

ULM, Charles Thomas Philippe (1898–1934), aviator, qualified as a pilot after serving in the first AIF. With Charles Kingsford-Smith he took part in two pioneering flights around Australia in 1927, and the first flight across the Pacific. He was subsequently managing director of Australian National Airways, and carried the first trans-Tasman passengers and airmail. He disappeared in 1934 on a flight from the United States to Australia that was intended to demonstrate the feasibility of a commercial trans-Pacific air service.

UNEMPLOYMENT rates in Australia have fluctuated widely with shifts in local and world economies. Even in periods of prosperity the country has rarely experienced full employment. The highest rates occurred during the depressions of the 1840s, 1890s and 1930s, but high unemployment has also prevailed at other times. Thus, from a pre-depression figure of 6.4 per cent in 1927, the rate rose to 19.3 per cent in 1930, peaked at 29 per cent in 1932 and remained above 10 per cent for the rest of that decade; it generally remained below 2 per cent in the extended period of postwar boom, but rose sharply during the recession of the mid-1970s, climbing from 1.6 per cent in 1974 to 6.2 per cent in 1978, then to 10 per cent in 1983.

Following the depression of the 1930s, governments strove to achieve full employment. They also began assuming responsibility for providing for the jobless, but the means for doing so remained haphazard. During the depressions of the 1890s and 1930s colonial and state governments had resorted to makeshift measures for coping with the unemployed. Like the charitable bodies aiding the jobless, they doled out food, clothing and money to the destitute, who, in return, could be required to labour on public works. Only Queensland, which implemented an unemployment insurance scheme in 1923, had developed a regular system of relief. The nature of relief became a matter of political dispute when the federal Labor government introduced the first national unemployment benefits scheme in 1945 following the passage of



Unemployed men engaged on road works near Hobart. Illustrated Tasmanian Mail, 20 Jan 1932.

Photograph J. J. Cowburn.

ARCHIVES OFFICE OF TASMANIA

the Unemployment and Sickness Benefits Act (1944), which allowed for benefits subject to a means test and at a rate determined according to the age, marital status and number of dependent children of the unemployed person. Initially the benefits were financed by a social services contribution tax, but in 1950 it was merged with income tax. Labor generally favoured paying an allowance, while the conservative parties preferred the idea of a contributory scheme. High levels of postwar employment, however, soon pushed the debate into the background, where it remained until rising unemployment again focused community attention on the unemployed during the 1970s. The number receiving unemployment benefits rose dramatically during the 1970s and 1980s: from about 19 480 recipients in 1971 the figure rose to 584 000 in 1984.

From the mid-1970s employment levels were increasingly taken as a measure of government competence, rising unemployment rates proving an electoral liability. When in power both major party groupings, Labor and Liberal–National, continued

paying commonwealth unemployment benefits and devised special support schemes for groups vulnerable to chronic unemployment. Their differences were mainly rhetorical: while Labor voiced concern over the plight of the jobless, the conservative parties stressed the duty of unemployed people to seek work and cease being a burden on the community. The latter view gave rise to the term 'dole bludger', the effect of which was to stigmatise the long-term unemployed as lazy and irresponsible.

Unemployment continues to raise concern. Government-sponsored employment and training programs aimed at vulnerable groups proliferated in the late 1970s and 1980s. Numerous self-help organisations for the unemployed also emerged, many aided by government grants. 'Job creation' became an emotive catch-cry, as when mining and timber companies raised the spectre of unemployment to justify development schemes. Past attempts by governments and employers to take advantage of high unemployment to reduce wages, break strikes and weaken unions remained potent symbols for rallying trade unionists. Social workers drew attention to how unemployment afflicted women, young school leavers, Aborigines, recent migrants and some immigrant communities in particular, and aggravated social problems like family violence and drug abuse. Radical social critics maintained unemployment stemmed from the evolution of Australian capitalism: it

was increasing because the giant corporations controlling local industry were implementing international strategies in which their local employees were insignificant; meanwhile employers were automating to reduce their reliance on workers.

Further reading K. Windschuttle, *Unemployment: a social and political analysis of economic crisis in Australia*, Melbourne 1980.

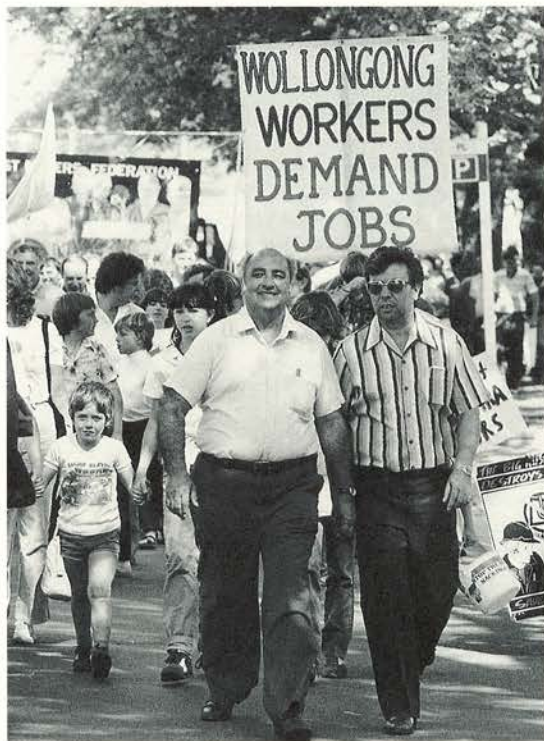
UNITED AUSTRALIA PARTY (UAP) was formed in May 1931 after an influx of ex-Labor members into the Nationalist Party created a major regrouping in the federal parliament. Joseph Lyons, a former Labor member, was elected leader. The UAP governed alone from December 1931 to 1934, when internal rifts and an electoral swing forced Lyons to seek Country party support. After Lyons' death (1939), R.G. Menzies was elected leader and became prime minister until August 1941, when he resigned as a result of internal attacks on his leadership. The Country party leader, A.W. Fadden, succeeded Menzies as prime minister. The coalition was defeated (October 1941) and Fadden was unanimously elected joint opposition leader. After a severe non-Labor defeat (1943) Menzies resumed leadership of the UAP and replaced Fadden as opposition leader. In 1944 and 1945 he reconstructed the moribund UAP and formed the Liberal Party of Australia.

UNITING CHURCH This church was inaugurated in 1977 from a union of the Methodist Church of Australia, the Congregational Union of Australia and the Presbyterian Church of Australia. Formal discussions on union began in 1957 and in 1964 'A proposed basis of union' was presented to the churches for discussion. This final revised version was approved in 1971. Almost 85 per cent of Methodists and 83 per cent of Congregationalists voted in favour of the union. Two successive ballots registered 75 per cent and 72 per cent of Presbyterians in favour of the union. A large minority of the latter opted to continue as the Presbyterian Church of Australia. A small number of Methodist and Congregational churches still exist.

The church perceives itself as an Australian church and resolutions of assemblies on issues such as Aboriginal land rights and nuclear disarmament are indications that the church is prepared to take a political stance in order to 'serve the world'.

At the 1981 census members of the Uniting Church comprised 4.9 per cent of the population. This figure is probably due to the loss of nominal adherents who now opted for no church on census day.

UNIVERSITIES In the American colonies, Harvard College was founded in 1636 when colonial New England had a population of 30 000 people, but had 100 resident graduates of Oxford or Cambridge. Australia, with its origins as a penal colony and its smaller educated middle class, moved more slowly but with the same tendency to look to Oxford, Cambridge and the Scottish universities. Our oldest university, the University of Sydney, founded in 1850, began teaching in 1852 a basic course consisting of classics and



In Canberra in 1982, steelworkers protested at the loss of jobs in the steel industry. Photograph by John Houldsworth.

AUSTRALIAN INFORMATION SERVICE



The Melbourne University Students' Representative Council of 1946 poses for a formal photograph.

UNIVERSITY OF MELBOURNE

logic, mathematics and the natural sciences (physics, chemistry and geology); the single chair of Greek and Latin was the first established, initially to teach all subjects. A law faculty was founded in 1855, though law was not taught until 1858. The University of Melbourne, established in 1853, began teaching in 1855, with chairs of classics, mathematics, natural sciences and law. Melbourne founded Australia's first medical school (1862–63) and the second law school (1875). The 1860s also saw chairs established in the fields of language and literature, philosophy and history in both universities, English, French and German studies initially being combined under the one chair in each university.

The consciousness of building for the future rather than for the present was strong in both universities. So was the belief that universities had a mission of civilising, softening the population and manners of a rough, crude colony. Sydney erected a magnificent 'great hall' to seat over 500 when it had 150 students. Though the importance and the ideological centrality of the arts faculty in all Australian universities were not challenged anywhere till after World War II, a marked tendency towards emphasising practical and professional education became evident from the 1870s.

The universities of Adelaide (founded 1874), Tasmania (1890), Queensland (1909) and Western Australia (1911) all included faculties of arts as foundation faculties but also emphasised commerce, science or engineering.

By World War I, then, Australia had a university in each of the six states, training men and women for teaching and the professions, principally if not entirely funded by each state and closely bound up with the life of that state. In the 1930s, largely for political reasons, university colleges were established in Canberra and Armidale as colleges of the universities of Melbourne and Sydney respectively. By 1946, total student enrolments in these university institutions had reached 25 500. By the mid-1980s, student numbers in the six 'old' universities ranged

from 18 400 students at Sydney to 5000 at Tasmania, while the number of faculties ranged from ten to thirteen, and the number of academic staff from 1400 at Sydney (136 of them professors) to 370 (36 professors) at Tasmania. All the 'old' universities had faculties covering agricultural science, engineering and planning, arts, dentistry, economics, education, law, medicine and science; three had faculties of veterinary science; four had faculties of music; and only one in each case had a separate faculty of mathematical science, environmental studies, fine arts and social work.

In the period following World War II the commonwealth government played an increasingly important role in university education, through the direct funding of students, its assumption of an overwhelming role in university funding on the advice of its universities commission and later its tertiary education commission. Twelve new universities were founded; and total enrolments reached 200 000 by the mid-1980s. By then Melbourne and Sydney each had three universities and collectively some 40 degree-granting non-university tertiary institutions. There was an enormous increase in postgraduate research, some 20 000 students being enrolled in postgraduate university courses by the mid-1980s. The PhD degree, virtually unknown as a local degree in Australia before the war, was now common.

These expansions were facilitated by the founding of twelve new universities, some arising out of previously existing institutions. The Australian National University (ANU) in Canberra was founded by the federal government in 1946 as a postgraduate research university, initially consisting of four research schools (physical sciences, medical research, social sciences and Pacific studies) and accepting a limited number of postgraduate students who proceeded towards the degree of PhD by thesis alone. In 1960, under pressure from the commonwealth government, the Canberra University College amalgamated with the ANU, which was thenceforth divided into an institute of advanced studies and the (teaching) faculties. The ANU was conceived as a counterpart to the research institutes of the academies of science of European countries and meant to promote, above all, advanced studies and research, bringing back eminent Australians from abroad and training the ablest Australian graduates at home. The other universities founded since have been modelled more conventionally on the British notion of a university as primarily a teaching institution, though a number have experimented with more flexible academic structures, new disciplines and new divisions of fields of studies. The University of New South Wales, founded in Sydney in 1949 as the University of Technology and changing its name in 1958, put some emphasis on applied science and took over academic responsibility for teaching at the Royal Military College, Duntroon, as its faculty of military studies. It became the largest of the Australian universities, with some 19 000 students. Though it covered all the normal university interests, including arts, medicine and law, it retained its initial

emphasis on practical, industry-related 'applied' disciplines, taking pride in having introduced university courses in textile, fuel, food and wool technologies, marketing, optometry, polymer science, ceramic engineering, landscape architecture, bio-medical engineering, transport and highway engineering, nuclear engineering, librarianship and business administration.

The University of New England, opened in 1938 as a college of the University of Sydney, became a separate university in 1954, pioneering a well-developed program of external studies and emphasising a more deliberate rural orientation. Monash University, the second university in Melbourne, founded in 1958 and opened in 1961, had over 14 000 students by 1986. Third universities in Sydney (Macquarie) and Melbourne (La Trobe) were founded in 1964, their student numbers being over 11 000 and nearly 9000 respectively in 1986. Both of these universities put some emphasis on innovative courses and transcending traditional disciplines. Macquarie had a special interest in (ethnic) community studies and community languages and in allowing students greater flexibility and subject choice. The University of Newcastle, established in 1951 as a college of the University of New South Wales, became autonomous in 1965 as one of the smaller non-capital city universities. In 1986 it had eight faculties, including a medical faculty, an academic staff of 320 (40 professors) and over 4000 students. Flinders University, established in 1963 as a second campus of the University of Adelaide, became a separate university in 1966 when it began teaching. It opted for a school as opposed to a faculty structure and initially emphasised cross-disciplinary work and study; in 1986 it was about the same size as the University of Newcastle. Also similar in size, with 300 academics, over 3000 students and six faculties, was James Cook University, established as the Townsville College of the University of Queensland in 1961 and becoming a separate autonomous university in 1970. In 1982 it amalgamated, under pressure from government, with the Townsville College of Advanced Education. It put special emphasis on tropical veterinary science and tropical marine studies and disaster studies, and has a special interest in Aboriginal and Islander peoples. A second university in Brisbane, Griffith University, was established in 1971 and in 1986, with some 2500 students, was the smallest in student, though not in academic staff, numbers. Two universities founded later in the 1970s (Murdoch University, the second university in Perth, and Deakin University in Geelong) both put special emphasis on cross-disciplinary studies and on external studies, and rejected a faculty structure. In 1986 Murdoch had 2100 students on campus and over 1000 external students; Deakin had 3200 students on campus and 3000 external students. The University of Wollongong, established as a college of the University of New South Wales in 1962 and founded as a separate university in 1975, was amalgamated in 1982 with the adjacent Institute of Education, formerly the Wollongong Teachers' College. By 1986 it had about 5000

students and was offering an unusual range of diplomas, from coal geology through to industrial relations, metallurgy and applied multicultural studies to public works engineering, sociology and English as a second language. The university made a special attempt to attract overseas students on the basis of its special sympathy for their needs, though the University of Western Australia, the University of New South Wales and Griffith University had also been specially attractive to overseas students from the Asian-Pacific region.

The variety of disciplines and fields of academic and professional interest studied in Australian universities increased enormously from the mid-1950s; so did the variety of approaches to the nature of teaching and what should be taught. The comparative cultural isolation of the Australian academic was greatly reduced and academics became more familiar with foreign university systems. The research function of Australian universities reached levels not dreamt of even in the early postwar years. Australian academics in many fields, from radio astronomy to philosophy, from medical research to geophysics, achieved world standing, while the universities became widely recognised as serious institutions with common and respectable appointment procedures, admission standards for students and, in most subjects, respectable standards of assessment. Like many universities throughout the world, they were by the 1980s facing many problems as a result of external pressures, internal stresses and ideological conflicts, not to mention economic problems resulting in (and then, from) the sudden end to the rapid university expansion of the 1960s and 1970s. But on the world scene, Australian universities did credit to a country that had a reputation of putting pragmatism and practicality before education and culture.

EUGENE KAMENKA

URANIUM is a radioactive silvery-white metallic element with the highest atomic number (92) and the highest atomic weight (238) of all naturally occurring elements. It was the first element in which nuclear fission was observed in 1938 and provides the raw material for use in nuclear power stations and nuclear weapons. Australia is potentially one of the best sources of low-cost uranium in the world, having about one-fifth of the known reserves of non-communist nations.

Uranium was first discovered in Australia in 1894 and first mined at Mount Painter and Radium Hill, SA. In 1948, in line with British interest in nuclear arms development, the Australian government offered rewards and taxation incentives to promote uranium discoveries. Deposits were subsequently discovered at Rum Jungle, NT, in 1949 and at Mary Kathleen, Qld, in 1954, and both of these deposits were mined. The growth in world demand for uranium in the 1960s, as nations shifted to generating electricity using nuclear power, revived interest in uranium exploration, as a result of which a series of discoveries was made during the 1970s. These included those at Ranger, Nabarlek and Jabiluka, NT, Yeelirrie, WA, Ben Lomond, Qld, and Honeymoon, Beverley and

Roxby Downs, SA, the last of these possibly being the largest of all Australian deposits.

In 1967 the Liberal-Country party government eased controls on exports of uranium and in 1972 authorised the export of 9000 tonnes by the firms Mary Kathleen Uranium, Queensland Mines and the consortium mining the Ranger deposits. The incoming Labor government decided to honour existing contracts while delaying authorisations of new mine development, to conserve uranium resources and allow time for public equity participation in new projects to be negotiated.

Public debate about uranium mining led to the Ranger Uranium Environmental Inquiry in 1975 and the postponement of export approvals (Mary Kathleen excepted).

By 1983 Ranger and Nabarlek were the only two mines operating in Australia. The decline in demand for uranium did not appear to justify further development and exploration. However, in 1979, the mining firms BHP, CSR, Peko-Wallsend and Western Mining Corporation, initially with government approval, established the Uranium Enrichment Group of Australia to analyse aspects of the establishment of a uranium enrichment industry in Australia, which would be more lucrative than the production of yellowcake (uranium oxide), the form in which uranium was then being exported. In 1982 the group reported to the government that it favoured the building of an enrichment plant near either Adelaide or Brisbane.

Uranium mining by then had become a highly contentious issue. It was, and continued to be, argued that it is dangerous to human life and the environment and that present methods of radioactive waste disposal are inadequate; that it disrupts the Aboriginal communities on whose land many of the larger deposits have been found; and that it contributes to the risk of atomic war. Pro-mining interests maintain that the industry has a good safety record and promises excellent economic benefits, especially to Aborigines.

The policy of the Labor government which came to power in 1983 has been to permit existing uranium contracts to proceed, but to oppose the development of any new projects except in specified circumstances. It accordingly permitted shipments of uranium to be made only to countries which it was satisfied were observing the Treaty on the Non-Proliferation of Nuclear Weapons. It temporarily suspended shipments to France in response to French nuclear tests in the Pacific, resuming sales in 1986 despite widespread protest in the community and within the ALP.

TRACY BELL

URBAN WATER SUPPLY The paucity of reliable local water supplies caused colonial authorities to construct water storage and distribution facilities soon after each capital city was founded. The tanks excavated along Sydney's Tank Stream in 1790 were the first of these facilities. When these became inadequate during the 1820s, water was carted, then brought by tunnel and later pumped from swamps beyond the



'The old Tank Stream, NSW.' One of a series of postcards, c1900, depicting Sydney in 1819.

NATIONAL MUSEUM OF AUSTRALIA



Declining day, old Pyrmont bridge, oil on canvas by Henry Fullwood, 1892. This first bridge across Darling Harbour in Sydney was opened in 1857 and only replaced in 1902. St Andrew's Cathedral and the Town Hall, with the new Centennial Hall completed in 1889, are prominent on the city skyline.

TASMANIAN MUSEUM AND ART GALLERY

city. By the 1880s, when more reliable supplies were required, water was being diverted from the Nepean River to a reservoir at Prospect, thence by pipe into the city. This project, completed in 1885, became the basis of Sydney's later water storage and supply system. Six major dams (Cataract, Cordeaux, Avon, Nepean, Woronora and Warragamba) were built west and southwest of Sydney from 1907 to 1960 to provide the sufficient storage to keep up with urban growth; additional dams (Yarrunga, Fitzroy Falls and Wingecarribee) were built in the 1970s, boosting storage capacity to 2.4 million megalitres.

Melbourne's water was drawn directly from the Yarra River until the completion of the Yan Yean reservoir in 1857. Seven further reservoirs (Maroon-dah, O'Shannassy, Silvan, Upper Yarra, Greenvale, Cardinia and Winneke) were built by 1980, giving Melbourne more than 1.3 million megalitres of storage capacity. The Thompson River Dam, commissioned in 1986, will almost double Melbourne's storage capacity.

Brisbane's water supply was a chain of waterholes

on the northwestern edge of the city until the Enoggera Creek reservoir was built in 1866. Further reservoirs (Gold Creek, Mount Crosby, Lake Manchester, Camerons Hill, Holts Hill, Green Hill, Tarragindi, Somerset and North Pine) raised storage capacity to 1.14 million megalitres. The Wivenhoe project on the Brisbane River, completed in 1985, doubled Brisbane's storage capacity.

Adelaide's water was drawn from the Torrens River until a weir was built in 1860 to divert the river's water to a reservoir at Thorndon Park. Further reservoirs (Hope Valley, Happy Valley, Millbrook, South Para, Mount Bold, Myponga, Kangaroo Creek and Little Para) with total capacity of two million megalitres were built; and from 1954 Murray River water was pumped into these.

Perth's water was drawn from private and public wells until 1889, when a private firm was authorised to establish a waterworks, for which the Queen Victoria and Mount Eliza reservoirs were built. Some municipalities later sank artesian bores as well. The state government, which took over the metropolitan

supply in 1904, subsequently built the Mundaring, Churchmans Brook, Wungong, Canning, Serpentine and South Dandalup reservoirs. Storage capacity was eventually raised to 0.629 million megalitres, with another 0.095 million available from groundwater. Water for the Kalgoorlie goldfields was supplied from 1903 via a 492-kilometre pipeline from Mundaring—a scheme then deemed an engineering marvel.

Hobart was supplied with water in 1831 when an aqueduct was constructed to carry water from the Hobart rivulet on Mount Wellington. Pipes then distributed the water to a series of wells around the city. The city council took control of the supply in 1860 and later built three reservoirs on Mount Wellington. Water is also drawn from Lake Fenton and from the Derwent River upstream of New Norfolk.

Canberra's water is supplied by the Cotter, Bendora, Corin and Googong dams, built between 1915 and 1978. Darwin's supply is from the Manton (completed 1942) and Darwin River (1972) dams. A variety of municipal and state agencies are responsible for supplying provincial cities and country towns, the sources of which are various dams, lakes, rivers, wells and bores.

IAN HOWIE-WILLIS

Further reading C.H. Munro, *Australian water resources and their development*, Sydney 1974.

URBANISATION Initial European colonisation of Australia was predominantly in towns, but with the expansion of farming, grazing and later goldmining, settlement spread rapidly, if thinly, across much of the country. Nineteenth-century observers frequently remarked on the high proportion of the population of each colony found in its urban areas and particularly in its capital city.

By comparison with most countries both proportions were indeed high and have remained high. In 1861, 41 per cent of the combined population of NSW, Victoria and Qld lived in urban areas. By 1901 this had increased to 64 per cent. For Australia as a whole the proportion living in centres with more than 1000 inhabitants increased from 62 per cent in 1921 to 86 per cent in 1976. These levels of urbanisation are surprising in a country which is better known overseas for its wide open spaces and its grazing, agricultural and mining industries than for its great cities, manufacturing and commerce.

In most countries the majority of people used to live in rural areas and villages, and significant urbanisation began only when mechanisation and other changes reduced rural employment while attracting people to growing job opportunities in urban areas. Rural industries in Australia, however, were never very large employers. From the first settlement most rural holdings were large and employed relatively few workers. From the beginning they were commercial rather than subsistence operations, selling most of their production to markets in the cities or overseas in exchange for manufactured goods and services. Much of Australia's rural settlement has occurred since railways and road transport became efficient enough for these exchanges to be concentrated in a few large

centres. Industry, like commerce, has always been attracted to cities because they provide ready markets and a pool of workers.

Increasing levels of urbanisation in Australia have primarily occurred through migration from overseas, which also contributed to an increase in the absolute population of rural areas. Even in recent years migration has accounted for much of the growth of cities. Between 1947 and 1971 Sydney and Melbourne between them grew by 2.4 million people, 77 per cent of whom were overseas migrants. In addition, there has been movement from rural to urban areas, and the former have not grown in population to the extent that their natural increase would suggest.

In 1861 between one-fifth and one-third of each colony's population lived in its capital city; for all of Australia the proportion was 25 per cent. The proportion increased steadily to a peak of 59 per cent in 1971, but in the next decade fell to 53 per cent. This may be a short-term fall similar to that which occurred during the Great Depression, but it could herald a decline in metropolitan dominance. Hobart and Brisbane have for many years been the least dominant: in 1981 they accounted for only 31 and 41 per cent respectively of state populations. Melbourne and Adelaide were most dominant with 67 and 69 per cent respectively.

In Australia there are very few medium-sized cities. After the five mainland state capitals, which in 1981 all had populations over 800 000, only five others had over 100 000, another eight over 50 000 and another twelve over 25 000. Australia has only one inland city with a population over 100 000—Canberra—and it is largely the creation of the federal government. Canberra's population reached 250 000 in 1985.

The concentration of the population in a single city in each state arose from a combination of factors peculiar to the period and setting. Most important was the function of the cities as ports through which almost all trade, intercolonial and overseas, was funnelled and through which came the convicts, free settlers and goldseekers. Later the cities were also the natural locations for a large proportion of the developing manufacturing industries. From them spread the roads and railways, confirming their command over their hinterlands. Colonial and state governments, powerful relative to both the commonwealth and local governments, actively fostered the growth of their capitals. Each colony thus evolved its separate urban system.

By contrast, Australian towns have been almost exclusively local service centres, although regional centres often accommodate branches of public authorities and private firms based in the capital cities. As road, rail and air transport have become faster and cheaper, the smallest towns have lost business to producers in larger cities able to penetrate markets in remote areas. Only holiday-retirement centres, new mining towns and dormitory towns near major cities have grown in recent times.

MAX NEUTZE

Further reading I.H. Burnley, *The Australian urban system*, Melbourne 1980; M. Neutze, *Urban development in Australia*, Sydney 1981.