

EARLE, Augustus (1793–1838), artist, arrived in Australia by accident, having been rescued from the island of Tristan da Cunha by a ship bound for Van Diemen's Land in 1824. The son of an American artist, born in England, Earle arrived in Hobart in 1825 and painted a series of landscapes and portraits in both Hobart and Sydney. Although he spent less than three years in Australia, Earle's important contribution to knowledge about the country was through his series of etchings of landscapes and Aborigines which he took back with him to England, and the publication of *Views in Australia* (1826).



Portrait by Augustus Earle of Mrs John Piper and four of her children. Earle painted a number of portraits of Sydney folk in 1826-27. Oil on canvas.

MITCHELL LIBRARY

ECONOMY In 1788 the Australian economy was a precarious bridgehead established by a tiny group of convicts and civil and military officials, exposed to the risk of starvation. Today it is a wealthy, industrialised, resource-rich system with a complex array of services and multifarious links with the outside world through the movement of people, trade, capital and technology. This broad transformation can be fairly readily grasped.

The change represents prodigious expansion—a population increase (from about 1000 in 1788) of some 15 000 times and an increase of total real output, after adjusting for inflation, of the order of about 150 000 times or more. No other economy has grown so fast over such a short period. Even this astronomical figure does not convey the scale of improvement, based as it is merely on market activity. Lifespans have more than doubled, health has improved, leisure time has increased and the level of education has been transformed.

The processes that have yielded today's sophistication and affluence occurred in three main phases, which coincidentally divide Australian economic history into three roughly equal periods. The first lasted from 1788 to about 1850; the second continued from 1850 to about World War I, and the third spans the past 70-odd years.

In 1788, the Aborigines had occupied the whole Australian continent using a variety of methods of managing their resources. In general, they had probably attained a comparatively high standard of living relative to white standards of the day. During this first phase, the dominant theme is the displacement of the Aborigines and the acquisition of their resources by Europeans. The European record in Australia is one of extremely rapid expansion, using simple productive technology. The Aborigines' story is one of demographic disaster and massive output decline.

We do not have any figures for an Aboriginal 'national income' and it would be very difficult to relate such a concept to European output. But it seems probable that a picture of the total output (Aboriginal

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In advertising their contribution to Western Australia's progress, Perth merchants Malloch Bros Ltd picture the diversity of the state's economy. Western mail annual, 1953.

WEST AUSTRALIAN NEWSPAPERS LIMITED

and European) would show a great decline overall until, perhaps, the 1830s. From then on the impetus of white expansion increased total activity by leaps and bounds.

Aboriginal resource management, particularly the use of fire, had shaped the grasslands and open woodlands into which European landuse, using simple technology, fitted readily. The Europeans had to adapt to an alien and relatively hostile natural environment and bear considerable costs resulting from Aboriginal resistance. By 1850, they had occupied the southeastern and southwestern sections of the continent and the island of Tasmania and had penetrated into southern Queensland. In the process, they had established several regional economies centred on the port towns that are now the main capital cities.

The first phase was, however, very much more than a story of convict settlements and pastoral occupation. Well before 1850, indeed probably in the first quarter of the century, the Europeans had established complex economies with a wide range of service and manufacturing activities, and had achieved better

standards of living than most could have expected in Britain. Pastoral and agricultural output was far from dominant, and despite the growth of wool exports, earnings from overseas trade were not great. Domestic markets for pastoral and agricultural products appear to have been much more important than exports. Already a peculiar Australian characteristic had developed: a considerable proportion of the population lived in towns, carrying on service and construction activity and small, largely craft, manufactures.

The prime movers of the early economy were threefold: the great influx of convict and free, largely pauper, immigrants; the sustained, large British government subsidisation followed by increasing private British investment in the colonies; and the many opportunities to acquire large colonial landed property to develop industries in urban areas. The first two were especially dependent on the decisions of the British government; the third encouraged the over-optimism and misjudgment that resulted in pastoral overexpansion and the depression of the 1840s, when the British government cut back both its colonial expenditure and its shipment of convicts.

From an early stage, private enterprise and decision-making were the basis of the economy. Even convicts had substantial amounts of free time in which to work for wages. Officials usually conducted private businesses, and the powers of governors were comparatively limited. From the 1820s, when pastoral expansion developed rapidly, a great deal of the economic activity was outside the control of the colonial governments. The Australian economy was then well on the way to assuming the capitalist form that we know today. This is perhaps not surprising, since even the convicts brought with them not only the skills of the most technologically advanced country in the world but also the knowledge of its system of private market behaviour.

Economic recovery after the depression of the 1840s was aided by the discovery of gold in 1851, which led to the second phase of Australian economic development. In the 1850s, the first great resources boom in Australia encouraged massive immigration, which greatly increased the scale of the Australian economy and made investment attractive. But it is doubtful whether large-scale gold production added much, immediately, to Australian standards of living. Moreover, it appears to have reduced the variety of manufacturing activities, particularly in the towns. In both these respects it foreshadowed the similar disappointments of the resources boom of the 1970s. Resources, and most of the immediate benefits, appear to have been transferred abroad.

Nevertheless, population growth, the gold and wool industries and the increased availability of British capital to underwrite the application of new technology provided three crucial conditions for the long phase of expansion to about 1890. This period of expansion, and a subsequent burst of expansion between 1905 and 1914, were the first experiments on a continental scale in the European adaptation and exploitation of Australian resources. The conditions

were right for rapid expansion and high living standards. The years 1860–90 were the high point of Australian productivity and real income relative to the rest of the world. Moreover, rural production and mining did not require large labour supplies. Populations concentrated increasingly in the town and particularly in the cities, where they produced and consumed manufactured goods and services.

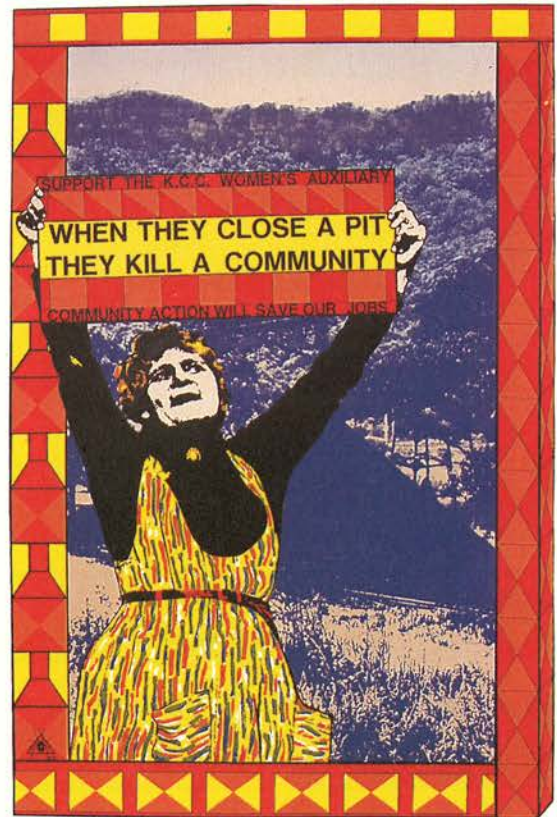
Resource exploitation did, however, require heavy investment. Much development during 1860–90 depended on a partnership arrangement between private Australian investors and Australian colonial governments. Both groups were, in turn, strongly supported by British capital. Private investment delivered pastoral, mining, industrial and urban assets; governments provided an infrastructure of railways, roads, bridges, harbours and, eventually, water and sewerage.

But the investment boom became increasingly unstable, particularly as export earnings failed to keep pace with foreign indebtedness. The ensuing depression of the 1890s was deep and prolonged, and aggravated by long drought. After recovery from the slump, government and private individuals continued to act together, particularly from 1905 to 1914, to diversify the rural economy, expanding grain, meat and dairy production, and to develop manufacturing related to these rural products, especially milling and food production.

Pastoral expansion and rural diversification were the two main forms of European exploitation of Australia's resources. Major mistakes were made: large areas of grassland were denuded by overstocking; irrigation resulted in soil salination; the spread of water and pastures encouraged an extraordinary number of rabbits as pasture predators. On the public side, infrastructures were overexpanded. Public and private debts grew, making British investors reluctant to support new investments.

After 1914, Australia was forced to rely more on its own much reduced resources. The shortage of shipping during World War I forced encouragement of manufacturing to replace imports. After the war, public policy and private pressures led to the establishment of a high and rising tariff wall to preserve and encourage Australian manufacturing. The rural sector no longer provided the primary point of economic expansion; indeed, technological changes, such as the introduction of artificial fertilisers and farm machinery, brought about a decline in rural populations and a major demographic shift towards the cities. Urban activity was based on manufacturing and services, and the Australian economy became increasingly oriented to secondary and tertiary activities. Moreover, the economy of Britain, the main buyer of Australian exports, remained in the doldrums throughout the interwar years.

Australia's tendency to cut itself off from competition from the outside world after World War I was greatly strengthened as a result of the Great Depression that began in the late 1920s. Public policy pursued two other aims: to maintain the rate of population



The Miners' Women's Auxiliary and other community groups in the Illawarra region of NSW protested at the closing of the Kemira colliery in October 1982. In that month BHP retrenched 400 workers (including 206 at Kemira) causing considerable hardship in the region.

REDBACK GRAPHIX

growth, increasing the scale of the domestic market through assisted immigration; and to sustain foreign borrowing and large public capital expenditure on (increasingly urban) infrastructure. In these ways, the old partnership relation between the public and private sectors persisted. These aims were unreachable and the rate of economic expansion and of productivity growth fell to very low levels in the interwar years. Real income per head slipped well below that of more advanced countries.

World War II produced renewed growth. Expenditure on civilian production was cut massively in favour of defence manufacturing, new technology was applied, large-scale production was possible and women entered the workforce in large numbers and acquired a broad range of skills. Postwar restrictions on imports were harsher than ever, and continued into the 1960s. These restrictions, combined with rapid expansion of the economy as a whole, attracted foreign entry into Australian manufacturing. With foreign capital came new technology which established conditions for substantial increases in productivity that had been missing for the quarter-century before 1940.

Australians adapted to foreign technology and world tastes, particularly in the mass consumption of consumer durables. These, with related base industries, were the springboard for a postwar boom in manufacturing. The growth of population was accelerated by large-scale assisted immigration; the domestic market expanded and the domestic workforce grew and diversified. But manufacturing was not the only major sector to be rejuvenated. The rural industries also experienced vital technical change. Myxomatosis wiped out rabbits, lifting the limits on the output capacity of the rural sector; pasture improvements, fertilisers and farm equipment added further to productivity. Until the mid-1960s, it seemed as if Australia was entering another golden age.

But this prosperity was shortlived. The outlets for Australian rural exports were gradually narrowed by the policies of the European Economic Community; the scale and efficiency of Australian manufacturing did not keep pace with world developments; the mineral resources boom became as much a source of economic disruption as of benefit to Australians; the economy, through foreign manufacturing and mining investment, became exposed to the decision-making of foreign multinationals—indeed, manufacturing has actually declined since 1970. Finally, the oil crisis of the early 1970s triggered the steep inflation that persists today.

The problem of restructuring the economy to compete with world producers has now become paramount in Australia. The emphasis of past public policy has been on the regulation of activity and the provision of physical capital. Possibly the most important area of neglect has been the development of human capital: the waste of youth in unemployment, the inadequate provision of education and the failure to develop training in skills.

From the early 1930s, Australia began to reorient its interests to the Pacific Basin. Further and much more radical adaptation is required as the Pacific becomes increasingly the focus of world economic growth. It is Australia's human capital that seems most likely able to allow it, as a small nation on the edge of a burgeoning group of economies, to participate fully in the opportunities of the future.

N. G. BUTLIN

Further reading N.G. Butlin, 'Contours of the Australian economy 1788–1860', *Aust econ hist rev* 26, 1986; N.G. Butlin, 'The shape of the Australian economy 1861–1900', *Econ record* 34, 1957; N.G. Butlin, 'Some perspectives of Australian economic development 1890–1965', in C. Forster (ed), *Australian economic development in the twentieth century*, London 1970; W.A. Sinclair, *The process of economic development in Australia*, Melbourne 1976.

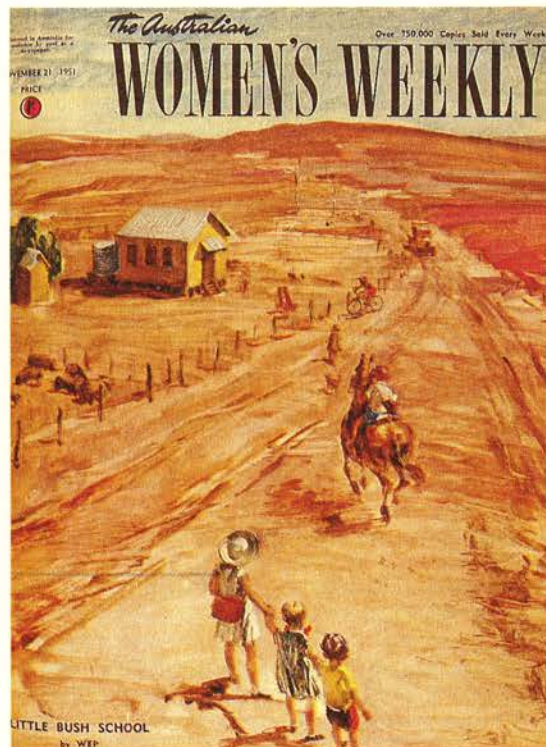
EDGLEY, Michael Christopher (1943–), show-business entrepreneur, was born in Melbourne and educated at Trinity College, Perth. He worked with his father's theatrical company from an early age and on his father's death in 1967 became managing director, changing the name of the firm to Michael Edgley

International Pty Ltd. The firm specialised in Russian productions, particularly the Moscow Circus and the Bolshoi Ballet, but has also presented shows as diverse as the Royal Shakespeare Company, Disney's World on Ice, and Torvill and Dean. Since 1967 Edgley has presented almost 200 shows and sold more than \$250 million worth of tickets worldwide.

EDUCATION The state education systems, which are currently undergoing changes in their governance and management, still retain much of their traditional form of centralised control of schools by a state department.

Between the penal colony period and the 1870s a dual system of school provision operated, with denominational and private schools, and national (later common) schools, both supported by public funds. Schooling was encouraged as a moral influence on children far removed from the 'civilising' effects of Europe. Unlike Britain, the state assumed a large responsibility for elementary schools because of the weakness of local government and the churches.

Eventually the dual system was seen to be socially unsound (divisive, sectarian, unpopular with the working class and rural labour) and educationally inefficient (duplication of schools, shortages in remote areas, poor central control and local manage-



'Little bush school.' Front cover of Australian women's weekly, 21 Nov 1951, by artist Walter E. Pidgeon ('Wep'). In 1951 the education of children in isolated areas took a step forward when the first School of the Air broadcasts were made from the Flying Doctor base at Alice Springs.

ment). Public education acts (for example, in Vic, 1872; NSW, 1880) attempted to resolve the twin problems by withdrawing funds from denominational schools, while transferring control of the national schools to a new authority, an education department. The education departments were to establish, maintain and administer a system of purportedly free schools throughout the colonies. The state school system was funded from Treasury and accountable to government through a minister for public instruction (later education). The minister was advised by a director of education, who was the administrative head of a teaching service, hierarchically structured like the public service, but separate from it. School inspectors, drawn from the teaching service, assisted the director in the formulation of policies, but more importantly, in the supervision of schools and teachers, especially in assessment of teaching performance. As a result of the education acts, sectional and municipal interests, local communities, head teachers and parents were denied effective participation in the education system and the development of school programs. This pattern of centralised control of schools became the distinguishing characteristic of Australian education for the next 80 to 100 years.

Denominational and private schools which survived without public grants did so by extending their interests into secondary schooling. The Catholic Church, fearful of the contamination of the now 'godless state schools', embarked on a successful expansion of parish schools.

Only in the last two decades has the centralised control of state schooling been modified, to varying degrees from state to state, in four directions. First, there is now teacher participation in the development of school-based programs, and to a lesser extent, in school management. This has been possible because of improvements in teacher training and further education, especially for the primary teacher, and the transfer of state teachers' colleges to other systems, which are independent of employer control.

Second, some decision-making and other administrative activities have been decentralised from capital city offices to the various educational regions.

Third, political decentralisation has occurred at two levels of the education system, in the form of public participation at the state level through a commission of representative education groups providing an alternative source of advice to the minister; and local parental involvement in school governance. School councils now have authority in some education programs, minor capital works, casual staffing, and, in some states, in the selection of the school principal. The recruitment and placement of teachers remains the responsibility of the education department.

Fourth, federal government assistance has provided a new source of school funding. This was legislated in 1964, but took real effect only after the establishment of the Commonwealth Schools Commission in 1973. Through this statutory authority, the commonwealth government has been able to influence education

departments and schools, as well as to give national direction through specific grants and participation in the development of curricula, courses and materials.

The Australian primary school finally broke from its narrow, formalistic modes of instruction in the 1960s. Today's primary school balances intellectual development with emphasis on the social and emotional needs of the individual child. Such reforms had been advocated much earlier this century, but schools were unable to respond because of impediments and inertia in other educational institutions. The constricted development of state secondary schools, for instance, had meant that the primary school still had to prepare pupils for the workforce or for secondary school entrance examinations. Another cause of slow response was the slow popular recognition of pre-schooling as a stage of early childhood education: until the 1950s official support had been restricted to urban working-class communities for welfare reasons. A further cause was the retention of the small rural school after the 1920s, when consolidation of such schools would have eased staffing problems, if school busing had then been available to make consolidation possible. Inspection of teachers, and the inherent conservatism of poorly trained teachers in all states (with the possible exception of NSW), completed the barriers around the teacher freedom necessary for implementing modern primary school programs. These barriers were removed piecemeal in the 1950s and 1960s.



Girls at Fort Street school, Sydney, celebrate Empire Day, 1936. Photograph by H. B. Martin.

FAIRFAX PHOTO LIBRARY

Secondary education, adapted from English counterparts, remained the prerogative of non-government schools until the early twentieth century. State intervention, again in the name of educational efficiency, at this level of schooling was resisted by non-government schools. Nevertheless by the 1950s the education departments had become the main providers of secondary schooling. This took various educational forms, including the expansion of comprehensive schools in the country and new suburban areas of the cities, the continuation of selective academic schools, and, in Vic, the expansion of junior technical schools, which were no longer prevocational schools.

Around 1970, the popular demand for secondary schooling beyond the compulsory leaving age of fifteen years had been acknowledged by education departments in the liberalisation of programs and the abolition of examination certificates in the middle years of secondary school. These changes, however, have not occurred in the final years, despite their increased holding power, because of a pervasive academic curriculum that still focuses on preparation for university entrance. In this, the traditional influence of the universities on the schools has been complemented by the growth of other vested interests, such as subject associations and the non-government schools. The latter are now subsidised heavily by governments, sometimes to the educational disadvantage of the growing number of adolescents who stay on at state secondary schools. The dominance of the academic curriculum remains while there is uncertainty about the social objectives of the higher levels of secondary schooling and post-secondary education.

The federal government has yet to accept, among the challenges of a youth policy, the need to make the universities and advanced colleges more accessible to student enrolments. (It has been more successful in the new area of post-secondary education, the technical and further education colleges.) The government, which assumed financial responsibility for post-secondary education in 1974, has not, it would seem, recognised its wider educational responsibility with regard to the universities and advanced colleges.

ANDREW SPAULL

Further reading A.G. Austin, *Australian education 1788–1900*, Melbourne 1973 (1961); B. Bessant and A.D. Spaul, *The politics of schooling*, Melbourne 1976; R.W. Connell *et al*, *Making the difference: schools, families and social division*, Sydney 1982; P.H. Partridge, *Society, schools and progress in Australia*, Oxford 1968.

EDUCATION, STATE AID TO Until the mid-nineteenth century there were few government schools, but the state provided both grants of land and financial support for church-controlled denominational schools. By mid-century 'national' schools were being set up in increasing numbers and a dual system developed. State initiatives to create a single, comprehensive, economical pattern of publicly funded primary education on the basis of 'common Christianity' were resisted by the major denomina-



Interior of a typical bush school in Victoria, September 1955. The teacher unravels the mysteries of long division and times tables under the watchful eye of the British royal family.

MAGAZINE PROMOTIONS

tions. Frustration with this response led to the passing of 'free, secular and compulsory education' acts in all the Australian colonies from the 1870s onwards. These acts withdrew all public funding from non-government schools, and restricted the extent and nature of religious education in government schools.

Thus the state aid issue was born, since the major denominations protested vehemently at this denial of public funding for their schools. There were also critics of the highly centralised and bureaucratic administration of 'public instruction' created by these acts. The response of the Roman Catholic Church was most important, for it vigorously began to develop a comprehensive system of parish schools. Catholic bishops condemned the government schools as 'seed-plots of future immorality, infidelity and lawlessness', though, since many Catholic children had still perforce to attend them, Catholic pressure was also exerted to block Protestant efforts to put the Bible more prominently back into these schools. Religious considerations ('sectarianism') for a long time influenced the terms in which the issue of public education was debated in Australia. A stalemate developed, although organisations such as the Australian Catholic Federation maintained pressure for change.

After World War II the rapid increase of population, together with increased community awareness of the value of education, placed great pressure on all schools. Without aid the Catholic system (1752 in a total of 2128 non-government schools by 1961) faced breakdown, and consequently it greatly increased

pressure on the government system. A crisis in Goulburn, NSW, in 1962, when Catholic parents protested by deliberately enrolling their children in the public schools, made the issues very plain. By then, especially after the formation of the Democratic Labor Party, political pressures for a change of policy were strong at both state and federal levels, while the virulence of earlier sectarian animosity had diminished. Despite some continuing opposition, especially within the Australian Labor Party, state aid had become a widely acceptable policy.

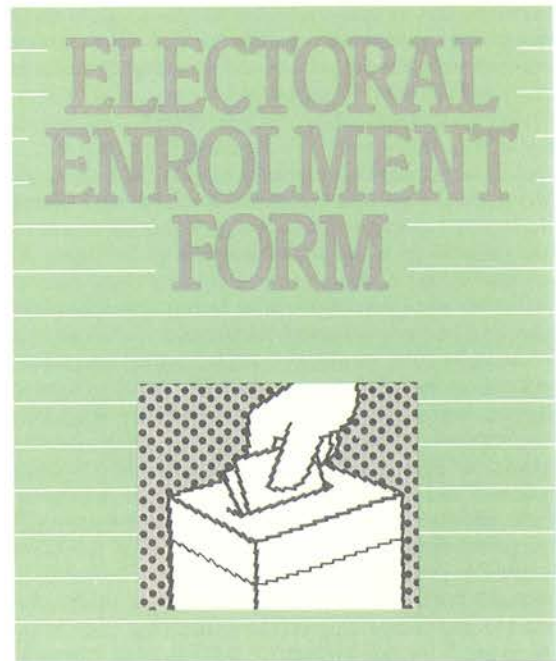
The first step was taken by the Menzies Liberal federal government, when in 1964 it legislated for scholarships and building grants open to all schools. Since then an extensive pattern of federal aid for schools, including recurrent funding on a per capita pupil basis, has developed. This aid has been administered since 1973 by a Schools Commission set up by the Whitlam Labor government. By 1982–83 federal government expenditure on schools had reached over \$1224 million, or 2.6 per cent of its total outlay; about half of this went to non-government schools. Expenditure on schools by state governments is still mainly directed towards the public system, but the states also have progressively extended aid to non-government schools. By 1981–82 total public funding (state and federal) for schools in Australia was \$5431 million, of which 13.3 per cent went to non-government schools. Despite continuing opposition to aid in principle by some, and debate among others as to how far distribution should be on a 'needs' basis, state aid seems now to be established policy for all parties at both state and federal levels.

J.S. GREGORY

EGGLESTON, Sir Frederic William (1875–1954), writer and diplomat, joined the Australian delegation at the Paris peace conference (1919) after service in the first AIF. He was then a member of the Victorian parliament (1920–27), and served in the railways and attorney-general's portfolios. Active in the institute of international affairs, he led Australian delegations to its conferences in the United States and Japan. He became Australia's first minister to China (1941), then to the US (1944), and was a member of Australia's delegation to the San Francisco conference (1945), which led to the formation of the United Nations. A writer of books on foreign policy, politics and philosophy, he was one of the few Australians of his generation who seriously questioned the country's role in international affairs.

Further reading W. Osmond, *Frederic Eggleston*, Sydney 1985.

EIGHT-HOUR DAY Stonemasons in Melbourne and Sydney first sought, and won, an eight-hour working day in 1856. The subsequent annual demonstrations and attempts to defend and extend the eight-hour day strengthened the early union movement and contributed to the mobilisation of the working class in the 1890s. The demand for a statutory maximum working day of eight hours formed one of the demands of the Intercolonial Trades Union Congresses



This form was produced in 1986 by the Australian Electoral Commission, and distributed through post offices in NSW.

AUSTRALIAN ELECTORAL COMMISSION

between 1879 and 1891, and was a plank in the platforms of the early Labor parties in the 1890s. The eight-hour day principle constituted the basis of unions' struggle to secure a 44-hour week between 1919 and 1926.

ELDER, Sir Thomas (1818–97), businessman and pastoralist, arrived in Adelaide in 1854 and went into partnership with Edward Stirling, Robert Barr Smith and John Taylor. After making a fortune developing copper mines, two of the partners retired and Elder Smith and Co was formed. This soon became one of the world's largest wool sellers and acquired extensive pastoral holdings. Elder sponsored expeditions and imported camels as a means of overcoming transport difficulties.

ELDERSHAW, Flora Sydney Patricia (1897–1956), writer, graduated from the University of Sydney in 1918 and during a teaching career wrote a number of historical studies and literary criticisms. She collaborated with a friend, Marjorie Barnard, in writing a number of novels including *Tomorrow and tomorrow* (1947) under the pen-name of M. Barnard Eldershaw. She was a founder member of the Fellowship of Australian Writers and its president in 1935 and 1943.

ELECTIONS have been part of the Australian political process since the 1840s, when the colonies began gaining rights to representative government. British electoral methods were of course used, but dissatisfaction with the inequities and abuses possible under

British practice led to a number of distinctively Australian reforms. Public and plural voting, property qualifications for the franchise and parliamentary membership, 'first past the post' tallying, and the lack of a female franchise were all anomalies Australian electoral systems rectified before reforms in these areas were effected in Britain. SA became the early leader of electoral reform. It adopted the secret ballot (almost simultaneously with Vic) in 1856, the same year it granted adult male suffrage on a six months' residence qualification, but without property or professional qualifications; and it gave the vote to women in 1894, being the first electoral system in the British Empire to do so. The most recent reform, lowering the voting age from twenty-one to eighteen, was made first by WA, in 1971, a step the commonwealth and other states also took by 1974.

By common agreement Australian electoral practice should observe certain principles, even if the ideal is not always attained. First, the candidates elected should reflect as closely as possible the electors' preferences. Preferential voting (as against 'first past the post') has therefore been adopted throughout the country, having been introduced in Qld in 1892. Second, because the government should represent the wishes of the majority of the population and also because participating in elections is an obligation of citizenship in a democracy, voting should be compulsory, with fines for non-voters. Again, Qld led the country by making voting compulsory in 1915. As a result there is generally a 90 per cent turnout of voters in Australian elections whereas previously the figure was 50 per cent or less, though critics maintain that obligatory voting results in a large 'donkey' vote which distorts the result. Third, there should be 'one vote, one value', a vote in one electorate counting for as much as a vote in another. However, although statutory electoral offices or commissions in each electoral system advise parliaments on the best means for achieving voter parity by distributing electorates evenly across the population, objections against electoral distribution have been a continuing theme in Australian politics. Frequent complaints have been that distributions favour rural voters by assigning larger numbers of voters to urban than to country electorates, and that governments gerrymander electoral boundaries, unfairly maximising their own electoral chances.

ELECTORAL REDISTRIBUTION The boundaries of Australian federal and state electorates are periodically readjusted, a process termed redistribution, to take account of demographic change. Boundary determination is carried out by statutory authorities, electoral offices or commissions. The commonwealth government established the first of these, the Australian Electoral Office, in 1902. In the states, electoral distribution was generally a responsibility of the chief secretary until they, too, set up separate electoral offices—SA and WA in 1907, then Qld (1910), Vic (1911), NSW (1928), Tas (1954) and the NT (1978). These bodies apply statutory formulae, which establish the number of electors, or quota, to

comprise an electorate; they establish how many electorates will be required to accommodate the quotas; they then propose to their parliaments the means recommended for apportioning electors among electorates and for delineating the boundaries. The formulae permit variations of between 10 and 20 per cent, according to the system, to allow for factors like regional character and administrative convenience. Further variations may occur, either because of political manipulation during the legislative phase or shifts in population after the boundaries have been set.

A widely accepted principle of electoral redistribution is equal value of votes: votes in one electorate should not be weighted more heavily than those in another, which would occur if the numbers of electors in each electorate varied widely. Complaints about disparities in voter values have generally been of two types. First, distributions in some systems have favoured rural voters, assigning proportionately fewer electorates and larger numbers of voters to urban than to rural electorates. The result, it is said, has been that the National (formerly Country) party, with firm rural support, succeeds in having more candidates elected in relation to its share of the total vote than does the Labor party, whose strength is in metropolitan areas. Second, governments have manipulated boundaries, creating gerrymanders designed to maintain them in office unfairly.

Critics of electoral redistributions have often referred to two examples to illustrate rural bias and gerrymandering. The Liberal Country League retained office in SA 1933–65, helped by a distribution that maintained a ratio of 2:1 between rural and metropolitan electorates (26 rural and 13 metropolitan seats), even though the latter contained over 60 per cent of the state population. In Qld the National party has held office since 1957 with the aid of distributions that have confined Labor and Liberal voters in high-quota electorates while favouring rural districts which strongly support the party. In 1977 the party, with only 26.9 per cent of the total vote, had 42 per cent of seats in parliament; by contrast the Liberals had 25.4 per cent of the vote but only 29 per cent of the seats, while Labor with fully 42.9 per cent of the vote gained only 28 per cent of the seats.

ELKIN, Adolphus Peter (1891–1979), anthropologist, was born at West Maitland, NSW. He was educated at local schools and at the University of Sydney before joining the Anglican ministry. In 1925–27 he completed a University of London PhD in anthropology. After extensive fieldwork in the Kimberleys, he combined fieldwork in SA with ecclesiastical duties at Morpeth, NSW. As professor of anthropology at the University of Sydney, 1934–56, and editor of *Oceania*, 1933–79, Elkin became an influential government adviser and propagandist for Aboriginal welfare. His *Australian Aborigines: how to understand them* (1938) remains a popular text. He was appointed CMG in 1966.
D.J. MULVANEY

ELLIOTT, Herbert James (1938–), athlete, was born in Perth. Trained by the innovative and uncon-

ventional Percy Cerutti, he became one of Australia's greatest middle-distance runners. He won two gold medals at the 1958 Commonwealth Games at Cardiff and in the same year established a new world mile record at Dublin. In winning the 1500 metres gold medal at the 1960 Rome Olympics he also established a new world record. He was never defeated in mile or 1500 metres events as a senior runner.

ELLIOTT, Sumner Locke (1917–), actor, novelist and playwright, was born in Sydney, but left Australia in 1948 to further his career in the United States. He now lives in New York. He has written many plays for both stage and television, including *Rusty bugles* (1948) and *The grey nurse said nothing* (1959). His partly autobiographical novel, *Careful, he might hear you* (1963), won the Miles Franklin Award and was translated into six languages. *Water under the bridge* (1977), also set in Sydney, won the Patrick White Award in 1978.

PATRICIA HOLT

Further reading W.H. Wilde *et al*, *The Oxford companion to Australian literature*, Melbourne 1985.

ELLIS, Malcolm Henry (1890–1969), was a feature writer for the *Sydney Bulletin* 1933–65, often under the pen-name 'Ek Dum', writing at first on farming and later on military, political and historical issues. He also wrote books on these subjects. *The Australian beef shorthorn* (1932) became a standard work, but he was better known for his monumental biographies of the early colonial figures, Lachlan Macquarie (1947), Francis Greenway (1949) and John Macarthur (1955).

EMANCIPISTS was a term commonly used to refer to former convicts who had been sentenced in the British Isles and who had served their terms in NSW or Tas. Strictly speaking, however, the term means 'those in favour of freedom'. It dates from the early 1820s and was a political label by which the claims of the ex-convicts were linked with the great 'emancipationist' movements current in Great Britain, one demanding liberty for black slaves and the other civil rights for Catholics. In Australia the term has often been stretched to include all who supported enlarged rights for former convicts, and even to all who worked for constitutional reform in that period. At the other extreme, it has been limited to those ex-convicts who had received pardons. Its ambiguity makes it unsatisfactory as a precise historical description of any group.

ALAN ATKINSON

EMPIRE DAY Originally celebrated in Australia on 24 May, Queen Victoria's birthday, Empire Day has been observed since 1905. The holiday was originally proclaimed largely owing to the efforts of F.B. Boyce, imperialist, cleric, social reformer and patriot, who viewed the empire as a beneficent force which could help to unite the world under just and moral law. In 1958 the title was changed to British Commonwealth Day and in 1966 it was again changed to Commonwealth Day. In 1966 also, the observance date was altered to 11 June, Queen Elizabeth II's official birthdate. Commonwealth Day is not a public holiday although it is still celebrated in many parts of

Australia and by the Council of Commonwealth Societies. Traditional observance included fireworks displays, though the sale of fireworks is now prohibited in some states.

EMPLOYERS' ORGANISATIONS, with the trade unions and governments, are an element of the tripartite structure of Australian industrial relations. Like the unions, they have been part of the Australian industrial scene since the late 1870s, and were formed to counter union power: as the labour movement became more organised, and strong unions like the Australian Shearers' Union and the Amalgamated Miners' Association emerged, employers' groups in those industries formed to protect mutual interests. The installation of formal mechanisms for arbitration, and government adoption, through 'factory acts', of a more interventionist role in industry, also played a part in encouraging employers in each colony to group together. By the end of the nineteenth century organisations for co-ordinating the activities of employer groups had also formed and were holding intercolonial conferences. The trend towards national co-ordination of employer bodies strengthened after Federation—seen in the foundation of the Associated Chambers of Manufactures (ACMA) in 1903, and in 1904 of the Central Council of Employers of Australia, which in 1942 became the Australian Council of Employers' Federations (ACEF).

Both ACMA and ACEF provided various services to member bodies. ACMA supplied information on economic trends; prepared submissions to the federal government; undertook studies of overseas trade, consumer demand, taxation, and employment; and issued quarterly bulletins on industrial trends. ACEF's function was to help members deal with industrial relations, arbitration and industrial legislation. Eventually, in 1977, they merged as the Confederation of Australian Industry (CAI), with numerous aims in view. These included promoting Australian industry, trade and commerce; protecting employers' interests through support of, or opposition to, measures likely to affect employers and their industries; representing employers before courts and tribunals; and supplying information relevant to employers' interests. To achieve these aims the CAI set up two operational divisions, the National Employers' Industrial Council to work on industrial relations, and the National Trade and Industry Council to pursue objectives in commerce, trade and industry.

By the 1980s there were more than 500 employers' organisations throughout Australia. Some were restricted to particular industries and states. Some, like the Master Builders' Federation of Australia, the Metal Trades Industry Association and the Australian Retailers' Association, were national bodies representing employers in related industries, and consisted of groups of affiliated state organisations. Others, notably the state chambers of manufactures and industries, and the state employers' federations, represented the interests of all employers' groups within a state. Overarching all these was the CAI, with which most employers' groups were affiliated.

EASIER ECONOMY — FURNISHES CONVENIENCE.



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— when you use GAS!*

THERE are no waiting delays or anxious moments when gas does the cooking and heating. An endless supply of fuel is always on tap ready to be used when you want it, and for as long as it is required. Intermittent and breakdown in the fuel supply are unknown and the heat can be regulated instantly to give the exact temperature required—slow, even heat, moderate heat or quick, lively heat. There is no dependence on other work, oil, gas, or other and no waiting and no scraps and incalculable waste to worry you. Everything is simple and straightforward and costs are reduced in quicker time and with less effort than other cooking or heating equipment.

You gas company will gladly advise you on all matters relating to the use of gas in the home and will furnish figures and facts to show the gas is better and cheaper than any other method of cooking and heating.

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THE CITY ELECTRIC LIGHT COMPANY LTD
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OF BRISBANE
INCORPORATED IN THE COMMONWEALTH OF AUSTRALIA



In 1927 Sydney's gas companies advertised in The home pictorial annual (left) the economy and convenience of using gas. By 1930 the City Electric Light Company (right) promised that electricity would lessen the drudgery of daily household tasks. Brisbane Courier, June 1930.

Further reading P.G. Macarthy, 'Employers, the tariff and legal wage regulation in Australia, 1890-1910', *J of industrial relations* 12,2, 1970; T. G. Parsons, 'An outline of employer organisations in the Victorian manufacturing industries 1879-1890', *J of industrial relations* 14,1, 1972.

ENERGY is essential for the operation of all industrial, agricultural, domestic and transportation equipment. Australia is well endowed with accessible energy resources, both renewable (timber, wind, running water and direct solar radiation) and non-renewable (coal, natural gas, uranium and some petroleum). The exploitation of these resources has contributed substantially to the development of the nation's industry, transportation, and standards of living. The location of coal and water resources has also played an important part in regional development.

The history of energy utilisation in Australia over the past two centuries parallels that in other industrialised countries, from which new processes and technologies were imported shortly after their development. Australian energy consumption per head has always ranked with the highest in the world. The major demands for energy have been created by industry and transportation, since most of the population lives in relatively mild climatic regions, where the demand for space heating is not great. Most of the demand has been met from local resources. The only energy source imported in quantity has been, and still is, petroleum. Over the last decade Australia has become one of the world's largest exporters of coal,

Don't You Wish You had Electricity

**to lighten
your daily
household tasks**



—no longer would you spend from morning till night cleaning . . . washing . . . ironing . . . cooking . . . sewing.

Electricity would reduce much of your work to the mere action of a flick of an electric switch—would get through your work in double quick time . . . give you hours of leisure—less worry, and better health. You can have Electricity installed in your home at no great expense. In fact—

Electricity is so Economical it Quickly Saves the Cost of Installation.

For if you can but find the time to read this little book, you will find that electricity is a family of four. Keep your own and the world's four homes. Wash the family clothes for two weeks. Find out what is your family time.

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FOR SAFETY - EFFICIENCY,
AND ECONOMY

Remember that the wire which electricity uses has no weight, and that it is not necessary to distribute your electricity, etc.

Advertisement of The City Electric Light Co., Ltd., Brisbane



and also a major supplier of liquefied hydrocarbon gases and uranium.

There have been several overlapping phases in energy utilisation since the Aboriginal phase, when the only energy source exploited other than food was firewood. The European settlers also used timber as a domestic and industrial fuel. Animal labour (humans, horses and bullocks) provided energy for transportation and for some early industries. Wind power was used in navigation and in windmills, the first of which was erected in Sydney in 1797.

The first non-renewable energy source to be used was coal, first discovered in the Hunter River region north of Sydney in 1791. It was increasingly substituted for timber as an industrial fuel, particularly for steam-raising, and from the 1860s became the dominant fuel for the expanding state railway systems. From the 1840s coal was also used to produce gas, first for street lighting and then for other domestic and industrial purposes, in towns and cities throughout Australia. The demand for coal has increased greatly in this century with the development of electrification after 1900, and of steelmaking after the 1920s.

Equipment for the generation of electricity was first imported into Australia in 1879. The early production and distribution of electricity was considerably stimulated by the growth of electric tramway systems, and has expanded steadily ever since, with all urban and most rural households connected to distribution grids centred on each state capital. Electricity generation is based in most states on local coal resources, with

major hydro-electric developments in Tasmania since the 1910s, and in the Snowy Mountains since the 1950s.

The next phase was dominated by petroleum, the consumption of which increased steeply after World War II with the growth in motor vehicle numbers. Petroleum products also replaced coal in many industrial applications, and as a feedstock in gas-making. Commercial flows of petroleum were first discovered at Moonie, Queensland (1961), then at Barrow Island, Western Australia (1964) and the Gippsland shelf off the coast of Victoria (1967). Local production has supplied most Australian demand since the 1970s.

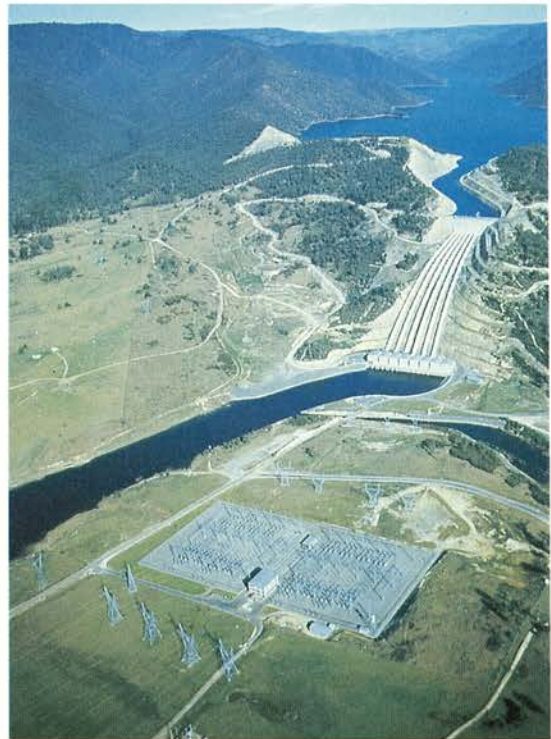
The present phase in energy utilisation is characterised by the increasing consumption of natural gas, which was discovered at several sites including the Cooper Basin in South Australia (1971). Natural gas was piped to all mainland state capitals between 1969 and 1976. Following the increase in world and Australian petroleum prices in the 1970s, natural gas and to some extent coal replaced petroleum in many industrial applications. However, no economically viable replacement for petroleum products in transportation has been found.

Since the early 1980s there has been some evidence of slower growth, and in some cases absolute decline, in Australian demand for energy of all types. This has occurred over a period of increasing energy prices, declining heavy industry, increasing efficiency of utilisation and some stabilisation in domestic appliance and motor vehicle ownership rates. There has also been some interest in renewable energy technologies such as solar water heating and photovoltaics, but as yet these remain only marginally economic in areas with high conventional energy costs.

G.L. WILKENFELD

Further reading A.H. Corbett, *Energy for Australia*, Melbourne 1976; G. Davison, 'Energy', *Australia* 1888 10, 1982; H. Saddler, *Energy in Australia*, Sydney 1981.

ENGINEERING emerged as an endeavour separate from the allied professions of architecture and surveying during the industrial revolution of the eighteenth and nineteenth centuries. *Civil*, as opposed to *military* engineering (the building and demolition of fortifications), was concerned with constructing the public works—roads, canals, bridges, harbours, wharves, and water supply, sewerage and drainage systems—required by an expanding industrial-commercial infrastructure, and had become a recognised field of specialised skill by the late 1790s. *Mechanical* engineering became a separate profession somewhat later, as steam power gave rise to the machines used in factories, to locomotives, ships and agricultural machinery. *Mining* engineering developed parallel to civil and mechanical engineering; and by the end of the nineteenth century other specialised branches of engineering had also evolved: *electrical* engineering, concerned with generating, distributing and applying electrical energy, and *chemical* engineering, the application of chemical processes to manufacturing. A



The Tumut 3 Power Station on Talbingo Dam, NSW, is the largest in the Snowy Mountains Hydro-Electric Scheme. Photograph, 1974.

AUSTRALIAN INFORMATION SERVICE

further major branch, *aeronautical* engineering, developed from the early years of the twentieth century. Various subdivisions of these professions also evolved; for example, marine, communications and nuclear engineering, though all involve applications of the same basic principles of engineering science.

Professional training in engineering became available in Australia from 1860, when Melbourne University first offered a three-year combined civil and mechanical engineering certificate. This became a four-year degree in 1883, the year Sydney University also began offering a degree in engineering. Since then training opportunities in all branches of the profession have expanded in universities and other tertiary training institutions.

By the 1980s engineers were divided between industrial and government employment, about half of Australia's 50 000 professional engineers working in federal, state and local government instrumentalities. The profession had become hierarchically structured, its upper grades consisting of 'professional' engineers—those with degree qualifications, advanced skills in applying analytical methods to the solution of technological problems, and the ability to manage large projects. In the lower grades were technicians, whose skills were essentially manual and who worked under the supervision of the professionals. Professional associations had developed in each of the main branches of the profession to safeguard engineers'

interests in matters like salaries and working conditions. A further body, The Institution of Engineers, Australia, was set up in 1919 as a learned society assisting in the development of engineering science and maintaining professional standards, for example by accrediting the engineering courses proposed by the training institutions. The institution, a federal organisation with nine affiliated state bodies, had 38 000 members by 1986; and employers generally regarded admission to its membership as an indication that an engineer was properly qualified.

Engineers have been responsible for numerous important technological advances in Australia. Much progress in industry, agriculture, commerce, communications and living standards in the latter half of the nineteenth century depended ultimately on engineers: advances in engineering made possible the gold and copper mining industries, submarine cables and the overland telegraph, the railway systems, farm machinery, such as the stump-jump plough and stripper harvester, irrigation, freezing works and refrigerated shipping, and urban water supply, sewerage and lighting. During the twentieth century engineers were responsible for many of the changes occurring in Australian mining, manufacturing, construction, agriculture, power generation, transport, communications, information systems, public utilities, defence, and domestic lifestyles. By the 1980s engineering projects comprised some of the most powerful symbols of Australian nationhood and achievement: undertakings such as Sydney's harbour bridge and opera house, the Snowy Mountains Hydro-Electric Scheme, the transcontinental standard gauge railway, the new parliament house in Canberra, the Bass Strait and Northwest Shelf off-shore oil and gas drilling operations, and the 'Aussat' communications system were all national 'monuments' as well as engineering masterpieces.

IAN HOWIE-WILLIS

ENVIRONMENT During the first few generations of white settlement in Australia scientific interest was excited equally by mysterious fauna and flora and by recurrent environmental hazards. For early immigrants such strange elements, together with the sheer incomprehensibility of distance and the numbing monotony of dry plains and plateaus, could increase their feeling of confusion and insecurity, and provoke some aggressive and exploitative responses. By contrast the foundations of Australia's Aboriginal cultures reflected an intimate connection with the land, in which game animals, food plants and water resources were conserved. Yet Aboriginal techniques of selective harvesting, storage, fish and eel trapping, together with some forms of seasonal rotation, also resembled 'farming'; furthermore, the common use of fire probably helped to develop the extensive grasslands and park-like savannas which greeted the first Europeans.

Long before the ecological disasters of the gold rushes in the 1850s, considerable damage had been wrought by whaling and sealing interests, small-scale mixed farming and the rapid expansion of grazing.

Clearing and draining activities, accidental introductions of exotic weeds, pests and diseases, and the arrival of domesticated cattle, sheep and other cloven-hoofed beasts, brought dramatic transformations which were neither easily contained nor well understood. Introduction of agreeable English songbirds and improved grasses were insufficient compensation for the sparrow, starling, deer, goat, fox and blackberry also introduced. Gradually, feral varieties and intrusive imports competed with native species everywhere beyond the dry interior: cats and dogs; cattle, horses and pigs; buffaloes, camels and donkeys; numerous kinds of fish; and rabbits, the greatest scourge of all. On the positive side, some types of native birds, kangaroos and wallabies were favoured by the provision of more reliable water and food supplies in and around the new settlements, better adapted crops and livestock were developed, and the first scientific and practical environmental records were kept. Finally, the pastoralists' bold initiatives clarified primary differences in regional environments over immense areas, and the resulting accumulation of data undoubtedly influenced subsequent settlement programs.

The fierce single-mindedness of the goldminers gave no quarter to vulnerable streams, hillsides and ore-bearing valleys. For a few frenetic decades after 1850 wooded areas provided fuel, house materials and construction timber for the mines, and the tree cover was sometimes removed merely to facilitate geological interpretation. Reckless dumping of waste materials, shaft drainage, powerful sluicing jets (later supplemented by giant dredges), and water races, tunnels and flumes caused serious local erosion, with long-term disruptions of water tables and stream flows. The singular importance of water itself was appreciated, however, and new legislation was devised to secure community interests above those of the individual.

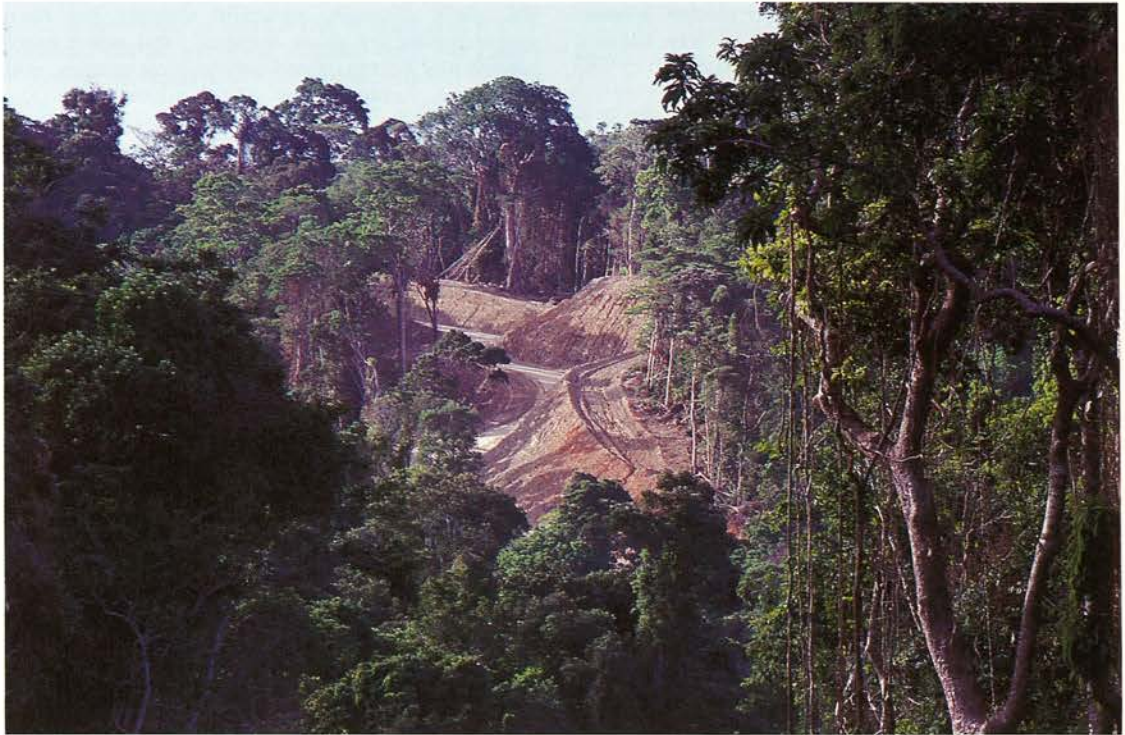
From about 1860 to 1890 Australia's governments passed a succession of land acts with the aim of settling small-scale freeholders or 'selectors' on the public lands. Although the foundations of the present wheat and sheep-wheat belts were laid during these years, land speculation and intense local and regional mobility mocked the romantic ideal of a stable 'peasant proprietary'. Farm management practices were frequently rudimentary or chaotic, and land was often deliberately exhausted to clear a debt or to make a quick profit before moving on to seek longer-term goals. Trial and error procedures continued nonetheless to yield useful regional evaluations: thus in SA the advance and retreat of an army of selectors over 'Goyder's line' of reliable rainfall confirmed the existence of marginal country with exacting environment qualities. Irrigation, drought-resistant wheats, refrigeration and more creative government intervention appeared to guarantee fewer negative returns from 'closer settlement' legislation introduced before the turn of the century, and continued in various guises until World War II. But it was repeatedly demonstrated that Australia was largely unsuited to small-scale

commercial farming, even in Tasmania and in the better watered sectors of the coastal belt; and if society was asked to bear intolerable costs, so too was the natural environment.

A few outspoken environmental experts—for example, the botanist Baron von Mueller in the last quarter of the nineteenth century, and the geographer Griffith Taylor in the 1920s—called in vain for more research and more rational resource development. Before 1914 international progress in planning and conservation techniques encouraged Australia's amateur and professional groups in their attempts to build a coherent base for modern town and regional planning and the creation of national parks in every state. Modest progress was made, but for the most part these activities attracted little public or political support. Then, during the depression of the 1930s, a combination of unusually dry seasons and the legacy of inappropriate farming systems culminated in catastrophic dust storms over the grain belts, and the official responses included improved bureaucratic machinery for resource appraisal and environmental management, and a preference for multifaceted rural research within the newly founded Commonwealth Scientific and Industrial Research Organization. CSIRO's most spectacular interwar and postwar achievements included a vigorous application of modern soil science and parasitology, and the pursuit of biological control measures in offensives against prickly pear infestations and rabbit plagues.

In 1939 bushfires swept across Vic, just as they had in 1851, and returned at irregular intervals in later years to Tas and the southern mainland; major floods and tropical cyclones have appeared at intervals in NSW, Qld and NT; in most years drought has involved some large part of Australia, but the drought of the early 1980s seemed particularly ominous, since dust storms literally brought the country to the city and reminded an overwhelmingly urban population of its precarious tenure. After the 1960s the great irrigation projects were publicly challenged, first by economic analysts, then increasingly on environmental grounds, largely because of problems of salting occurring over enormous areas.

All of this has transformed the backdrop for an issue-oriented 'environmentalism', which draws on a loose coalition of widely differing groups to proclaim the scientific status or public interest significance of a succession of threatened areas. It has become associated politically and philosophically with social reform, new dimensions of nationalism and Aboriginal land rights, and generally with an increased respect for uniquely Australian wildlife and scenery—embracing at last the desert heart, hitherto abused or feared—and there has been a consequent increase in the area set aside as national parks. Evocative signals were contained in federal 'heritage' legislation passed in 1975 to provide for the registration and protection of well-authenticated natural and man-made environments comprising the 'National Estate': Australians



In August 1984 conservationists tried to block the construction of a logging road in Daintree rainforest, Qld. Photograph by Leo Meier.

WELDON TRANNIES

were invited to mobilise in a quest for valued buildings, neighbourhoods, rural landscapes and wilderness tracts. By the early 1980s government enthusiasm had largely evaporated and, although about 7000 places were registered, it was already demonstrably clear that this visionary scheme had failed to attract the desired broad spectrum of popular support. More than 2000 species, about 10 per cent of Australia's native plants, are now classified as 'at risk', and 78 species are considered extinct. Nineteen vertebrate animals are also believed extinct, with another 74 species at risk. After almost 200 years of aggressive white settlement, the Australian community is still reluctant to come to terms with its unique environment.

J.M. POWELL

Further reading G.C. Bolton, *Spoils and spoilers: Australians make their environment 1788-1980*, Sydney 1981; T. McKnight, *Friendly vermin: a survey of feral livestock in Australia*, Wollongong 1976; J.M. Powell, *Environmental management in Australia 1788-1914: guardians, improvers and profit: an introductory survey*, Melbourne 1976; F. Ratcliffe, *Flying fox and drifting sand: the adventures of a biologist in Australia*, Sydney 1974 (1938).

EPIDEMICS Australia has experienced many epidemics of diseases. The first known occurred in 1789, when smallpox brought by the first fleet spread among the Aborigines, though possibly Aboriginal communities had previously suffered other epidemics following the arrival of various ships on Australian coasts. The most serious epidemic has been that of pneumonic influenza, which killed over 12 000 Australians as it swept the world in 1919-20.

Some diseases, such as dysentery, diphtheria and poliomyelitis, remained endemic well into the twentieth century but resembled epidemics because they tended to recur in cycles. Other diseases, for example, bubonic plague, smallpox and typhoid, broke out in epidemics more spasmodically, usually after disease-carrying agents had entered the country or had become actively infectious. Better public health provisions did much to eliminate most epidemic diseases from Australia from the late 1950s. Stricter quarantine rules, closer supervision of food processing and distribution, higher building standards and better housing, extended urban sewerage systems, more effective means of eradicating vermin, better vaccines and public immunisation programs all played a part here. Influenza is one disease which has continued to recur in epidemics, new strains of its virus periodically emerging and spreading before vaccines can be developed to help control its spread.

EQUAL PAY The first demands for equal pay for men and women performing equal work were made by the Australian suffragist and labour movements around the turn of the twentieth century. Pressure mounted with the Council of Action for Equal Pay (established 1937), feminist agitation during World War II, and Australian government support for the 1951 International Labour Organization resolution. Restricted equal pay was granted by the Conciliation

and Arbitration Commission in 1969, extended at the 1972 national wage case, and in 1974 made more effective by the commission's extension of the minimum wage to women. Continuing inequalities in employment opportunities, however, resulted in average female weekly earnings being only 55 per cent of male rates in 1984.

ESSON, Thomas Louis Buvelot (1878-1943), dramatist, was born in Edinburgh, and came to Australia with his widowed mother when he was three. He studied at Melbourne University but did not complete a degree. From 1904 he published poems and topical paragraphs in the *Bulletin* but became increasingly critical of that journal. In 1906 he joined the Victorian Socialist Party, and its publication, the *Socialist*, gave him a forum for his views. His first full-length



Immunisation at Hyde Park, Sydney, during the influenza epidemic in New South Wales, 1919. The first victim to die from influenza in New South Wales had come from Melbourne on 2 February 1919. Amid accusations that the Victorians had not followed proper quarantine procedures, the New South Wales government ordered masks to be worn in public places and offered an immunisation program. This inoculation depot was set up in Hyde Park. Sydney Mail, 5 Feb 1919.

play, *The time is not yet ripe*, was successfully staged in 1912. He lived overseas 1916-21 and after his return to Melbourne he established the Pioneer Players, a group which performed Australian plays, including his works, *The drovers*, *The battler* and the *The bride of gospel peace*.

ETHNICITY, an expression gaining currency in Australia from the early 1970s as the idea that Australian society was multicultural became more widespread, is a loose expression signifying the sum of national, cultural and racial qualities distinguishing one people, or 'ethnic group', from another. Thus, Australians of, say, Greek descent are said to be distinct from those of Vietnamese descent because of various racial, linguistic, religious and historical factors, their separate traditions, and differences in lifestyles such as diet and dress. That ethnicity was becoming a matter for political concern became clear in 1975, when the name of the commonwealth Department of Immigration was changed to Department of

Immigration and Ethnic Affairs. During the mid-1980s critics of the notion of multiculturalism began arguing that to stress ethnicity was divisive as this detracted from the democratic traditions all ethnic groups shared by virtue of their residence in Australia.

EUGENICS was first systematically expounded by the English scientist Sir Francis Galton in the 1880s. He believed that people could be bred for desired qualities in much the same way as farmers breed animals and plants to meet market needs. Eugenics society branches were common throughout the British empire including Australia between 1905 and 1930. In Australia eugenic ideas were important in debates about health, welfare, population and immigration policies until the 1940s. Eugenics was also taught as part of some Australian university courses in the biological and social sciences. The doctrine suffered a severe loss in popularity because of its use by Hitler and the Nazis to justify the persecution and killing of Jewish people.

LYNDSAY A. FARRALL

EUREKA Early on the morning of Sunday 3 December 1854, a combined military and police force of over 400 attacked about 150 goldminers in the Eureka stockade on the Ballarat goldfields. The miners opened fire when the troops were about 150 metres from the stockade. The military returned fire and charged. Within ten minutes it was all over: the diggers' flag (a stylised representation of the Southern Cross) had been torn down, tents had been set alight, and the miners had either surrendered or escaped. Some troops then behaved disgracefully, bayoneting the wounded, and shooting down or arresting bystanders hundreds of yards from the scene of the clash. Five soldiers were killed, twelve were seriously wounded, and thirty diggers were killed outright or died later of their wounds. Another fifty to sixty diggers were probably seriously wounded, but, like the miners' leader, Peter Lalor (who later had an arm amputated), managed to escape.

Controversy over Eureka has continued. Some believe it was the birthplace of Australian democracy; others dismissed it as a minor affray. Similarly, the cause of Eureka is debated: was it part of a wider revolutionary movement, or a feud between Irish miners and British troops; or were the rebels self-employed businessmen protesting over taxes? Such simple explanations fail to appreciate that Eureka was the culmination of many factors—widespread digger unrest, government overreaction and unique local conditions—and that its significance lies in the aftermath.

The diggers' grievances centred on the licence, which, initially costing 30s a month (later reduced to £1 a month, or £2 for three months), allowed miners to dig for gold on crown land. Its introduction provoked widespread anger among diggers, who thought it unfair to tax people before they had earned income. They called for its replacement by a gold export tax. Methods of policing the licence aggravated the discontent: miners had to carry their licences at all times or face arrest; the penalties were a £5 fine (half going

V.  R.
Edmund Secretary's Office, Melbourne, this December, 1854.

£400 REWARD

Whereas Two Persons of the Names of
Lawlor & Black,
 LATE OF BALLARAT,
 Did on or about the 13th day of November last, at that place, use certain
TREASONABLE AND SEDITIOUS LANGUAGE,
 And incite Men to take up Arms, with a view to make war against
 Our Sovereign Lady the QUEEN:

NOTICE IS HEREBY GIVEN
 That a Reward of £200 will be paid to any person or persons giving such
 information as may lead to the Apprehension of either of the abovesaid
 parties.

DESCRIPTIONS.
 LAWLOR—Height 5 ft. 11 in., age 35, hair dark brown, whiskers dark brown and shaved under the chin, no
 mustache, long face, rather good looking, and is a well made man.
 BLACK—Height over 6 feet, straight figure, slight build, bright red hair worn in general rather long and
 brushed backwards, red and large whiskers, meeting under the chin, blue eyes, large thin nose, ruddy
 complexion, and rather small mouth.

By His Excellency's Command,
WILLIAM C. HAINES.

BY APPOINTMENT, THE PRINTER, GOVERNMENT PRINTER, MELBOURNE.

Reward offered for the capture of Peter Lalor and George Black, two of the miners' leaders who escaped after the Eureka Stockade. Poster 1854.

MITCHELL LIBRARY

to the arresting trooper) and up to six months in gaol for subsequent offences. Licence hunts quickly became an excuse for intimidation and corruption by the hastily recruited Victorian police, many being ex-convicts.

The arrival of a new governor, Sir Charles Hotham, in June 1854 raised hopes that conditions on the goldfields would improve, but Hotham was not the liberal the diggers initially took him for. Before leaving London he had been told that the colony's main problem was its budget (in 1853 Vic had overspent its budget by £1 million). On learning that many miners were evading the licence fee, he clamped down, ordering that licence hunts take place at least twice a week. The miners held mass meetings, signed petitions, and formed protest organisations. The miners' leaders included former Chartists, who had advocated democratic reform in Britain and had brought Chartist demands to this new campaign in Vic. Increasingly the miners' leaders argued that the whole system of government had to be changed if diggers were to obtain relief. Such constitutional agitation was as far as most miners on the Victorian goldfields were prepared to go. Only on the Eureka lead at Ballarat were diggers prepared to arm themselves and skirmish with the troops.

Local factors contributed to the growing militancy of Eureka miners. Deep lead mining was hard, dangerous work, and chances of success were slim. Frustration quickly turned to anger when the police

continually interrupted this work, demanding to see licences. The slowness of the mining also meant that the Eureka population was relatively stable, so that a community of interest developed among the diggers, whose solidarity was reinforced by a concentration of Irish miners. Ill-feeling between the miners and the authorities at Ballarat had been simmering for some time. In October 1854 a miner named James Scobie was kicked to death by the ex-convict owner of the Eureka Hotel, James Bentley, and three of his associates. Despite strong evidence, two of the three magistrates hearing the committal proceedings voted to dismiss the case. Bentley was a friend of one of the magistrates and his hotel was a favourite drinking place for Ballarat police and officials. Angered by the court's decision, the miners agitated to get the case reopened. They also burnt Bentley's hotel to the ground.

From the middle of November 1854 it was clear that Hotham wished to be severe with the Ballarat diggers. He was receiving reports that 'foreign agitators' were on the goldfields and, with Britain at war in the Crimea, he feared unrest in one of the empire's wealthiest colonies. Hotham reinforced the government camp at Ballarat and told Commissioner Rede to be firm with the miners. The more militant diggers responded by burning their licences and pledging to protect one another. When the police began a provocative licence hunt on 30 November 1854 they were stoned by the miners and several shots were fired. The day ended with the diggers swearing

allegiance to the Southern Cross flag and barricading themselves behind a crude stockade.

What the diggers hoped to achieve at the Eureka stockade is unclear. The theatrical nature of their actions suggests that they wished merely to repudiate the authority of government officials at Ballarat, their rough fortifications having symbolic rather than a practical role. One of the ringleaders, Raffaello Carboni, later claimed that most of the 1000 diggers who had first gathered at the stockade on Friday 1 December had believed Hotham would act against the Ballarat officials when he became aware of the situation. If so, the Eureka miners were hardly revolutionaries. But clearly the officials at Ballarat were determined to assert their authority, and decided to attack the stockade although the miners had been drifting back to their claims.


The initial public response to the attack on the stockade was to support the government. Wild rumours that the diggers had intended to march on Melbourne and pillage the city helped the government case. As more details of the events surrounding the rising were revealed, however, public opinion shifted. Large demonstrations pledged support for the miners' demands, and a campaign began for an amnesty for the stockaders who had been arrested or were being sought by the authorities. By February and March 1855, when the thirteen diggers accused of high treason were tried, public opinion was firmly behind the miners. Evidence at the trials confirmed the extent of official provocation, and revealed many instances of police perjury. The juries of Melbourne shopkeepers and artisans confirmed the popular verdict by finding the stockaders not guilty. With as much good grace as possible, Hotham admitted his mistakes. A general amnesty was granted to those stockaders still in hiding, and the government set about speedily introducing reform. By the middle of 1855 the diggers were enfranchised, an export duty on gold replaced the licence fee, and a system of democratically elected courts created to enable the miners to manage the goldfields themselves.

Whether the events at Ballarat contributed to the introduction of political democracy in Victoria a few years later is debatable. Many of the political reforms were already in the pipeline, and at best Eureka merely speeded up the process. Eureka's real significance was that it symbolised the ascendancy of democratic ideals in Victoria: whereas governments had previously been able to ignore public opinion, henceforth they could only do so at their own peril.

JOHN KNOTT

Further reading W: Bate, *Lucky city: the first generation of Ballarat, 1851-1901*, Melbourne 1978; R. Carboni, *The Eureka stockade*, Melbourne 1963 (1855); C.H. Currey, *The Irish at Eureka*, Sydney 1954; J. Molony, *Eureka*, Melbourne 1984; G. Serle, *The golden age*, Melbourne 1968 (1963).

EVANS, George William (1775-1852), surveyor and explorer, moved to Sydney from the Cape of Good Hope in 1802 when the latter was returned to the

V.  R.

NOTICE!!

Recent events at the Mines at Ballarat render it necessary for all true subjects of the Queen, and all strangers who have received hospitality and protection under Her flag, to assist in preserving

Social Order

AND
Maintaining the Supremacy of the Law.

The question now agitated by the disaffected is not whether an enactment can be amended or ought to be repealed, but whether the Law is, or is not, to be administered in the name of HER MAJESTY. Anarchy and confusion must ensue unless those who cling to the Institutions and the soil of their adopted Country step prominently forward.

His Excellency relies upon the loyalty and sound feeling of the Colonists. All faithful subjects, and all strangers who have had equal rights extended to them, are therefore called upon to

ENROL THEMSELVES

and be prepared to assemble at each place as may be appointed by the Civil Authorities in Melbourne and Geelong, and by the Magistrates in the several Towns of the Colony.

CHAS. HOTHAM.

BY APPOINTMENT, HER MAJESTY'S SURVEYOR GENERAL.

Sir Charles Hotham's appeal for law and order in the face of increasing unrest at the Ballarat goldfields.

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Dutch. Between 1803 and 1805, Evans acted as surveyor-general and in 1809 he was appointed assistant surveyor for Port Dalrymple in Van Diemen's Land. Recalled to Sydney in 1813 to confirm that Blaxland, Lawson and Wentworth had found a way across the Blue Mountains, Evans became the first European to cross the main range. He discovered the Macquarie River and traced it beyond the present site of Bathurst and, as John Oxley's second in command, was part of the expedition that discovered the Lachlan River. He returned to Van Diemen's Land, was appointed surveyor-general of the colony in 1825 but retired, returning to England in 1826. He returned to Australia in 1832 where he remained until his death.

JOHN McQUILTON

EVATT, Elizabeth Andreas (1933–), judge, won the University of Sydney medal for law in 1955, the first woman to do so. Her distinguished career has included appointments as a deputy president of the Australian Conciliation and Arbitration Commission, chair of the Royal Commission on Human Relationships and chair of the Family Law Council. Since 1976 she has been chief judge of the Family Court of Australia.

EVATT, Herbert Vere (1894–1965), politician and judge, was born in East Maitland, NSW, on 30 April 1894. Displaying academic brilliance, Evatt distinguished himself at Fort Street Boys' High School, the



Dr H. V. Evatt, successively barrister, member of the NSW parliament, High Court judge, commonwealth minister and chief justice of the NSW Supreme Court.

FAIRFAX PHOTO LIBRARY

University of Sydney, and later with the publication of legal, historical and political works. Although called to the NSW Bar in 1918, and taking silk in 1929, Evatt also sought political activity, representing Labor as MLA for Balmain (1925–30). In 1930, on the nomination of the Scullin Labor government, he became the youngest judge of the High Court of Australia, his resignation ten years later preceding a successful entry into federal politics.

As minister for external affairs and attorney-general (1941–49), Evatt was responsible for a unique period in foreign policy characterised by Australian independence and assertiveness at international forums. He was a conspicuous figure at the formation of the United Nations Organisation, later becoming president of the General Assembly (1948–49).

In Australia, Evatt's preoccupation with fundamental freedoms animated his successful defence of the Communist party in the face of government attempts to ban it. His career waned while he was leader of the parliamentary Labor party (1951–60), the turning point being electoral defeat in 1954, failure to dispose adequately of claims that his staff were implicated in Soviet espionage, and involvement in re-opening divisions within his own party. Declining health marred his brief term as chief justice of the NSW Supreme Court (1960–62).

The law shaped Evatt's scholastic and political views and gave formal expression to his support for the underprivileged and his commitment to causes, frequently involving civil liberties, as jurist, scholar and politician. His major scholarly publications were: *The King and his Dominion governors*, 1936; *Rum Rebellion: a study of the overthrow of Governor Bligh by John Macarthur and the New South Wales Corps*, 1938; and *Australian labour leader: the story of W.A. Holman and the labour movement*, 1940.

P.W. CROCKETT

Further reading K. Tennant, *Evatt: politics and justice*, Sydney 1970.

EXCLUSIVES was a term of abuse used by some of the constitutional reformers in NSW in the 1820s and 1830s to describe the higher ranks of landowners, merchants and officials. With a few exceptions so-called exclusives were opposed to reform, or else they hoped that former convicts would be barred from full participation in any future electoral system. Many also disliked the fact that juries in criminal cases often included unrepentant former convicts.

ALAN ATKINSON

EXETER HALL, a building in The Strand, London, was for more than fifty years from 1831 the principal meeting place of Church of England benevolent societies and a centre of much Anglican philanthropic activity. To Australian colonists the name 'Exeter Hall' became a catchcry denoting 'armchair' theorising about colonial issues, particularly in relation to the Aborigines. Leading colonists, such as W.C. Wentworth, decried the 'pernicious' influence of Exeter Hall on British colonial policy. The building was demolished around the turn of the century.



On 1 August 1888 Victoria's governor, Sir Henry Loch, opened Melbourne's Centennial International Exhibition. Here the viceregal carriage passes the Treasury Building, Spring Street, on its way to the opening ceremony. Illustrated Supplement to the Sydney Mail, 4 Aug 1888.

EXHIBITIONS The Great Exhibition of the Works of the Industry of All Nations held at the Crystal Palace, London, in 1851 inaugurated the age of large-scale international exhibitions designed to display the triumphs of the industrial revolution and to stimulate trade. Apart from displays or previews of exhibits prepared for the exhibitions held in Paris (1855), London (1862 and 1873) and Philadelphia (1876), inter-colonial exhibitions were held in Melbourne (1866), Sydney (1870, 1873 and 1875) and Brisbane (1876). Australia's first international exhibition was held in Sydney at the 'Garden Palace' from 17 September 1879 to 20 April 1880; this was followed by international exhibitions in Melbourne (1880–81 and 1888–89), Adelaide (1881), Launceston (1891–92), Hobart (1894–95) and Brisbane (1897). After 1900 smaller, more specialised displays became more the vogue; for example, the Bendigo Exhibition (1901–02) was held to commemorate the jubilee of the discovery of gold, the first international exhibition of women's work was held in Melbourne in 1907, and in 1913 the Australian Chambers of Manufactures held an all-Australian exhibition in Melbourne. Many of the functions of the old all-embracing exhibitions are now incorporated in the annual shows run by agricultural societies. Australia has taken part in most overseas trade exhibitions in the twentieth century including the British Empire Exhibition at Wembley, England, in 1924–25, the World's Fair, New York, in 1939 and the various Expos. In the bicentennial year Brisbane will host Expo 88.

G.P. WALSH

EXPLORATION BY LAND Orthodox histories of land explorations highlight great expeditions, heroic feats, intriguing personalities and, not infrequently, the seductive appeal of mysterious events and circumstances. By such romantic or literary standards, the main work of exploration was completed before the end of the first century of white settlement. In fact, over very extensive areas only the bare superstructure of a most elementary geography had been clarified by, say, 1880, and there were countless pioneering investigations, attracting little attention, which were no less heroic and painstaking—and more reliable and practical—than the grand expeditions chronicled in the established texts. And modern scientists could argue that the exploration of Australia in the broadest sense is still going on today.

At first glance, it may be thought that Australia's basic environmental characteristics and the nature of its pre-European settlement generally promoted the exploration process: the vast expanses of relatively flat and open country; the opportunities provided by lengthy periods of temperate weather conditions; to some extent the sparse distribution of indigenous population offering little organised resistance. But a closer inspection reveals some further facts. The Aborigines, Australia's first explorers, were not commonly consulted, yet they assisted mightily on some expeditions, without commensurate recognition. In addition, the challenge of the arid interior, the forested and mountainous terrain over much of Tas and the eastern fringe of the mainland, and the comparative dearth of large estuaries and navigable river systems, made penetration difficult.

From the outset Australian exploration was variously conducted under government sponsorship and by independent parties, and for a number of reasons—natural curiosity and the quest for adventure; commercial, scientific and strategic hopes and concerns; the bid for personal fame. A rapid diffusion of pioneer pastoralists was triggered by successful crossings of the Blue Mountains and the Dividing Range by Blaxland, Lawson, Wentworth, Evans, Oxley and Cunningham between the 1810s and 1830s, and by the southward forays of Hume and Hovell (1824) and Maj Thomas Mitchell (1836). Subsequently, the exploration process was intensified on each of the new holdings on the expanding frontiers; in some cases pastoral pioneers anticipated the official exploration parties.

From the late 1820s to the early 1840s, the most daring exploits were directed towards answering primary geographical riddles—the quest for the estuary of a large river on the southern coast, the pursuit of westward-flowing rivers into a mysterious inland sea. Mitchell's 1836 journey and Charles Sturt's remarkable exploits (1827–30) helped to sketch out the framework of the main Murray–Murrumbidgee system. Scientific questions were competently addressed by a number of the leaders and by the inclusion of gifted botanists in some parties, but in a few large regions independent pastoralists and visiting foreign scientists contributed more than any official emissaries to the earliest environmental appraisals—



Lost in the bush, a sketch 'taken on the spot' by S. T. Gill, presents the European traveller and his horse as victims of the predatory bush. Some explorers and travellers were indeed killed by starvation, thirst, heat and Aborigines. Their stories could heighten terror of the bush among townspeople and titillate an overseas audience. Watercolour from S. T. Gill, J. T. Doyle's sketches in Australia, c 1854-63.

MITCHELL LIBRARY

for example, Angus McMillan (1839–41) and Paul E. Strzelecki (1840) in Gippsland, Vic. Tas was carefully reconnoitred by government surveyors and pioneer botanists, while the Van Diemen's Land Company successfully backed its own explorers. In tropical Australia the despatch of official parties from western NSW, including one under Thomas Mitchell (1845–46), opened up a good deal of new grazing country. A year earlier, the Prussian-born scientist Ludwig Leichhardt had taken one of the first great private expeditions from the Darling Downs into the far north, to Port Essington; his disappearance on a later expedition launched a series of searches, but the mystery was never solved.

In SA the Eyre–Torrens–Gairdner lakes complex was finally unravelled in the late 1850s by J.M. Stuart and others, following the earlier work of E.J. Eyre and Charles Sturt. In WA the mid-coastal margins were best investigated in the late 1820s and 1830s by J.S. Roe and later by George Grey (1839) and the Gregory brothers, Augustus and Francis (from 1848). But the coastal peripheries and the remote interior were still cartographic blanks until the 1860s. Then the Gregorys were again prominent, as were the Forrest brothers—John completed the first crossing from

Perth to Adelaide in 1870 and confirmed Eyre's negative reports on surface water resources; Alexander Forrest was closely associated with field appraisals of the southwest and northwest. For the most part, this filling-in of the Australian map brought no splendid returns in economic intelligence, but it yielded a full measure of mystery and adventure, or was made to do so by subsequent interpreters.

There was a stronger focus on central Australia during the 1850s and 1860s. A south–north crossing was made in 1861–62 by J.M. Stuart, on his third attempt, but it did not attract the publicity that had been given to the expedition of Robert O'Hara Burke and W.J. Wills in 1860–61. The confusions surrounding this strange expedition, the deaths of its leaders, and the exploits of the numerous search parties, still command widespread attention. In contrast, P.E. Warburton's westward crossing from Alice Springs (1873) and Ernest Giles's journeys in both directions during the mid-1870s, have not drawn their full share of popular interest.

By the end of the 1870s these expeditions had proved the aridity of Australia's heartland. In every region the labours of graziers, farmers, mining companies and individual prospectors continued to fill in

the initial outlines provided by the explorers. With the main geographical framework complete, the title 'explorer' was more grudgingly applied to adventurous twentieth-century pioneers. C. T. Madigan relied on camels to cross the dry country of southwestern Qld and the NT in 1939, but it is significant that he had already flown over the region ten years earlier. Subsequently the 'aerial survey' approach, so well adapted to Australia's continental scale, intensified all aspects of environmental appraisal, and in the process transformed the very concept of exploration. The most celebrated early exponent of the technique was Donald Mackay, whose prodigious output of maps and reports on central Australia provides a unique record of its 1930s landscapes.

Exploration techniques were rapidly defined in a postwar era characterised by growth in the field sciences, expansion of Australia's university system, and the involvement of CSIRO, the Division of National Mapping, the Bureau of Mineral Resources, and other government agencies, in development strategies and the compilation of resource inventories. Intricate topographical and geological mapping, hydrological and mineral surveys and the like, are increasingly dependent on the employment of space photography and orbital satellites. Australia is still far better placed than most other countries to satisfy the old desire to be the first to set foot on new territory, but the ambition has become even more personal and eccentric, the challenge emptier. For the most part, today's authentic explorers are not required to leave the comfort of their laboratories.

J.M. POWELL

Further reading E. Favenc, *History of Australian exploration from 1788*, Sydney 1888; E.H.J. Feeken, G.E. Feeken and O.H.K. Spate, *The discovery and exploration of Australia*, Melbourne 1970.

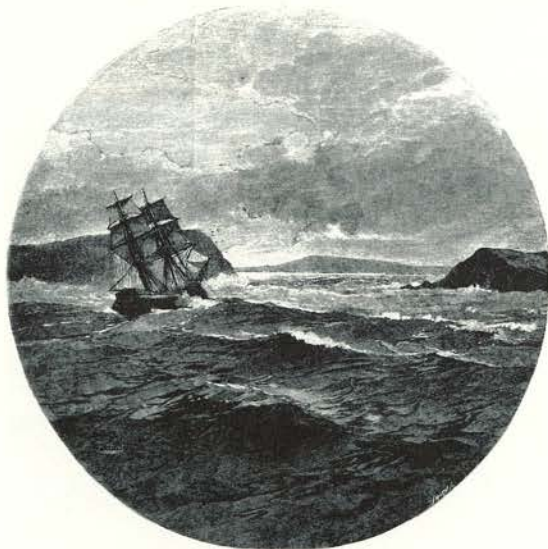
EXPLORATION BY SEA The Portuguese were in Timor early in the sixteenth century, and almost certainly knew at least the northwest coast of Australia; but the evidence, mainly from a series of maps produced at Dieppe from Portuguese origins, is complex and confusing, and their priority is still and rightly a matter of dispute.

Dutch traders reached Java in 1596; ten years later Willem Jansz in the *Duyfken* became the first European who is known by specific written record to have seen Australia, on the west of Cape York Peninsula; one of his names, 'Fly Bay', strikes a note repeated by irritated visitors ever since. This was about March 1606; in September Luiz Vaz de Torres, separated from an abortive Spanish attempt to colonise Espiritu Santo (New Hebrides, now Vanuatu), passed through Torres Strait from east to west, and possibly saw Cape York without knowing it was a mainland.

In 1611 Hendrik Brouwer pioneered a new and swifter course to the East Indies, running before the prevailing westerly winds from the Cape of Good Hope as far as the longitude of Java before turning north, and by 1616–17 this became the official route for ships of the Dutch East India Company. Sooner or later some captain was bound to sail too far east before turning north and so to strike the Australian coast; the

first to do so was Dirck Hartog in the *Eendracht*, who on 26 October 1616 found the island which bears his name, off Shark Bay; he left an inscribed pewter plate which was picked up by Willem de Vlamingh 81 years later. There were other sightings, and after the 1627 voyage of Pieter Nuyts in the *Gulden Zeepaard*, from Cape Leeuwin along the coast of the Great Australian Bight to near Ceduna, the Dutch knew the outlines of the western two-thirds of the continent, but with gaps. In 1644 Abel Tasman filled in those in the Gulf of Carpentaria and the northwest. Two years earlier, in the *Heemskerck* and *Zeehaen*, he had found Van Diemen's Land (Tas) and, more importantly, by reaching New Zealand and returning to Batavia (Jakarta) by a great sweep north of New Guinea, he had circumnavigated the continent (at a distance!) and so set limits to its eastward extension. The first Englishmen to see Australia were the crew of the *Tryall*, wrecked near Northwest Cape in 1622, and John Read and William Dampier, buccaneers, in the *Cygnets*, who were in the Buccaneer Archipelago off King Sound in 1688.

After Tasman there was no major exploration for 126 years. The coasts found by the Dutch were unattractive: jungle or desert (they missed some of the better parts in the southwest) or, in the Bight, most forbidding cliffs; no gold, no spices, and people who had nothing to offer a hard-headed trading company. The east coast must exist—it is shown conjecturally on a great mosaic map in Amsterdam Town Hall, reproduced in the NSW State Library—but, unlike the west, it was not likely to be found accidentally, since for sailors entering the Pacific by Cape Horn or



A recreation of the entry of the brig Lady Nelson into Port Phillip on 12 February 1802, on a journey of exploration along the Southern Victorian coastline under Lieutenant James Grant. From A. Garran (ed), Picturesque Atlas of Australasia, 1886–88.

the Strait of Magellan, the natural course for the Indies was to run before the known and regular southwest trade winds which as it were slanted across the roof of Australia. The east coast had to wait until it was deliberately sought, and that is what James Cook did in 1770, on his first great voyage in the *Endeavour*.

Cook's first task was to make the important astronomical observation of the passage of the planet Venus across the sun's disc, which was visible from Tahiti; after that he was to check on the existence of the suspected southern continent ('Terra Australis') and then on the extent of NZ, not visited since Tasman's glimpse. After carrying out these instructions, he found himself with a ship not fit for a voyage in high latitudes, whether against the westerlies to the Cape of Good Hope or with them into the notoriously tempestuous waters around Cape Horn. He decided on a bold compromise—to Cape Town, but north of New Holland, as Australia was then known.

On 1 April 1770 he left NZ, and on 19 April made a landfall south of Cape Howe. He went up the coast and on 29 April anchored in the inlet which his plant-loving companion Joseph Banks induced him to name Botany Bay. His week's stay led to the selection of this area for the first European settlement in 1788. A few Aborigines made gestures of defiance but generally avoided contact: their fate lay a generation ahead. Passing and naming, but not entering, Port Jackson, he proceeded northwards and was soon within the Great Barrier Reef. Here on 11 June he nearly met disaster, striking a reef and with great difficulty making Endeavour River, near Cooktown, for repairs; here a mysterious beast was shot, the first recorded 'kanguru'. Cook sailed again on 4 August and was soon outside the Barrier, but the ship was borne in upon it and only with great difficulty got through Providential Channel. By 23 August he had completed this very hazardous navigation and was in Endeavour Strait; at Possession Island he formally claimed the whole coast for Great Britain by the name of New South Wales. From old maps the existence of Torres Strait was suspected, but not certain; Cook pressed through and by 11 October was at Batavia. The major lineaments of Australia were now assured.

There were still gaps, but within thirteen years of the foundation of Sydney the vexed question of the insularity of Tas had been decided and the southeast coast as far as Nuyts's discoveries had been charted, mainly by George Bass and Matthew Flinders but partly by the Frenchmen Bruni (or Bruny) D'Entrecasteaux and Nicholas Baudin, whose 'Terre Napoleon' did not long survive on the maps. Then in 1801–02 came the great voyage of Flinders in the *Investigator*, the first *close* circumnavigation. The outline charting of Australia was now virtually complete, though refinement of detail was still needed; the most notable later contribution was by Phillip Parker King in 1817–22.

O.H.K. SPATE

Further reading E.H.J. Feeken, G.E. Feeken and O.H.K. Spate, *The discovery and exploration of Australia*, Melbourne 1970; K.G. Macintyre, *The secret discovery of Australia*, Melbourne 1982; T.M. Perry, *The discovery of Australia*, Melbourne 1982; G. Schilder, *Australia unveiled*, Canberra 1975; A. Sharp, *The discovery of Australia*, Oxford 1963; G.A. Wood, *The discovery of Australia*, Melbourne 1969.

EYRE, Edward John (1815–1901), explorer, arrived in Sydney in 1833 after using the purchase money for a commission in the army to emigrate to NSW instead. After gaining some farming experience in the Hunter valley, he took up 1260 acres at Molonglo Plains near Queanbeyan in 1834. Not a particularly good farmer, he left Molonglo Plains in 1837 and returned to Sydney where he met Charles Sturt who backed him in a scheme to overland cattle to Port Phillip. The trip was a success and in 1838 Eyre tried to overland stock from Melbourne to Adelaide through Victoria's Wimmera but failed. Following established routes later in the year he succeeded. He settled in Adelaide and his last overlanding experience came in 1840 when he drove cattle from Albany to Perth.

Eyre was fascinated by the mystery of the interior of the continent and, using Adelaide as a base, mounted several expeditions after his arrival in SA. In 1839 he explored the country from the head of the Spencer Gulf to the Flinders Ranges, striking the southern edge of Lake Torrens. Unable to penetrate the country, he assumed that a large horseshoe lake blocked the way north from Adelaide. He explored the peninsula that was to bear his name. In 1840 he again attempted to break through his horseshoe lake and failed. Instead, with a small party of four, he turned westwards in an attempt to reach Albany by following the Great Australian Bight. The journey was one of the most harrowing in Australian exploration history. Much of the country traversed was desert and all but one of his companions, the Aboriginal guide Wylie, died. Only the food and water provided by a French whaler at Rossiter Bay enabled the two men to reach Albany on 7 July 1841.

Eyre's journeys opened up much valuable new pastoral country in SA. In 1841 he was appointed resident magistrate and protector of the Aborigines at Moorundie on the Murray River in SA. He left Australia in 1846, filling various viceregal positions in New Zealand and the islands in the Caribbean. In 1865, while governor-in-chief of Jamaica, he declared martial law to quell a riot. His armed forces killed over 600 persons and burnt 1000 dwellings. Eyre was recalled to England and a royal commission found that he had acted with unnecessary rigour. He lived in seclusion in England until his death.

JOHN McQUILTON

Further reading G. Dutton, *Edward John Eyre: the hero as murderer*, Melbourne 1977 (1967).