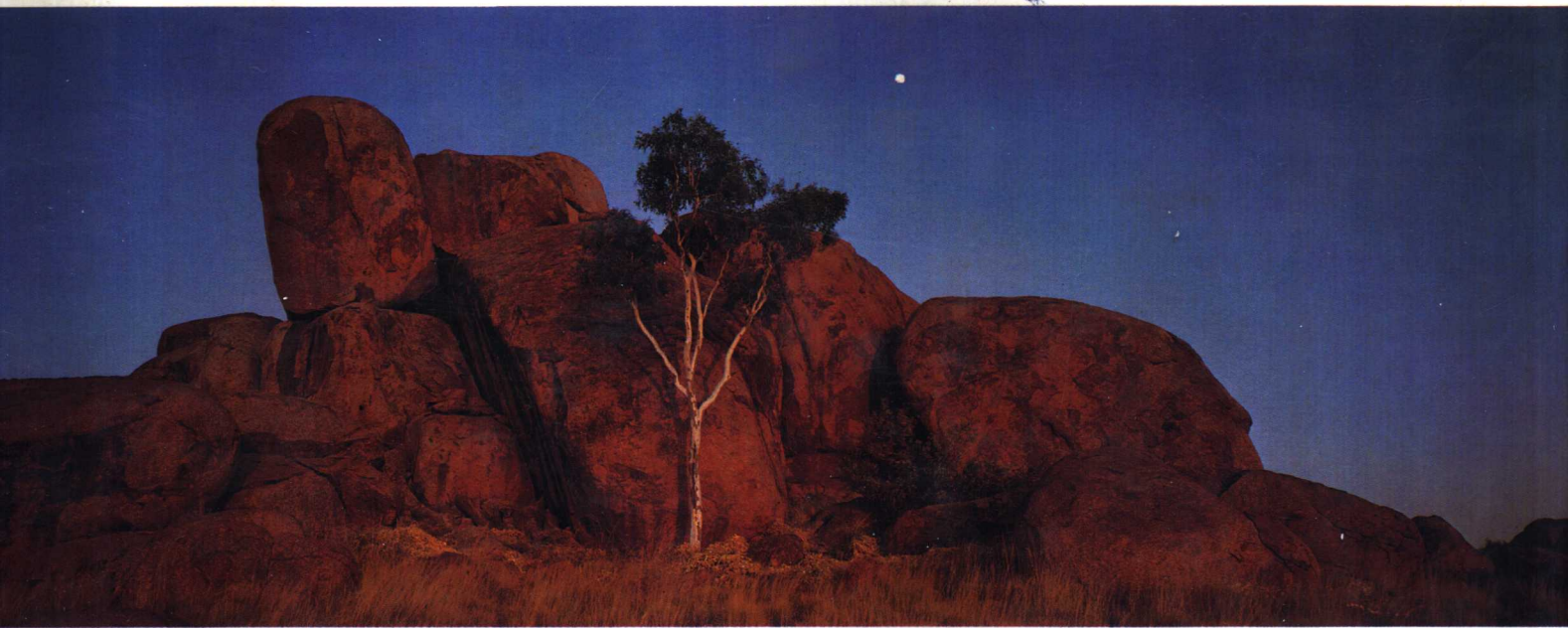


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AUSTRALIAN

ENCYCLOPEDIA

Editor
John Shaw

COLLINS, Sydney
in association with David Bateman Limited

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To my personal assistant over many years, Miss Helen Webb, I am deeply grateful for her untiring help; and to my professional colleagues Owen Munn, Christina Keogh, Catherine Marciniak and Richard Jones I express my sincere appreciation for their advice and co-operation in artistic and photographic work.

Picture Acknowledgements The acknowledgements for all black and white photographic material used in this encyclopedia appear alongside the photograph concerned; colour pictures are acknowledged on pages xii–xvi.

PREFACE

The correct selection of material is very important in the compilation of a one-volume encyclopedia. Decisions about what to include and what not to include played an important part in the early planning of this book and have continued to be significant throughout the whole publication process. The result is a broad, yet representative coverage of topics in almost every field of knowledge: history and geography, literature and drama, politics and government, social and economic matters, theatre and music, native and introduced fauna and flora, sport and films, art and architecture, mineral and rural industries, science and agriculture. Of necessity, some entries are brief, but we hope they are clear and balanced carefully with the longer ones, and provide in one volume a convenient reference for people in all walks of life.

Many authors have contributed within their fields of expertise and it was left largely to them to decide how to treat their subject, thus providing the opportunity for subjective interpretations in some sections. The result is an encyclopedia which we think is lively as well as factual.

Entries are in alphabetical order using common rather than scientific names. (There is a separate glossary of scientific terms.) The index at the back of the book lists broad categories of subjects for readers who may be pursuing particular interests or lines of study.

The illustrations, both colour and monochrome, have been chosen for the practical contribution they make rather than for visual effect.

Biological Entries Within the encyclopedia the arrangement of the entries on plants and animals reflects their hierarchical classification. Information on beetles, for example, will be found under BEETLES, but characteristics which the beetles share with most other insects are discussed under INSECTS. Similarly, the insect entry refers to the ARTHROPODS, the phylum of animals of which the insects form one class. An outline of BIOLOGICAL CLASSIFICATION explains the various levels in the hierarchies for plants and animals.

A compromise has been made in the choice of names. With familiar groups such as KANGAROOS and BEETLES a common name has been used rather than the scientific name (Macropodoidea; Coleoptera) but with less familiar groups, such as the sea slugs, sea urchins and so on, the technical term (ECHINODERMS) has been used with ample cross-referencing. The scientific names of species and plants and animals have been used throughout but always with the most often used common name, when one exists.

The scientific names have been used because of their internationality and because many common names mean different things in different places — even within Australia. Unfortunately, even scientific names do tend to change as the groups to which the organisms belong become better known to science. Thus, unavoidably, some names will have changed by the time the book is published. This is particularly true, for example, of the marine fishes but will scarcely apply, if at all, to the birds. In the entries on birds, some names will be found to be marked thus*. This indicates that the species, genus or family so indicated is endemic to Australia, i.e. the bird(s) concerned is now restricted to Australia as a native animal though it may have had a wider distribution in the past.

Animals vary in size, even within a species. The dimensions given are therefore to be taken only as a guide. Usually a mean is given, but sometimes the maximum is recorded, or the range of a large sample, is provided.

Aborigines/Aboriginal Throughout the encyclopedia, the word 'Aboriginal' has been used adjectivally (for example, Aboriginal housing) or to describe one person (for example, Bennelong was an Aboriginal). The word 'Aborigines' has been used for the plural (for example, six Aborigines).

National Parks The source of the statistics for the areas of National Parks, and for the names of these parks, has been the publication edited by M. D. Hinchey, entitled *Nature Conservation Reserves in Australia (1980)*, Occasional Paper No. 5, published by the Australian National Parks and Wildlife Service, Canberra, 1981.

Just prior to publication of this encyclopedia, a new edition of *Nature Conservation Reserves in Australia (1983)* was published. It shows that a number of changes to our National Parks have been gazetted.

Alphabetical Organisation The alphabetical system used in this encyclopedia is one that considers only the first word of the (bold type) entry heading; only where the first words are identical in two or more entries are succeeding words considered. Thus, **Bank of New South Wales** precedes **Bankcard** and **Australia Party** precedes **Australian Alps**. It should also be noted that all entry headings beginning with **Mc** or **Mac** are treated as if they begin **Mac** and those beginning with **St** as **Saint**. Thus **McPherson Range** precedes **Macquarie Harbour**, and **St Arnaud** follows **sailing** and precedes **salamanders**.

Abbreviations Names of States and Territories are abbreviated as capital letters with no full stops, thus ACT (Australian Capital Territory), NSW (New South Wales), NT (Northern Territory), QLD (Queensland), SA (South Australia), TAS (Tasmania), VIC (Victoria) and WA (Western Australia). However, where the name of a State or Territory is part of a proper name, it is printed in full (for example, New South Wales Corps, not NSW Corps). Compass direction points are given in capital letters without hyphens or full stops (for example, NW, ESE, SSW) except when they immediately precede another abbreviation (for example, north-eastern NSW, not NE NSW) and when they are part of a proper name (for example, South Grafton, Southern Tablelands, not S Grafton, S Tablelands). Other abbreviations used are Mt and Mts (for Mount and Mountains) and Is (for Islands) where these words are not part of a cross-reference (*see below*), and the standard ones for metric measures, such as mm (millimetres), cm (centimetres), ha (hectares) and ML (megalitres).

Cross-References The system of cross-referencing used throughout the encyclopedia, in order to direct the reader's attention to other relevant entries, is that the titles of other entries are placed in small capital letters. Thus, within the entry on Harvey River WA, there is a mention of the Darling Range, which is placed in small capital letters — DARLING RANGE — to indicate that there is an entry on this subject which will give more detailed information. Also, at the end of some articles, there are cross-references listed as a guide to readers; for example, at the end of the entry on Singleton NSW there is a cross-reference written thus: *See also* Maitland; Muswellbrook.

Population Statistics The population figures throughout the encyclopedia for cities, towns and other urban units are statistics of urban centres and bounded localities (not of local government areas, nor of statistical divisions, unless specifically stated). The particular statistics were used because it was felt that they provided more realistic figures to indicate the relative sizes of urban agglomerations. The basic sources for these population data were the series, one for each State and Territory, under the general title *Census of Population and Housing, 30 June 1981 — Persons in Local Government Areas and Urban Centres*, published by the Australian Bureau of Statistics. In general, entries have been included in the encyclopedia for all urban centres with populations of over 2000, but some smaller centres are also included where they have unique features or where it was thought useful to have gazetteer-type entries on those towns.

The tables of population growth figures have been compiled from official publications of the Australian Bureau of Statistics (or of its predecessor, the Commonwealth Bureau of Census and Statistics). The 1981 statistics of State and Territory populations are figures of Estimated Resident Population (Preliminary); these are figures from a new official series of population estimates, compiled according to the place of usual residence of the population, by the Australian Bureau of Statistics; the two basic sources for these data are: *Estimated Resident Population, Australia, States and Territories, 30 June 1981, 1976 and 1971 (Preliminary)*, Australian Bureau of Statistics, Catalogue No. 3217.0, Canberra, 31 March 1982; and *Estimated Resident Population by Sex and Age: States and Territories of Australia, June 1971 to June 1981*, Australian Bureau of Statistics, Catalogue No. 3201.0, Canberra, 23 August 1982.

References There are references listed for further reading at the end of many entries in the encyclopedia. These, it is hoped, will guide readers to some sources of more detailed information and encourage further investigation of relevant issues.

Among the general references which readers may find useful (and which have been used in preparing material for the encyclopedia) are: *Year Book Australia*, formerly called the *Official Yearbook of the Commonwealth of Australia*, published by the Bureau of Statistics, Canberra; *Atlas of Australian Resources*, published by the Department of National Development, Canberra; the various State Yearbooks and government statistical publications; and numerous journals and periodicals such as *The Australian Geographer*, published by the Geographical Society of New South Wales, the *Current Affairs Bulletin*, published by the Department of Adult Education, University of Sydney, and *Geo Magazine*, Sydney.

How to use the Encyclopedia

Here are sample entries from the main part of the encyclopedia showing the various aids provided to help the reader make the best possible use of the information.

emu Next to the ostrich, the emu, *Dromaius novaehollandiae* (2m long and 2m tall) of the family Dromaiidae, ~~is the largest~~ of all BIRDS. It has a large bill, long, dark greyish-brown, down-like feathers and a white ruff; the sparsely feathered face and throat have a pale grey-blue skin. It is a swift-footed, flightless bird, able to run at a speed of about 50 kph; its powerful legs are also used for defence and for

Species endemic to Australia

Measurements quoted are metric

F

Fadden, Sir Arthur William (1895–1973) Politician and Prime Minister. Born in INGHAM in QLD, ~~he worked first in canefields~~ and a sugar mill, then joined the service of the MACKAY Town Council and rose to the position of Town Clerk. Meanwhile, he had been studying accountancy, and in 1918 opened his own business as a public accountant in TOWNSVILLE and BRISBANE. ~~He was a Country Party member of the QLD Legislative Assembly from 1932 to 1935 and of the federal House of Representatives from 1936 to 1958, during which time he held a number of Cabinet posts, most notably that of Treasurer (1940–41, 1949–58). He became leader of the Country Party in the Commonwealth Parliament in 1941, was Prime Minister for about seven weeks after the resignation of Robert MENZIES in 1941, and was deputy Prime Minister from 1949 until his retirement in 1958.~~

States abbreviated to capital letters

Denotes cross-reference to subject covered elsewhere in the encyclopedia

Further reading: Fadden, A. W. They Called Me Artie. Jacaranda, Milton QLD, 1969.

Reader can research subject further by referring to books mentioned; publisher, author and year of publication listed

mushrooms *see* agriculture; fungi

music This article provides an ~~outline~~ of the history of music in Australia.

Subject covered under another main heading

Aboriginal music Tribal music of the Australian Aborigines ~~had existed for thousands of years in Australia prior to the arrival of Europeans. The early white settlers failed to understand or assess the sacred, semi-sacred and secular music of the Aborigines they encountered, although in the earlier half of the 19th century a few composers did try to come to terms with this music by attempting to assimilate it into western-style songs and choral works. Little further interest was taken until the appearance of John ANTILL's ballet score *Corroboree* in the 1940s, while more recently George DREYFUS has written a *Sextet for Didjeridu and Wind Quintet*. However, the rhythmic complexity of much Australian Aboriginal music is such that it does not blend~~

Sub-headings under main entries

Titles of books, music, etc. in italics

How to use the Subject Index

The subject index at the end of the encyclopedia lists a wide range of general topics such as Arts, History, Natural History, Politics and Politicians, in some cases with sub-headings, e.g., Music, Birds, etc. Under these headings are grouped the encyclopedia entries which relate to them, together with the appropriate page numbers.

By referring to this, and following up the cross-references in the main text, the reader can find all the relevant information for any particular line of research. Numerals in *italics* refer to colour illustrations.

Major articles on a particular topic are indicated by an †.

A sample from the index is shown below.

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A

abalones *see* gastropods

ABC *see* Australian Broadcasting Corporation

Aborigines The Aborigines have been native to Australia for perhaps longer than 40 000 years. Most of their history during this long period can be deduced only from archaeological findings, from the conclusions of other scientific research, and from their own customs and oral traditions; no written record of them was made before European explorers first visited the continent early in the 17th century. However, research indicates the existence, up to that time, of a society whose life-style had been stable for a very long period, and which was integrated with the natural environment to a remarkable degree. They evidently had a complex and rich culture, a sufficient and healthy diet, a great deal of leisure, habits of co-operation and sharing, and a deep and strong religious life.

Archaeological records The oldest Aboriginal bones yet discovered were found by J.M. Bowler in 1974 at Lake Mungo in south-western NSW, where erosion had revealed a 30 000-year-old burial; stone tools, freshwater food shells and cooking hearths, 5000 years older, were found in the same area. On the Upper Swan river, near Perth, human occupation also dates from around 38 000 years ago. Sites excavated in northern Australia are younger, but this is probably because the oldest are submerged beneath the Arafura sea. Around 20 000 years ago, during the ice age, sea level was over 120 metres below its present level. It was during this period when Bass Strait was dry land, that Aborigines migrated to Tasmania.

It seems beyond doubt that the Australoid ancestors of the Aborigines came here from South-East Asia, possibly in several migrations. At no period since *Homo sapiens* appeared has Australia had a complete land-bridge to Asia (*see* AREA); it is supposed, therefore, that the crossings might have been made by chance drifting on the floating debris of storms, or, more probably, by design on some form of watercraft, as the water crossing was never less than 75km.

Since that distant past the Aborigines had lived in almost complete isolation until European discovery, and consequently appear to have changed little from the ancestral stock. Only in the far N are there traces of outsiders—seasonal visits of Indonesian trepang-fishers

and, on the tip of CAPE YORK, some Papuan influence.

Traditional society and culture During their long isolation, there were many changes in environmental conditions, but Aboriginal society proved adaptable and resilient. Although the economy was based upon hunting, collecting and fishing, there were many changes through time and, by 1788, there existed complex regional variants. It is becoming evident that, during the last few thousand years, there was an intensification in the exploitation of available plant and animal resources. These included harvesting and grinding wild grass seeds in arid areas, extensive artificial channels for trapping eels in VIC, and washing toxic material from cycad nuts.

Daily life The main occupation of daily life was the search for food for immediate use, for there was little that could be stored. In poor country in a bad season the work of obtaining food would have been one of ceaseless effort; but death from hunger or thirst was probably a rare fate.

Collecting vegetable foods, insects and small animals was women's work. Various nuts, seeds and roots were powdered or ground to be made into dampers (a type of unleavened bread) but some would have to be soaked overnight in running water to remove toxic substances. Certain vegetable substances not usually eaten were collected for medicinal purposes, including *pituri*, the dried leaves of *Duboisia* which contain small quantities of a drug resembling cocaine and serving as their main stimulant. Along the E coast, the women fished with hook and line in estuarine waters from bark canoes; they cooked and ate some of their catch while fishing—a small fire was made on a bed of sand in the canoe—and the rest was taken back to camp. The Aborigines made no fireproof containers so most cooked food was roasted, or baked in a pit.

Hunting—carried out in strict silence, or using a highly developed sign language—was men's work, although Tasmanian women clubbed seals. With long training and muscular development it was possible, with the aid of a spear-thrower, to launch a spear at 30m per second over a range of 60m or more. Game secured by patient tracking far afield or by fishing with spears, nets or traps would be shared among the people in the camp strictly according to totem and kinship rules.

Another occupation for both sexes was the making or repairing of tools, or the rolling and twisting of bark fibre into cords for such items as bags or netting. Apart from ceremonial occasions, evening was a time for discussion, story-telling and work that could be done by firelight.

Children were breast-fed for about three years and were, to a large extent, dependent upon their mothers for several more. Five-year-olds were already becoming adept at food-gathering, the boys learning to throw miniature spears at small animals, the girls foraging with small digging sticks. Very little clothing was worn, though in the cooler S regions large

cloaks made from animal skins were worn.

Fire Tending camp-fires and providing them with fuel was an endless task. Although Aborigines had several ways of making fire through friction, camp-fires were not allowed to go out, and a burning torch of wood or bark was always carried when people were on the move.

The Aborigines also made extensive use of fire as an aid to hunting—partly to keep down the undergrowth and partly to promote the growth of the following season's grass for animals hunted for food. In much of the inland, fire is the only way to keep the impenetrable *Spinifex* grass at bay, permitting the growth of plants providing food for man and animals. Because Australian flora had become adapted to fire long before the arrival of man, and because fuel did not accumulate for many years at a time, the Aborigines' seasonal fires were not disastrous to the environment, though it may have been modified.



Two old men of the Warlpiri tribe making fire

Kimber/Aboriginal Arts & Crafts Sydney

Social organisation Research indicates the existence by 1788 of about 600 tribes, living in separate territories whose size was largely dependent on productivity. The total population at the time of European settlement may have been at least 300 000, of whom approximately 4000 were in TAS. A tribe might number up to 1 500 or fewer than 500.

The tribe was the largest unit of Aboriginal society and was governed by the elders, none of whom had any formally special position. Any fully initiated member of the tribe who by long experience and wisdom was recognised as worthy could participate in decision making.

It would appear that there was little to encourage or necessitate political confederacies between the largely independent tribes. However, there existed complex reciprocal ceremonial exchange or 'trade' routes, sometimes hundreds of kilometres long, over which gifts were exchanged. For example, red ochre, *pituri* and stone for hatchets circulated over great distances. Movement within these exchange cycles was governed by strict rules. Only in exceptional circumstances, and when his safety was guaranteed by his hosts, would a tribesman venture outside his territory, for beyond it his ancestral spirits could not protect him, and the rest of the world was potentially hostile.

Religious orientation The families of tribesmen moved as the search for food and water dictated, and had no permanent settlements within their own tribal lands; however, within

the well-known boundaries of their territory were specific sacred places to which tribal initiates would go periodically to commune with their ancestral spirits and to refresh and strengthen their spiritual life. To these people, voluntary migration to another territory, though it must have happened in the distant past, was unthinkable. The Aboriginal concept of belonging had at least as much religious as material content, and there could be no understanding of the European idea that land is something saleable, that title and possession could be transferred as one might barter a stone hatchet for a boomerang.

Nor did the Aborigines see themselves as the only conscious beings in their environment—for them animals, trees, rocks and water holes all had individual spirits and names, and according to totem any one of these might be descended from the same ancestors as themselves or might even be those remote ancestors.

For such a people, for whom living memory could reach no further back than four generations, history was telescoped so that the very distant past, with its great significance enshrined in the legends of the DREAM TIME, pressed close upon the living. The Aborigine could perceive the dream time figures as vividly present realities with whom he could communicate during rituals.

It would not be correct to say that the Aborigines had a religion in the sense of a organised body of doctrine, although specific items of belief were evident. Rather, the term 'religion' can be said to embrace their laws, mythology, kinship bonds and totems, and was thus pervasive and inseparable from any other aspect of their lives. Their religious practices might be loosely described as a combination of animism, ancestor-worship and fertility cults. Like their largely unstratified social system, their religion worshipped neither a supreme creator nor a hierarchy of gods and goddesses. They worshipped the ancestral spirits from whom they were lineal descendants, and who were thus seen as super-human rather than supernatural, although they were thought to possess enormous powers.



Aboriginal children learn their own language, *Banjalang*, an Aboriginal language from northern NSW

Language The study of Aboriginal languages, especially attempts to reconstruct parts of the ancient mother tongue, is specialised, difficult and controversial. There were hundreds of

Aboriginal languages, clearly related in structure and presumably having a common origin, though differing greatly in vocabulary. Very little has survived of many of these languages and attempts to connect them with the languages of other countries have been completely unsuccessful; it seems likely that they evolved from very ancient languages that were brought to Australia by the first Aborigines and have long since vanished elsewhere.

Law It was essential to the Aborigine that he lived in harmony with the spirit world. The law, preserved in the traditions of his tribe and expounded by the elders, prescribed right conduct and the reverent performance of ceremonies; on this depended successful hunting and gathering, abundance of water, good health and fair climate. Times of drought, scarcity and trouble indicated that the spirit world was displeased and that man must make good his shortcomings. The law prescribed the proper behaviour for almost every occasion in life, and even unknowing violation brought its penalty. For wilful breaches, punishment would also come directly from the delinquent's fellow tribesmen, under the authority of the elders. Improper behaviour was against the interests of the community, and the rigid and detailed code of the law permitted none of the easy Western distinction between legality and morality.

Kinship bonds and totem The tribes were subdivided, on the basis of kinship, into various clans. The complex structure of kinship systems within the different tribes evidently served as a means of regulating social conduct, prescribing behaviour for every relationship within the tribe; in default of identifiable blood relationship, some formal relation could always be established. When—rarely—a white man has been admitted to tribal membership he has not only had to be properly initiated but also formally provided with relatives, thus defining, in addition, which tribal woman he could or should marry. For the Aborigines the rules governing marriage were as much concerned with social as with blood relationship.

Totem embodied another kind of relationship—that of a man to his dream time ancestors, carried over the ages by his spirit. A spirit never died, but was reincarnated at the conception of a new child, which would then bear the same totem. This totem could be clearly recognised by various signs, and brought with it certain taboos, preventing the person from hunting or eating animals of the same totem. In practice, such restrictions acted gratuitously like a conservation scheme, preventing the excessive consumption of any one species, though they were probably not intended to serve this purpose.

Fertility The most important power wielded by the ancestral spirits was the control of fertility in all its aspects. Essential in women for propagation of the race, and also in animals and plants for sustaining human life, fertility was vested solely in the female. The father's part in conception was of relatively minor importance: he simply prepared the way for

the entry of a spirit into the womb. Consequently, it was essential that ceremonies for natural increase and fertility should be correctly and reverently performed before the mating and growing seasons. The ritual chants and dances of fertility rites were highly traditional, but not unchangeable: expert elders might devise improvements, and sometimes a ceremony that appeared to be particularly effective might be adopted by a neighbouring tribe. An interesting phenomenon of more recent prehistoric times concerns the development of a fertility cult centred on a female spirit, *Kunapipi*, which was spreading among the tribes, and which in time might conceivably have developed into a distinct mother-goddess religion.

Magic It is often hard to distinguish between religious and magical practices in primitive societies. Although everyone could use magic to some degree, certain men and women in traditional Aboriginal society appeared to enjoy a significant, though informal, status as skilled practitioners in magic. Malice backed by magic was the usual theory of inexplicable misfortune, and victims might seek help from the 'medicine man' in averting the harmful magic.

Craftsmanship and art The Aborigines were among the first people in the world to use ground-edge tools, about 10 000 years before it was thought of in Europe, and were highly skilled at shaping stone implements by chipping and delicate flaking. Some tools were made of bone or shell; most of their tools were for wood-working and their implements were made mainly of wood (for example, spear-throwers, spears, shields, clubs, BOOMERANGS, digging sticks, COOLAMONS). Sheets of bark were also used for shelters (such as GUNYAHS) and canoes. Also well known to the Aborigines was the use of natural resins, loaded with fibrous and other materials, for bonding together the parts of implements; developed only recently in the modern world with synthetic materials, this technique had been practised by the Aborigines for at least 15 000 years.



Aboriginal dancing ritual

It is almost impossible to separate Aboriginal art and craftsmanship from religious and