,278	20,448
1930	1,547	10,596	3,134	2,906	950	19,501	8,073	6,891	1,385	649	2,272	20,537
1931	1,547	9,228	3,279	2,269	678	17,374	6,654	7,243	1,346	486	3,950	20,215
1932	1,547	8,818	2,766	2,014	585	16,071	5,724	7,015	1,098	328	4,543	19,186
1933	1,947	8,873	2,701	2,257	558	16,664	5,682	7,009	1,108	333	3,761	18,392
1934	2,147	8,867	2,240	2,737	626	16,963	5,870	7,095	1,153	309	3,560	18,541
1935	2,413	9,837	1,562	3,804	812	18,663	6,391	7,100	1,225	326	3,342	18,997
1936	2,617	10,366	1,677	4,372	767	20,067	6,756	7,135	1,331	341	3,595	19,891
1937	2,013	10,633	1,727	4,807	773	20,371	7,247	7,237	1,432	381	4,024	21,113
1938	2,097	11,148	1,980	5,190	749	21,638	7,249	7,579	1,474	380	4,158	21,659
1939	2,087	11,159	1,786	5,728	634	21,899	7,857	7,779	1,514	401	3,992	22,340
1940	2,137	11,102	1,942	5,992	632	22,240	7,662	8,021	1,545	416	4,070	22,534
1941	2,247	11,366	1,916	6,255	638	22,864	7,534	8,114	1,568	421	4,262	22,842
1942	2,207	12,133	2,204	6,222	620	23,880	8,282	8,204	1,662	436	4,293	23,877
1943	7,852	13,518	2,497	1,330	634	26,303	9,377	8,183	1,627	458	5,564	26,254
1944	7,935	13,626	2,868	1,553	700	27,178	8,870	8,185	1,747	506	5,780	27,102
1945	8,044	13,618	3,402	1,715	697	27,908	10,064	8,251	1,778	485	6,261	27,899
1946	9,960	13,303	2,519	1,936	709	28,815	10,825	8,168	2,005	1,010	5,621	28,815
1947	11,461	11,769	3,105	2,138	1,053	29,962	10,866	8,012	2,447	1,369	5,910	30,057
1948	14,515	13,242	3,575	2,354	1,202	35,421	13,996	8,089	2,247	1,841	7,280	36,125
1949	17,136	15,032	4,564	2,683	1,106	41,121	16,720	8,215	3,519	2,613	9,942	42,756
1950	22,975	17,792	5,733	3,240	1,225	51,622	20,237	8,508	4,160	3,633	13,096	51,574
1951	25,343	19,085	5,911	3,912	1,230	56,312	21,974	8,994	5,269	4,465	13,180	55,994
1952	29,923	24,335	6,863	4,633	1,300	67,910	27,490	9,741	7,262	6,269	15,696	69,094
1953	39,056	22,385	8,557	5,247	1,513	77,768	32,044	10,611	8,686	6,926	17,639	78,784
1954	38,342	29,860	8,378	6,468	1,929	86,292	35,234	12,147	9,503	7,675	18,797	86,497
1955	38,759	32,645	9,433	7,258	2,014	91,440	36,089	13,857	11,217	8,026	19,838	92,408
1956	43,373	33,969	9,779	8,036	2,498	99,225	39,184	15,451	12,482	9,344	21,501	102,886
1957	46,759	37,133	12,548	9,027	2,433	108,662	42,022	17,043	13,636	10,067	33,645	112,487
1958	51,808	34,525	13,640	10,729	2,516	114,108	40,103	19,303	15,172	11,026	25,572	116,355
1959	55,496	36,080	14,522	10,368	2,783	120,136	40,317	20,844	15,819	11,967	29,244	123,506
1960	58,871	38,575	15,696	11,834	2,878	128,776	42,418	23,053	17,282	13,565	29,861	131,587
1961	65,519	40,830	16,372	12,079	2,797	138,665	41,072	24,628	19,541	15,018	35,160	141,075
1962	73,430	42,456	16,549	12,926	3,283	149,852	42,097	27,250	21,417	14,935	40,131	151,780
1963	75,847	43,559	18,134	14,762	3,501	157,182	42,267	29,980	22,850	16,073	41,254	158,687
1964	78,988	45,376	20,948	17,604	3,751	167,898	44,247	31,771	25,880	18,705	43,430	170,681
1965	88,565	39,778	26,712	19,512	4,107	180,143	43,360	34,669	29,133	21,160	49,401	184,840
1966	103,459	45,683	28,753	22,574	4,598	206,655	47,106	37,926	34,016	23,086	56,869	206,665
1967	106,748	52,787	31,461	27,536	7,655	228,146	53,182	41,662	36,746	26,429	61,512	228,174
1968	112,617	56,226	33,135	34,916	11,845	250,738	60,728	43,864	41,224	29,294	65,362	249,909
1969	126,621	54,407	33,035	41,602	17,301	275,081	64,016	47,083	46,441	33,613	74,822	276,135
1970	141,326	62,921	36,905	50,865	23,633	318,189	71,166	51,427	55,839	41,343	87,660	318,901
1971	170,396	68,350	45,583	48,434	32,187	367,252	79,717	54,178	66,341	52,575	107,129	371,620
1972	200,633	73,446	54,131	78,490	34,992	423,999	82,410	62,029	82,472	59,862	125,260	424,890
1973	200,633	69,158	66,711	97,141	37,162	473,840	88,372	65,280	94,547	71,866	144,005	477,330
1974	232,111	85,291	76,306	126,929	43,346	567,683	104,178	69,200	115,982	100,841	168,122	573,414
1975	313,846	108,921	96,930	160,307	49,010	734,240	121,494	75,300	165,705	148,161	213,042	743,373

(a) From 1900, year ended 30 June. (b) Reimbursements, fees, etc. (c) Revenue from sales, leases, licences and royalties relating to land, mining and timber.
 NOTE: This table has been replaced by a new series 'State and Local Authorities: Receipts and Outlay' on a later page.

NET EXPENDITURE FROM LOAN FUNDS; PUBLIC DEBT
(S'000)

Year (a)	Net expenditure from loan funds on public works and services (b)							Public debt (at end of year)		
	Railways, tramways and omnibuses	Electricity supply	Harbours, rivers, light- houses, etc.	Water supplies, sewerage, drainage and irrigation	Public buildings	Other	Total	Gross amount outstand- ing	Sinking fund	
1860	—	—	—	4	—	
1870	—	—	—	—	—	
1880	(c) 549	(d) 38	.....	—	n.a.	(d) 802	722	n.a.	
1890	3	6	2	(e) 76	n.a.	32	2,735	170	
1900	302	395	949	—	110	1,757	23,349	754	
1910	908	174	199	152	626	2,058	46,575	5,139	
1920	242	204	94	21	4,765	5,327	93,644	13,656	
1921	398	237	427	50	4,061	5,173	98,079	15,283	
1922	1,207	183	435	89	2,996	4,910	109,920	16,740	
1923	1,359	240	402	37	4,740	6,779	116,972	17,562	
1924	1,303	278	871	177	5,244	7,874	125,532	18,747	
1925	1,243	362	1,301	182	5,110	8,198	128,987	19,970	
1926	1,540	439	1,357	156	4,667	8,157	140,022	21,309	
1927	1,559	382	884	235	4,901	7,960	141,212	17,514	
1928	1,902	530	1,132	256	4,577	8,397	152,856	17,798	
1929	1,825	528	1,092	182	4,255	7,882	(f) 138,711	(f) 1,983	
1930	1,819	529	610	108	4,226	7,291	142,389	2,081	
1931	878	257	420	—	1,457	3,012	153,130	2,621	
1932	263	155	1,152	—	1,055	2,624	159,416	2,618	
1933	374	485	1,355	69	1,838	4,121	167,029	2,693	
1934	659	492	1,606	196	2,344	5,297	171,696	743	
1935	997	610	2,155	213	1,103	5,076	177,180	1,048	
1936	946	602	2,487	169	700	4,903	180,688	1,138	
1937	491	352	2,303	178	741	4,064	184,666	1,292	
1938	950	201	1,843	183	1,144	4,321	187,424	614	
1939	441	184	1,777	230	640	3,272	190,945	719	
1940	200	104	1,615	732	974	3,624	192,461	608	
1941	214	18	152	1,649	306	480	2,819	195,583	1,147
1942	110	25	111	605	70	437	1,359	194,718	535
1943	157	92	133	100	55	217	754	193,976	347
1944	49	31	Cr. 143	75	166	34	212	192,957	140
1945	140	11	61	150	241	492	1,094	191,790	254
1946	142	208	75	473	451	276	1,625	193,852	1,008
1947	535	332	173	1,453	772	821	4,087	198,005	1,091
1948	676	1,471	316	1,388	1,097	125	5,074	200,549	309
1949	913	2,131	449	1,626	1,099	942	7,161	207,377	126
1950	4,496	4,691	804	2,002	1,357	2,859	16,209	219,100	142
1951	3,723	6,591	1,164	4,091	2,003	3,081	20,653	246,374	17
1952	15,198	6,684	2,694	4,803	2,729	3,409	35,517	276,577	647
1953	13,533	179	2,422	4,858	5,432	8,787	35,213	306,144	1,861
1954	11,295	1,406	2,328	3,939	3,144	6,276	28,388	331,565	822
1955	9,752	1,410	1,920	5,661	3,993	6,726	29,462	355,763	442
1956	6,139	2,049	1,638	5,516	4,187	7,098	26,629	377,465	245
1957	5,519	4,200	950	7,119	5,599	9,169	32,556	410,290	112
1958	4,209	2,480	1,398	7,694	5,891	6,599	28,272	436,857	147
1959	5,711	2,200	1,428	8,395	7,410	7,199	32,342	464,237	173
1960	4,953	1,553	1,373	9,547	8,723	6,355	32,504	493,575	171
1961	4,221	400	1,966	10,314	10,479	8,037	35,418	523,070	94
1962	5,432	300	2,587	10,952	12,032	6,449	37,751	555,130	222
1963	6,204	500	2,438	10,770	13,420	5,563	38,894	587,336	485
1964	7,496	—	3,028	10,537	15,630	6,409	43,100	626,045	442
1965	6,800	794	2,822	10,957	19,948	5,457	46,779	665,620	473
1966	7,628	1,434	2,583	12,667	19,908	3,580	47,800	705,514	267
1967	9,068	2,427	1,746	13,642	18,230	5,902	51,015	748,601	216
1968	7,750	4,542	2,402	14,552	18,816	5,115	53,177	792,969	408
1969	10,547	5,679	1,190	12,560	20,116	4,765	54,859	840,343	3,015
1970	6,331	4,566	2,055	13,330	24,627	8,594	59,504	886,778	182
1971	7,194	27	2,202	15,176	25,549	13,492	63,640	924,111	582
1972	5,919	3,666	1,902	18,369	23,994	32,606	86,456	975,958	1,216
1973	4,179	4,104	2,371	23,598	32,872	21,882	89,006	1,030,060	265
1974	5,569	3,467	2,505	26,708	34,324	3,291	75,863	1,074,111	4,899
1975	6,185	4,069	3,728	24,487	45,262	6,140	89,871	1,120,313	1,037

(a) From 1900, year ended 30 June. Sinking fund at 31 March from 1900 to 1928. (b) From 1928 includes expenditure from Loan Suspense Account. (c) Total amount for the years 1877 to 1881. (d) Total amount for the years 1872 to 1881. (e) Includes expenditure prior to 1890. (f) Reduction due to operation of Financial Agreement Act of 1928.

NOTE. This table has been replaced by a new series 'State and Local Authorities: Receipts and Outlay' on a later page.

NATIONAL WELFARE FUND: EXPENDITURE IN WESTERN AUSTRALIA

NOTE. The National Welfare Fund was established, with effect from 1 July 1943, in terms of the *National Welfare Fund Act 1943*. During the first two years of operation, only maternity allowances and funeral benefits were paid from the Fund. Expenditure on these items in Western Australia was \$341,014 in 1943-44 (maternity allowances \$322,710, funeral benefits \$18,304) and \$374,302 in 1944-45 (maternity allowances \$348,164, funeral benefits \$26,138). Under the provisions of the *National Welfare Fund Act 1945*, effective from 1 July 1945, expenditure on age pensions (introduced in 1909), invalid pensions (1910), widows' pensions (1942), and child endowment (1941) became a charge on the Fund. Unemployment, sickness, and special benefits came into operation on 1 July 1945. Hospital benefit was first paid in 1945-46 (in respect of public hospitals from 1 January 1946, and private hospitals from 18 February 1946).

The principal expenditures from the Fund are shown separately in the table below.

(\$'000)

Year ended 30 June	Social services				Total expenditure on social services	Health services					Total expenditure on health services (c)	Total expenditure from National Welfare Fund (d)
	Pensions		Child endowment (a)	Un-employment, sickness, and special benefits		Hospital and nursing home benefits	Medical benefits	Pharmaceutical benefits	Tuberculosis campaign (b)	Milk for school children		
	Age and invalid	Widows'										
1946	3,721	405	2,570	144	7,186	248	....	....	....	....	248	7,435
1947	4,010	391	2,958	339	8,165	716	....	....	20	....	736	8,901
1948	5,131	484	2,898	203	9,150	730	....	....	....	....	732	9,883
1949	5,842	561	3,620	165	10,644	979	....	24	22	....	1,025	11,670
1950	6,176	594	4,607	306	12,215	1,000	....	69	148	....	1,244	13,477
1951	6,877	632	6,539	242	14,882	1,044	14	496	473	....	2,047	16,955
1952	8,213	733	6,956	118	16,620	1,023	151	1,004	627	134	2,970	19,625
1953	9,684	808	8,106	444	19,681	1,102	237	1,108	1,201	185	3,867	23,584
1954	10,750	870	7,766	399	20,435	1,314	590	1,396	1,214	213	4,763	25,235
1955	11,519	902	8,138	286	21,516	1,491	1,156	1,537	967	253	5,432	26,967
1956	13,363	1,062	9,368	374	24,887	1,559	1,461	1,626	1,017	273	5,958	30,845
1957	14,508	1,225	8,923	896	26,281	1,544	1,590	1,624	1,123	316	6,222	32,503
1958	16,154	1,415	9,143	1,265	28,725	1,858	1,746	2,006	1,041	305	6,983	35,708
1959	17,244	1,601	10,396	1,673	31,681	2,571	1,917	2,794	1,272	364	8,948	40,679
1960	19,833	1,827	9,720	1,504	33,652	3,351	2,241	3,178	1,163	458	10,427	44,079
1961	21,586	2,104	11,402	1,309	37,180	3,817	2,339	3,630	1,111	448	11,386	48,812
1962	24,344	2,371	10,205	1,887	39,575	3,996	2,455	4,809	873	526	12,695	52,270
1963	25,582	2,377	10,485	2,006	41,203	4,189	2,657	5,161	885	584	13,501	54,705
1964	27,373	3,115	12,994	1,978	46,223	4,705	2,808	5,242	839	615	14,238	60,460
1965	29,413	3,463	13,406	1,401	48,450	4,987	3,716	5,294	822	637	15,486	64,635
1966	30,760	3,602	13,624	872	49,648	5,286	4,345	5,870	758	619	16,906	67,316
1967	33,794	4,011	15,498	855	55,001	5,881	4,944	6,719	600	698	18,998	74,666
1968	36,418	4,346	14,845	758	57,295	6,598	5,265	7,117	862	850	20,860	78,894
1969	39,404	4,786	15,540	795	61,729	7,401	5,600	8,702	645	797	23,340	85,828
1970	44,637	5,600	17,894	1,039	70,725	9,153	6,373	9,836	828	797	27,262	98,577
1971	48,979	6,172	16,423	1,699	75,279	10,256	9,782	11,215	800	835	33,246	109,216
1972	57,374	7,180	18,188	4,298	89,623	14,492	13,800	12,418	907	997	43,032	133,770
1973	76,188	10,064	21,407	8,372	119,622	19,062	15,958	13,258	824	1,086	50,827	171,763
1974	98,011	13,409	19,009	8,314	147,040	21,222	16,478	16,153	803	596	56,535	205,778
1975	138,812	18,459	19,085	24,944	213,981	(e)25,758	19,437	19,830	1,023	..	68,542	284,016

(a) A number of endowments are paid every twelve weeks. Although in most years there are four such payments, there are some years in which five payments are made. (b) Comprises amounts paid to individuals in the form of allowances and to the State Government as reimbursements for expenditure incurred in the provision and maintenance of facilities. (c) Excludes some relatively minor expenditure not allocable among States. In 1974-75 such costs, for Australia as a whole, amounted to \$6.63 million and comprised \$1.63 million for the supply of blood products; radio-active isotopes, \$2.44 million; hearing aids for school children and pensioners, \$1.72 million; poliomyelitis vaccine, \$0.27 million; and other vaccines, \$0.57 million. (d) See footnote (c). (e) Includes expenditure of \$857,000 covering the operating deficits of certain nursing homes.

NOTE. This table has been replaced by a new series 'Australian Government Cash Benefits to or for Persons in Western Australia' on the next page.

STATE AND LOCAL AUTHORITIES: RECEIPTS AND OUTLAY

NOTE. This series replaces 'Public Revenue and Expenditure: Consolidated Revenue Fund' and 'Net Expenditure from Loan Funds; Public Debt' on earlier pages.

(\$ million)

Year ended 30 June	Receipts and financing items						Outlay				
	Taxes, fees, etc.	Income from public enterprises	Property income	Grants from the Australian Government	Financing items	Total funds available	Final consumption expenditure	Gross capital formation	Transfer payments	Net advances	Total outlay
1966	52.3	14.5	9.9	146.9	99.4	323.0	104.5	156.8	54.0	7.8	323.0
1967	63.3	19.8	13.3	153.5	93.0	342.8	116.3	161.6	58.5	6.3	342.8
1968	74.6	22.7	17.8	164.8	94.0	373.9	133.4	173.5	60.4	6.6	373.9
1969	87.8	19.4	24.5	180.4	93.0	405.1	149.0	184.7	64.3	7.1	405.1
1970	103.0	24.2	32.0	203.5	115.2	477.9	176.3	220.3	72.1	9.3	477.9
1971	104.6	25.6	41.2	256.1	121.5	549.0	214.1	249.1	76.1	9.6	549.0
1972	138.3	33.8	44.6	278.6	186.8	682.2	265.7	309.7	91.1	15.7	682.2
1973	160.0	26.4	52.9	323.5	133.7	696.5	304.1	274.0	103.0	15.4	696.5
1974	195.5	24.6	63.5	394.8	129.1	807.5	381.8	306.5	111.4	7.9	807.5
1975	255.5	25.5	72.1	553.0	231.7	1,137.8	563.0	426.6	123.5	r 24.8	1,137.8
1976	324.8	49.9	70.8	772.6	141.5	1,359.6	r 736.2	465.5	140.1	17.8	1,359.6
1977	372.8	24.5	89.0	845.2	r 244.0	1,575.6	883.8	513.5	161.1	17.3	1,575.6
1978	424.8	23.1	106.8	974.1	276.6	1,805.4	1,009.0	592.6	191.4	12.5	1,805.4

AUSTRALIAN GOVERNMENT CASH BENEFITS TO OR FOR PERSONS IN WESTERN AUSTRALIA

NOTE. This series replaces 'National Welfare Fund: Expenditure in Western Australia from Inception' on the previous page.

(\$'000)

Year ended 30 June	Health				Social security and welfare						Other services	Total cash benefits.
	Hospital and nursing home benefits	Medical and pharmaceutical benefits	Other	Total	Aged and invalid pensions	Unemployment, sickness and special benefits	Widows' pensions	Child endowment	Other	Total		
1971	10,256	18,318	865	29,439	48,979	1,698	6,172	16,423	25,895	99,167	3,563	132,169
1972	14,494	23,153	1,029	38,676	57,374	4,298	7,234	18,188	21,599	108,693	4,258	151,627
1973	19,059	25,463	1,232	45,754	76,188	8,372	10,064	21,407	25,286	141,317	6,645	193,716
1974	21,223	28,225	600	50,048	98,011	8,314	13,409	19,009	35,450	174,193	10,219	234,460
1975	25,759	33,581	847	60,187	138,812	24,944	18,459	19,084	49,986	251,285	16,378	327,850
1976	30,810	65,279	941	97,030	183,513	41,252	24,809	22,737	62,115	334,426	23,444	454,900
1977	29,446	51,570	1,004	82,020	217,185	51,142	27,700	89,514	75,419	460,960	24,261	567,241
1978	31,574	38,510	1,018	71,102	255,432	69,023	32,290	90,809	89,378	536,932	27,460	635,494

SOCIAL SERVICE BENEFICIARIES AND REPATRIATION PENSIONS: WESTERN AUSTRALIA

Year ended 30 June	Social service benefits							Repatriation pensions				
	Pensioners (a)				Endowed children (a)			Un-employment benefit (g)	Disability		Service	
	Age (b) (c)	Invalid (b) (c)	Total Age and Invalid	Widow	Under 16 years of age (d) (e)	Students (f)	Total		Number (a) (h)	Amount paid \$'000	Number (a) (i)	Amount paid \$'000
1910	2,361	..	2,361					n.a.	n.a.			
1920	4,791	1,788	6,579					22,311	1 087			
1921	5,002	2,004	7,006					23,235	1,501			
1922	5,316	2,022	7,338					23,561	1,468			
1923	5,599	2,063	7,662					23,878	1,430			
1924	6,099	2,250	8,349					24,301	1,430			
1925	6,448	2,392	8,840					25,138	1,439			
1926	6,940	2,632	9,572					25,927	1,521			
1927	7,326	2,699	10,025					26,689	1,535		not applicable	
1928	7,713	2,866	10,579					27,495	1,545			
1929	8,256	3,029	11,285					28,084	1,575			
1930	8,913	3,284	12,197					28,407	1,586			
1931	10,461	3,554	14,015				not applicable	28,063	1,575			
1932	11,458	3,790	15,248					26,345	1,397			
1933	11,097	3,827	14,924					25,475	1,259			
1934	11,854	4,122	15,976					24,940	1,255			
1935	12,840	4,290	17,130					24,436	1,304			
1936	13,740	4,482	18,222					23,882	1,326			
1937	14,453	4,634	19,087					22,886	1,361	375	5	
1938	15,332	4,863	20,195					23,375	1,379	1,204	73	
1939	16,278	5,116	21,394					22,617	1,394	1,454	92	
1940	19,024	3,454	22,478					21,449	1,370	1,489	103	
1941	19,423	3,425	22,848					20,388	1,343	1,545	112	
1942	19,156	3,557	22,713		68,533	68,533		19,757	1,337	1,561	129	
1943	18,575	3,580	22,155	2,596	65,777	65,777		20,245	1,506	1,454	147	
1944	18 109	3,443	21,552	2,796	66,938	66,938		22,511	1,884	1,369	144	
1945	17,713	3,414	21,127	2,894	68,316	68,316		27,686	2,105	1,403	144	
1946	18,797	3,538	22,335	2,870	69,325	69,325	422	27,921	2,530	1,343	173	
1947	21,162	4,002	25,164	2,570	71,968	71,968	1,095	42,127	2,856	1,580	192	
1948	22,210	4,387	26,597	2,719	75,186	75,186	409	44,818	3,000	1,715	290	
1949	23,739	4,340	28,079	2,876	79,693	79,693	126	46,785	3,516	1,832	301	
1950	24,316	4,294	28,610	2,883	133,557	133,557	267	48,878	3,776	1,953	331	
1951	24,317	4,184	28,501	2,789	172,186	172,186	60	51,027	4,545	2,022	369	
1952	24,782	3,964	28,746	2,676	183,257	183,257	57	52,071	5,429	2,136	449	
1953	25,679	3,996	29,675	2,686	192,991	192,991	844	52,607	5,843	2,343	556	
1954	27,248	4,101	31,349	2,753	202,098	202,098	427	53,352	6,174	2,468	605	
1955	28,833	4,191	33,024	2,848	212,025	212,025	157	54,117	6,877	2,692	723	
1956	30,244	4,425	34,669	3,015	220,792	220,792	473	54,427	6,902	3,648	964	
1957	32,192	5,039	37,231	3,243	230,922	230,922	1,940	54,987	7,169	4,306	1,095	
1958	33,124	5,519	38,643	3,542	237,732	237,732	2,330	55,251	8,017	4,672	1,395	
1959	34,629	5,941	40,570	3,833	245,090	245,090	2,852	56,008	7,893	5,009	1,552	
1960	36,575	6,152	42,727	4,039	250,449	250,449	2,512	56,644	8,471	5,344	1,751	
1961	37,656	6,945	44,601	4,348	257,037	257,037	2,154	57,123	9,310	6,101	2,102	
1962	39,104	7,826	46,930	4,570	266,067	266,067	2,932	57,947	10,177	7,115	2,687	
1963	40,661	8,170	48,831	4,486	270,736	270,736	2,674	57,580	10,527	7,526	2,927	
1964	41,819	8,306	50,125	4,734	275,910	275,910	2,677	57,047	11,564	7,754	3,177	
1965	42,706	8,615	51,321	4,926	279,642	279,642	1,679	55,920	11,447	7,780	3,320	
1966	43,876	8,575	52,451	5,071	286,534	286,534	8,769	54,560	12,637	7,757	3,571	
1967	45,741	8,307	54,048	5,228	295,628	295,628	10,697	52,967	11,889	7,674	3,612	
1968	48,850	8,310	57,160	5,482	306,492	306,492	10,999	51,193	11,934	7,586	3,777	
1969	50,432	8,413	58,845	5,559	318,147	318,147	11,446	49,526	13,061	7,298	4,071	
1970	56,017	7,933	63,950	6,086	322,058	322,058	474	47,993	12,811	7,783	4,491	
1971	58,224	8,155	66,379	6,392	333,848	333,848	872	46,514	13,140	7,767	4,769	
1972	60,523	8,485	69,008	6,795	343,455	343,455	2,808	45,079	14,413	7,864	5,298	
1973	68,701	9,518	78,219	7,948	346,769	346,769	4,960	44,093	15,462	9,599	7,394	
1974	76,124	10,406	86,530	8,763	343,404	343,404	2,863	42,807	17,363	10,669	10,191	
1975	79,831	10,961	90,792	9,442	349,702	349,702	13,598	41,747	21,845	11,814	15,149	
1976	84,087	12,265	96,352	10,027	352,998	352,998	20,151	40,619	23,118	13,472	20,560	
1977	86,470	13,263	99,733	10,691	(j)	(j)	376,346	15,706	25,587	15,338	26,933	
1978	94,491	13,653	108,144	11,494	(j)	(j)	377,545	20,470	28,728	16,975	33,785	

(a) Number at 30 June. (b) Figures for dates prior to 30 June 1957 exclude pensioners in benevolent homes. (c) During 1939-40 all invalid pensions in force were specially reviewed, and at 30 June 1940 all those pensioners who had become qualified for age pension by reason of age and residence were transferred to the age pensioner category. (d) Endowed children in institutions are excluded from figures shown for dates prior to 30 June 1957; at that date there were 3,347 such children. (e) From the commencement of the child endowment scheme on 1 July 1941 until 20 June 1950, endowment was not paid in respect of the first or only child of a family. (f) Persons aged 16 and under 21 years who are receiving full-time education at a school, college or university and are not in employment or engaged in work on their own account. (g) Average of number of persons on benefit at end of each week. (h) Includes pensions paid to incapacitated veterans and to the dependants of incapacitated or deceased veterans. (i) Comprises pensions paid to veterans and their dependants. (j) From 15 June 1976 new rates and conditions applied for a combined scheme known as family allowances.

BANKING AND INSURANCE

Year	Trading banks			Savings banks (c)		Insurance			
	Depositors' balances (a)	Loans (other than loans to authorised dealers in the short-term money market), advances and bills discounted (a)	Weekly debits to customers' accounts (b)	Operative accounts at end of year	Depositors' balances at end of year	Life		General (e) (f)	
		Sum insured under policies existing at end of year (d)				Premiums	Claims		
								Ordinary (including super-annuation)	Industrial
	\$'000	\$'000	\$m	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
1870	n.a.	n.a.		895	27	n.a.	n.a.		
1880	n.a.	n.a.		1,299	45	n.a.	n.a.		
1890	1,904	2,809		3,014	69	n.a.	n.a.	n.a.	n.a.
1900	8,781	5,514		33,646	2,598	6,916	439		
1910	12,627	12,228		84,262	6,955	12,717	1,170		
1920	24,742	21,594		211,415	14,516	21,640	4,089	1,080	368
1926	(g) 28,887	(g) 25,745		292,353	17,940	33,970	7,317	1,832	901
1927	29,301	29,233		309,176	13,389	36,279	8,042	(g) 831	(g) 432
1928	31,025	30,592		330,284	21,291	38,926	8,750	2,111	1,200
1929	26,811	34,480		350,046	23,218	41,268	9,366	2,391	1,205
1930	25,524	41,773		367,665	23,457	41,656	9,003	2,452	1,163
1931	24,455	41,635		371,662	21,735	39,906	8,353	1,914	971
1932	28,563	39,292	n.a.	206,997	20,435	39,181	8,585	1,693	655
1933	29,785	38,433		194,095	20,129	39,447	8,181	1,786	796
1934	32,853	38,742		192,915	20,798	40,631	9,394	1,746	801
1935	32,853	38,742		197,611	21,858	42,899	9,945	1,929	910
1936	36,206	41,061		208,990	23,034	45,608	10,688	2,176	1,015
1937	38,731	43,232		217,247	23,670	48,857	11,373	2,410	1,366
1938	39,463	44,532		225,118	24,075	51,653	11,944	2,641	1,526
1939	41,230	45,141		232,564	24,792	53,853	12,609	2,746	1,462
1940	41,181	47,774		233,649	23,720	54,708	13,086	2,884	1,460
1941	47,099	45,617		238,820	25,042	55,842	13,875	2,792	1,236
1942	51,918	43,638		250,153	27,642	55,881	15,311	2,806	1,245
1943	61,135	37,827		279,469	37,769	57,865	16,656	2,347	1,014
1944	71,529	33,462		301,225	51,581	61,380	17,962	2,369	897
1945	74,846	31,504		316,565	63,526	66,254	19,024	2,565	1,154
1946	(h) 66,652	(h) 33,726	(i) 11.6	340,737	76,578	77,608	21,036	2,890	1,223
1947	72,490	45,388	14.2	349,091	73,250	88,016	23,054	3,503	1,737
1948	82,032	48,754	17.4	358,709	72,365	98,891	25,139	4,188	2,089
1949	100,971	49,904	21.4	365,130	75,070	111,213	27,127	5,071	2,053
1950	116,458	55,301	27.4	378,670	79,225	126,332	29,503	6,281	2,916
1951	149,244	66,680	38.6	392,790	89,345	148,724	32,460	7,782	3,947
1952	170,923	83,353	43.6	403,678	94,342	171,007	35,257	9,950	5,877
1953	170,234	87,353	44.2	414,288	99,589	195,499	38,110	11,558	6,171
1954	181,863	106,429	50.8	422,480	105,229	221,568	40,240	12,449	6,224
1955	180,895	137,830	52.4	426,637	107,258	251,543	41,487	13,707	7,349
1956	174,070	142,156	53.9	446,419	115,868	282,139	42,114	14,723	8,199
1957	185,576	135,074	57.1	473,548	125,386	317,264	42,535	15,169	9,416
1958	186,478	141,198	60.4	497,690	131,896	352,360	43,003	17,064	9,416
1959	180,300	147,106	61.5	527,079	142,998	396,322	43,279	18,679	10,899
1960	192,076	142,064	69.7	550,966	157,246	459,740	44,325	21,569	12,771
1961	190,094	146,244	75.7	577,619	161,424	523,636	44,745	23,583	15,022
1962	209,274	139,204	80.4	625,070	181,056	597,892	46,754	25,133	15,113
1963	219,952	153,528	88.2	683,417	208,812	679,161	47,983	27,319	18,262
1964	242,268	164,878	96.4	736,009	239,766	774,550	50,588	30,336	20,234
1965	272,430	186,000	106.3	786,340	261,654	881,652	53,565	33,347	21,429
1966	310,432	195,190	122.4	848,562	292,871	1,005,119	57,916	37,565	23,360
1967	355,899	212,023	138.6	905,349	330,807	1,164,613	63,960	43,330	27,131
1968	398,837	252,627	169.1	970,120	373,602	1,383,330	69,961	48,310	31,160
1969	462,559	280,147	209.0	1,036,180	412,984	1,651,918	75,605	56,863	37,748
1970	558,017	323,824	246.4	1,096,466	431,877	1,948,690	83,255	68,211	41,178
1971	544,732	351,110	295.3	1,153,420	464,611	2,307,828	91,293	78,995	47,286
1972	552,546	357,410	318.4	1,205,448	511,457	2,670,637	95,137	87,187	53,112
1973	693,456	443,330	355.9	1,250,576	608,133	3,137,437	101,495	90,465	58,389
1974	829,002	604,460	439.4	1,327,699	684,974	3,660,469	105,055	107,043	75,094
1975	906,589	673,526	515.9	1,401,485	779,427	4,344,464	108,739	133,931	119,590
1976	1,092,350	791,376	680.0	1,443,883	897,693	5,079,654	113,938	r 167,499	r 123,779
1977	1,376,813	r 927,709	814.4	1,466,200	960,548	5,854,286	115,468	210,531	144,076
1978	r 1,448,206	r 1,163,207	975.9	1,511,092	r 1,048,510	n.y.a.	n.y.a.	n.y.a.	n.y.a.
1979	1,621,852	1,368,657	1,151.8	1,539,416	1,133,627	n.y.a.	n.y.a.	n.y.a.	n.y.a.

(a) Average based on amounts as at close of business each week. From 1927, year ended 30 June. (b) Weekly average for year ended 30 June. Excludes debits to Australian Government accounts at city branches. From 1946-47 includes The Rural and Industries Bank of Western Australia (Rural Department). (c) From 1900, year ended 30 June. (d) Actual date varies according to the financial year of individual insurance companies. (e) From 1927, year ended 30 June. (f) Includes transactions of The Motor Vehicle Insurance Trust, which became the sole insurer in respect of motor vehicle (third party) insurance from 1 July 1949. (g) Six months ended 30 June. (h) Average for nine months to 30 June. (i) Ten months ended June 1946.

TRANSPORT; CUSTOMS AND EXCISE

Year	State Government railways (a)				Private railways	Customs and excise revenue (b)			Shipping (b) (c)	
	Route kilometres at end of year (d)	Operating revenue (e)	Operating expenses (e)	Paying goods and livestock carried (e)	Route kilometres at end of year (b) (f)	Customs	Excise	Total	Clearances to ports outside the State	
									Number	Net tons
1870	-	\$'000	\$'000	'000 tonnes	-	\$'000	\$'000	\$'000	131	'000 68
1880	55	5	8	2	61	81	-	81	131	68
1890	303	90	103	62	620	186	-	186	167	126
1900	2,181	2,519	1,723	1,406	1,003	356	-	356	268	420
1910	3,452	3,275	2,194	2,278	1,452	1,889	63	1,952	747	1,606
1920	5,695	4,584	4,001	2,656	1,477	1,543	213	1,756	726	2,372
1921	5,695	5,440	4,844	2,646	1,440	1,311	799	2,110	729	2,659
1922	5,695	5,440	4,844	2,646	1,440	2,018	1,176	3,194	789	2,826
1923	5,721	5,656	4,658	2,589	1,413	1,550	1,148	2,698	874	3,231
1924	5,840	5,832	4,421	2,666	1,392	2,005	1,145	3,150	709	3,088
1925	6,008	6,455	4,596	3,072	1,307	2,377	1,190	3,567	673	3,101
1926	6,220	6,719	4,710	3,338	1,374	2,707	1,177	3,884	805	3,658
1927	6,305	6,220	5,018	3,289	1,423	2,791	1,249	4,040	685	3,256
1928	6,400	7,216	5,371	3,494	1,403	3,356	1,332	4,688	799	3,797
1929	6,565	7,716	5,822	3,757	1,349	3,454	1,429	4,883	812	3,806
1930	6,616	7,600	6,111	3,729	1,355	3,788	1,431	5,219	808	3,674
1931	6,729	7,318	6,226	3,587	1,363	3,882	1,527	5,409	794	3,932
1932	6,816	6,398	5,222	3,204	1,329	2,166	1,304	3,470	742	3,686
1933	6,981	5,845	4,247	2,893	1,336	2,117	1,327	3,444	694	3,530
1934	7,017	5,864	4,223	2,886	1,360	2,430	1,719	4,149	691	3,564
1935	7,015	5,839	4,373	2,695	1,374	2,574	1,628	4,202	683	3,568
1936	7,014	6,624	4,765	2,950	1,399	2,766	1,736	4,502	730	3,775
1937	7,012	6,892	4,976	2,933	1,416	3,239	1,830	5,069	725	3,831
1938	7,042	6,924	5,240	2,843	1,405	3,504	1,926	5,430	761	3,754
1939	7,046	7,356	5,420	3,111	1,374	3,710	1,955	5,665	866	4,111
1940	7,051	7,198	5,823	2,905	1,358	3,381	2,218	5,599	930	4,327
1941	7,051	7,112	5,657	2,702	1,337	3,769	2,395	6,164	805	3,751
1942	7,051	7,144	5,516	2,646	1,312	2,934	3,149	6,083	556	3,087
1943	7,051	7,993	6,052	2,681	1,316	2,273	3,167	6,030	492	2,508
1944	7,051	8,836	6,895	2,545	1,366	1,646	5,569	7,215	312	1,467
1945	7,051	8,773	7,592	2,601	1,334	1,661	6,225	7,886	385	1,580
1946	7,051	8,552	7,529	2,951	1,284	1,783	5,705	7,488	382	1,528
1947	7,051	8,213	8,053	2,771	1,136	2,707	6,508	9,215	490	2,473
1948	6,997	8,092	8,848	2,618	1,221	4,377	6,894	11,271	572	2,646
1949	6,997	9,198	11,140	2,903	1,189	5,784	9,264	15,048	752	3,431
1950	6,954	10,430	13,405	2,781	1,181	6,987	10,254	17,241	950	4,678
1951	6,843	12,944	15,003	2,889	1,246	10,166	10,943	21,109	1,006	5,272
1952	6,804	14,392	17,238	3,082	1,210	10,839	11,973	22,812	1,060	5,552
1953	6,619	18,327	21,331	3,112	1,210	14,045	16,312	30,357	1,045	5,524
1954	6,611	15,945	24,175	2,661	1,165	9,908	18,395	28,303	1,025	5,407
1955	6,616	22,749	27,512	3,257	1,220	12,241	19,447	31,688	1,005	5,320
1956	6,616	25,061	27,871	3,461	1,204	12,196	21,812	34,008	1,136	6,144
1957	6,629	26,548	29,986	3,854	1,168	8,473	24,092	32,565	1,268	6,776
1958	6,626	28,088	32,023	4,291	1,136	5,504	30,078	35,582	1,244	6,531
1959	6,626	25,950	29,685	3,647	925	5,476	32,547	38,023	1,219	6,499
1960	6,626	27,400	29,865	3,976	925	4,800	32,398	37,198	1,282	6,607
1961	6,630	30,077	30,816	4,605	832	5,614	33,634	39,248	1,403	7,234
1962	6,635	33,076	31,103	4,911	755	7,470	33,835	41,305	1,598	8,547
1963	6,198	35,608	31,527	5,428	898	7,156	35,705	42,861	1,687	8,962
1964	6,111	33,429	31,150	4,870	888	8,996	35,944	44,940	1,528	8,252
1965	5,918	35,190	32,250	5,271	665	10,369	37,839	48,208	1,580	8,627
1966	6,008	36,686	32,920	5,313	34	10,692	43,349	54,041	1,560	8,593
1967	6,030	43,669	35,985	6,486	(j) 460	15,251	53,536	68,787	1,711	9,528
1968	6,140	49,120	40,170	7,999	455	13,569	58,176	71,745	1,690	10,977
1969	6,140	52,773	42,623	9,053	455	19,468	62,903	82,371	1,770	12,916
1970	6,157	50,558	44,503	9,078	(k) 882	21,202	69,289	90,490	1,848	15,372
1971	6,161	57,240	48,550	10,837	884	24,649	76,637	101,286	2,165	21,005
1972	6,175	61,917	53,205	13,457	884	32,262	88,978	121,240	2,499	27,765
1973	6,116	64,846	57,112	13,867	884	30,072	101,883	131,955	2,425	28,734
1974	6,168	64,793	61,011	13,706	(l) 1,220	25,714	106,054	131,768	2,481	34,291
1975	6,192	79,861	74,403	15,059	1,222	30,612	138,197	168,809	2,655	40,122
1976	6,075	108,309	96,406	16,348	(m) 1,181	44,114	148,310	192,424	2,739	45,361
1977	6,163	132,312	110,893	17,812	1,179	46,767	183,838	230,605	2,613	42,040
1978	6,165	138,311	123,382	19,003	1,155	63,037	203,852	266,889	2,562	43,067
1979	5,764	150,588	140,426	18,625	1,150	68,117	216,929	285,046	2,547	42,010

(a) From 1900, year ended 30 June. (b) From 1915, year ended 30 June. (c) From 1967 excludes vessels of 200 net tons and under. (d) Open for general and passenger traffic. (e) From 1942 includes operations of Railway Road Services, which began in November 1941. (f) From 1900 to 1964 includes 446 kilometres of line open for general and passenger traffic. (g) Decrease due to proclamations of closure issued by authority of the *Railways (Cite-Big Bell and other Railways) Discontinuance Act, 1960*. (h) Increase due to the transfer of all government-operated timber railways to private control. (i) Decrease due to transfer of Midland Railway Company to Western Australian Government Railways and to closure of timber and mining railways. (j) Increase due to opening of Goldsworthy-Port Hedland, Tom Price-Dampier and Westmine-Tilley iron ore railways. (k) Increase due to opening of Newman-Port Hedland iron ore railway. (l) Increase due to opening of Panawonica-Cape Lambert iron ore railway and extensions to Goldsworthy and Tom Price railways. (m) Decrease due to closure of Westmine-Tilley iron ore railway and timber railways.

MOTOR VEHICLE REGISTRATIONS; EXPORTS OF WHEAT

Year	New motor vehicles registered (a)				Motor vehicles on register (b)				Wheat exports (c)	
	Motor cars (d)	Utilities, panel vans, trucks and omnibuses	Motor cycles (e)	Total	Motor cars (f)	Utilities, panel vans, trucks and omnibuses	Motor cycles (e)	Total	Quantity (tonnes)	Value (\$'000)
1860									1	-
1870									-	-
1880					n.a.				408	8
1890									-	-
1900									27	-
1910									54,839	813
1920					3,404				249,049	5,083
1921					4,181				178,969	5,860
1922					4,403				281,871	6,076
1923					7,280				145,957	2,942
1924					11,162				297,330	5,085
1925					15,261				407,852	10,316
1926	n.a.	n.a.	n.a.	n.a.	20,011				358,565	8,373
1927					19,451	5,819			444,430	9,334
1928					24,205	8,104			712,884	13,989
1929					27,174	9,767			710,081	13,384
1930					31,130	11,358	7,707	50,195	679,109	12,258
1931					27,741	10,880	6,777	45,398	1,155,028	10,577
1932					28,608	12,094	6,700	47,402	1,003,383	10,647
1933					27,969	12,626	6,700	47,295	835,381	9,323
1934					28,761	13,937	6,284	48,982	635,755	6,834
1935					30,578	15,530	6,597	52,705	678,647	7,844
1936					32,329	17,362	6,861	56,552	405,430	5,607
1937					34,180	19,919	6,977	61,076	375,030	7,255
1938					36,386	22,596	7,079	66,061	599,776	9,667
1939	3,297	1,814	568	5,679	38,039	24,441	7,199	69,679	615,452	6,055
1940	2,871	1,517	399	4,787	38,907	25,026	6,789	70,722	417,214	4,669
1941	1,015	632	200	1,847	36,995	24,788	6,704	68,487	404,314	5,858
1942	250	353	74	677	29,022	21,625	4,057	54,704	266,005	4,021
1943	218	151	57	426	29,750	21,189	3,935	54,874	139,833	2,111
1944	19	1,102	109	1,230	30,295	22,459	4,324	57,078	328,138	5,813
1945	40	597	192	829	30,635	23,943	4,501	59,079	642,015	14,955
1946	101	456	271	828	31,408	28,904	6,799	67,111	367,682	11,696
1947	1,354	1,126	678	3,158	32,879	32,097	8,199	73,175	185,102	8,964
1948	2,963	1,975	1,059	5,997	35,596	35,285	8,877	79,758	525,857	33,809
1949	4,684	3,122	1,769	9,575	40,119	38,901	10,974	89,994	500,793	28,100
1950	8,926	4,707	2,346	15,979	48,632	43,206	12,897	104,735	585,406	33,384
1951	8,201	6,610	2,802	17,613	56,235	47,908	14,535	118,678	830,346	51,688
1952	8,836	5,750	2,740	17,326	64,277	52,627	16,047	132,951	730,002	45,728
1953	6,879	4,881	1,416	13,176	69,917	56,445	15,565	141,927	634,639	40,347
1954	9,926	5,601	1,258	16,785	78,312	60,362	15,243	153,917	185,066	11,272
1955	12,394	5,993	1,202	19,589	90,255	63,870	14,662	168,787	526,212	27,478
1956	10,100	5,203	1,089	16,392	99,206	62,809	12,959	174,974	619,779	28,860
1957	9,321	4,418	1,192	14,931	104,506	63,315	12,731	180,552	1,273,578	61,291
1958	10,140	5,562	1,702	17,404	111,825	63,598	12,631	188,054	725,131	40,861
1959	10,389	5,140	2,071	17,600	119,957	65,588	12,814	198,359	639,647	33,113
1960	13,492	5,695	1,949	21,136	130,476	68,702	12,876	212,054	999,164	49,442
1961	15,161	5,542	1,080	21,783	141,612	70,974	12,589	225,175	1,428,272	71,280
1962	17,082	5,833	902	23,817	155,447	74,224	12,390	242,061	2,010,766	104,356
1963	23,175	6,367	754	30,296	169,800	75,500	11,500	256,800	1,380,372	72,197
1964	24,958	7,013	628	32,599	186,200	77,700	10,200	274,100	1,497,453	77,881
1965	23,304	6,897	553	30,754	197,800	78,500	8,900	285,200	1,102,420	56,955
1966	23,418	9,170	706	33,294	212,600	83,300	8,400	304,300	1,887,996	96,515
1967	27,922	9,404	1,158	38,484	231,200	86,300	8,400	325,900	2,312,777	126,918
1968	33,368	10,448	1,525	45,341	252,300	90,800	8,900	352,000	2,373,195	121,764
1969	35,379	11,018	1,539	47,936	275,300	94,500	9,600	379,400	1,521,376	77,987
1970	37,764	11,138	1,945	50,847	301,000	99,900	10,800	411,700	1,814,787	86,593
1971	37,769	10,872	2,718	51,359	328,500	104,900	12,200	445,600	2,670,890	130,564
1972 (g)	37,274	9,819	3,985	51,078	346,300	104,600	14,200	465,100	2,587,504	128,132
1973 (g)	36,904	11,425	4,914	53,243	364,400	107,400	16,800	488,600	2,249,934	111,744
1974 (g)	40,302	12,241	7,062	59,605	389,300	112,700	21,000	523,000	2,139,973	211,333
1975 (g)	41,474	13,693	6,613	61,780	414,800	125,000	24,600	564,400	3,241,895	409,758
1976 (g)	40,338	15,863	5,731	61,932	437,200	140,000	27,600	604,800	3,215,792	375,897
1977 (g)	44,363	17,362	3,887	65,612	473,731	153,174	28,022	654,927	3,009,101	316,258
1978	40,990	16,538	3,339	60,867	500,365	167,107	28,051	695,523	3,795,969	351,190
1979	40,882	14,025	2,713	57,620	n.y.a.	n.y.a.	n.y.a.	n.y.a.	n.y.a.	n.y.a.

(a) Year ended 30 June. (b) From 1929, at 30 June; for earlier years, at various dates. For years before 1946, excludes Australian Government-owned vehicles; from 1946, includes Australian Government-owned vehicles other than those of defence services. From 1956, new series based on the results of the periodic census of motor vehicles. (c) From 1920, year ended 30 June; from 1978, excludes interstate exports. (d) From 1959, includes station wagons previously included with commercial vehicles. (e) Including motor scooters. (f) From June 1956, includes station wagons previously included with commercial vehicles. (g) Figures for motor vehicles on register are based on final results of the census of motor vehicles on register at 30 September 1976.

EXPORTS OF CERTAIN COMMODITIES

Year (a)	Wool				Meats—Fresh, chilled or frozen					
	Greasy (b)		Degreased		Beef and veal		Mutton and lamb		Pigmeat	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	tonnes	\$'000	tonnes	\$'000	tonnes	\$'000	tonnes	\$'000	tonnes	\$'000
1840	23	5	|	|	....	....	....	....	....	....
1850	141	31	|	|	....	....	....	....	....	....
1860	298	99	|	|	....	....	....	....	....	....
1870	811	179	(c)	(c)	....	....	....	....	....	....
1880	1,970	543	|	|	....	....	....	....	....	....
1890	3,161	523	|	|	....	....	....	....	....	....
1900	3,927	505	198	36	(d)	(d)	(d)	(d)	(d)	(d)
1910	11,692	1,894	191	40	....	....	....	....	....	....
1920	25,530	7,218	1,504	657	300	33	....	....	....	....
1921	19,073	4,593	492	183	2,614	248	54	7	20	5
1922	24,726	5,673	1,896	731	1,124	79	....	....	....	....
1923	17,815	5,986	1,202	479	4,516	305	393	55	—	—
1924	19,214	8,028	688	446	4,829	272	202	26	....	....
1925	15,296	7,030	586	443	3,223	198	....	....	....	....
1926	21,783	6,703	756	353	3,683	240	....	....	....	....
1927	23,646	6,694	752	342	3,038	198	....	....	....	....
1928	27,398	9,734	381	192	5,001	272	103	15	....	....
1929	25,493	7,615	382	207	4,224	226	....	....	....	....
1930	28,022	5,422	465	136	5,162	272	....	....	....	....
1931	31,478	4,652	629	121	5,132	244	388	35	95	7
1932	29,298	4,540	892	151	5,098	235	958	103	554	53
1933	30,931	4,871	1,222	236	6,534	276	174	15	430	37
1934	31,751	9,131	1,237	491	5,716	234	613	49	303	29
1935	36,537	6,479	1,565	348	5,476	233	2,258	236	542	55
1936	35,602	8,892	1,398	451	7,727	321	2,521	282	703	65
1937	26,455	7,854	1,110	475	5,092	249	2,066	247	592	67
1938	24,245	5,877	1,227	446	5,191	314	3,949	470	373	52
1939	31,030	6,072	1,636	469	7,485	497	5,341	638	580	80
1940	29,610	7,603	1,655	661	4,826	329	4,665	533	2,263	324
1941	9,064	2,601	1,270	518	5,583	407	4,396	496	6,015	851
1942	34,355	9,836	2,235	1,030	3,576	327	3,684	435	4,670	682
1943	12,934	4,163	1,239	594	—	—	3,985	458	1,053	155
1944	31,145	10,842	2,095	917	1,445	190	6,664	763	1,568	238
1945	23,613	8,082	2,216	1,025	1,202	168	4,002	410	1,697	254
1946	49,070	17,136	5,328	2,778	4,317	558	2,269	275	3,401	545
1947	34,104	15,561	7,918	4,960	6,358	691	4,081	409	1,306	248
1948	36,380	27,801	7,291	5,443	6,353	604	5,079	584	303	53
1949	38,972	36,717	6,163	6,352	8,056	840	4,607	608	624	179
1950	37,832	40,071	7,934	10,852	8,625	1,183	2,392	485	163	59
1951	36,619	96,493	5,014	16,066	7,699	1,221	939	217	279	113
1952	41,483	57,291	5,150	10,389	6,028	1,135	1,044	301	424	232
1953	45,772	67,759	5,717	11,363	5,016	1,437	6,569	1,463	463	303
1954	45,677	71,346	5,406	10,914	6,148	1,748	3,309	875	215	152
1955	43,796	59,296	6,015	11,267	6,776	2,038	3,225	1,328	1,049	532
1956	51,387	57,894	7,595	12,419	7,601	2,343	6,602	2,156	743	482
1957	49,252	71,251	8,503	16,259	4,127	1,221	5,788	1,741	733	588
1958	43,750	57,224	8,417	15,462	11,025	3,302	5,083	1,900	2,324	1,462
1959	50,408	46,313	9,872	12,224	10,535	4,342	9,944	3,177	1,983	1,178
1960	50,396	58,137	12,442	19,820	13,597	6,742	8,735	2,378	1,188	953
1961	59,830	59,290	11,851	15,552	12,413	6,141	11,367	3,901	1,894	1,501
1962	62,094	68,177	11,490	15,688	12,544	6,299	8,468	2,436	3,151	2,025
1963	59,617	66,401	11,441	15,706	17,268	9,382	7,428	2,401	2,061	1,404
1964	72,240	97,138	10,388	17,101	20,528	11,497	5,385	1,895	861	718
1965	68,861	83,030	10,245	15,264	19,360	11,730	5,040	1,981	571	516
1966	87,853	101,905	9,845	13,223	18,115	12,108	10,319	4,357	420	376
1967	97,098	114,052	9,788	12,943	16,912	11,987	9,652	3,723	565	470
1968	113,224	113,868	11,484	12,549	16,821	12,995	13,153	4,745	547	474
1969	132,034	142,065	12,354	15,885	20,210	16,939	21,523	7,218	642	564
1970	120,224	117,952	12,554	17,024	23,645	21,508	29,661	11,271	1,437	1,175
1971	119,137	89,752	9,251	8,537	20,257	17,626	24,244	9,396	1,126	895
1972	145,803	109,263	13,481	11,197	24,435	22,528	42,994	17,645	2,503	1,995
1973	136,110	204,455	10,346	16,264	33,325	36,614	39,853	26,103	7,630	6,382
1974	112,536	242,357	8,577	20,973	34,778	43,039	27,189	23,682	5,939	5,772
1975	102,621	148,153	11,448	19,478	31,083	25,993	33,240	22,107	2,283	3,037
1976	140,581	207,528	12,667	23,773	35,732	32,693	52,120	34,009	2,451	3,696
1977	154,779	291,142	14,895	40,022	53,051	53,291	60,373	48,913	1,292	1,968
1978	112,075	219,402	10,996	31,919	57,827	64,896	42,532	40,885	620	984

(a) From 1920, year ended 30 June. (b) For 1890 and earlier years includes degreased wool for which figures are not available separately. (c) See note (b). (d) Separate particulars not available. Total exports of fresh meats were 84 tonnes valued at \$9,164.

EXPORTS OF CERTAIN COMMODITIES—*continued*

Year (a)	Flour (b)		Butter		Potatoes		Fresh fruit (c)	Cattle	Sheep
	Quantity	Value	Quantity	Value	Quantity	Value	Value	Value	Value
	tonnes	\$'000	tonnes	\$'000	tonnes	\$'000	\$'000	\$'000	\$'000
1860	11	—	—	—	71	1	—	—	4
1870	—	—	—	—	26	—	—	—	—
1880	n.a.	2	—	—	—	—	—	—	—
1890	—	—	—	—	—	—	—	1	2
1900	47	1	4	1	113	1	1	—	2
1910	2,559	49	77	12	18	—	11	16	9
1920	117,254	5,045	38	17	1,637	54	300	73	28
1921	48,355	2,144	20	10	344	7	243	44	23
1922	50,943	2,046	12	6	298	5	352	96	70
1923	54,162	1,338	1	—	1,566	32	476	118	45
1924	70,733	1,644	6	2	3,443	90	378	60	40
1925	67,956	1,923	—	—	443	5	493	5	8
1926	83,333	2,581	—	—	1,647	43	464	30	31
1927	85,294	2,314	1	—	1,540	44	669	32	50
1928	77,208	2,009	1	—	436	12	384	70	58
1929	72,265	1,780	36	14	1,327	32	1,067	38	52
1930	62,659	1,540	21	7	5,037	151	312	1	46
1931	77,713	1,266	20	5	4,897	47	604	3	25
1932	80,061	1,156	663	179	724	14	861	3	28
1933	78,159	1,105	1,042	280	487	5	665	1	35
1934	58,599	781	1,000	195	1,708	17	673	—	26
1935	77,986	1,127	1,042	148	2,375	49	826	1	44
1936	60,633	972	1,033	246	8,440	121	905	1	47
1937	78,150	1,662	738	183	7,107	119	670	1	56
1938	73,629	1,605	1,642	472	5,030	55	549	—	74
1939	80,766	1,165	1,875	462	14,961	282	1,175	1	73
1940	83,159	1,301	1,873	490	11,953	214	740	—	65
1941	107,588	2,185	1,748	460	18,501	373	282	2	112
1942	77,087	1,681	1,676	428	10,452	213	114	1	97
1943	70,412	1,581	169	47	6,410	139	139	1	—
1944	96,941	2,344	919	262	772	22	96	27	—
1945	92,438	2,505	964	369	17,939	581	132	2	1
1946	106,088	4,667	1,283	502	13,219	446	488	2	91
1947	117,661	7,628	920	383	12,939	484	1,445	27	362
1948	127,002	11,326	2,043	1,000	18,623	681	1,688	10	347
1949	119,025	10,516	2,075	1,047	13,723	431	1,452	11	374
1950	105,065	8,335	1,475	864	10,090	384	1,780	5	426
1951	144,914	11,774	498	312	11,181	506	2,295	9	616
1952	146,584	13,669	144	93	13,514	733	2,853	23	631
1953	159,883	15,090	155	126	12,860	750	4,556	23	501
1954	134,126	11,704	170	141	16,026	1,300	3,300	29	568
1955	109,172	7,219	168	142	9,020	512	3,845	68	612
1956	117,409	7,766	255	206	2,275	171	3,393	177	625
1957	115,658	7,474	177	156	7,728	736	4,598	243	923
1958	101,448	6,907	200	169	13,998	832	3,725	308	841
1959	94,854	6,337	178	166	8,577	368	3,609	396	764
1960	79,697	5,100	191	183	9,612	436	2,437	325	845
1961	122,839	7,840	303	247	7,821	437	4,636	318	881
1962	88,889	5,891	756	532	10,328	632	2,818	55	1,254
1963	67,652	4,645	247	228	18,032	810	4,982	160	1,495
1964	62,677	4,396	138	126	9,925	353	4,016	331	1,433
1965	83,826	5,926	166	159	12,935	841	5,165	427	1,376
1966	49,130	3,378	1,062	732	21,362	1,393	4,838	283	1,633
1967	34,804	2,507	192	201	17,478	692	5,704	381	1,771
1968	41,918	2,944	225	232	13,142	622	4,068	1,229	2,191
1969	35,100	2,433	231	254	21,944	1,149	6,552	972	2,943
1970	31,173	2,257	216	243	19,888	831	6,054	760	2,876
1971	26,670	1,958	266	325	9,390	510	7,208	1,159	2,710
1972	18,882	1,345	234	297	8,600	371	5,245	1,865	3,871
1973	9,798	859	237	311	(d) 4,911	(d) 334	6,135	1,661	7,959
1974	11,232	1,380	228	278	(e) 9,576	(e) 1,113	5,835	2,111	12,539
1975	19,281	3,439	190	281	8,527	1,217	7,547	1,498	12,862
1976	11,658	2,022	224	345	12,196	1,636	6,047	1,464	14,436
1977	11,355	2,051	180	310	7,190	1,127	5,285	2,533	(f) 34,905
1978	8,291	1,481	164	245	5,853	390	5,976	3,071	35,985

(a) From 1915, year ended 30 June. (b) From 1973, figures include meal and flour of wheat or maslin; from 1978, figures include meal and flour of all cereal grains. (c) Includes tomatoes for 1933 and earlier years. (d) Some interstate details for 1973 included in 1974. (e) See footnote (d). (f) Excludes interstate exports. Details are not available for publication.

EXPORTS OF CERTAIN COMMODITIES—continued

Year (a)	Skins and hides		Timber (b)		Rock lobster tails (c)		Pearl-shell (d)		Iron and steel (e)
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Value	
	\$'000	'000 cu m	\$'000	tonnes	\$'000	tonnes	\$'000	\$'000	
1850	1	—	2	—	—	—	—	—	
1860	—	2	10	—	—	—	—	—	
1870	—	6	35	—	—	—	—	—	
1880	8	19	133	—	—	75	19	—	
1890	49	33	164	—	—	731	79	—	
1900	150	162	916	—	—	1,257	173	7	
1910	482	342	1,945	—	—	749	173	5	
1920	1,246	143	931	—	—	1,488	492	16	
1921	759	278	2,274	—	—	1,702	671	—	
1922	730	235	2,082	—	—	1,171	470	26	
1923	1,092	224	1,995	—	—	1,546	508	16	
1924	1,040	315	2,735	—	—	1,294	429	18	
1925	955	335	2,956	—	—	1,447	487	6	
1926	883	340	3,046	—	—	1,182	469	13	
1927	752	371	3,316	—	—	1,309	465	9	
1928	1,106	294	2,531	—	—	1,245	425	10	
1929	1,101	216	1,921	—	—	969	332	7	
1930	738	186	1,615	—	—	1,093	345	3	
1931	539	117	1,015	—	—	984	331	3	
1932	395	87	722	—	—	1,032	334	2	
1933	480	63	523	—	—	622	194	1	
1934	771	115	972	—	—	1,049	294	1	
1935	640	151	1,270	—	—	856	196	7	
1936	1,061	159	1,356	—	—	987	189	3	
1937	1,143	161	1,397	—	—	984	214	3	
1938	985	214	1,860	—	—	928	247	7	
1939	736	162	1,436	—	—	1,259	336	12	
1940	745	143	1,251	—	—	1,149	212	15	
1941	580	172	1,546	—	—	856	153	31	
1942	772	148	1,369	—	—	696	142	35	
1943	348	100	1,189	—	—	590	142	19	
1944	680	103	1,216	—	—	6	1	5	
1945	537	81	1,131	—	—	2	1	23	
1946	1,274	96	1,429	—	—	—	—	100	
1947	2,131	98	1,719	—	—	13	8	9	
1948	2,048	102	2,230	—	—	127	120	99	
1949	2,134	91	1,986	(f)	(f)	342	340	89	
1950	2,329	81	1,949	518	463	415	367	59	
1951	5,294	66	1,783	1,436	1,517	355	248	95	
1952	3,194	68	2,075	1,311	1,861	345	274	83	
1953	3,942	112	4,147	1,329	2,085	417	406	58	
1954	3,295	109	4,480	1,461	2,342	535	612	357	
1955	2,921	99	3,847	1,532	2,490	623	708	279	
1956	3,274	129	5,598	1,601	3,022	700	820	602	
1957	4,650	132	6,215	1,618	3,514	811	999	530	
1958	3,898	158	7,496	2,136	3,965	1,101	1,391	1,174	
1959	3,489	183	8,415	2,715	5,281	1,147	1,381	2,470	
1960	4,767	174	7,760	2,996	6,499	789	772	4,218	
1961	3,828	157	7,175	2,316	5,881	637	707	11,198	
1962	4,580	161	7,528	3,607	9,778	573	502	12,781	
1963	4,339	155	7,241	3,490	8,910	453	320	13,826	
1964	4,966	149	6,813	3,416	9,211	388	289	15,107	
1965	4,177	133	6,279	2,672	10,592	168	112	15,029	
1966	5,447	69	3,687	3,193	13,821	162	133	17,933	
1967	5,377	139	7,475	3,643	13,873	155	123	14,458	
1968	4,699	85	4,947	3,919	17,989	218	189	15,658	
1969	6,013	88	5,068	3,038	17,133	212	147	11,442	
1970	7,968	96	5,666	2,976	15,695	212	125	27,002	
1971	5,395	79	4,808	3,155	19,413	255	173	34,306	
1972	5,356	101	6,440	3,425	24,626	196	132	34,571	
1973	13,945	113	7,087	3,171	20,919	202	123	36,415	
1974	13,536	100	7,407	2,656	18,511	218	131	36,529	
1975	11,195	109	9,252	3,328	25,258	145	105	60,811	
1976	13,728	94	9,823	3,128	27,777	170	137	71,493	
1977	24,708	78	10,152	4,071	47,061	163	123	60,765	
1978	21,147	59	8,885	3,902	48,043	137	90	74,508	
						172	182	50,285	

(a) From 1920, year ended 30 June. (b) Excludes plywood and veneers and small quantities of timber for which details are not recorded. For the years 1910 to 1921, figures are approximate. (c) Figures for the years 1950 to 1952 represent overseas exports only and exclude small consignments to other Australian States. Those for 1953 to 1960 include small consignments of cooked whole rock lobsters to other Australian States. (d) From 1973, figures represent overseas exports only. (e) Principally pig-iron, cast iron and basic shapes and sections of iron and steel. (f) Precise information not available, but it is known that the value of exports was about \$500,000.

EXPORTS OF CERTAIN COMMODITIES—*continued*

Year (a)	Gold mint bullion (b)		Lead and zinc ores (c) (d)	Tin ore and concentrates	Asbestos (crude and fibre)		Manganese ore and concentrates		Iron ore and concentrates		Ilmenite concentrates (including leucoxene) (e)	
	Quantity	Value (f)			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	kg	\$'000	\$'000	\$'000	tonnes	\$'000	'000 tonnes	\$'000	'000 tonnes	\$'000	'000 tonnes	\$'000
1850	—
1860	2	....	....	....	....	....	....	....	....	....
1870	29	....	....	....	....	....	....	....	....	....
1880	31	....	....	....	....	....	....	....	....	....
1890	715	4	11	....	....	....	....	....	....	....	....
1900	31 103	7,589	76	....	....	....	....	....	....	....	....
1910	10,389	2,835	4	93	....	....	....	....	....	....	....
1920	1,275	452	102	129	....	....	....	....	....	....	....
1926	1,555	386	186	23	....	....	....	....	....	....	....
1927	2,830	711	109	28	....	....	1	....	....	....	....
1928	435	121	8	24	....	....	1	....	....	....	....
1929	311	81	11	30	....	....	....	....	....	....	....
1930	4	1	19	29	....	....	....	....	....	....	....
1931	2	10	....	....	....	....	....	....	....	....
1932	16,018	7,336	1	6	....	....	....	....	....	....	....
1933	19,440	9,376	—	7	....	....	....	....	....	....	....
1934	20,311	10,624	—	11	....	....	....	....	....	....	....
1935	18,320	10,258	—	17	....	....	....	....	....	....	....
1936	23,981	13,385	....	18	....	....	....	....	....	....	....
1937	28,273	15,819	....	16	....	....	....	....	....	....	....
1938	33,436	18,598	1	20	281	37	....	....	....	....	....
1939	36,360	21,240	1	11	272	26	....	....	....	....	....
1940	36,329	24,056	2	14	188	17	....	....	....	....	....
1941	37,386	25,096	2	12	148	15	....	....	....	....	....
1942	30,326	20,590	2	6	74	7	....	....	....	....	....
1943	23,514	15,744	1	5	89	8	....	....	....	....	....
1944	10,855	7,250	1	6	92	8	....	....	....	....	....
1945	1	5	386	36	....	....	....	....	....
1946	—	8	1,081	104	....	....	....	....	....
1947	5	12	637	65	....	....	....	....	....
1948	11,073	7,656	146	17	1,201	148	....	....	....	....	....
1949	235	31	1,178	179	....	....	....	....	....
1950	2	2	272	49	894	204	2	22	....	....	....
1951	263	62	1,568	378	11	154	....	....	....	....
1952	12,286	13,143	1,369	107	2,620	709	8	115	53	102	....
1953	23,608	24,798	1,681	153	3,006	990	14	256	553	1,079	....
1954	13,001	13,230	270	97	3,200	986	27	829	592	1,157	....
1955	19,222	19,338	108	146	3,792	788	35	804	589	1,149	....
1956	12,752	12,842	888	322	7,534	1,440	56	1,271	480	936	....
1957	23,950	24,119	960	293	10,727	2,140	59	1,551	334	649	....
1958	6,470	6,511	410	166	11,743	2,920	76	2,501	446	870	89
1959	4,106	4,118	238	304	10,737	2,166	57	1,628	598	1,169	66
1960	18,662	18,738	229	415	15,407	3,111	80	2,224	809	1,601	90
1961	78,754	79,271	83	325	10,776	2,364	48	1,267	1,035	2,101	132
1962	14,090	12,195	45	563	12,850	2,753	110	2,945	1,069	2,209	159
1963	12,970	13,048	33	532	12,610	2,799	53	1,390	1,495	2,898	183
1964	11,975	12,045	18	1,080	8,069	1,767	27	695	1,381	2,743	263
1965	15,956	16,127	662	1,229	11,131	2,210	77	1,747	1,562	3,040	330
1966	25,909	26,147	124	1,521	8,064	1,702	106	2,404	2,657	6,967	430
1967	14,930	15,107	177	2,214	5,985	1,229	193	4,161	8,530	50,890	443
1968	11,602	11,816	58	2,330	—	—	164	3,408	14,563	104,506	462
1969	11,228	12,701	161	1,843	65	8	179	3,624	19,898	151,797	557
1970	12,037	13,874	41	1,386	56	4	161	3,086	31,542	233,580	573
1971	2,986	3,041	....	1,511	45	10	159	2,755	46,273	341,702	563
1972	3,359	4,125	....	2,043	40	3	(g)	(g)	48,658	347,500	580
1973	8,736	15,681	6	2,277	....	....	(g)	(g)	66,036	420,255	595
1974	893	2,484	15	2,732	....	....	(g)	(g)	79,286	488,239	728
1975	452	1,855	....	3,019	....	....	(h)	(h)	88,070	699,843	672
1976	4,857	19,335	....	2,538	....	....	(h)	(h)	83,090	772,199	647
1977	6,832	26,172	....	3,939	81	39	(i)	(i)	84,939	900,987	1,184
1978	6,986	34,975	....	4,947	....	....	(g)	(g)	80,128	935,018	986

(a) From 1915, year ended 30 June. (b) Gold sold abroad before consignment is not recorded as an export until actually shipped. (c) Includes silver-lead and silver-lead-zinc ores and concentrates. (d) From 1973, figures exclude interstate exports of lead ores and concentrates. (e) From 1972, figures exclude overseas exports of beneficiated ilmenite; from 1978, figures also exclude interstate exports of all ilmenite and leucoxene. (f) Includes additional premiums on sales of industrial gold. (g) From 1972, overseas details are not available for publication. For 1972, 1973, 1974 and 1978, interstate details are nil. (h) Overseas details are not available for publication. Interstate details are less than 500. (i) Excludes overseas exports. Details are not available for publication.

EXTERNAL TRADE
(\$'000)

Year (a)	Imports (b)			Exports (b) (c)			Excess of—		Ships' stores
	Overseas	Interstate	Total	Overseas	Interstate	Total	Imports	Exports	
1850	n.a.	n.a.	125	n.a.	n.a.	44	80	....	n.a.
1860	318	20	338	160	16	175	163	....	3
1870	260	167	427	348	46	394	33	....	8
1880	349	358	707	736	252	988	....	280	11
1890	1,025	724	1,749	961	369	1,330	419	....	14
1900	6,574	5,350	11,924	11,246	2,250	13,496	....	1,572	208
1910	8,750	7,067	15,817	11,679	4,627	16,306	....	489	294
1920	9,918	14,819	24,737	28,918	2,392	31,311	....	6,574	827
1921	14,439	15,239	29,678	20,790	2,724	23,514	6,165	....	1,004
1922	8,616	15,459	24,076	21,594	4,522	26,116	....	2,041	1,141
1923	13,001	14,555	27,555	19,339	2,252	21,611	5,944	....	599
1924	13,325	15,363	28,688	24,825	2,928	27,753	935	....	493
1925	16,053	16,095	32,148	25,719	2,623	28,342	3,806	....	987
1926	15,792	17,133	32,925	25,223	2,876	28,100	4,826	....	1,064
1927	18,894	17,858	36,752	26,135	2,810	28,946	7,806	....	1,358
1928	18,023	18,553	36,575	32,505	2,674	35,179	1,396	....	1,302
1929	18,906	21,201	40,108	30,603	2,411	33,014	7,094	....	1,358
1930	17,758	19,805	37,563	32,009	2,213	34,223	3,341	....	1,316
1931	9,165	13,639	22,804	33,306	1,550	34,856	....	12,052	1,095
1932	6,926	15,854	22,780	29,633	1,826	31,459	....	8,679	1,133
1933	9,542	16,740	26,282	28,037	1,916	29,953	....	3,671	1,122
1934	8,889	18,554	27,443	31,132	2,427	33,559	....	6,116	1,024
1935	10,203	20,290	30,493	30,002	2,650	32,652	....	2,158	1,106
1936	12,688	22,073	34,761	33,023	3,665	36,688	....	1,928	1,095
1937	14,144	24,742	38,886	34,592	6,361	40,953	....	2,067	1,029
1938	15,986	25,879	41,865	38,944	6,057	45,001	....	3,135	1,200
1939	12,275	25,329	37,604	34,149	10,815	44,964	....	7,360	1,049
1940	12,568	27,450	40,017	19,256	28,518	47,774	....	7,756	1,380
1941	9,710	27,519	37,229	16,900	30,808	47,708	....	10,479	1,971
1942	10,391	26,110	36,501	23,157	25,241	48,398	....	11,897	2,305
1943	7,383	24,803	32,186	10,625	20,117	30,741	1,445	....	1,983
1944	7,770	26,628	34,399	22,845	13,472	36,317	....	1,919	2,747
1945	9,215	26,863	36,079	24,665	11,533	36,298	....	2,179	2,508
1946	11,018	32,238	43,256	38,917	11,662	50,579	....	7,322	2,511
1947	18,929	42,253	61,182	46,015	11,459	57,474	3,708	....	1,966
1948	34,311	51,329	85,640	97,389	11,599	108,989	....	23,349	2,474
1949	44,075	61,182	105,258	96,982	9,495	106,477	....	1,220	4,710
1950	68,844	70,044	138,887	106,590	12,421	119,011	19,876	....	4,720
1951	80,517	95,828	176,345	197,686	18,780	216,466	....	40,122	7,249
1952	120,474	124,209	244,683	151,562	35,404	186,966	57,717	....	8,419
1953	59,748	137,213	196,961	166,286	49,659	215,945	....	18,984	10,321
1954	85,051	165,374	250,425	136,849	39,190	176,039	74,386	....	7,266
1955	101,295	182,110	283,405	137,013	47,310	184,323	99,082	....	7,865
1956	92,963	177,952	270,915	152,286	68,466	220,752	50,164	....	10,592
1957	80,423	188,680	269,103	216,599	81,545	298,144	....	29,041	12,902
1958	91,775	195,103	286,879	179,516	79,836	259,352	27,527	....	11,602
1959	89,972	202,430	292,402	174,585	68,919	243,504	48,898	....	9,482
1960	92,363	246,696	339,059	231,766	77,278	309,043	30,016	....	8,954
1961	110,531	245,474	356,005	309,332	89,922	399,254	....	43,249	10,285
1962	100,178	245,208	345,386	287,619	84,626	372,245	....	26,859	9,379
1963	112,640	313,712	426,351	246,823	91,636	338,459	87,892	....	7,904
1964	121,677	323,176	444,854	286,132	101,811	387,943	56,911	....	9,733
1965	153,540	343,899	497,439	243,078	119,954	363,033	134,407	....	9,009
1966	175,690	403,054	578,744	314,404	119,619	434,023	144,721	....	10,058
1967	159,390	474,852	634,242	421,325	116,030	537,355	96,887	....	10,936
1968	206,980	527,052	734,031	475,260	124,505	599,765	134,266	....	14,824
1969	203,533	562,312	765,846	546,366	149,892	696,258	69,588	....	14,327
1970	242,299	640,189	882,487	675,027	149,861	824,888	57,600	....	15,092
1971	278,344	726,778	1,005,122	862,421	151,093	1,013,514	....	8,392	20,561
1972	283,263	787,788	1,071,051	946,504	138,478	1,084,982	....	13,931	22,477
1973	227,305	786,177	1,013,483	1,154,359	159,327	1,313,686	....	r 300,203	17,542
1974	368,910	939,361	1,308,272	1,414,968	197,299	1,612,267	....	303,995	29,224
1975 r	577,416	1,134,510	1,711,926	1,880,082	218,613	2,098,695	....	386,769	50,157
1976	637,439	1,418,726	2,056,165	2,117,898	259,540	2,377,439	....	321,274	46,638
1977	829,411	r 1,641,545	r 2,470,955	2,596,110	295,144	2,891,254	....	r 420,299	64,141
1978	937,350	1,828,280	2,765,629	2,588,954	343,050	2,932,004	....	166,375	71,009

(a) From 1920, year ended 30 June.
publication.(b) From 1976, excludes interstate value of horses. Details are not available for
(c) Excludes ships' stores.

LAND TENURE; LIVESTOCK; WOOL PRODUCTION

Year	Land alienated and land in process of alienation (a)	Land held under lease or licence (a) (b)	Livestock (c)				Wool production (d)	
			Horses	Cattle	Sheep	Pigs	Quantity	Gross value (e)
			'000	'000	'000	'000	tonnes	\$'000
1829	212	-	-	-	1	-	n.a.	-
1830	256	-	-	1	8	-	n.a.	-
1840	647	-	1	2	31	2	n.a.	-
1850	538	-	3	13	128	3	n.a.	-
1860	614	2,251	10	32	260	11	298	n.a.
1870	593	4,953	22	45	609	13	811	-
1880	860	18,179	35	64	1,232	24	1,970	-
1890	2,159	42,388	44	131	2,525	29	3,161	-
1900	2,679	35,360	68	339	2,434	62	4,323	-
1910	7,013	67,667	134	825	5,159	58	13,210	2,141
1920	9,317	104,252	179	850	6,533	61	18,947	4,552
1921	9,806	104,614	180	893	6,506	63	19,542	4,482
1922	10,423	108,303	181	940	6,664	68	18,535	6,294
1923	10,953	106,088	182	954	6,596	61	20,541	8,665
1924	11,470	84,959	175	892	6,397	66	19,697	9,151
1925	11,696	94,290	171	836	6,862	74	21,903	6,800
1926	12,253	93,306	166	827	7,459	70	25,007	7,148
1927	12,845	94,762	165	847	8,447	60	28,441	10,170
1928	13,485	96,085	161	838	8,943	49	26,701	8,027
1929	14,326	98,633	160	837	9,557	65	30,459	5,952
1930	14,585	99,307	157	813	9,883	101	32,451	4,829
1931	14,653	87,667	156	827	10,098	121	32,484	5,007
1932	14,516	83,432	157	857	10,417	118	34,086	5,198
1933	14,386	80,260	160	886	10,322	91	35,573	9,404
1934	14,201	81,176	162	912	11,197	98	40,823	6,422
1935	13,807	82,396	160	883	11,083	98	38,876	8,886
1936	13,353	82,541	155	793	9,008	76	28,820	7,306
1937	13,356	82,985	151	740	8,732	65	29,365	5,832
1938	13,358	83,363	144	768	9,178	83	32,374	5,450
1939	13,261	83,247	139	799	9,574	150	34,201	7,581
1940	13,127	84,733	130	789	9,516	218	32,362	7,889
1941	12,995	84,968	124	840	9,773	163	35,211	8,328
1942	12,895	85,607	113	831	10,424	152	43,417	11,935
1943	12,812	85,810	107	871	11,013	164	46,611	12,741
1944	12,797	86,076	97	853	10,050	164	38,166	10,512
1945	12,836	85,928	88	834	9,766	138	37,225	10,424
1946	12,861	85,860	81	812	9,787	102	36,525	16,094
1947	13,061	87,910	75	816	10,444	93	40,609	29,277
1948	13,016	90,169	69	864	10,873	81	42,533	37,720
1949	13,178	91,256	59	865	10,923	79	42,071	47,237
1950	13,515	82,101	55	841	11,362	90	46,680	118,068
1951	13,902	82,918	53	852	12,188	86	52,681	64,027
1952	14,296	83,587	50	846	12,475	76	54,760	75,121
1953	14,911	83,218	49	830	13,087	101	58,497	82,567
1954	15,213	84,432	47	861	13,411	107	56,324	67,985
1955	15,385	86,450	45	897	14,128	99	67,932	69,642
1956	15,507	87,332	45	957	14,887	140	67,301	90,283
1957	15,746	89,111	44	997	15,724	151	68,504	75,228
1958	15,925	88,388	41	1,000	16,215	115	71,376	59,407
1959	16,180	92,311	41	1,030	16,412	131	72,979	75,302
1960	16,343	92,640	40	1,100	17,151	176	82,652	73,863
1961	16,637	94,479	40	1,218	18,314	174	83,159	79,283
1962	17,079	99,722	39	1,298	18,727	131	80,366	80,071
1963	17,484	99,364	39	1,299	20,165	128	95,053	116,331
1964	17,848	99,771	37	1,258	22,392	137	91,170	93,275
1965	18,287	99,444	35	1,271	24,427	144	108,116	115,183
1966	18,737	99,764	n.a.	1,357	27,370	161	119,681	121,509
1967	19,192	100,581	n.a.	1,427	30,161	183	131,379	116,653
1968	19,504	100,976	n.a.	1,546	32,901	220	164,307	158,264
1969	19,620	100,716	29	1,681	33,634	250	144,527	120,819
1970	19,761	102,957	|	1,781	34,709	278	151,808	92,009
1971	19,545	103,389	|	1,975	34,405	427	170,219	135,137
1972	19,531	103,218	|	2,182	30,919	476	140,649	225,041
1973	19,539	102,711	n.a.	2,330	32,451	344	143,147	251,712
1974	19,493	101,408	|	2,544	34,476	264	172,659	218,859
1975	19,505	99,899	|	2,654	34,771	260	174,807	242,027
1976	18,686	100,053	|	2,464	31,158	242	156,237	291,358
1977	18,723	99,360	|	2,271	29,823	237	143,372	258,034

(a) From 1907 to 1946 at 30 June; for earlier years and from 1947 at 31 December. (b) Comprises allocations by Lands Department and certain leases and licences issued by Mines and Forests Departments. Apparent decrease in 1950 due mainly to revisions in records of Lands Department. (c) At 31 December for 1941 and earlier years; from 1942, the figures shown relate to 31 March in the following year. (d) Comprises shorn, dead and fellmongered wool. Excludes wool exported on skins. For 1947 and earlier, year ended 31 December; figures shown for 1948 to 1964 are for the year ended 31 March in the following year. From 1965 figures relate to the year ended 30 June in the following year. (e) Figures for 1949 and 1951 to 1955 exclude distributions of profits under the 1939-1945 War-time Wool Disposals Plan aggregating \$13,869,934. Separate State figures are not available for distributions made from 1956 to 1958 when payments were virtually complete.

AGRICULTURE

Year (a)	Total area used for crops (b)	Area and production of principal grain crops							
		Wheat				Oats		Barley	
		Area	Production			Area	Production	Area	Production
			Yield per hectare	Total	Gross value				
	'000 hectares	'000 hectares	tonnes	'000 tonnes	\$'000	'000 hectares	'000 tonnes	'000 hectares	'000 tonnes
						n.a.	n.a.	n.a.	n.a.
1840	1	1	1.11	1					
1850	3	2	n.a.	n.a.					
1860	10	6	1.00	6	n.a.				
1870	22	11	0.79	9		1	1	2	2
1880	26	11	0.62	7				2	2
1890	28	14	0.92	13				2	2
1900	81	30	0.70	21	310	2	2	1	1
1910	346	236	0.68	161	2,162	25	14	1	1
1920	730	516	0.65	333	11,023	78	37	4	3
1921	770	541	0.70	378	7,532	66	37	3	2
1922	921	628	0.60	377	6,986	87	41	4	2
1923	940	671	0.77	515	8,987	98	52	4	2
1924	1,097	756	0.86	650	14,532	129	77	5	4
1925	1,187	855	0.65	557	12,837	113	53	5	4
1926	1,346	1,040	0.81	846	17,217	95	49	6	3
1927	1,505	1,214	0.82	990	19,842	95	53	5	3
1928	1,724	1,353	0.68	920	16,473	132	65	6	4
1929	1,848	1,444	0.74	1,064	17,721	156	74	10	6
1930	1,939	1,601	0.91	1,456	12,201	111	60	7	4
1931	1,604	1,278	0.88	1,130	14,430	108	64	6	4
1932	1,725	1,371	0.83	1,137	13,554	116	65	6	3
1933	1,707	1,288	0.79	1,015	12,004	139	72	10	7
1934	1,554	1,119	0.66	734	10,123	166	77	11	5
1935	1,508	1,028	0.62	635	9,747	181	83	13	9
1936	1,559	1,042	0.56	586	11,902	187	63	16	10
1937	1,687	1,225	0.81	986	14,830	156	79	18	13
1938	1,895	1,381	0.73	1,003	8,984	172	85	30	21
1939	1,735	1,202	0.93	1,112	15,526	183	96	34	22
1940	1,614	1,062	0.54	573	8,648	174	59	27	16
1941	1,545	1,073	0.95	1,021	15,615	165	97	28	22
1942	1,127	709	0.79	561	10,080	138	66	20	12
1943	1,110	634	0.71	450	9,531	145	72	25	16
1944	1,115	614	0.71	434	8,319	163	70	31	20
1945	1,163	743	0.77	570	15,871	160	74	27	15
1946	1,429	982	0.66	648	22,048	172	66	27	12
1947	1,593	1,117	0.84	939	50,265	200	98	25	17
1948	1,660	1,161	0.85	987	42,122	215	127	26	22
1949	1,737	1,171	0.89	1,048	51,339	237	132	28	22
1950	1,834	1,289	1.05	1,358	65,328	237	144	24	21
1951	1,824	1,253	0.87	1,089	58,984	266	140	23	16
1952	1,877	1,214	0.80	965	55,194	337	189	43	40
1953	1,812	1,168	0.93	1,030	55,423	297	174	85	62
1954	2,041	1,206	0.77	933	43,655	354	174	105	64
1955	2,118	1,170	1.24	1,449	68,840	442	300	136	106
1956	2,080	1,119	0.78	874	44,055	425	189	139	85
1957	2,230	1,197	0.75	901	45,912	467	250	124	81
1958	2,434	1,332	1.18	1,569	77,639	538	410	130	123
1959	2,583	1,505	1.06	1,597	82,361	502	356	170	161
1960	2,734	1,627	1.07	1,739	92,290	538	396	219	193
1961	2,823	1,773	1.01	1,788	100,023	498	366	199	165
1962	2,965	1,944	1.01	1,973	107,023	476	367	158	137
1963	2,714	1,878	0.76	1,424	74,389	455	324	121	92
1964	2,950	2,085	0.82	1,717	88,557	466	254	123	84
1965	3,419	2,489	1.12	2,780	153,050	502	422	167	147
1966	3,463	2,569	1.09	2,809	153,157	487	401	151	152
1967	3,595	2,690	1.08	2,911	170,102	469	359	168	159
1968	3,840	2,952	1.04	3,060	151,306	442	416	224	208
1969	3,916	2,747	0.66	1,815	90,961	461	281	364	273
1970	3,831	2,361	1.25	2,957	153,227	520	520	632	769
1971	3,751	2,042	1.06	2,165	115,934	454	414	911	1,000
1972	3,855	2,437	0.82	2,003	109,399	297	212	744	640
1973	4,133	2,978	1.41	4,211	461,049	325	383	510	626
1974	3,758	2,810	1.17	3,277	361,211	262	250	387	329
1975	4,207	3,171	1.30	4,122	427,507	320	386	419	505
1976	4,416	3,314	0.98	3,249	290,489	372	347	452	553
1977	4,910	3,609	0.81	2,945	292,901	415	416	614	751

(a) Figures shown for 1942 and earlier are for the year ended last day of February in the following year; those shown for 1943 and later are for the season ended 31 March in the following year. (b) Excludes pasture hay and from 1967 also excludes lucerne.

PRIMARY PRODUCTION—MISCELLANEOUS

Year	Hay (all kinds) (a)		Gold production (b) (c)		Coal production (c)		Average values f.o.b.	
	Area	Production	Quantity	Value (d)	Quantity	Value	Wool (greasy) per kg (e)	Wheat per tonne (f)
	'000 hectares	'000 tonnes	'000 grams	\$'000	'000 tonnes	\$'000	cents	\$
1860	2	8	....	....	....	....	....	19.83
1870	7	21	....	....	....	....	....	....
1880	8	20	....	....	....	....	....	....
1890	9	25	622	171	....	....	n.a.	18.37
1900	42	106	43,980	12,015	120	110	....	5.51
1910	71	182	45,753	12,494	266	227	16.20	14.85
1920	108	268	19,222	6,951	469	701	28.26	26.33
1921	136	375	17,231	5,907	477	814	24.07	26.94
1922	175	464	16,734	5,052	445	763	22.95	20.21
1923	134	374	15,707	4,464	428	738	33.60	18.53
1924	161	456	15,085	4,512	429	727	41.78	17.45
1925	158	361	13,717	3,749	444	726	45.97	22.35
1926	145	431	13,592	3,715	483	789	30.78	23.04
1927	144	424	12,690	3,469	510	816	28.31	20.29
1928	168	429	12,224	3,342	536	840	35.52	20.05
1929	170	435	11,726	3,204	554	853	29.87	18.60
1930	161	500	13,001	3,729	509	770	19.37	16.69
1931	154	460	15,894	5,996	439	672	14.77	8.42
1932	169	493	18,849	8,807	423	541	15.50	11.48
1933	194	520	19,813	9,773	465	580	15.74	11.18
1934	167	470	20,248	11,118	508	557	28.75	10.79
1935	200	513	20,186	11,404	546	636	17.73	11.79
1936	193	420	26,314	14,747	574	663	24.98	14.62
1937	175	457	31,135	17,488	563	681	29.70	20.29
1938	165	445	36,329	20,726	615	750	24.25	15.08
1939	160	484	37,760	23,686	567	726	19.58	8.95
1940	169	381	37,044	25,393	548	729	25.68	11.19
1941	132	421	34,494	23,703	566	779	28.70	14.49
1942	102	282	26,376	17,731	590	923	28.64	15.12
1943	114	319	16,982	11,421	541	979	32.19	15.09
1944	133	344	14,494	9,800	567	1,166	34.81	17.71
1945	114	292	14,588	10,021	552	1,146	34.24	23.30
1946	112	284	19,191	13,280	652	1,460	34.92	31.81
1947	93	272	21,897	15,151	743	1,680	45.64	48.42
1948	92	281	20,684	14,314	745	1,760	76.41	64.33
1949	87	276	20,155	15,926	763	1,944	94.20	56.11
1950	72	231	18,973	18,933	827	2,575	105.91	57.03
1951	70	215	19,533	19,451	862	3,434	263.50	62.25
1952	92	295	22,706	23,696	843	4,915	138.10	62.64
1953	89	299	25,629	26,598	900	6,146	148.04	63.57
1954	117	310	26,469	26,627	1,034	7,178	156.20	60.90
1955	109	390	26,189	26,749	919	6,179	135.39	52.22
1956	98	293	25,256	26,405	843	5,448	112.66	46.57
1957	137	392	27,900	29,102	852	5,105	144.67	48.12
1958	135	462	26,967	28,357	885	4,561	130.80	56.35
1959	129	440	26,967	28,388	926	4,713	91.87	51.76
1960	115	387	26,625	28,140	937	4,878	115.37	49.48
1961	119	402	27,122	28,584	778	3,361	99.10	49.91
1962	138	460	26,717	28,115	934	3,962	109.80	51.90
1963	117	395	24,883	26,375	916	3,970	111.38	52.30
1964	123	396	22,177	23,383	1,003	4,679	134.47	52.01
1965	118	421	20,497	22,381	1,010	4,410	120.58	51.66
1966	119	424	19,564	23,316	1,078	4,562	116.00	51.12
1967	129	428	17,916	21,690	1,079	4,765	117.46	54.88
1968	138	508	15,925	19,407	1,104	4,817	105.69	51.31
1969	202	576	14,961	19,040	1,120	4,853	107.60	51.26
1970	190	673	12,310	15,811	1,178	5,407	98.11	47.72
1971	177	653	10,736	13,674	1,190	5,653	75.33	48.88
1972	224	664	10,848	14,835	1,188	5,855	74.94	49.52
1973	220	734	9,264	16,718	1,154	6,422	150.21	49.67
1974	164	508	7,173	19,183	1,197	7,237	215.36	98.75
1975	163	536	6,305	29,788	1,879	12,511	144.37	126.39
1976	169	560	7,644	27,141	2,157	17,613	147.62	116.89
1977	191	597	7,619	31,586	2,339	r 21,896	188.10	105.10
1978	n.y.a.	n.y.a.	13,653	64,741	2,435	24,846	195.76	(g) 92.52

(a) See footnote (a) on preceding page. (b) Prior to 1971 comprises gold refined at the Mint and gold contained in gold-bearing materials exported. From 1971 covers gold production as notified by the Department of Mines. (c) From 1969 figures relate to year ended 30 June. (d) Includes amounts distributed by the Gold Producers' Association Ltd. from premiums on sales of Western Australian gold and net subsidy payments by the Commonwealth Government, under the *Gold Mining Industry Assistance Act 1954*. (e) From 1915 figures relate to year ended 30 June. (f) Prior to 1940 averages generally are based on exports of the previous season's wheat; from 1940 they relate to exports during the year ended 30 June. (g) Overseas exports only.

VALUE OF PRIMARY COMMODITIES PRODUCED
(Excluding Mining)
(\$'000)

Year (a)	Gross value of primary commodities produced (excluding mining) (b)						
	Agricul- ture	Dairying, poultry farming and bee keeping	Pastoral (c)	Hunting	Forestry	Fisheries (d)	Total
1920	17,466	2,065	(e) 9,008				
1921	13,853	2,265	(e) 8,032			n.a.	n.a.
1922	12,992	2,350	(e) 10,584		n.a.		
1923	15,076	2,483	(e) 13,027			642	
1924	22,367	2,726	(e) 13,419			764	
1925	19,510	2,507	(e) 11,537		4,126	970	38,651
1926	24,187	2,503	(e) 11,262		3,367	580	41,899
1927	26,068	2,687	(e) 14,687		2,906	516	46,865
1928	23,884	2,936	(e) 13,501		2,463	561	43,344
1929	24,504	3,443	(e) 10,800		2,159	544	41,450
1930	17,756	3,170	(e) 8,845		1,809	485	32,066
1931	20,985	3,311	(e) 8,023		1,312	427	34,058
1932	20,495	3,338	(e) 8,057		1,183	430	33,502
1933	19,022	3,315	(e) 13,369		1,648	406	37,759
1934	16,336	3,927	9,329	127	2,399	373	32,491
1935	17,045	3,897	12,439	200	2,653	372	36,606
1936	18,871	4,170	11,016	421	3,032	465	37,974
1937	21,071	4,494	9,947	193	2,957	592	39,254
1938	17,077	4,716	9,326	131	2,899	561	34,711
1939	23,198	4,855	11,463	139	2,660	562	42,877
1940	14,760	5,230	11,460	241	3,160	539	35,391
1941	22,219	5,960	11,958	276	2,950	479	43,843
1942	18,106	7,664	16,155	190	3,277	255	45,647
1943	18,505	7,971	18,156	225	3,150	347	48,353
1944	20,856	8,473	15,385	215	3,152	330	48,411
1945	26,310	8,709	15,948	281	3,358	438	55,044
1946	32,635	8,933	21,986	465	3,305	635	67,959
1947	64,699	9,790	37,036	395	3,649	1,135	116,703
1948	58,785	11,964	46,254	517	4,024	1,379	122,924
1949	69,686	12,975	58,687	393	4,501	1,432	147,674
1950	87,752	14,155	131,921	499	6,741	1,649	242,716
1951	86,791	18,778	79,955	488	8,517	2,505	197,034
1952	87,127	21,289	90,639	461	7,155	3,286	209,956
1953	86,533	22,328	101,567	609	7,678	3,808	222,523
1954	77,164	21,762	87,435	335	8,116	4,383	199,195
1955	109,709	22,433	89,293	361	10,474	4,915	237,185
1956	80,170	23,240	112,885	277	10,305	5,563	232,441
1957	87,293	23,500	94,118	175	11,046	6,530	222,662
1958	126,672	22,838	81,639	125	10,903	7,818	249,995
1959	131,052	24,696	100,255	288	10,919	8,621	275,831
1960	140,003	25,917	101,051	579	11,082	8,569	287,201
1961	148,765	26,400	105,310	511	11,104	10,689	302,779
1962	157,948	27,387	107,280	376	10,877	11,219	315,087
1963	123,342	28,723	148,701	632	11,462	10,187	323,047
1964	139,426	30,884	125,837	775	12,093	15,218	324,233
1965	215,949	32,899	157,249	836	12,731	15,733	435,397
1966	218,206	33,022	159,857	986	13,300	16,525	441,895
1967	234,020	35,485	158,754	1,236	14,076	21,954	465,524
1968	218,854	38,801	210,780	1,211	13,465	23,717	506,828
1969	153,805	40,459	176,387	1,098	13,632	19,660	405,041
1970	256,862	42,330	146,198	834	16,174	25,127	487,525
1971	216,969	45,170	199,443	838	14,660	30,817	507,896
1972	203,417	50,137	321,111	2,132	14,607	28,158	619,561
1973	604,907	59,648	369,636	1,739	15,264	30,494	1,081,687
1974		(f) 845,169		1,657	19,995	35,130	901,951
1975		996,633		1,744	21,784	51,079	1,071,241
1976		959,160		2,622	26,349	69,094	1,057,226
1977		1,005,029		2,675	28,016	88,340	1,124,059

(a) Figures generally are for the season or financial period ending in the following year. (b) Represents the estimated value of recorded production based on wholesale prices realised at the principal market. (c) In addition the following amounts were paid as interim distribution of profits under the 1939-1945 War-time Wool Disposals Plan: in 1949, \$3,629,478; in 1951, \$3,629,478; in 1952, \$2,325,324; in 1953, \$368,104; in 1954, \$2,120,460; and in 1955, \$1,797,090. Separate State figures are not available for distributions made from 1956 to 1958 when payments were virtually complete. (d) Includes pearling and whaling. (e) Separate details not available. (f) From 1974 this dissection has been contracted to the single industry 'Agriculture'.

FACTORIES (a)

Year (b)	Factories	Persons employed (c)	Wages and salaries (d)	Output (e)	Net production (f)	Production of selected commodities								
						Bricks (g)	Fibrous plaster sheets	Scoured wool	Bacon and ham	Butter (h)	Flour (plain)	Cheese (i)	Timber from local logs (j)	
1900	No. 632	No. 11,166	\$'000 2,589	\$'000 n.a.	\$'000 25,234	'000 n.a.	'000 sq m	tonnes	tonnes	tonnes	tonnes	tonnes	'000 cu m	
1910	822	14,894	3,532	10,158	5,472	23,162				132	11,375		266	
1920	998	16,942	6,073	26,283	9,708	31,838	n.a.	n.a.	850	553	108,976	n.a.	412	
1930	1,466	19,643	8,310	33,783	14,976	47,720			1,180	2,143	109,402		377	
1931	1,455	14,619	5,774	24,707	10,562	13,630			1,321	3,222	119,830		265	
1932	1,490	13,392	4,671	22,375	9,212	15,101			1,318	3,787	118,991		136	
1933	1,499	14,810	5,083	24,655	10,124	25,673			1,567	4,292	115,733		140	
1934	1,606	16,154	5,505	25,755	10,889	31,717			1,324	1,932	110,677	129	228	
1935	1,658	17,769	6,222	29,283	12,570	37,552			1,633	2,068	112,609	291	308	
1936	1,946	20,972	7,408	35,057	15,008	50,498	906		1,533	4,975	107,356	391	366	
1937	2,032	22,712	8,315	36,626	15,893	53,270			1,129	1,972	111,332	458	416	
1938	2,066	23,133	8,803	39,288	17,125	57,598	797		1,358	1,976	6,215	113,826	400	417
1939	2,129	23,211	9,147	39,097	17,551	53,062	737		1,673	1,911	6,647	124,786	443	381
1940	2,129	22,967	9,150	40,615	18,055	43,786	656		2,459	2,106	6,351	127,776	382	360
1941	2,056	22,734	9,441	43,650	18,034	45,505	696	3,867	2,325	6,454	136,010	431	347	
1942	1,938	23,980	10,999	47,904	20,201	34,247	413	2,709	2,773	7,103	122,777	589	345	
1943	1,799	25,813	12,956	53,475	22,906	8,926	153	3,455	4,172	6,549	114,554	735	328	
1944	1,807	28,101	14,835	58,417	25,023	6,296	203	4,437	4,391	6,254	144,967	804	287	
1945	1,931	29,146	15,228	63,481	25,920	10,003	305	4,274	5,051	5,767	146,683	835	275	
1946	2,280	30,256	15,768	68,046	27,653	24,150	547	3,899	4,646	5,694	151,310	824	278	
1947	2,615	33,806	18,210	76,540	31,497	37,758	917	5,417	4,677	6,052	160,323	1,033	330	
1948	2,788	35,967	21,471	91,252	36,768	44,986	1,018	5,334	4,018	7,086	177,352	1,035	351	
1949	2,925	38,354	25,856	106,835	42,948	50,378	1,209	6,467	3,610	7,078	164,623	884	336	
1950	3,023	40,733	30,586	127,956	52,088	58,943	1,384	7,110	3,599	6,878	144,691	712	363	
1951	3,111	43,761	39,316	168,862	68,441	67,312	1,729	5,828	3,615	6,906	197,172	760	416	
1952	3,267	45,097	50,769	213,143	85,491	76,884	2,153	5,884	3,739	6,813	201,255	634	471	
1953	3,424	45,188	56,687	238,620	98,383	86,043	2,037	6,162	3,752	6,584	203,509	909	527	
1954	3,523	47,459	63,181	269,174	110,294	101,240	1,964	6,914	3,503	6,241	170,513	1,224	569	
1955	3,727	49,314	69,476	299,169	121,912	115,412	2,105	7,226	3,369	7,260	150,381	1,100	593	
1956	3,871	50,108	74,413	350,293	139,466	102,359	1,816	9,483	3,283	7,523	162,715	775	578	
1957	3,935	48,748	73,833	375,272	146,884	101,209	1,248	11,044	3,103	7,582	153,800	1,201	539	
1958	3,941	48,462	75,870	392,525	150,624	111,082	1,257	11,708	2,999	6,916	134,398	1,033	550	
1959	4,125	48,417	77,464	392,405	157,524	101,521	1,128	12,791	3,002	6,265	126,736	1,200	561	
1960	4,279	49,651	83,285	431,165	172,747	110,359	1,190	15,271	3,228	7,494	136,780	1,466	532	
1961	4,334	50,666	90,255	481,140	193,262	119,998	1,249	13,420	3,214	7,784	152,622	1,373	496	
1962	4,418	51,033	92,840	486,988	196,083	119,868	1,209	14,459	3,556	7,603	128,007	1,386	505	
1963	4,492	53,435	99,880	517,899	216,422	131,176	1,319	13,312	3,899	8,013	123,296	1,462	486	
1964	4,609	55,705	108,515	555,058	230,511	155,792	1,373	12,464	3,841	7,026	129,996	1,530	517	
1965	4,734	58,097	119,978	616,422	260,637	146,057	1,335	12,040	4,047	7,887	121,906	1,838	550	
1966	4,906	60,282	134,171	678,751	288,803	140,611	1,435	12,107	4,357	8,225	103,115	1,230	552	
1967	5,167	63,757	153,597	765,224	335,788	163,166	1,457	12,148	4,654	6,529	91,725	1,726	533	
1968	5,404	67,335	175,100	887,372	388,257	207,575	1,634	12,662	5,173	6,009	100,418	1,983	557	
1969	2,585	59,853	183,168	919,555	361,473	273,078	1,759	14,415	5,591	6,332	96,641	2,022	444	
1970	2,705	62,597	208,410	1,028,778	414,999	288,949	1,956	14,940	5,399	5,915	92,635	1,718	450	
1971	(k)	(k)	(k)	(k)	(k)	240,323	1,553	10,724	4,863	5,425	96,411	1,917	449	
1972	2,727	64,217	255,879	1,240,106	472,013	227,581	1,511	17,009	5,116	5,988	84,227	1,979	407	
1973	2,814	64,074	275,455	1,375,859	501,034	278,610	1,403	11,987	5,257	5,324	77,680	1,869	405	
1974	2,818	67,884	346,942	1,741,029	658,412	304,178	1,337	10,791	5,530	5,223	79,114	1,922	408	
1975	1,974	65,852	434,272	2,032,374	779,842	262,905	1,112	11,779	5,294	4,981	84,486	2,291	392	
1976	2,054	65,953	508,931	2,432,654	944,459	328,356	1,112	14,326	5,439	4,531	78,447	2,673	388	
1977	2,035	66,750	594,514	2,882,421	1,151,619	385,942	n.y.a.	16,200	5,836	3,340	n.a.	2,074	375	

(a) Prior to 1968-69 a factory was defined for statistical purposes as any establishment engaged in the processes of manufacturing, assembling, treating or repairing and in which 4 or more persons were employed during any period of the year, or power other than manual was used. For 1968-69 and later, direct comparisons of statistics of number of factories, persons employed, wages and salaries, output and net production with those for earlier years are not possible (see introduction to Chapter VIII). Figures for 1974-75, exclude details of single establishment enterprises with less than 4 persons (see Section *Manufacturing Statistics*).

(b) For 1924 and earlier, year ended 31 December; from 1927, year ended 30 June. (c) Average over whole year including working proprietors. Prior to 1926-27 includes fallers and haulers employed by sawmills. (d) Figures for 1929-30 and later years exclude amounts drawn by working proprietors. (e) Selling value 'at the factory'.

(f) Value added in course of manufacture, representing sum available for payment of wages, rent, depreciation, other sundry expenses and for interest and profit. (g) For years prior to 1964-65, figures include all types of standard size bricks. Prior to 1925-26, they also include firebricks and blocks. From 1964-65 figures represent clay bricks only (all sizes). (h) For 1917 and earlier years, includes butter made on farms. (i) Source: 1933-34 to 1967-68, annual manufacturing census; 1968-69 to 1970-71, Commonwealth Dairy Produce Equalisation Committee Limited; from 1971-72, Western Australian Department of Agriculture. (j) Prior to 1968-69, figures also include hewn timber. (k) A case of manufacturing establishments was not conducted in respect of the year ended 30 June 1971.

INDUSTRIAL DISPUTES; WAGE RATES; UNEMPLOYMENT BENEFIT

Year	Industrial disputes (a)				State basic wage per week (b)		Minimum wage rate index numbers (c)		Unemployment benefit (d)
	Number of disputes	Workers involved (e)	Working days lost (man-days)		Perth (f)		Adult males (g)		
			Number	Average per worker involved	Adult males	Adult females	Weekly	Hourly	Persons on benefit (h)
1920	45	'000 12·0	'000 166·6	No. 13·87	\$	\$			
1921	12	12·1	145·1	12·03	(i)	(i)			
1922	8	0·8	43·5	53·94					
1923	6	4·0	72·3	18·04					
1924	13	3·5	66·7	19·08					
1925	10	4·1	98·9	23·93					
1926	9	0·6	9·1	15·11	8·50	4·59			
1927	20	3·4	23·8	7·02	8·50	4·59			
1928	11	2·5	54·9	21·72	8·50	4·59			
1929	4	0·9	2·7	3·05	8·70	4·70	n.a.	n.a.	
1930	2	0·5	27·1	57·85	8·60	4·64			
1931	13	3·9	24·0	6·12	7·35	3·97			
1932	8	2·7	11·1	4·16	7·05	3·81			n.a.
1933	10	3·9	16·9	4·31	6·92	3·74			
1934	10	3·5	17·8	5·11	7·10	3·83			
1935	11	3·6	72·0	19·98	7·05	3·81			
1936	19	4·7	32·4	6·87	7·38	3·98			
1937	12	1·7	14·4	8·65	7·49	4·04			
1938	7	3·6	43·8	12·01	8·11	4·38			
1939	7	1·3	14·1	11·25	8·22	4·43	35·6	32·0	
1940	4	3·0	7·4	2·44	8·53	4·61	36·8	33·1	
1941	3	0·3	0·8	2·79	9·04	4·88	39·0	35·4	
1942	8	1·8	8·9	4·89	9·78	5·28	41·5	37·6	
1943	10	2·5	38·4	15·11	10·11	5·46	42·8	38·8	
1944	30	11·0	30·0	8·16	9·99	5·39	42·6	38·6	
1945	16	3·8	32·5	8·55	10·01	5·41	42·6	38·7	
1946	11	6·4	69·6	10·94	10·21	5·51	43·6	39·5	422
1947	7	1·8	6·1	3·44	11·08	5·98	48·4	44·1	1,095
1948	9	2·4	7·8	3·33	12·16	6·57	53·9	53·9	409
1949	16	5·7	26·3	4·64	13·59	7·34	59·6	59·7	126
1950	15	2·0	5·7	2·93	16·65	9·41	71·0	71·7	267
1951	10	4·2	5·1	1·22	20·57	13·37	85·5	85·7	60
1952	21	19·2	127·8	6·67	23·85	15·50	97·5	97·7	57
1953	11	3·7	5·0	1·36	24·65	16·02	100·4	100·7	844
1954	15	5·5	21·7	3·94	24·65	16·02	101·7	101·9	427
1955	16	9·8	9·6	0·97	25·24	16·41	106·3	106·6	157
1956	14	11·1	31·9	2·87	26·52	17·23	110·8	111·0	473
1957	14	5·4	3·1	0·57	27·28	17·72	113·9	114·1	1,940
1958	20	11·0	3·0	0·27	27·34	17·78	114·7	114·9	2,330
1959	20	11·2	11·2	1·00	28·15	18·30	120·7	120·8	2,852
1960	43	25·7	27·3	1·06	29·46	22·09	126·8	127·1	2,512
1961	22	9·7	23·2	2·40	29·88	22·41	128·8	129·0	2,154
1962	28	8·4	6·3	0·75	29·88	22·41	129·5	129·7	2,932
1963	28	42·6	32·0	0·75	30·15	22·61	132·8	133·0	2,674
1964	26	6·2	7·1	1·16	31·12	23·34	137·5	137·6	2,677
1965	33	12·6	10·0	0·79	31·96	23·97	143·4	143·5	1,679
1966	25	2·9	6·2	2·17	33·50	25·13	153·6	153·8	785
1967	26	5·1	6·0	1·18	(j)	(j)	159·6	159·9	718
1968	70	18·7	21·8	1·16	35·45	27·08	169·0	168·7	608
1969	104	59·1	101·4	1·72	36·45	27·88	179·5	179·3	524
1970	125	46·5	141·1	3·03	38·45	29·40	198·2	198·0	474
1971	132	35·8	69·4	1·94	39·45	30·90	219·5	219·4	872
1972	105	28·3	94·6	3·34	40·45	32·40	234·2	232·5	2,808
1973	160	37·6	117·3	3·12	44·00	39·00	267·9	266·3	4,960
1974	257	188·1	256·9	1·37	48·50	43·50	357·7	356·5	2,863
1975	236	53·8	100·7	1·87	48·50	43·50	401·2	398·5	9,317
1976	250	100·7	252·1	2·50	48·50	43·50	468·4	466·0	13,598
1977	229	54·9	220·5	4·02	48·50	43·50	526·0	524·2	15,706
1978	306	76·1	197·9	2·60	48·50	43·50	p 561·6	p 559·7	20,470

(a) Excludes disputes involving cessation of work of less than 10 man-days. Details of the number of disputes and workers involved in disputes which commenced in any year and were still in progress during the following year are included in the figures for both years. (b) At 31 December. (c) End of December. Base: weighted average wage rate for Australia, 1954 = 100. (d) Payment commenced 1 July 1945. (e) Includes workers indirectly involved, i.e. those thrown out of work at an establishment where a stoppage occurred but not themselves parties to the dispute. (f) The rates shown for 1964 and later apply uniformly throughout the State. (g) Excludes workers in rural industry. (h) Year ended 30 June; average number of persons on benefit at end of each week. (i) The first State basic wage operated from the beginning of the first pay-period commencing on or after 1 July 1926. (j) Special loading of 60 cents a week added to award rates for adult males and adult females operative from the beginning of the first pay-period commencing on or after 1 July 1967. Loading increased to \$1·95 operative from the beginning of the first pay-period commencing on or after 25 October 1968 until 22 November 1968 when loading was absorbed in basic wage.

CONSUMER PRICE INDEX (a)

Year ended 30 June	Group index numbers—Perth											Weighted average of six State capital cities
	Food	Clothing	Housing	Household supplies and equipment	Miscellaneous	Household equipment and operation	Transportation	Tobacco and alcohol	Health and personal care	Recreation	All groups		All groups
1949	38.4	50.6	36.1	60.4	45.4						44.0	43.9
1950	42.6	58.3	38.2	64.6	46.6						48.0	47.6
1951	48.8	66.7	42.9	71.0	50.4						53.9	53.8
1952	60.8	80.8	50.2	84.2	60.8						65.6	65.9
1953	69.7	84.8	57.6	90.9	67.1						72.5	72.1
1954	74.0	84.8	62.0	92.7	66.8						74.6	73.5
1955	76.1	84.9	68.6	92.8	66.8						76.3	74.0
1956	77.4	86.0	71.3	92.7	70.8						78.3	77.0
1957	80.9	87.4	71.1	95.0	78.5						81.8	81.5
1958	79.7	89.6	72.5	96.0	79.4						82.4	82.3
1959	80.3	90.8	75.0	96.3	79.6						83.2	83.6
1960	82.5	91.7	76.9	97.3	81.1						84.8	85.7
1961	86.7	93.9	81.6	97.6	84.0	n.a.	n.a.	n.a.	n.a.		87.9	89.2
1962	86.1	94.7	84.3	97.6	84.0					n.a.	88.2	89.6
1963	86.4	95.0	86.9	97.3	84.2						88.7	89.8
1964	87.4	95.7	89.8	95.7	86.2						89.8	90.6
1965	91.0	96.8	92.1	96.7	90.0						92.6	94.0
1966	95.2	97.9	95.4	98.3	95.3						96.1	97.4
1967	100.0	100.0	100.0	100.0	100.0						100.0	100.0
1968	102.9	102.1	105.8	100.7	103.2						102.9	103.3
1969	104.5	104.5	112.7	102.1	105.6						105.5	106.0
1970	108.1	107.8	120.1	103.7	109.8						109.4	109.4
1971	112.5	112.3	125.7	107.7	114.8						114.1	114.6
1972	116.4	118.9	133.7	112.7	124.5						120.7	122.4
1973	124.5	126.1	139.7	117.4	130.4						127.3	129.8
1974	141.7	143.3	149.1	125.7	141.6						140.6	146.6
1975	160.9	174.2	174.2			154.5	158.2	167.6	188.2		166.1	171.1
1976	180.2	202.3	209.7			184.1	184.9	206.4	156.6		189.6	193.3
1977	205.5	232.9	244.5	n.a.	n.a.	198.9	206.2	226.3	308.1	104.3	219.4	220.0
1978	235.6	258.6	269.4			217.8	224.8	237.6	365.7	113.5	243.1	241.0
1979	260.2	277.0	282.3			233.4	249.4	277.2	337.0	120.8	262.8	260.7

(a) With the exception of Health and personal care (Base: December quarter 1968 = 100) and Recreation (Base: September quarter 1976 = 100), the base of each index is Year 1966-67 = 100.

BUILDING COMPLETED

Year ended 30 June	Houses (a)		Other dwellings (a)(b)		Alterations and additions (c) to dwellings	Other building (d)				Total, all building (d)
	Number	Value (d)	Number	Value (d)		Value (d)	Factories	Offices	Education		Total, 'Other building'
1946	860	\$'000 1,452	2	\$'000 4	\$'000	\$'000 144	\$'000	\$'000	\$'000 492	\$'000 1,948
1947	1,792	3,516	....	....	....	98	....	....	716	1,232
1948	2,771	5,784	....	....	....	176	....	....	872	6,656
1949	3,244	7,592	....	....	....	440	....	....	1,822	9,414
1950	3,509	8,974	101	194	....	446	....	....	1,536	10,704
1951	5,160	15,032	305	606	....	410	n.a.	n.a.	2,258	17,896
1952	6,577	24,466	215	300	....	1,402	....	....	4,086	28,852
1953	7,965	37,988	100	334	....	1,668	....	....	7,514	45,836
1954	7,627	39,768	212	834	....	1,734	....	....	10,968	51,570
1955	8,792	48,422	316	1,176	....	6,250	....	....	18,594	68,192
1956	7,760	45,084	584	2,564	....	3,756	842	2,162	19,708	67,356
1957	5,030	29,054	365	1,502	(e)	2,210	2,002	1,162	16,292	46,848
1958	6,196	36,526	171	712	....	2,526	3,906	1,110	17,286	54,524
1959	5,846	34,410	212	840	....	2,792	2,384	4,584	25,274	60,524
1960	5,997	35,454	263	986	....	2,368	1,544	5,838	23,800	60,240
1961	5,973	38,102	440	1,580	....	4,736	4,118	7,956	32,368	72,050
1962	6,082	39,470	265	1,342	....	3,038	2,902	6,014	27,260	68,072
1963	6,593	45,780	642	2,984	....	4,912	1,588	7,724	37,664	86,428
1964	7,276	51,774	1,295	5,596	....	5,384	5,996	6,226	35,498	92,868
1965	7,445	57,238	1,841	9,046	....	6,816	2,820	8,044	40,816	107,100
1966	7,265	58,089	1,624	9,096	....	9,631	10,576	8,459	62,993	130,178
1967	8,272	78,078	1,742	9,322	....	9,841	7,093	10,477	74,735	162,135
1968	9,858	97,370	2,392	12,577	....	15,061	14,608	12,051	85,456	195,403
1969	12,840	133,276	3,491	22,406	....	15,845	10,885	14,122	99,152	254,833
1970	13,933	151,300	5,596	40,519	....	16,615	14,294	13,297	111,577	303,397
1971	11,900	149,267	5,013	39,964	404	18,006	39,736	20,589	175,377	365,012
1972	13,209	165,548	1,595	13,913	1,187	21,336	19,360	16,325	150,790	331,440
1973	13,660	163,396	920	7,308	1,842	15,594	21,245	24,767	151,468	324,013
1974	12,517	176,410	3,546	32,828	2,763	23,430	19,034	21,846	139,163	351,164
1975	10,994	198,605	3,300	38,882	4,427	18,216	18,443	39,965	170,105	412,020
1976	12,080	253,756	2,948	43,989	8,714	22,387	45,695	58,285	227,299	533,757
1977	15,155	394,991	6,152	113,875	15,405	26,640	43,533	29,497	226,433	750,706
1978	12,685	378,760	4,681	98,949	21,496	34,611	18,166	46,109	234,046	733,251

(a) Prior to 1970-71 figures include alterations and additions to dwellings. Data for 1970-71 and later years relate to new dwellings only. (b) Individual living units; prior to 1 July 1973 described as 'Flats'. (c) Valued at \$10,000 and over. (d) Excludes the value of land. (e) Not available separately; included with 'Houses' and 'Other dwellings' as appropriate.

WESTERN AUSTRALIA IN RELATION TO AUSTRALIA

Particulars	Unit	Date or period	Western Australia	Australia	Percentage
Area	sq km	....	2,525,500	7,682,300	32.9
Proportion of area having rainfall—					
Under 250 mm	per cent	....	58.0	39.0	....
250 mm and under 500 mm	per cent	....	29.2	31.8	....
500 mm and over	per cent	....	12.8	29.2	....
Population	number	Dec. 1978	1,231,700	14,330,900	8.6
Population increase	number	1978	20,600	167,400	12.3
Rate of population increase	per cent	1978	1.7	1.2	....
Births registered	number	1978	20,611	224,181	9.2
Deaths registered	number	1978	7,794	108,425	7.2
Marriages registered	number	1978	9,404	102,958	9.1
Divorce—Dissolutions granted	number	1978	3,387	40,525	8.4
Wage and salary earners (a)	'000	June 1979	401.1	4,777.9	8.4
Average weekly earnings per employed male unit	\$	1978-79	223.3	225.7	....
Unemployed on benefit	number	May 1979	31,548	318,905	9.9
Industrial disputes—Working days lost	'000	1978	197.9	2,130.8	9.3
Trade union membership	'000	1978	234.8	2,774.8	8.5
Area under crop	'000 hectares	1977-78	4,901	16,791	29.2
Area under sown pasture	'000 hectares	1977-78	7,214	25,892	27.9
Area under irrigation	'000 hectares	1975-76	28	1,475	1.9
Area of—					
Wheat for grain	'000 hectares	1977-78	3,609	9,955	36.3
Oats for grain	'000 hectares	1977-78	415	1,076	38.6
Barley for grain	'000 hectares	1977-78	614	2,803	21.9
Hay	'000 hectares	1977-78	107	313	34.2
Fruit and vineyards	'000 hectares	1977-78	9	165	5.5
Livestock—					
Sheep	'000	Mar. 1978	29,820	131,442	22.7
Cattle	'000	Mar. 1978	2,271	29,379	7.7
Pigs	'000	Mar. 1978	237	2,219	10.7
Wool production (b)	tonne	1978-79	157,400	709,167	22.2
Meat production (c)	'000 tonnes	1978-79	218	2,708	8.1
Whole milk production	mil. litres	1978-79	211	5,661	3.7
Butter production	million kg	1978-79	(d) 1.4	101.3	1.4
Fish (live weight)	tonne	1977-78	10,897	62,789	17.4
Crustaceans (live weight)	tonne	1977-78	14,839	34,641	42.8
Value of primary commodities produced (excluding mining)	\$m	1978-79	1,440	10,440	13.8
Mining establishments—Value added (e)	\$m	1977-78	(f) 949.8	3,905.0	24.3
Gold production	'000 grams	1977-78	(g) 13,653	21,323	64.0
Iron ore production	'000 tonnes	1977-78	85,241	90,261	94.4
Bauxite production	'000 tonnes	1977-78	(g) 10,891	24,826	43.9
Black coal production	'000 tonnes	1977-78	(g) 2,433	78,919	3.1
Crude oil production	'000 barrels	1977-78	(g) 11,317	159,276	7.1
Manufacturing establishments (h)—					
Number (e)	....	1977-78	2,037	25,999	7.8
Employment—Average over whole year (e)	'000	1977-78	66	1,143	5.8
Wages and salaries paid (e)	\$m	1977-78	629.1	11,119	5.7
Value added (e)	\$m	1977-78	1,208.8	20,381	5.9
Total new dwellings commenced	number	1977-78	14,901	118,696	12.6
Value of all building commenced	\$m	1977-78	732.2	6,205.0	11.8
Overseas imports	\$m f.o.b.	1977-78	937.3	11,166.6	8.4
Overseas exports	\$m f.o.b.	1977-78	2,589.0	12,269.5	21.1
Overseas cargo discharged	'000 tonnes	1977-78	6,047.0	21,654.4	27.9
Overseas cargo shipped	'000 cu m	1977-78	355.2	5,062.5	7.0
	'000 tonnes	1977-78	89,244.6	164,170.0	54.4
Motor vehicles on register	'000	June 1978	384.7	2,163.2	17.8
New motor vehicles registered	'000	1978-79	695.5	7,114.5	9.8
Road traffic accidents—Persons killed	number	1978	57.6	618.9	9.3
Retail sales (excluding motor vehicles, etc.)	\$m	June qr 1979	345	3,713	9.3
Installment credit for retail sales—Balances outstanding	\$m	June 1979	596.1	(i) 6,556.6	(j)9.1
Savings bank deposits per head	\$	June 1979	328.8	3,033.9	10.8
Household income per head	\$	1976-77	920	1,380	....
Age and invalid pensions	number	June 1978	4,765	4,995	....
Disability and service pensions	number	June 1978	113,939	1,547,489	7.4
Student enrolment—			55,028	651,203	8.5
Government schools	number	Aug. 1978	216,209	2,371,355	9.1
Non-government schools	number	Aug. 1978	44,971	638,677	7.0
Universities	number	April 1978	12,099	160,035	7.6
Colleges of Advanced Education	number	April 1978	18,465	149,922	12.3

(a) In civilian employment. Excludes defence forces and employees in agriculture and private domestic service, and trainee teachers. (b) In terms of greasy wool. Comprises shorn wool, dead wool, fellmongered wool and wool exported on skins. (c) Dressed carcass weight. Excludes offal. (d) Source: Department of Agriculture, from October 1978. (e) See definitions at the beginning of Chapter VIII. (f) Excludes establishments predominantly engaged in quarrying sand and gravel. (g) As reported to Department of Mines. (h) See Chapter VIII, Part 3. Excludes electricity and gas establishments. (i) Excludes details of Australian Capital Territory and Northern Territory. (j) See footnote (i).

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APPENDIX

CHAPTER III—CONSTITUTION AND GOVERNMENT

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THE STATE PARLIAMENT

Members of the Legislative Council at 30 September 1979

McNeil, Hon. Thomas, member of the Legislative Council for the electoral province of Upper West. Political party: N.P. (National Party).

ARTICLES PUBLISHED IN PREVIOUS ISSUES (a)

In cases where an article has been published in more than one previous issue, the reference to its last appearance only is given.

Article	Year Book
Agriculture, Institute of, University of Western Australia	1975, pp. 217-18
Air pollution and the weather	1975, pp. 63-5
Albany, Port of	1971, pp. 449-51
ANZAAS Congress: Perth, 1973	1973, pp. 562-4
Basic wage, historical summary—	
Commonwealth	1968, pp. 396-401
State	1968, pp. 403-5
Captain Fremantle's Report of Arrival of First Settlers, text of	1976, pp. 541-2
Captain Stirling's 'Narrative of Operations', text of	1974, pp. 533-41
Census of Wholesale Establishments, 1968-69	1976, pp. 434-7
Censuses of population and housing, 1911 to 1966	1972, pp. 547-70
Computer Service Centre, Perth	1969, p. 504
Conservation of the fauna	1976, pp. 93-5
Conservation of the flora	1975, pp. 78-80
Cyclones, tropical	1969, pp. 43-50
Education Department, history of	1972, pp. 117-21
Electoral Divisions (Commonwealth)	1971, pp. 97-8
Electoral Divisions (Commonwealth), origin of names of	1970, p. 530
Electoral Provinces and Electoral Districts (State)	1976, pp. 116-17
Esperance, Port of	1973, pp. 444-6
Exploration in Western Australia	1975, pp. 9-28
Export price index	1970, p. 507
Flora of Western Australia—	
Acacia	1965, pp. 59-60
'Christmas tree' (<i>Nuytsia floribunda</i>)	1962, p. 51
Economic value of the flora	1968, pp. 54-5
Grasses	1976, pp. 69-72
Orchids	1968, pp. 48-9
Proteaceae family in Western Australia	1974, pp. 52-4
Rutaceae family in Western Australia	1972, pp. 53-5
Special features of the flora	1962, pp. 51-2
Forests Department, history of	1976, pp. 125-7
Fremantle, Port of	1970, pp. 441-3

(a) Commencing with the present series: No. 1—1957.

ARTICLES PUBLISHED IN PREVIOUS ISSUES (a)—*continued*

Article	Year Book
Geraldton, Port of	1972, pp. 447-9
Government administration, Commonwealth	1973, p. 542
Governor Darling's letter to the Earl of Bathurst, text of	1974, pp. 541-2
Governors and Administrators of Western Australia—	
1828 to 1951	1957, p. 65
1901 to 1959	1960, p. 81
1901 to 1963	1968, p. 89
1828 to 1974	1975, pp. 117-18
Governor Stirling's Commission dated 4 March 1831, text of	1979, pp. 12-16
Historical review—chronological notes from 1829	1967, pp. 2-33
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