



**THE AUSTRALIAN MUSEUM
ANNUAL REPORT 1973 - 1974**

COVER: Preparators put the final touches to the cell model in the Australian Museum's Hall of Life.

7056/47

REPORT
OF THE
TRUSTEES OF THE AUSTRALIAN
MUSEUM
FOR THE
YEAR ENDED 30 JUNE, 1974

Ordered to be printed, 20 March, 1975

ACKNOWLEDGEMENTS

The Trustees, Director and staff of the Australian Museum have pleasure in thanking the following organizations which provided funds by way of research grants or grants-in-aid, assisting Museum staff in undertaking research and other projects of interest to the Museum:

Australian Research Grants Committee
Australian Biological Resources Study Interim Council
Australian Institute of Aboriginal Studies
Australian Council for the Arts
CSIRO Science and Industry Endowment Fund
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Ian Potter Foundation
The Commonwealth Foundation
The British Council
The Myer Foundation
BHP Ltd
James Kirby Foundation
Bernard Van Leer Foundation
Argyle Arts Centre

Further acknowledgements are listed under Appendix 2.

COVER: *Preparators put the finishing touches to the cell model in The Australian Museum's Hall of Life. (Photo: Howard Hughes Australian Museum.)*

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Walter Deas

Tents provide temporary accommodation for visiting scientists at the Museum's new research station at the northern end of the Great Barrier Reef. Permanent buildings are scheduled for completion during 1975.

To His Excellency the Governor:

The Trustees of the Australian Museum have the honour to submit their 120th Annual Report for the year ended 30th June, 1974.

Dr K. L. Sutherland, D.Sc., Ph.D., was re-elected President of the Board of Trustees at the annual meeting on 20th December, 1973.

Mr W. P. Coleman, B.A., M.Sc.(Econ.), M.L.A., was elected to the Board of Trustees on 27th September, 1973.

A Scientific Advisory Committee to the Trustees, chaired by Professor D. L. Wilhelm, University of New South Wales, presented their report on the scientific activities of The Australian Museum to the Trustees in October, 1973. The committee reported that the broad aims of the Museum are being achieved, that the calibre of the scientific staff is commendable, that there is gratifying interest in the pursuit of research work and that there is satisfactory output of scientific publications. They noted that research work was frequently hampered by an inadequate number of scientific and support staff and restricted laboratory space, and that accommodation for storage of collections was seriously restricted. The committee recommended, among other things, that greater attention be given to work on terrestrial biology, and that in general the Museum's policies and programmes be reviewed. The report, together with comments by the Trustees, was sent to the Public Service Board in January, 1974.

Long-term plans for new staff in all sections of the Museum were submitted to the Board. In the administrative area, the organization of the Office and Accounts Section was radically changed and approval was given for the addition of four new staff from 1st July, 1974. Total staff in the office will reach eighteen with the approved additions. A plan for the addition of twenty-two new scientific and support staff over a period of 4 years was submitted to the Public Service Board. Among the new

professional positions sought were curators in the Departments of Molluscs and Environmental Studies, and a Visiting Research Associateship to be established for overseas scientists visiting the Museum for periods of 6 months to 1 year to study the collections and carry out their own research. Plans were also submitted to the Public Service Board calling for the addition of seven new staff in the Exhibitions Department, and five new staff in the Education Section over a period of 3 years. A plan for the building of new galleries and the renovation of existing galleries over a period of 10 years was drawn up. The plan calls for the construction of a new Marine Hall, an Arid Zone exhibit, and the renovation of the Mineral Gallery. The Hall of Life is expected to be completed in December, 1974. Construction of this gallery, the most complex yet built in the Museum, has taken 4 years.

At their meeting on 22nd March, 1973 the Trustees of the Museum decided to set up a small Trust for the establishment of a research station on Lizard Island at the northern end of the Great Barrier Reef. During the present year the research station's Committee of Trustees was enlarged and a Board of Consultants was formed. The station will provide facilities for continuing work on the biology of coral reefs for scientists from Australia and overseas. Museum scientists have played a major role in such studies since last century. By the end of the year donations had been received from a number of overseas individuals and from some organizations in Australia. The project will be an expensive one and further donations are being sought. Responsibility for the One Tree Island Field Station at the southern end of the Great Barrier Reef will finish at the end of 1974.

During the year, a separate Materials Preservation (Conservation) Section was established. The Conservation Laboratory is responsible for ensuring that the cultural and biological material in

the Museum's collections is maintained in the best possible condition. The laboratory undertakes diagnosis and treatment of the problems affecting the collections and carries out research in those fields where further information is required to ensure the long-term stability of the collections. Artefacts composed of wood, bark, and vegetable fibres are subject to physical, chemical and biological deterioration. Diagnosing the problems and applying or developing the necessary treatments requires a properly staffed and equipped conservation, research and restoration laboratory. Research is also being carried out into the causes of deterioration of Aboriginal painted and engraved sites and methods are being developed for their protection and conservation.

Since 1921, The Australian Museum has published a popular scientific magazine, first called *The Australian Museum Magazine* and later *Australian Natural History*. From the first issue of 1974, the whole format of the magazine was changed; it is now larger and more profusely illustrated, with a number of colour photographs. The special issue has been changed from December to June and the June issue for 1974 dealt with Lord Howe Island, its biology and geology. The special issue for 1973, published in December, dealt with New Guinea.

The temporary exhibit, "Indonesia Today", was held in the Museum from September, 1973 to January, 1974. The culmination of a 3-year programme supported partly by the Department of Foreign Affairs, Canberra and the Sydney Citizens Opera House Opening Committee, the exhibition was officially opened by Mr Sabir, Charge d'Affaires for Indonesia on 27th September, 1973. The exhibit was visited by over 30 000 people. After closing on 28th January, 1974, it was sent to museums throughout Australia. A handbook, *Indonesia Today*, prepared by Mr D. R. Moore (Curator, Department of Anthropology) and Mr J. J. Freeman (Exhibitions

Officer) and an accompanying LP record, *Music and Sounds of Indonesia Today*, were published by A. H. and A. W. Reed in association with the exhibition.

In May, 1974, the Minister for Cultural Activities, the Hon. G. F. Freudenstein, M.L.A., opened a special exhibit of children's paintings entered in the Hall of Life Art Exhibition Competition. This competition was sponsored jointly by the Trustees of the Museum and *The Sydney Morning Herald* and prizes were donated by the Bernard van Leer Foundation in association with the Argyle Arts Centre. Over 1 600 paintings were received from children throughout the State of New South Wales in four categories—infants, primary, junior secondary, and senior secondary. The competition and exhibition were organized by Mr G. S. Hunt of the Museum's Education Section and was widely covered by the Press.

As part of a programme to assist country museums, Mr Bertram, Chief of the Exhibitions Department, and Ms Walston, Officer-in-Charge, Materials Preservation Section, gave lectures in May, 1974, at a seminar in Dubbo organized jointly by the Ministry of Cultural Activities and the departments of Tourism and Decentralization and Development. Five further seminars are to be conducted throughout the State during the next 2 years.

The Hall of Life Art Competition, held from May to June 1974, attracted 1600 entries, 300 of which were exhibited. The paintings were judged by three well-known artists and the prizes were donated by the Van Leer Foundation.

A number of major events occurred during the year which affect museums throughout Australia. In August, 1973, the Commonwealth Government announced the formation of an interim council to formulate plans for an Australian Biological Resources Study. This project, first suggested in 1962 by the Australian Academy of Science, aims to provide substantial information on the distribution and abundance of terrestrial and fresh-water Australian animals and plants, particularly in habitats characteristic of Australia which might be threatened by human impact. Dr H. G. Cogger, Curator of Reptiles, was appointed to the interim council. The Museum received two grants from the council in the 1973-4 year. These related to the studies of rain forests (to be carried out jointly with the Queensland Museum) and a study of the application

of automatic data processing methods to museum collections.

In March, 1974, the Commonwealth Government announced the establishment of a Committee of Inquiry into Museums and National Collections. The Committee of Inquiry is to advise the Government on the establishment of an Australia Institute, which is envisaged as being similar to the Smithsonian Institution in Washington D.C., U.S.A. The Committee is also to enquire into the measures necessary to enhance the national collections maintained by a number of state museums and other similar organizations. The Director of the Museum, Dr F. H. Talbot, was appointed to the Committee of Inquiry.

For a number of years the Museums Association of Australia has been investigating the



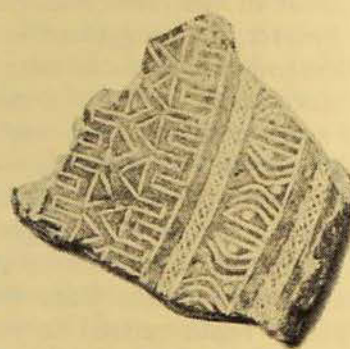
Gregory Millen/Australian Museum

needs for training in museum studies. Of particular interest during the year was the visit of Mr H. Raymond Singleton, Director of the University of Leicester's Department of Museum Studies, who was invited by the Australian National Commission for UNESCO to advise on training in museums. UNESCO organized a special symposium in collaboration with the Museums Association's Annual Conference in Melbourne in August, 1973. The conference was attended by more than eighty people, including a large number of staff from the Museum as well as staff members from museums and art galleries throughout Australia.

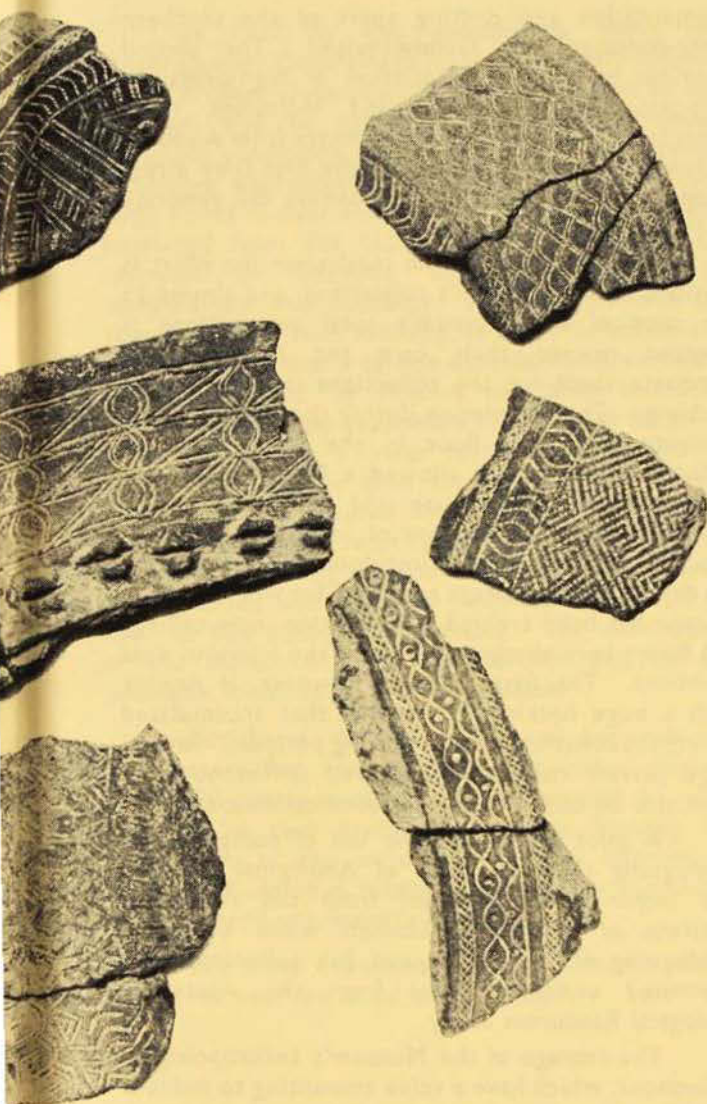
The Museum carried out extensive scientific, education and exhibit programmes during the year. Staff attended many scientific meetings, lectured to societies and at universities; research projects on numerous groups of animals and in geology and anthropology continued; 42 scientific papers were published by staff. School children in larger numbers than ever visited the Museum. Several temporary exhibitions were staged and a new gallery was commenced. By the end of the year the number of staff had increased to 140. Visitors to the Museum numbered approximately 560 000; this compares with 569 000 in 1972-3 and is an increase of 54 per cent in 10 years (358 000 in 1964-5).

The Museum continues to be active in its traditional areas of research—systematic zoology, anthropology and geology. Such research is essential to an understanding of our environment and constitutes the base on which many other fields of biological, medical and geological research is built. It is heavily dependent on the Museum's collections, and many field and laboratory studies are broadly aimed at making the collections more valuable as research tools.

But in response to changing community needs, a greater component of the Museum's research effort is now geared to broader ecological and environmental problems, especially as these problems



Examples of Lapita pottery found on Watom Island, New Britain, Papua New Guinea by a German missionary between 1908 and 1909. They are believed to be between two and a half and three thousand years old.



Gregory Millen/Australian Museum

relate to the conservation and wisest use of our natural resources. With changing trading patterns and increased culture contact, a greater effort is now made to relate the material cultures of the Melanesian and Australian Aboriginal peoples to the people themselves.

Dr J. R. Specht (Department of Anthropology) continued his main research project which started 10 years ago and centres around prehistoric pottery in the Melanesian region. His excavations in New Britain, New Ireland and the northern Solomons have revealed that a prehistoric type of decorated pottery known as Lapita-ware occurs at a number of sites and is dated to about 2 000 years ago. Lapita-ware has also been found at a number of other places in the western Pacific and is regarded as an important marker for tracing the patterns of early settlement there. Associated with this pottery, Specht has found a range of obsidian artefacts and has been able to trace both the origin of the raw material and the extensive network through which it was traded to many parts of Melanesia. Recently he has extended his investigations to southern New Britain and the north coast to the New Guinea mainland. The implications of this research are far-reaching and crucial to understanding the prehistory of the whole Pacific Islands region.

Dr Clark (Department of Environmental Studies) completed studies on the effects of sand-mining on coastal plant communities. Sandmining for heavy minerals has been pursued for some time on the east coast of Australia. In recent years, however, the increasing scale of mining activity together with the disappearance of many remaining natural areas on the coast has led to acute conflict between mining and conservation. While soil stability can be achieved by means of standard soil conservation techniques, little is known about the effect of mining on the plant communities of coastal areas. The recognition of this lack of information led, several years ago, to the initiation of a study of

the problem. The study compares vegetation before mining with vegetation at successive stages after mining up to 3 years. The effect of fertilizer and topsoil stockpiling time have also been investigated. The study is now in its final stages and will contribute to a body of information enabling more sound land use decisions to be made.

Drs Hutchings (Department of Marine Invertebrates) and Recher (Environmental Studies) completed a study of Careel Bay, one of the few remaining places in the Sydney area with extensive undamaged wetlands. This bay has been surveyed since 1971 as part of a continuing and wider programme to obtain basic biological data on estuarine ecosystems in New South Wales. Particular attention has been paid to the kinds of animals and plants found in Careel Bay, their abundance, distribution and changes with season. In addition, the survey has had immediate practical value in providing the information needed for local government to plan the wisest use of Careel Bay's wetlands. Among the other areas being studied and compared with Careel Bay are the Hawkesbury River, Wallis and Smiths Lake, Towra Point, Tuncurry Creek and the Gosford lagoons.

The Australian Museum is one of the many institutions contributing to current studies of Australian volcanic and plutonic igneous rocks. Mr Sutherland's studies are directed particularly to the pattern and ages of volcanic violence, the chemistry of volcanic liquids and the depths at which they are generated and the high-temperature and high-pressure mineral and rock inclusions brought up by the lavas. Assembly of all these clues is opening up understanding of the development of Australian landforms, the structure of the continental crust and the Earth's mantle under the volcanic zones and the mechanisms controlling Australia's future geological events and movements. Two projects on these topics have been written. One relates the history of melting and volcanic activity in Australia over the last 200 million years to the

fragmentation and drifting apart of the southern super-continent of Gondwanaland. The second describes an unusual association of high-pressure/high-temperature minerals and inclusions in a basalt lava of silica-saturated chemistry from Andover in Tasmania, which provide, for the first time direct evidence that lava of this composition can generate as deep as the Earth's mantle.

Well over half of the total scientific effort is devoted to the Museum's collections, and almost 25 per cent of the Museum's total expenditure is directed toward their care and improvement. Adequate space for the collections is a continuing problem. The completion during the year of a new concrete mezzanine floor in the Department of Malacology has at last allowed a long-awaited and vitally necessary expansion and reorganization of the dry and wet collections of molluscs. Seventy-two new cabinets have almost doubled the space for the dry collection storage and space for wet collection storage has been trebled. In addition, new ceilings and floors have eliminated a lot of the previous dust problems. The first priority, however, is dealing with a huge backlog of material that accumulated during the construction and shifting periods. Several large private collections acquired in recent years must also be added to the research collections.

A pilot study into the use of computers in cataloguing the collections of Aboriginal artefacts was begun under a grant from the Australian Institute of Aboriginal Studies, while computer cataloguing of the reptile and fish collections was continued under a grant from the Australian Biological Resources Study.

The storage of the Museum's anthropological collections, which have a value amounting to millions of dollars, has been a matter of increasing concern over the last decade. By sheer bulk and extreme fragility, many of the most valuable ceremonial and art specimens probably pose the most difficult storage and conservation problems faced by Museum staff.

In 1972, it was decided to move the Anthropology Department into the recently vacated Child Welfare Department buildings adjacent to the Museum and to establish storage areas under optimum conditions for the Melanesian collections. Extensive alterations were made to provide two large floors of clear storage space and a special plant imported from the U.S.A. has been installed to maintain air filtration and total control of temperature and humidity. All artefacts will be stored on open steel shelving, to allow for maximum air movement, and a carbon dioxide fire-prevention system activated by sensors has been installed. Carbon dioxide gas suppresses fire without harming artefacts, whereas a water sprinkler system could cause more damage than the fire itself. Security against theft is ensured by a complex of delicate sensors which warn security guards of any movement within the building. Some 20 000 specimens have been cleaned and checked, ready to be moved as soon as this becomes practicable. The movement of the collections has been further delayed by problems with the air treatment plant.

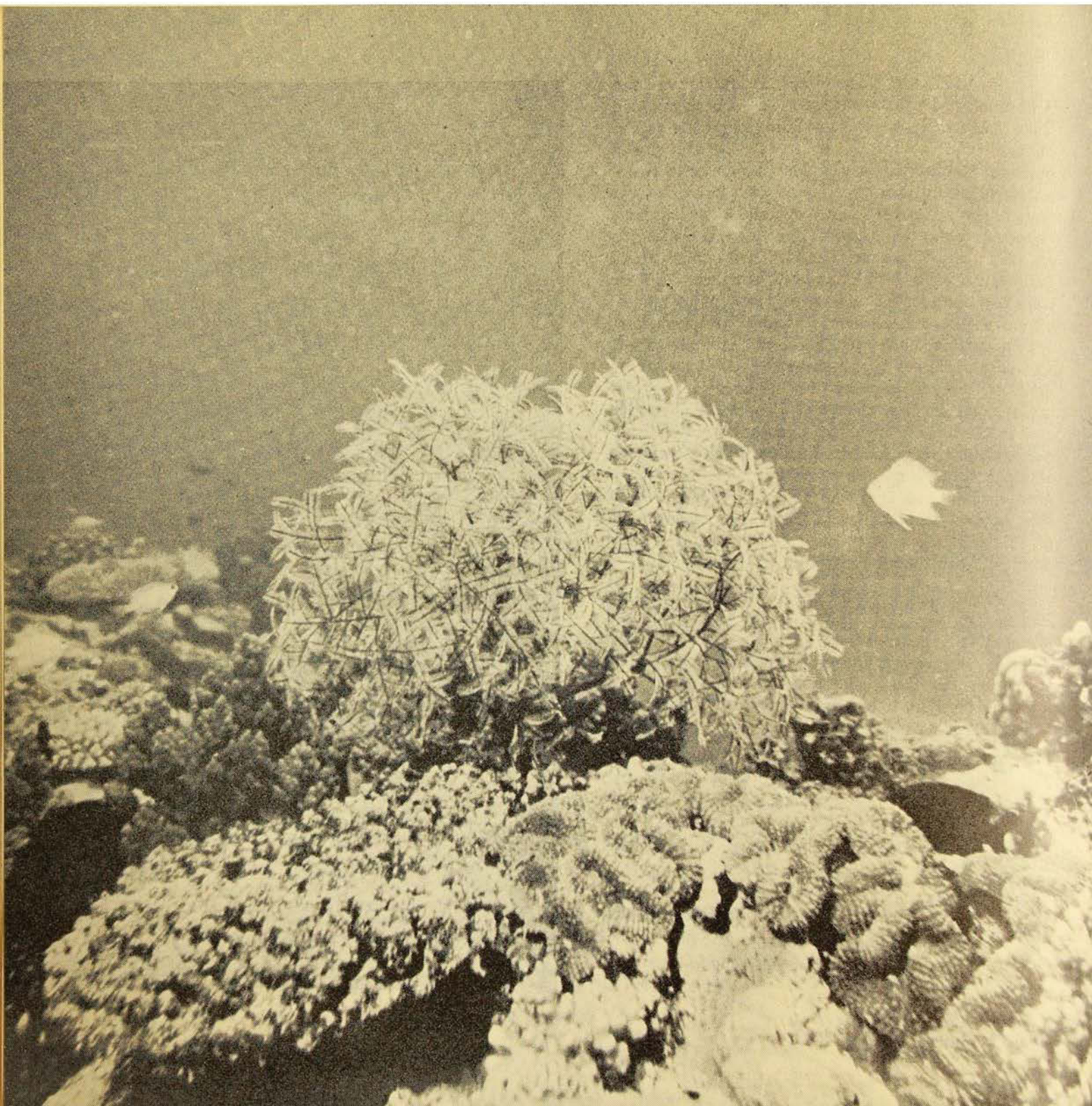
Additional rented space was acquired at Rushcutters Bay and almost 1 860 square metres (about 30 per cent of total storage space) is now available in two premises, but the housing of large parts of the collections several kilometres from the Museum is totally unsatisfactory and must be considered a temporary measure.

The many donations to the collections made during the year are listed in Appendix I.

One of the children who attended the Indonesian Shadow Puppet-making course held by the Education Section of the Australian Museum in January, 1974.

Howard Hughes/Australian Museum





When the special temporary exhibit "Indonesia Today" was on display, it was felt that some creative activity associated with the objects would increase their interest and value to students. Thus, a course was arranged during the week of 14th-18th January for forty students to make replicas of the *wayang kulit* or shadow puppets and to learn something of their significance to the Indonesian people. The concentration by the students on their productions was intense and their enthusiasm at the final performance was good evidence of their enjoyment, if not of technical skill in puppet manipulation. Funds for the course were provided by the Australian Council for the Arts, and two tutors were employed to supervise this most successful project.

Work on renovating the Old Spirit House as a new Education Centre commenced in November and considerable progress has been made. The projected completion date is May, 1975. The Centre will then consist of three floors of teaching, laboratory and office space, and will be connected to the entrance hall of the Museum.

Expo '74, held in Spokane, Washington, U.S.A., involved the Museum in the supply and display of natural history material for the Australian pavilion. Mr B. Bertram was responsible for the displays assembled at short notice at the Commonwealth Government's request, and he travelled to Spokane to arrange the exhibits. While in America he was able to extend his visit to three weeks, visiting museums in San Francisco, Los Angeles,

Seattle, and Mexico City. The visit to Los Angeles was particularly relevant to the new Marine Hall.

Every department continued to answer a large number of enquires from the general public, other institutions, and scientists in Australia and overseas. The Entomology Department dealt with several thousand enquires and the Department of Mineralogy answered nearly five hundred.

Identifications of specimens were made for many organizations, scientists and members of the public, materials and specimens for research and teaching purposes were loaned, and in some cases given, to a large range of scientific and educational institutions in Australia and abroad, and staff accepted many requests to referee manuscripts and review books.

The considerable increase in the Museums' activities during the year, was correlated with a dramatic increase in funds from granting agencies and foundations. Twenty per cent of the Museum's total expenditure is now derived from outside the State Government and more than forty per cent of money spent on research comes from granting agencies and private foundations. Money from such sources is now supporting, in part, the education and exhibits programme. Although this shows a greater community support for the Museum and its activities, the fact that a smaller proportion of funds is provided by the State Government places the Museum in a potentially very serious position. Funds to care for existing collections and to acquire those parts of the national heritage that must remain in Australia are inadequate. Without greater support the Museum will no longer be able to carry on its work.

The trustees and staff of the Museum are pleased to thank the many organizations and individuals whose co-operation assisted in so many ways during the year. Details are provided in Appendices 1 and 2.

*A Hydroid belonging to the genus Lytocarpus—
a stinging reef organism photographed at the
Australian Museum's research station at One
Tree Island on the Great Barrier Reef.*

DEPARTMENTAL REPORTS

SCIENTIFIC DEPARTMENTS

Anthropology

Mr Moore carried out an archaeological survey at Cape York and in the adjacent Prince of Wales Group during July-August, 1973; six exploratory excavations were completed. The analysis of the material obtained will constitute part of his research project on the ethnography and prehistory of Cape York and Torres Strait.

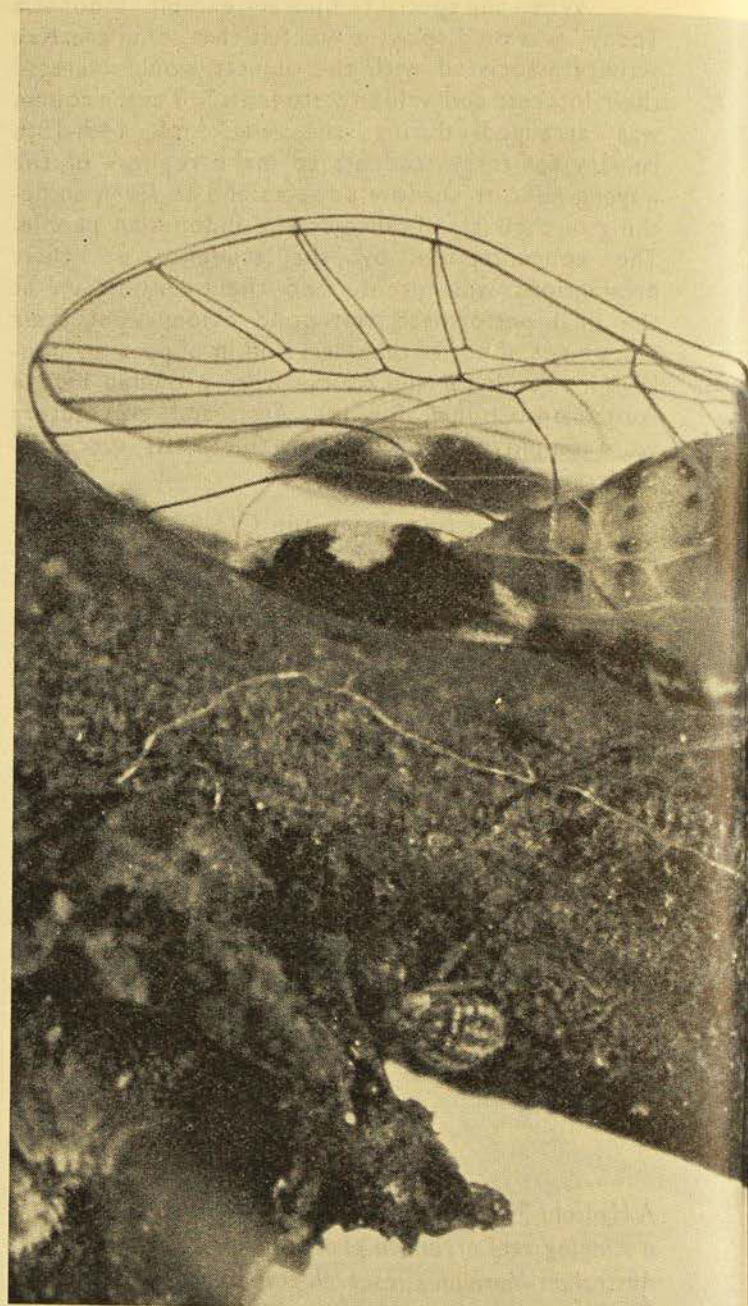
Dr Specht continued his research on Melanesian pottery reported elsewhere.

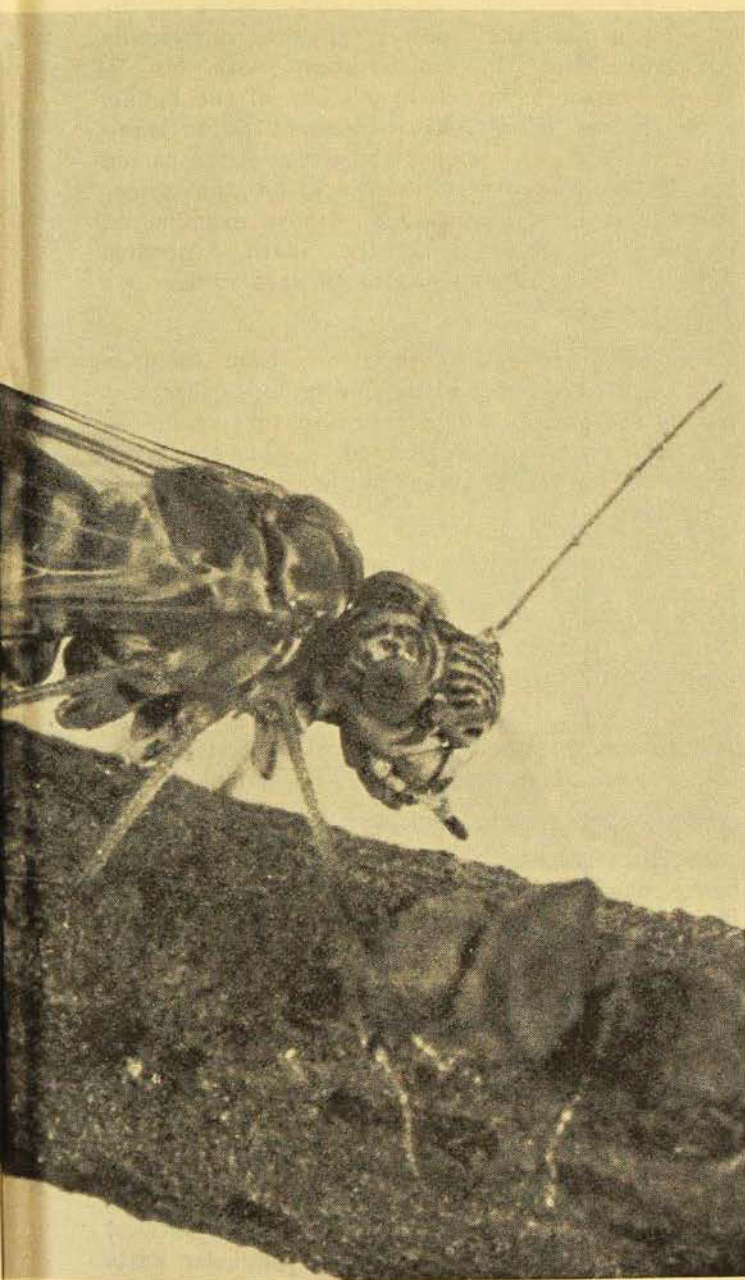
The sorting and storing of the Melbourne Ward Collection, mainly comprising artefacts from Australia and the Pacific, has proceeded during the year.

Preparation of the Melanesian collections for their move into new premises in the Yurong Street buildings continued but the actual move has been further delayed.

Whilst the new storage areas are adequate for the main Melanesian collections, the Australian Aboriginal collections and those from other ethnic areas of the world will have to remain under uncontrolled conditions for the time being. It is to

A Bark Louse or psocid belonging to the order Psocoptera, currently being studied by Museum entomologist, Dr C. N. Smithers.





Gregory Millen/Australian Museum

be hoped that the total ethnographic holdings of the Museum can be placed under optimum storage conditions in the near future.

The department's curatorial programme was assisted by Ms J. A. Rosenthal, Ms A. Madden and, before appointment to the Museum's staff, Ms M. Gastineau.

A party of Pacific Island museum trainees from the East-West Center, Hawaii, visited the Museum late in 1973 for a short training course in museum management.

Two courses were given by Dr Specht in the prehistory of material culture to the Australian Institute of Aboriginal Studies and to the Conservation Committee of the National Trust of Australia (N.S.W.).

Director's Research Laboratory

Dr Allen, Mr Russell and Mr Anderson continued the coral reef fish ecology programme at the Museum's field station at One Tree Island, on the Great Barrier Reef. The first phase of this programme, carried out by Dr Talbot and Dr B. Goldman, involved a detailed descriptive study of the fish communities at One Tree Island. Dr Goldman visited the Museum during April to complete this work.

The second, experimental, phase of the One Tree programme, initiated by Dr Talbot in 1971, is being continued by Mr Russell and Mr Anderson and involves more detailed studies of the structure, organization and dynamics of the fish communities on small artificial and natural reefs.

Dr Allen worked on the ecology and systematics of the Pomacentrid damselfishes extending his work on the Great Barrier Reef with visits to Fiji, the Solomon Islands, New Guinea, and Hawaii.

Entomology

Dr Smithers' main research efforts have concerned the taxonomy of the Psocoptera (book lice). This has included completing work on collections from New Zealand, the Antarctic islands, studies on the faunas of Norfolk and Lord Howe Islands, a collection from Australian caves, and a review of the families Elipsocidae and Stenopsocidae from Australia and New Guinea. A special project on insects of Muogamarra Nature Reserve was started.

Migration studies have concentrated on seasonal movements of the Wanderer Butterfly (*Danaus plexippus*) in Victoria, and movements in other areas have also been worked out. The first migration records for Painted Lady Butterfly (*Vanessa kershawi*) were made for Western Australia in August, 1973.

Field work related to these studies was carried out in the Camden area, Muogamarra Nature Reserve, inland New South Wales, the Snowy Mountains, and several localities around Sydney, as well as in Victoria and Western Australia.

Information on parasite relationships and host plants, accumulated incidentally during migration studies, has been prepared for publication.

Dr McAlpine has continued research on Acalyptrate Diptera (a group of flies) assisted by Mr Kim and a grant from the Australian Research Grants Committee. Acquisition of a new Leitz Dialux microscope for high-power work has aided morphological studies on antennal structure in this group. A critical study of aspects of the comparative morphology of the Micropezidae has resulted in a new understanding of the evolution of the family and a revised classification. As part of this programme, field work was carried out in Wentworth Falls, Royal National Park, Castlecrag, Mount Wilson, and Ku-ring-gai Chase.

Mr Gray continued revisionary work on the systematics of the spiders of the superfamily Amaurobioidea. In collaboration with Ms V. Gregg (Research Associate) a study of the Funnel Web spiders (genus *Atrax*) reached an advanced stage and a paper clarifying the status of the named species is in preparation. Work on the spider fauna of caves was continued with an examination of large collections from the South Australian Museum; data on distribution of cave spiders are being analysed.

About seventeen thousand seven hundred specimens were added to the Entomology collections during the year and one thousand three hundred and eight types were registered. Eighty-one loans, involving over four thousand five hundred specimens, were sent out.

A large collection of the Sword Grass Brown Butterfly (*Tisiphone abeona*) was received from Dr R. Conroy. This collection was the basis of a major study of the distribution, ecology and evolution of the species and is of considerable scientific interest. There are about 4 000 specimens. The studies on the collection make it one of the best known species of butterfly in Australia.

The programme of rearranging and rehousing the collections has continued with special attention being paid to Australian Orthoptera, Odonata, Plecoptera, Diptera, Hymenoptera and general collections from Lord Howe and Norfolk Islands.

Work on the rearrangement of the spider collections is being continued and compilation of a type catalogue and a geographic catalogue is under way. Mr Gray spent a week in the Western Australian Museum working on parts of their collections.

Work by voluntary assistants on the collections is increasing. J. V. Peters, M. S. Moulds (Associate) and C. E. Chadwick helped with particular parts of the collections during the year.



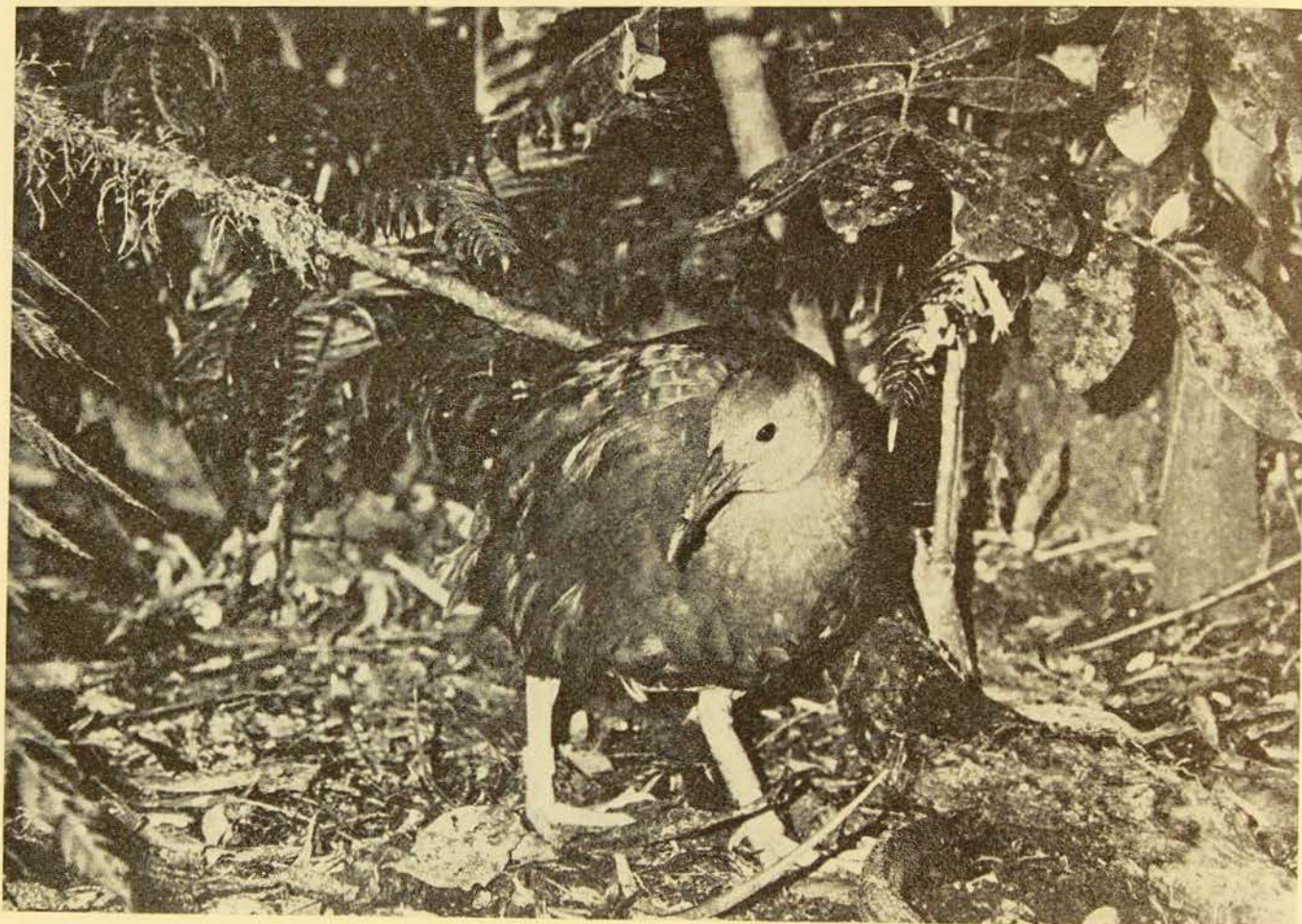
Charles Turner/Australian Museum

Environmental Studies

At Nadgee in southern New South Wales where studies (supported by the Ian Potter Foundation) are continuing on the ecology of small mammals, the river study plot is being monitored for post-fire data, and Mr Lunney has begun a study of the ecology and habitat requirements of two *Rattus* species on a small unburned section of the Nadgee Nature Reserve.

Mr Posamentier is completing a report on a survey of small mammals on the North Coast of

Mineral sand mining at Myall Lakes on the central coast of New South Wales. The effect of sand mining on coastal plant communities has been the subject of extensive research by Dr S. Clark of the Museum's Department of Environmental Studies.



E. Slater

N.S.W. The results were presented at the meeting of the Mammal Society in Melbourne.

Dr Recher's research on the ecology of Honey-eaters in Brisbane Waters National Park is also continuing.

Dr Clark visited the U.S.A. and Canada briefly late in 1973 and studied land use planning at the Tennessee Valley Authority and the Canadian Land Use Authority.

The Lord Howe Island Woodhen, Tricholimnas sylvestris, a member of the rail family. This species is now only found on the summit of Mount Gower and its population probably does not exceed twenty.

Dr Clark completed studies of the effects of sandmining on coastal vegetation; this work is detailed in the introduction.

The Department of Environmental Studies conducted surveys for a number of government departments and organizations and provided information to the Forestry Commission for their Environment Impact Study on the Eden Woodchip Industry. Dr Recher gave lectures in Environmental Architecture to third-year students at the University of Sydney and Dr Clark gave a series of lectures to the third-year students doing the Ecology course at Macquarie University.

The Shelf Benthic Survey Team completed field studies for the programme on offshore animals and plant communities near sewerage outfalls being carried out for Caldwell Connell Engineers and commenced a monitoring study for the Metropolitan Water Sewerage & Drainage Board. At the request of the CSIRO Division of Land Use Research the team will carry out a short term study of the coastal areas of Eurobodalla Shire in southern New South Wales.

Herpetology

Dr Cogger continued studies of the taxonomy of the lizard families Gekkonidae and Scincidae, and of reproduction and behaviour in the endemic Fijian iguanid lizard *Brachylophus fasciatus*; completed a checklist of Australian reptiles and amphibians; and also continued a herpetofaunal survey of the Alligator Rivers region, Northern Territory, in conjunction with the CSIRO Division of Wildlife Research. Field work during the year was largely associated with the Alligator Rivers Survey.

Three thousand three hundred and forty-six specimens were registered during the year. Approximately six thousand additional specimens, the result

of a long-term herpetofaunal survey of the New England District by the Department of Zoology at the University of New England, were received and are awaiting cataloguing.

The Department answered large numbers of enquires from the public, especially in relation to venomous snakes. Numerous loans of material were made to scientists and institutions and specialist information and identifications were provided to government departments and hospitals, etc.

Ichthyology

Dr Paxton continued research projects on deep sea fishes, luminescent fishes and the fishes of Sydney Harbour, and Dr Hoese continued work on gobiid and clinid fishes. Field work was carried out in Sydney Harbour, southern New South Wales and South Australia. The compilation of a checklist of the fishes of Lord Howe Island was completed.

Important collections of offshore midwater fishes from N.S.W., reef fishes from New Guinea, and collections from the Solomon Islands were exchanged with the American Museum of Natural History and the Bernice P. Bishop Museum. More than 10 000 specimens were registered during the year, representing over 2 000 lots.

More than 25 visiting scientists worked in the Ichthyology Department during the year and loans of more than 1 500 specimens were made. A large number of public and scientific enquires were answered and public lectures were given by Dr Paxton and Dr Hoese to various societies including fishing and diving clubs in Sydney and Canberra.

As in past years, Mr G. P. Whitley (Research Associate) helped greatly by assisting in maintaining the department's collection record system and literature index file.

Malacology

Dr W. Ponder was overseas for 5½ months on a study tour to examine Australian and Indo-Pacific molluscs in museums and institutions in Europe, Britain, U.S.A., Philippines, Japan, Hong Kong, Thailand and India. Many Australian species of molluscs were studied which had previously been described by British, European and American scientists before and during the nineteenth century. A large number of problems surrounding the taxonomy of these molluscs were resolved during Dr Ponder's visit.

During August 1973, Dr Ponder visited the National Museum of Victoria and carried out field research in western Victoria.

Dr Ponder and Mr Yoo have been preparing material for work on various groups of Australian micromolluscs. Studies are also progressing on several macromolluscan gastropod genera. Mr T. A. Garrard (Associate) completed a revision of the family Cancellariidae in Australia, and is now revising the Australian Architectonicidae.

Mr Colman visited the Solomon Islands in August. Using the facilities of the research vessel *El Torito*, owned by Dr W. Starck (Research Associate) marine molluscs were collected around Guadalcanal and Malaita Islands.

The acquisition of additional space in the department by the completion of a mezzanine floor is reported in the introduction.

Local and overseas collectors continued to provide valuable material. The department assisted several State and Commonwealth organizations in identifying material and has answered public and scientific enquires and made loans to research workers in Australia and overseas. Dr Ponder gave lectures to the Malacological Society and the National Parks Association of N.S.W.

Ms J. Kerslake and Mr J. Voorwinde (Associate) helped considerably in the curation of parts of the collection.

Mammalogy

Mr Marlow completed investigations on the Australian sea-lion (*Neophoca cinerea*) which have been carried out since 1967 in the Spencer Gulf area. The biology of the sea-lions of the Southern Hemisphere is very poorly known in comparison with that of the Northern Hemisphere sea-lions, *Eumetopias jobata* and *Zalophus californianus*, which have been extensively studied in the United States and Canada. Information on the general, social and reproductive behaviour of the Australian sea-lion is now available but other aspects of its biology, especially its life history, remain obscure. While in most sea-lions the breeding season is of short duration and sharply defined, the Australian sea-lion appears to have a variable and extended breeding season which may last from August to December. It is hoped to carry out further studies on the life history of this animal to elucidate this peculiarity.

Studies of the comparative behaviour of the Australian sea-lion, *Neophoca cinerea*, of southern and Western Australia, and of *Phocarctos hookeri* of New Zealand have shown striking differences in the territorial behaviour of these two sea-lions which are partly innate and partly related to habitat.

A reorganization of the mammal collection

A composite reconstruction of the extinct Lord Howe Island horned turtle, Meiolania platyceps.

housed at Rushcutters Bay has been completed. This has involved fumigation procedures and use of protective coverings.

Eight visiting scientists from Australia and Papua New Guinea examined material in the Mammalogy Department's collections. Mr Marlow gave a radio interview in connection with his research and field work on Australian sea-lions and also appeared in court on behalf of the RSPCA in a case concerning the use of protected fauna by greyhound trainers.

Marine Invertebrates (Crustacea and Coelenterates)

Studies of the Indo-Pacific spider crabs of the family Majidae were continued by Dr Griffin and Ms Tranter. Reports were completed on the spider crabs of the Philippine Islands (based on the collections of the U.S. Fisheries steamer, *Albatross*, made in 1907-10) and the spider crab fauna of the Red Sea (from specimens collected by Tel Aviv University). Considerable progress was made in a study of the spider crabs collected by the *Siboga* expedition in Indonesia from 1899-1900 and by

other expeditions. Dr Griffin and Ms Brown began detailed studies of eastern Australian deepwater decapod Crustacea.

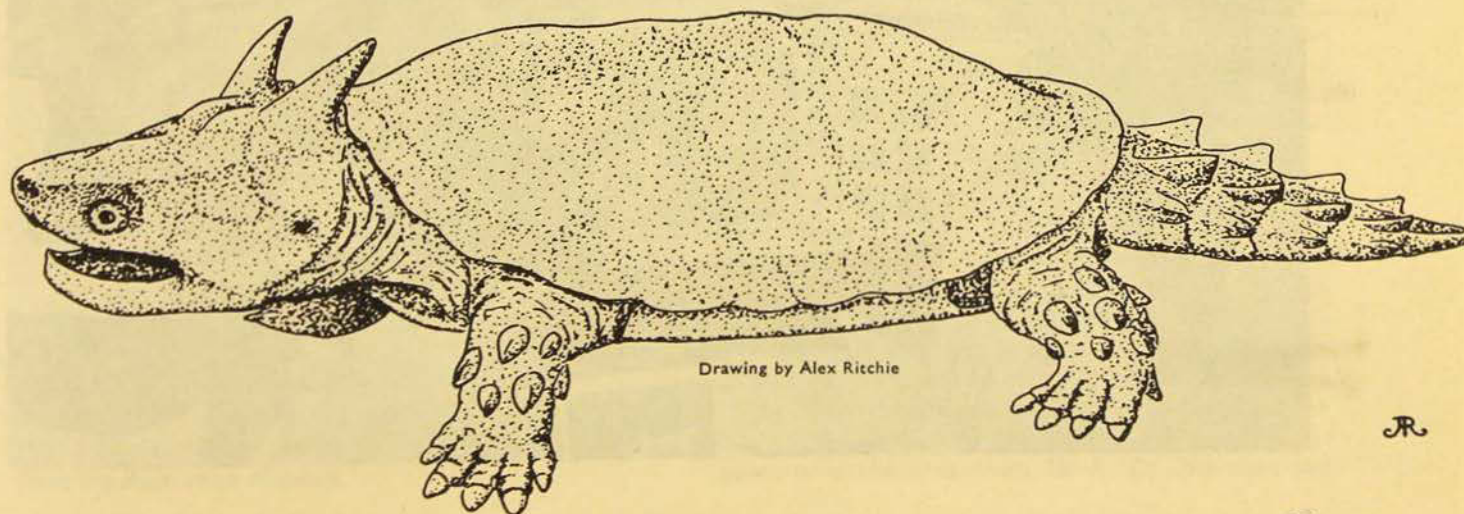
Ms E. C. Pope (Research Associate) continued her research on barnacles and intertidal zonation.

A total of 1 000 lots of Crustacea and other minor invertebrates were registered during the year; over 20 000 lots of Crustacea are now included in the collections.

Collections of Crustacea and other invertebrates were identified for the N.S.W. Littoral Society and collections from Moreton Bay were identified for CSIRO Division of Fisheries and Oceanography. Identifications were also made for James Cook University of North Queensland, N.S.W. State Fisheries, and the University of N.S.W. Many enquiries were answered on freshwater and marine crayfish, the small Crustaceans known as "sea monkeys" and also prawns, crabs, corals and jellyfish.

Marine Invertebrates (Worms and Echinoderms)

Dr Hutchings completed a project on the



Drawing by Alex Ritchie

ecology of Careel Bay, Pittwater and continued studies on coral reef ecology and polychaete worm systematics. She attended a SCOR workshop, held on Heron Island in July, on quantitative methods used in coral reef research and continued her survey of the distribution of infauna in coral reefs, partly funded by the Ian Potter Foundation, during a 4-week field trip to One Tree Island in October, 1973. Collections were made at the Gilbert and Ellice Islands in November.

As part of the systematic work on polychaete worms, a study of the terebellids of Moreton Bay,

Queensland was completed. Two weeks were spent in Melbourne studying collections from Port Phillip Bay; a revision of the polychaete family Capitellidae in Australia is being undertaken.

Dr F. W. E. Rowe joined the staff in January, 1974. His research interests are echinoderms, sponges and ascidians. He participated in a joint field trip to monitor populations of the Crown of Thorns starfish around Kendrew Island, Dampier Archipelago with members of the staff of the Western Australian Museum and collected echinoderms for the Australian Museum. Two weeks were spent



Gregory Millen/Australian Museum

in Perth studying the Western Australian Museum collections.

Ms H. Paxton (Associate) continued her research on the taxonomy of polychaetes.

Dr Hutchings, assisted by Dr S. Rainer of Fisheries and Wildlife, Victoria, have identified the majority of polychaetes from the Shelf Benthic Survey collections; these are being incorporated into the collections and will provide useful information on the local fauna.

Ms A. M. Clark of the British Museum (Natural History) has recently returned a large collection of named Australian crinoids.

The type specimens of echinoderms, tunicates and sponges are being separated from the main collections and the echinoderm and ascidian collections are being reorganized. Among notable additions to the echinoderm collections were species of the genus *Eudiocrinus* previously known from Indonesia and specimens of the aberrant asteroid *Podosphaeraster polyplex*.

Large collections of polychaetes and echinoderms have been identified for various organizations and institutions throughout Australia. Dr Hutchings gave a course of lectures on "Poly-

chaete Reproductive Biology" to third-year students at the University of New South Wales. Other lectures have been given to the N.S.W. Institute of Technology, the National Parks Association and the Malacological Society.

Mineralogy

During the year, field studies on the volcanic basalt fields of the Bowen Basin, North Queensland, and Tasmania were completed. Using facilities in Sydney and Canberra, such as electron-microprobe analysers and X-ray fluorescence systems, analytical work in the laboratory was carried out on high-temperature/high-pressure minerals and rock inclusions. Data on these inclusions were supplied for a catalogue of such assemblages in Australia, being compiled by the Geology Department, Macquarie University. Data on the Hobart lavas were supplied for two joint projects—on interpretation of ERTS (satellite) photography (with CSIRO Division of Mineral Physics) and on the first early Tertiary (23+ million years old) fossil marsupial site in Australia (with the Department of Vertebrate Palaeontology, American Museum of Natural History).

Registered minerals at the year's end stand at 43 195 entries (increase of 385) and rocks and meteorites stand at 9 407 (an increase of 253 rocks and 28 meteorites). Considerable material collected during the year also awaits registration.

The main collecting trips by Mr Sutherland were to Broken Hill, collecting secondary minerals from the oxidized zone (South Mine MMM) to Batchelor, Northern Territory, collecting a malachite – pyromorphite – cerussite association (Brown's Gemstone Prospect); and to the Pilbara-Eastern Goldfields, Western Australia, collecting a wide range of minerals and rocks associated with iron, nickel, gold, uranium, gemstone and other deposits of the area (with Mr R. O. Chalmers and

School children participate in a natural history lesson with the aid of a school loan travel case from the Australian Museum.

Dr B. Mason, Smithsonian Institution). Representative rock suites were also collected during Mr Sutherland's field trips in Tasmania (melelitite and eclogite), South Australia and Victoria (basaltic volcanics), and New Britain (calc-alkaline volcanic suites).

More than twenty important exchanges were made, diversifying the Museum's collections.

Mr R. O. Chalmers (Research Associate) provided valuable assistance to the department during the year.

Ornithology

Mr Disney's main research on the study of the taxonomic, morphological and anatomical relationships of the age and sex differences of Australasian birds with particular regard to moult has continued. The survey of the Lord Howe Island Woodhen, perhaps the world's rarest bird, has continued. In February, 1974, 7 days were spent at the top of Mt Gower checking the Woodhen population. A visit was also made to the summit of Mt Lidgbird and a young Woodhen observed, confirming a previous sighting.

During the year, the study of birds in pine forests and in dry and wet sclerophyll forests was completed.

Bird specimens registered during the year numbered four hundred and ninety-seven; three hundred and sixteen of these were donated by members of the public or other government departments and one hundred and eighty-one collected by Museum staff. Forty-six specimens were received from the Western Australian Museum as part of the joint survey of the Ord river and seventy-five specimens were received from a New Guinea collection made during a visit by Mr R. Lossin of the Exhibitions Department.

Enquiries to the Department of Ornithology from the public, government departments and institutions were answered and lectures were given to The Australian Museum Society (on the ageing of birds), Parramatta and Hills Flora and Fauna Society (on birds in pine forests), National Parks Association (on birds in pine forests), and the Department of Customs and Excise. Mr Disney was asked to appear in court as an expert witness in legal proceedings concerned with bird smuggling.

Palaeontology

Dr Ritchie's main research programme concerning the Upper Devonian arthrodiran fish *Groenlandaspis* continued. This animal has now been traced to four continents, represented by six species, several of which are new to science. A Middle Devonian member of the same family, representing a new genus, has been discovered in western N.S.W. and a review is in hand of these and of *Tiaraspis*, the oldest member of the family from the Lower Devonian of Germany.

Since the acquisition of a properly equipped preparation laboratory in early 1973, work on this project has progressed rapidly. The large quantities of fish-bearing rock recovered in May, 1972 and May,

Sue Walston, Conservator in the Materials Preservation Section at the Australian Museum, attaches an artificial drip line to an Aboriginal painted site.



1973, from the Jemalong Range near Forbes and from Grenfell (both in central N.S.W.) have largely been prepared and have yielded much important material. The Grenfell material is especially rich, well-preserved and diverse. One of these fossils is a distinctive new genus with possible links to known Chinese forms.

The Middle Ordovician ostracoderm material collected from the Amadeus Basin in the Northern Territory has been fully prepared and reveals what is probably the most complete vertebrate individual yet known from the Ordovician Age (480 million years ago).

Fossil remains of the Lord Howe Island horned turtle, *Meiolania*, obtained in 1972, have now been cleaned in acid, revealing for the first time the complete skeleton of the front and hind feet.

The Hervey Range, northeast of Parkes was visited by Dr Ritchie, Mr R. Jones, Mr E. Wilson (Education Section), and five members of the Museum Discoverers' Club in a search for vertebrate remains.

A total of 355 fossils were registered during the year; 80 of these were donated. Most of the material consists of Devonian fish remains from the Antarctic and from various sites in N.S.W. As in recent years, most of the additions to the collections have been of vertebrate material, with occasional donations of invertebrate specimens.

Mr H. O. Fletcher (Research Associate) continued to assist the department during the year.

The level of public enquires to the Department of Palaeontology remained at about the same level as in previous years, mostly involving invertebrate and plant material. Dr Ritchie presented his annual course on the "Evolution of the Vertebrates" in the school of Earth Sciences, Macquarie University. Several talks on various aspects of fossils and his work in the Antarctic were given to local lapidary and natural history societies in Gosford and Sydney.

He was also invited to give the Antarctic lecture at the Annual Meeting of the Institute of Fuel Technology of N.S.W. For exchange and teaching purposes, an extensive selection of fossil specimens have been cast and several sets have been supplied to local universities and to some overseas institutions.

Materials Preservation Section

This new section, established at the beginning of the year, will advise on methods of conservation of the Museum's collections.

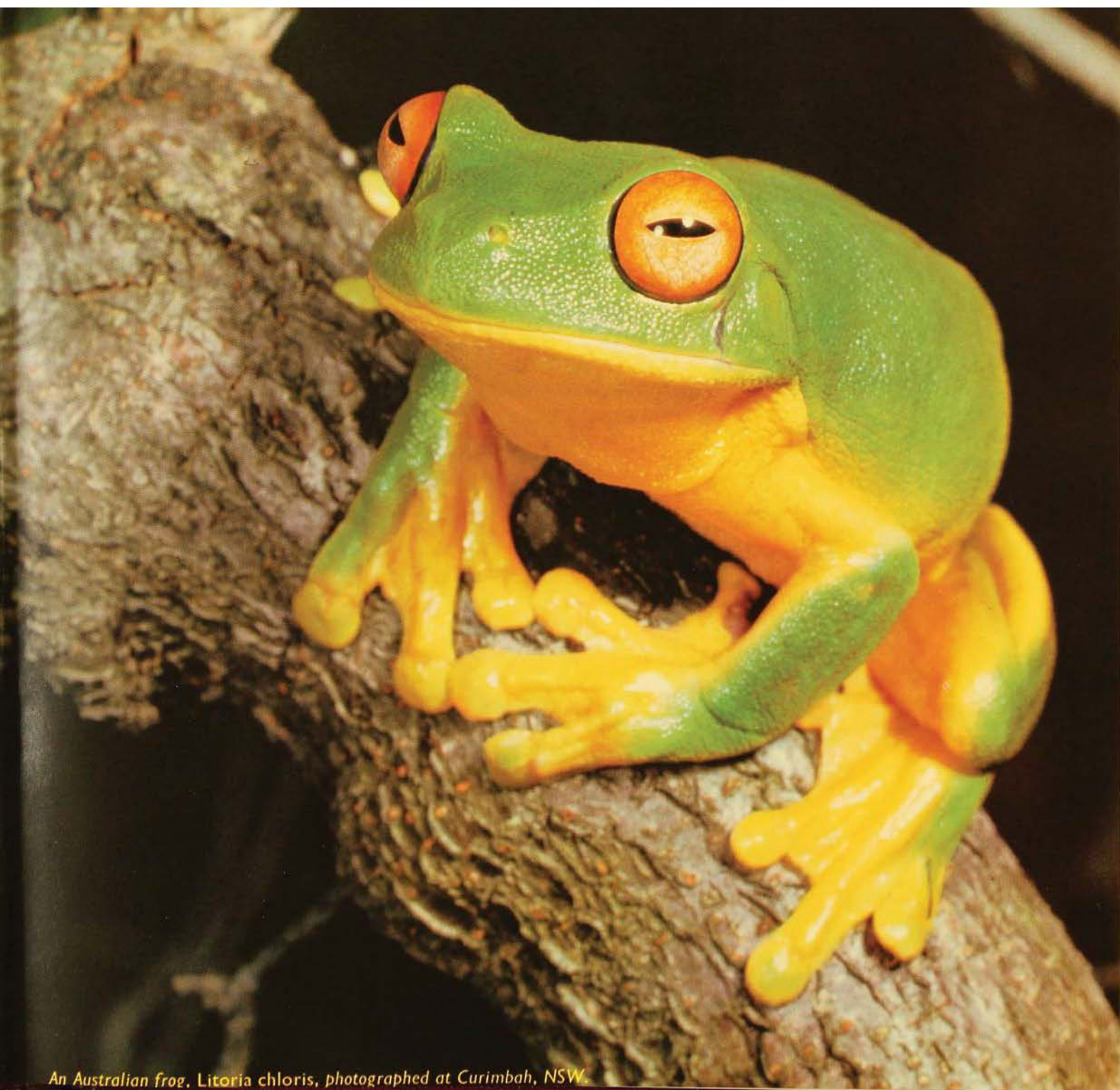
The Conservation Laboratory is working on the initial stages of a biodeterioration survey of the Museum's ethnographic wood and fibre collections. This involves obtaining information on the nature and degree of fungi occurrences among the collections and identifying the fungi spores present in the atmosphere throughout the Museum.

Ms Sue Aldridge, Macquarie University student, worked as a temporary Vacation Assistant for 2 months to assist with the initial stages of the survey. Ms Nerida Butler, Museum Discoverer, assisted with the project for 3 weeks.

Insect and climatic problems are also being identified. Further information on the history, geographic origins, and age of the material together with the physical data is being obtained. This survey is being carried out in collaboration with the Mycology and Entomology section of the Biological Sciences Group of the Wood Technology Division of the State Forestry Commission.

The Public Works Department has agreed to assist with the design and installation of an ethylene oxide vacuum fumigation chamber for the routine fumigation of all collections entering the Museum.

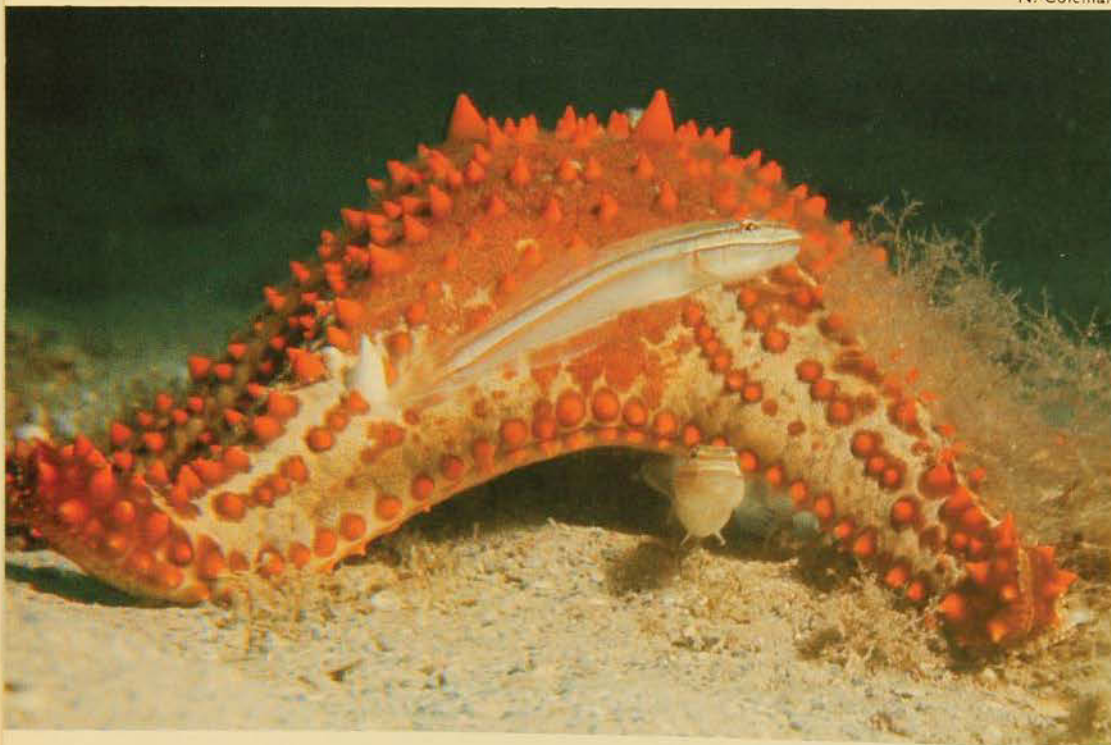
Regular inspection of the galleries to check light levels, insects, fungi and vandal damage was continued. Insecticides are now installed



An Australian frog, *Litoria chloris*, photographed at Curimbah, NSW.



N. Coleman



N. Coleman





Anthony Healy



Walter Deas

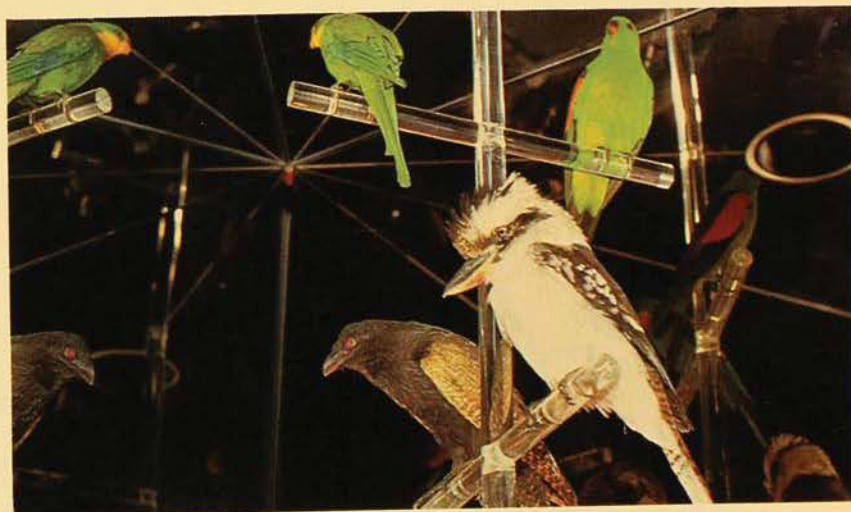
TOP LEFT: The Knight Fish, *Cleidopus gloriamaris*, a species of luminous fish.

ABOVE: Soldier Crabs, *Mictyris longicarpus*, photographed during a study of the fauna of Careel Bay.

BOTTOM LEFT: *Valencienna n. sp.*, an undescribed species of gobiid fish, emerging from beneath a sea star, *Pentaceraster regulus*.

CENTRE: Divers at the Australian Museum's Lizard Island Research Station on the Great Barrier Reef.

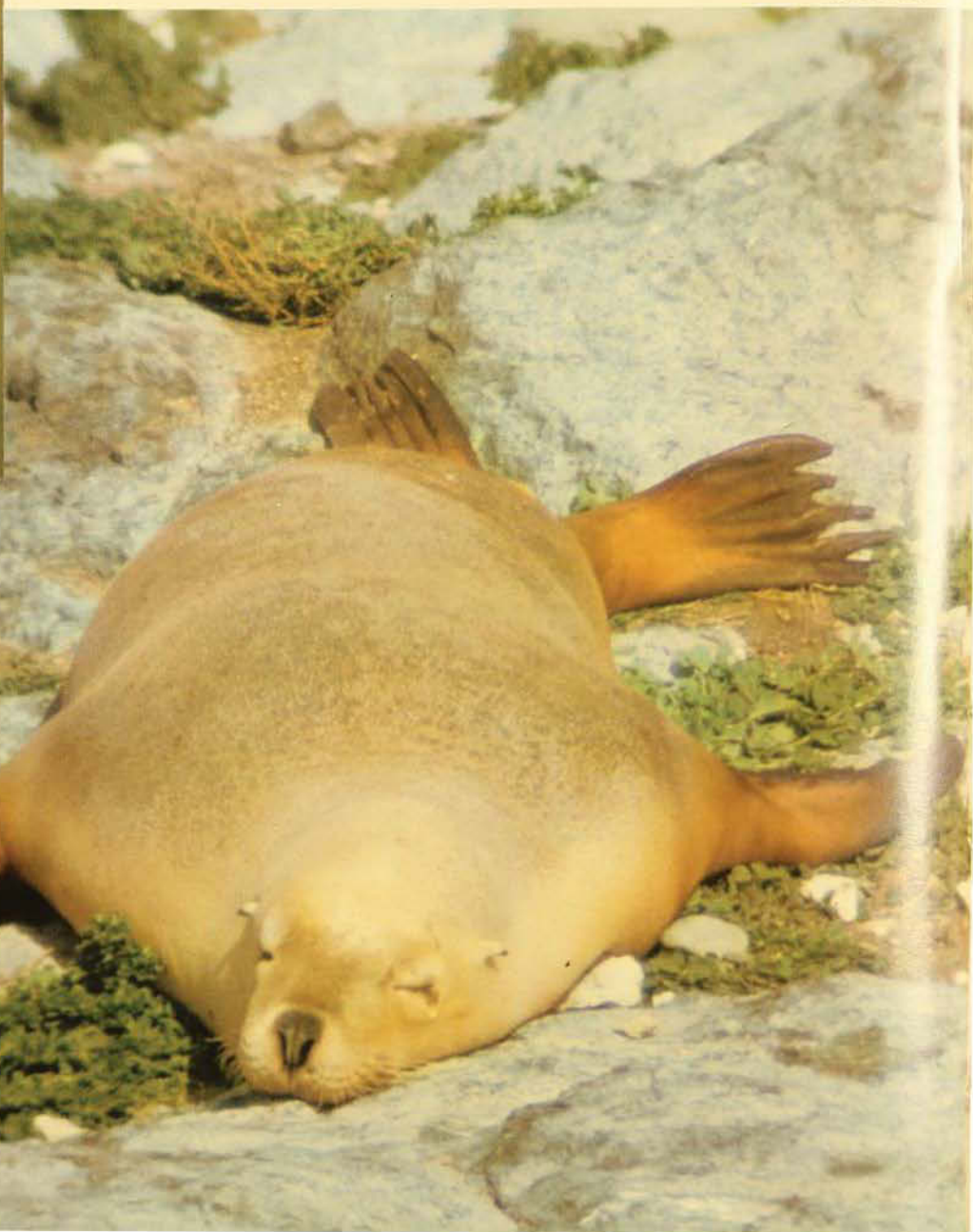
BELOW: Specimens from The Australian Museum formed a major display in the Australian Pavilion at Expo '74, Spokane, Washington, USA.



Jim Frazier



Howard Hughes/Australian Mus



B. J. Marlow

in all show cases housing vulnerable material. Recommendations on lighting levels and ultraviolet screening in the galleries have been made and are now being implemented.

A programme for the conservation and housing of the Aboriginal bark paintings is now under way. Specially designed and individually sized box-frames are now being made by an outside contractor. A grant was obtained from the Aboriginal Arts Board of the Australian Council for the Arts to employ a conservator for one year to treat the Aboriginal Bark Painting collection. The appointee will commence work at the beginning of July, 1974.

Ms Walston inspected progress on the conservation work being carried out on the Mootwingee engraved rock slope in Western N.S.W. She also organized a trip including a geologist and mineralogist from the Department of Mines to examine and sample pigments from the Aboriginal painted sites at Mootwingee and Mt Grenfell.

Mr Francis Bafmatuk from the Papua New Guinea Public Museum and Art Gallery returned to the Museum for a further 5 months training in the conservation of ethnographic material. He has now returned to Port Moresby to take up the position of Conservator in his museum. A group

TOP: *The Wanderer Butterfly, Danaus plexippus.* A marking program to study the migration of this butterfly started in 1962 and is continuing. BOTTOM: *An adult female sea lion, Neophoca cinerea.* Mr B. Marlow, Curator of Mammals at The Australian Museum, made field trips to Dangerous Reef in the Spencer Gulf in 1967, 1969 and 1970 to study the general behaviour of the mammals.

of museum trainees from the East-West Center in Honolulu spent a day in the Laboratory discussing conservation techniques for Pacific Islands material.

Ms Walston lectured on conservation at a pilot seminar designed to assist country museums. The 2-day seminar was held in Dubbo in May.

The laboratory conducted a 3-day "practical" in conservation techniques for ethnographic and archaeological material for honours students in the Department of Anthropology at the University of Sydney.

EDUCATION SERVICE

The service continued a vigorous programme throughout the year although hampered considerably by lack of space.

A total of 502 schools groups (25 628 children) attended the Museum classes organized by the Education staff. As usual, available lesson time for the whole year was completely booked by the middle of the first term and all other requests for lessons had to be refused. Some schools were provided with question sheets, or with sample copies prior to their visit, but no help could be given to the majority of requests. Approximately 65 000 children in 1 620 classes attended the Museum without appointment. The total number of school children visiting the Museum this year was the highest ever recorded and the number is increasing by 10 to 15 per cent each year.

Four classes were taken on field trips to study marine ecology. Special groups of handicapped children including the blind, deaf, and crippled, were given lessons presented in a manner suited to their disability.

The children's room was visited by about 11 580 people during the three school vacations—an average daily attendance of 300. Different displays and activities were arranged in the children's room for each vacation: "Reptiles" in September, "The Indonesians" in January and "Decorative Arts" in May. Film screenings were arranged during the May vacation and 1367 people attended these screenings—an average of 137 per day.

The annual "Education Week" exhibition of children's work based on their Museum visits was organized by Ms Maguire for the 4 weeks 12th August to 10th September, 1973. Prizes were provided by the Trustees of the Museum.

Demonstration lessons and lectures on the Museum's educational services were given to various groups of trainees from all teachers colleges in Sydney. Groups of migrants, accountancy students from the University of New South Wales, and students from the Commonwealth Teaching Centre and the Australian Institute for New Guinea were also given special lectures. Members of the N.S.W. Ambulance Transport Service Board continued with series of visits to study venomous animals. Lectures were also given to members of the View Club of Australia.

For the enjoyment of children in holiday time, question booklets, the Museum "Walkabouts" based on the gallery exhibits are available. Those who find these an interesting and rewarding experience—and hundreds do—may continue the series each holiday, eventually qualifying for membership in the Museum Discoverers' Club, which holds regular meetings, field trips and other activities. This year one-day field trips were made to Muogomarra Nature Reserve to study spiders and to Lawson to study fungi, and two 5-day camping trips were undertaken, the first to Nadgee Nature Reserve to assist the Museum's Department of Environmental Studies with the small mammal

investigations, and the second to Parkes to assist Dr Ritchie, the Curator of Fossils in examining possible sites for future study. Both of these longer trips were plagued by wet weather but nothing seems to dampen the enthusiasm of Discoverers.

Museum "Walkabouts" were completed by 773 children during the year and 21 students completed the Walkabout series making them eligible for membership in the Discoverers' Club. Seven club meetings were held during the year in addition to the field trips. Nine "Discoverers" assisted in the scientific departments of the Museum during the January vacation. The Discoverers' Society—the senior group of the club—has met six times at the Museum in the evenings and has held one field trip (12th–16th April) to the Blue Mountains.

For the benefit of classes unable to visit the Museum, a series of school loan travel cases is provided. Each case presents an attractive array of specimens, photographs and slides for individual or group use in the classroom. As with most of the facilities offered, the demand for the cases exceeds the supply, even though the borrowing time has been reduced from 3 to 2 weeks. This year 7 new cases were completed—6 on various bird topics and 1 on Eskimos—and at the request of the N.S.W. Education Department and in conjunction with the Exhibitions Department of the Museum, work has commenced on 5 new cases dealing with Aborigines of the western desert. More than 500 loans comprising 65 collections of specimens and photographs and 447 travel cases, were made during the year. Clerical assistance from Ms Watson in the preparation of documents and bookings for the travel cases has relieved the pressure of work in this area.

Sets of free Museum leaflets were sent to 60 school libraries including those in other States and in Papua New Guinea. In addition, 1665 letters from teachers and pupils were answered, giving information for class work.

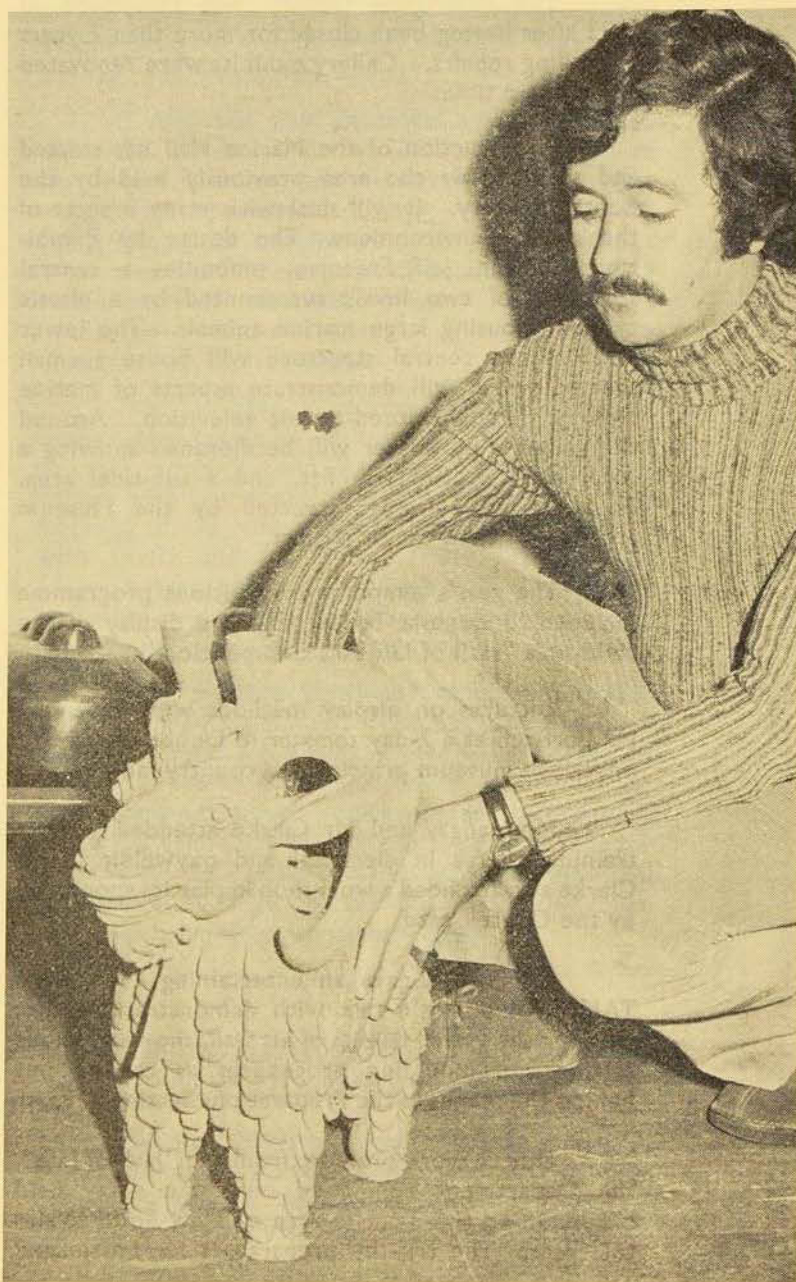
Ms McDonald travelled overseas for 8 weeks in May-July and attended the Tenth Triennial Conference of the International Council of Museums in Copenhagen, Denmark, 5th to 14th June, 1974. She was elected Vice-President of the ICOM International Committee for Education and Cultural Action. Also visited on this study trip were museums in Indonesia, Israel, Britain, Sweden and Holland. Financial assistance to undertake this trip was provided by the Commonwealth Foundation, the Ian Potter Foundation, the British Council, the Australian Department of Foreign Affairs, and the Trustees of the Museum.

EXHIBITIONS DEPARTMENT

The Hall of Life, scheduled to open in November, 1974, was again the main work sphere of the department with all three sections heavily involved. The artificers completed all fixtures during the latter part of the year and installation of exhibits is well advanced. A notable feature is the 1.65-metre diameter model of a cell built by the Preparation Section. This representation of a cell is a complex structure of plastic forms—cast, fabricated, blown, and vacuum-formed. A number of new techniques were developed during its construction and it is one of the largest unreinforced epoxy resin castings ever attempted in this country.

Exhibitions Officer, Jeff Freeman with a sculpture from the temporary exhibit, "Indonesia Today" which, after being shown in Sydney, toured major museums in Australia.

Charles Turner/Australian Museum



The Aboriginal Gallery was re-opened in 1973 after having been closed for more than 2 years for ceiling repairs. Gallery exhibits were renovated at the same time.

Construction of the Marine Hall has started and will occupy the area previously held by the Reptile Gallery. It will deal with many aspects of the marine environment. The design by Exhibitions Officer, Jeff Freeman, embodies a central structure of two levels surmounted by a plastic cylinder housing large marine animals. The lower level of the central structure will house a small theatre which will demonstrate aspects of marine biology through closed-circuit television. Around the gallery's perimeter will be dioramas showing a coral reef, a mangrove flat, and a sub-tidal area. Fixtures are being constructed by the Museum artificers as their major project.

The year's temporary exhibitions programme included "Indonesia Today" and the display of the children's "Hall of Life Art Competition".

Lectures on display methods were given by Mr Bertram at a 2-day seminar in Dubbo in May to introduce museum principles to country museums.

Mr Hangay and Mr Clarke attended a short training course in electrical and oxywelding. Mr Clarke also attended a workshop in plastics sponsored by the Crafts Board.

Mr Frazier gave an entertaining evening to TAMS, combining a talk with demonstrations and, utilizing the varied talents of his staff, showed various casting and moulding procedures as carried out behind the scenes in the Preparations Section.

Due to work pressure from the "Hall of Life", the Department conducted only one 4-day field excursion to the Trangie area of New South Wales this year. The trip by preparators Mr Lossin and

Mr Clarke encountered bad weather but yielded eighteen replacements to the old gallery bird mounts and one previously unrepresented species.

Artificers have carried out general maintenance requiring regular inspections of various equipment and the Museum building. The roof of the Museum has given very little trouble during the past year, but the stone work on the southwest corner of the building is in need of repair and is dangerous to pedestrians on the footpath below. The Department of Public Works has been notified of this, but due to lack of funds, nothing has been done. The wall and balustrades in the same corner are also in need of attention.

The artificers have constructed show cases and fittings for all temporary exhibits held during the year including "Indonesia Today" and the "Hall of Life Art Competition", and have made alterations to existing galleries. They have also built many cabinets and cases for the scientific departments and have done all the general carpentry required by Museum staff.

LIBRARY

Accessions and Binding

During the year 346 books were received, an increase of 50 per cent over the previous year. There was also an increase in the number of serial publications—200 compared with 86 last year. Regular binding has been resumed. The library received 43 new periodical titles during the year.

Loans

A total of 2 745 loans were made during the year. The number of loans to outside libraries decreased slightly but the number within the Museum increased slightly; approximately a third of the requests are supplied as Xerox copies rather than

as loans of the original publication. There have been many requests for material during the year from both the University of Malaysia, Kuala Lumpur, and the University of Singapore as well as the more usual requests from New Zealand and Papua New Guinea.

Cataloguing

More publications were catalogued this year—522 compared with 429 last year—but little re-cataloguing has been done.

The work of Ms Barbara Mew on a part-time basis has enabled a start to be made on the reorganization of the books in the stacks. The contents of the old reading room and office were reorganized and the catalogue has been housed in more appropriate cabinets. A new reading room and office were acquired during the year.

The Rank-Xerox 422 copying machine was replaced by a later model, a 720, during December, 1973. The supply of Xerox copies of articles instead of whole bound volumes is resulting in a considerable saving in postal expenses.

PHOTOGRAPHY AND VISUAL AIDS SECTION

The Photographic Section continued to supply material for various Museum and other publications, exhibitions, and promotions. There is an increasing demand for illustrative material in colour and this is reflected in the work executed within the last few months. Work continues on special requirements for the Hall of Life.

Three 16 mm colour/sound films titled "Mimona's Basket", "The Man-spear" and "The Spear-thrower" were completed. These embrace the manufacture of Aboriginal artefacts and were

filmed at the Edward River, Cape York Peninsula, during August-September, 1970. Work proceeded on two further BHP-sponsored films titled "Australian Lizards" and "Australian Snakes".

During the year contracts were concluded with ABC Television for screening in Australia of the seven films on the Australian Environment which were sponsored by BHP. A contract was also arranged for overseas distribution of the films with an agent, ID Television, of London. This firm concentrates on television markets. Another firm, Educational Media Australia, is selling these films through their London office.

The Teaching Resources Centre at North Sydney gave access to editing equipment for work on the cinefilms, and Taronga Zoological Park helped with live snake and lizard specimens. The National Parks and Wildlife Service was helpful with advice and comment. The Commonwealth Serum Laboratories, Melbourne, assisted with information and advice for filming the preparation of snake anti-venenes.

Lack of space continues to cause concern. Another small studio and darkroom and improved storage facilities are needed. Inadequate storage is causing irreparable damage to valuable material, especially cinefilm and sound recordings. A lead shield has been built around the X-ray unit, but the unit should be housed separately. The filing and registration of negatives and 35 mm colour transparencies is being improved and updated.

PUBLICATIONS AND SCIENTIFIC INFORMATION OFFICE

The most important feature of the Museum's publication activity was the complete change in the popular magazine *Australian Natural History* as detailed elsewhere. In May, 1974, Ms Nancy Smith

(Scientific Information Officer) was appointed Editor of the magazine.

The number of *Records of the Australian Museum* published or in process of publication was almost twice as great as the previous year's high figure.

Twelve numbers in the *Records* series (vol. 28 No. 15 to vol. 29 No. 7) were papers on: The Alpheid Shrimp of Australia by D. M. and A. H. Banner (vol. 28, No. 15); A South European Harvestman in Australia and New Zealand by J. Gruber and G. S. Hunt (No. 16); The Harpacticoid Copepods (Crustacea) of the Saline Lakes in Southeast Australia, by R. Hamond (No. 17); The Australian Species of *Robertsonia* (Crustacea, Harpacticoida) with a Revised Key to the Genus, by R. Hamond (No. 18); Broom Cave *Cercartetus*, with observations on Pygmy Possum Dental Morphology, Variation and Taxonomy, by W. D. Turnbull and F. R. Schram (No. 19); Observations on Sexual Behaviour in Some Australian Platystomatidae (Diptera, Schizophora), by D. K. McAlpine (vol. 29, No. 1); The Garfishes (Hemiramphidae) of Australia and New Zealand, by B. B. Collette (No. 2); Spirorbinae (Polychaeta: Serpulidae) from Southeastern Australia, by E. W. Knight-Jones, P. Knight-Jones, and L. C. Llewellyn (No. 3); Description of Four New Damselfishes (Pomacentridae) from Papua New Guinea and Eastern Australia, by G. R. Allen and D. R. Robertson (No. 4); Notes on Australian Meteorites, by B. Mason (No. 5); A New Leech from Papua, by L. R. Richardson (No. 6); and A Study of Australian Nephthyidae (Polychaeta) by H. Paxton (No. 7).

The *Index to Volume 28 of the Records* was also published.

At 30th June, 1974, the nine numbers of Volume 29 of the *Records* were in the process of printing. Included were papers on the Psocoptera of Norfolk Island, by C. N. Smithers and I. W. B. Thornton (No. 8); a new Isopod from Australia by

T. E. Bowman and H. Kuhne (No. 9); Earthworms from New South Wales, by B. M. Jamieson (No. 10); a New Species of Snapping Shrimp from New Guinea, by A. H. and D. M. Banner (No. 11); the second part of a major revision of Australian Snapping Shrimps, by A. H. and D. M. Banner (No. 12); Crinoids from the Swain Reefs, by A. Clark (No. 13); the Morphology of Leafhoppers, by J. W. Evans (No. 14); new Pogonophora from Indonesia, by E. Southward (No. 15); and Psocoptera from Lord Howe Island, by C. N. Smithers and I. W. B. Thornton (No. 16).

The eighth edition of the book, *Australian Aboriginal Decorative Art*, by F. D. McCarthy, was published. The number of copies printed was 10 000 which was 2 000 more than the seventh edition.

New editions of four of the free natural history leaflets were printed, and new editions of three others were in process of printing. Two new leaflets were also with the Government Printer.

In addition to articles listed above, a total of forty-two papers were published by staff. These are listed in Appendix 4.

MATTERS OF GENERAL MUSEUM INTEREST

In August, 1973, a Commonwealth Government regulation came into effect which restricts export of insects to permit holders. Dr Smithers accepted an invitation to serve on a committee set up by the Australian Entomological Society to assess the views of Australian entomologists on this controversial legislation.

Permits to export insects, ticks and spiders are only granted for shipment of specimens which represent either (a) a loan made to a reputable overseas institution or person, (b) the return of a loan, the property of an overseas institution or

person, (c) insects, etc., not native to Australia, or (d) paratypes. Permits are granted for material other than the above only for shipments to persons or institutions who have signed a blanket undertaking to lodge all holotypes that may at any time be designated from among any Australian native insects, ticks or spiders received after 19th July, 1973 in an Australian museum or in the Australian National Insect Collection (CSIRO).

Although this legislation at present affects only entomological research, in the opinion of some, it sets a precedent which could, if it leads to further restriction or curtailment of the exchange of scientific material with overseas institutions, inhibit biological research in Australia.

All members of scientific staff continued membership in professional organizations and attended meetings throughout Australia during the year. Dr Cogger resigned from his post as Honorary Curator of Reptiles at Taronga Zoological Park. He became chairman of the Terrestrial Ecology Committee of the Australian Conservation Foundation and was re-appointed Research Associate of the California Academy of Sciences. Several marine biologists on the staff attended the first joint conference of the Australian Marine Science Association, The Australian Society for Fish Biology and the Australian Society for Limnology which dealt with estuaries. Other meetings attended by Museum scientists included the ANZAAS Congress and associated meetings, the Fire Ecology Seminar organized by Monash University and the Victorian Forestry Commission, the seventh general meeting of the Australian Society of Herpetologists, the National Conservation Seminar, the annual general meeting of the Museums Association of Australia, the third International Gondwanaland Symposium, the Storage and Retrieval of Geological Information symposium held by the N.S.W. Geological Survey, the Specialist Group on Palaeontology and Biostratigraphy, and the Mammal Society.

Ms Walston was appointed Vice-President of the newly formed Institute for the Conservation of Cultural Material and was temporarily appointed to the State Aboriginal Relics Advisory Committee. At the National Conservation seminar in Perth in August, 1974, she convened and chaired the section on the Conservation of Monuments and Sites.

Mr Sutherland continued to represent the Museum on the N.S.W. Geological Co-ordination Committee and was nominated to represent the Museum's Commission of the International Mineralogical Association for the Geological Society of Australia's Specialist Group in Geochemistry and Mineralogy.

Dr McAlpine continued to serve on the council and Publications Committee of the Linnean Society of New South Wales and the Editorial Committee of the Australian Entomological Society.

Dr Ponder served as a committee member on the Sydney Branch of the Malacological Society.

Dr Hutchings continued to be Membership Secretary of the Australian Marine Sciences Association and Vice-President of the New South Wales Division of the Australian Littoral Society.

Dr Specht was re-elected Honorary Secretary of the Anthropological Society of New South Wales.

Dr Griffin continued as Honorary Treasurer of the Australian Marine Sciences Association and as a council member of the Australian Society for Fish Biology. He was appointed by the Trustees of the Museum to the Council of the National Trust of Australia (N.S.W.) and was also appointed to the N.S.W. National Parks and Wildlife Advisory Council.

Mr Disney is a council member and chairman of the Field Investigation Committee of the Royal Australian Ornithologists Union, a member of the Scientific and General Committees of the International

Ornithological Congress, Vice-President of the Bird Banders Association of Australia and a council member of the Royal Zoological Society of New South Wales. He served on the five selection panels of the National Photographic Index of Australian Birds during the year. He was also a member of the advisory panel on field programmes and grants for the index.

Several papers were presented by the scientific staff of the Museum at seminars, symposia and meetings of professional societies.

Ms Walston presented a paper on the Conservation of Ethnographic Collections at the National Conservation Seminar in Perth in August, 1974.

Mr Sutherland gave a paper on volcanic activity in relation to high seas in Australia at the Forty-fifth ANZAAS Congress in Perth and a paper on magnetism associated with the breakup of Gondwanaland at the Third International Gondwanaland Symposium in Canberra. Dr Ritchie presented a paper on the correlation of Upper Devonian Vertebrates and the discovery of *Groenlandaspis* on four continents at the meeting of the Specialist Group on Palaeontology and Biostratigraphy in Hobart in February, 1974.

THE AUSTRALIAN MUSEUM SOCIETY

The Australian Museum Society (TAMS), founded in 1971, aims to bring together members of the general public with an interest in natural history, anthropology, conservation, etc., and acquaint them with the fascinating and varied, but sometimes little known, work carried out by The Australian Museum. In its second official year (1973-4) TAMS organized varied lectures, field trips, family and social functions, and film shows. As the result of experience and feedback from the members themselves the programmes were designed to cater for both

general and specialized interests. Short series were held in which small groups explored a particular topic in depth.

In addition to attending the lectures in encouraging numbers, TAMS members were also able to visit behind the scenes at the Museum and examine the part the general public never sees. They met Curators and supporting staff and visiting scientists and generally obtained a much better idea of how the Museum operates. In this way they learned at first hand about current Museum projects and several TAMS members have provided voluntary assistance to sort and label specimens, catalogue reprints, etc. Members also had the opportunity to preview all Museum exhibitions during the year and meet the staff responsible for their design and creation.

Most of the year's functions were held within the Museum although problems were still encountered in accommodating the numbers who wished to attend some events. This was partly eased by members becoming more selective in the functions they attended. A highlight of the year's programme was the society-sponsored visit of Mr Poedijono, an Indonesian puppeteer, who gave one private performance to the society and eight public performances during late January. Other activities included three lectures about the Great Barrier Reef and an evening of natural history films for members and their families.

After a slight drop in numbers following the inaugural year the membership has been more stable. Most of the 1361 members of TAMS during the 1973 subscription year have renewed their membership and 125 new members joined in early 1974. The society would like to see a much larger membership and plans to have an enrolling drive during 1974.

At the second annual general meeting of TAMS in March, 1974, Sir Harold Wyndham was returned

as President, Ms Faye Cameron as Executive Vice-President and Ms Rosemary Beeman as Art Advisor; a full list of TAMS council is given elsewhere (p. 3). The TAMS office has been ably run by Ms Barbara Thomas who, with the assistance of volunteers, has printed most of the brochures, news-letters, etc., and therefore costs have been kept to a minimum. Suppers for the various functions were prepared and served by Ms Shirley Ransford and voluntary assistants. Rising costs in certain fields (paper, postage, etc.) have caused problems during the year and the society is particularly grateful to the Minister for Cultural Activities for a grant of \$500 from his special fund during 1973.

The society is also grateful for the constant support of the Museum staff, especially that of Dr Talbot (Director), Dr Griffin (Assistant Director), Mr Wason (Chief Security Officer) and Mr Bertram (Chief, Exhibitions Dept).

NATIONAL PHOTOGRAPHIC INDEX OF AUSTRALIAN BIRDS

During the year, there were five sessions of the Selection Panel, designated stages XI to XV. A total of 2 609 photographs were submitted and 623 accepted for the Index; an additional 228 were accepted for the transparency section. The new photographs represented 56 species of birds not previously included.

With 2 655 photographs now in the Index, the collection has passed the mid-point of its growth towards the target of 5 000 photographs, and is well on its way to the interim target of the Four Year Plan's 3 000 by the end of 1975. There are also good prospects that the species count, now standing at 590, will be lifted well beyond the 600 mark during the same period.

Over 10 000 photographs have been submitted

for consideration over the last 5 years from 238 photographers throughout Australia.

As the rate of flow of photographs, especially new species, is predictably declining, a list of species not represented in the Index was circulated to photographers at the end of 1972 and again at the end of 1973. In addition, the Bank of New South Wales grants scheme has acted as an incentive for the 23 photographers who received grants during 1973 to concentrate on the unrepresented species. Work from 15 of these photographers has been received and evaluated up to stage XV. Of the 673 photographs submitted, 181 were chosen for the index and 46 for the transparency section—62 of these were species previously unrepresented in the Index.

The terms of reference of the Advisory Panel on Grants, set up originally to make recommendations to the Executive Committee on applications received under the Grants Scheme, has been expanded to make recommendations on future field programmes to meet the needs of the Index. Renamed the Advisory Panel on Field Programmes and Grants, its membership now includes Mr H. J. de S. Disney, Mr Vincent Serventy, and Mr K. A. Muller.

The greatly increased administrative activity generated by the substantial growth of the Index, the Grants Scheme, and the *Readers Digest* bird book project, has continued to put considerable strain on the small Index team. The two paid clerical assistants left in July and could not be replaced because of insufficient funds. An appeal for a grant from the Commonwealth Government was made to the Prime Minister by Sir Percy Spender in November.

The Trustees held their eighth meeting on 20th September, 1973. The Executive Committee met three times (44th, 45th and 46th meetings), and the Advisory Panel met once.

STAFF

DIRECTOR F. H. Talbot, M.Sc., Ph.D., F.L.S., F.R.Z.S.,
F.R.S.A., A.M.A.A.

ASSISTANT DIRECTOR D. J. G. Griffin, M.Sc., Ph.D.

SCIENTIFIC DEPARTMENTS

PRINCIPAL CURATOR C. N. Smithers, M.Sc., Ph.D.

ANTHROPOLOGY

Curator D. R. Moore, M.A., Dip.Anthrop.

Assistant Curator J. R. Specht, M.A., Ph.D.

Research Assistants P. Thomson, B.Sc. (to 31-7-73)
M. Gastineau, B.A. (from 18-3-74)

Technical Officer (Scientific) Z. Wakelin-King, B.A.

Assistants S. Walston, Dip.Inst.Arch. (to 6-9-73)
L. Hosking

ENTOMOLOGY

Curator and Head of Department C. N. Smithers, M.Sc., Ph.D.

Curator D. K. McAlpine, M.Sc., Ph.D., D.I.C.

Assistant Curator M. R. V. Gray, M.Sc.

Technical Officer (Scientific) G. A. Holloway, B.Sc.

Research Assistants S. P. Kim, M.Agr. Sci. (to 17-6-74)

J. O'Regan (seconded from La Trobe University)

Assistants R. D. Brewer, C. A. Horseman, K. K. Kota

ENVIRONMENTAL STUDIES

Curator	..	..	..	..	..	..	..	H. F. Recher, B.Sc., Ph.D.
Assistant Curator	..	..	..	..	..	..	..	S. S. Clark, M.Sc., Ph.D.
Technical Officer (Scientific)	..	..	..	..	..	..	..	H. Posamentier, B.Sc.
Research Assistant	..	..	..	..	..	..	..	D. Lunney, B.Sc.
Assistants	..	..	..	..	..	..	..	E. House (to 8-10-73) J. Settle (from 9-10-73)

SHELF BENTHIC SURVEY

Leader	..	..	..	..	..	..	..	J. Laxton, M.Sc., Ph.D.
Research Assistants	..	..	..	..	..	..	..	I. Briggs, M.Sc. (Hons), N. Carrick, B.Sc., H. Fisher, B.Sc., D. Milledge, R. Snape, B.Sc. (seconded from M.W.S. & D.B. to 30-6-74), E. Williams, B.Sc. (Hons)

HERPETOLOGY

Curator	..	..	..	..	..	..	..	H. G. Cogger, M.Sc., Ph.D.
Technical Assistant	..	..	..	..	..	..	..	P. Webber
Assistant	..	..	..	..	..	..	..	A. Young (from 17-9-73)

ICHTHYOLOGY

Curator	..	..	..	..	..	..	..	J. R. Paxton, M.Sc., Ph.D.
Assistant Curator	..	..	..	..	..	..	..	D. F. Hoese, B.A., Ph.D.
Technical Officer (Scientific)	..	..	..	..	..	..	..	H. Larson, M.Sc. (from 3-5-74)
Assistants	..	..	..	..	..	..	..	C. Allen (to 3-5-74), H. Dlugaj

MALACOLOGY

Curator	..	..	..	..	..	..	..	W. F. Ponder, M.Sc., Ph.D.
Research Assistant	..	..	..	..	..	..	..	E. K. Yoo, B.Sc.
Technical Assistant	..	..	..	..	..	..	..	P. H. Colman
Assistants	..	..	..	..	..	..	..	E. Mangan (from 6-5-74), C. J. Robinson

MAMMALOLOGY

Curator	..	..	..	..	..	..	..	B. J. Marlow, B.Sc.
Technical Assistant	..	..	..	..	..	..	..	L. M. Gibson

MARINE INVERTEBRATES (Crustacea and Coelenterates)

Curator	..	..	..	..	..	..	..	D. J. G. Griffin, M.Sc., Ph.D.
Research Assistant	..	..	..	..	..	..	..	H. Tranter, B.Sc.
Technical Officer (Scientific)	..	..	..	..	..	..	..	D. E. Brown, B.A.

MARINE INVERTEBRATES (Worms and Echinoderms)

Acting Curator	..	..	..	..	..	..	..	P. A. Hutchings, B.Sc., Ph.D.
Assistant Curator	..	..	..	..	..	..	..	F. E. W. Rowe, B.Sc., Ph.D., M.Inst.Biol., F.L.S.
Technical Officer (Scientific)	..	..	..	..	..	..	..	C. Cannon, B.Sc.
Assistant	..	..	..	..	..	..	..	R. Eggert

MINERALOGY AND PETROLOGY

Curator	..	..	..	..	..	..	..	F. L. Sutherland, B.Sc. (Hons)
Technical Officer (Scientific)	..	..	..	..	..	..	..	J. E. Hingley

ORNITHOLOGY

Curator	..	..	..	..	..	..	..	H. J. de S. Disney, M.A.
Assistants	..	..	..	..	..	..	..	G. Burkle (from 7-11-73), A. Young (to 17-9-73)

PALAEONTOLOGY

Curator	..	..	..	..	..	..	..	A. Ritchie, B.Sc. (Hons), Ph.D.
Technical Officer (Scientific)	..	..	..	..	..	..	..	R. K. Jones, B.Sc.
Assistant	..	..	..	..	..	..	..	D. Jones

DIRECTOR'S RESEARCH LABORATORY

Research Assistants	..	..	..	..	..	..	..	G. R. Allen, B.A., Ph.D. (to 27-11-73), G. R. V. Anderson, M.Sc. (from 16-1-74), B. C. Russell, M.Sc.
Officer-in-Charge, One Tree Island Field Station	..	..	..	..	..	..	..	A. E. Chilvers
Resident Director, Lizard Island Research Station	..	..	..	..	..	..	..	S. Domm, B.Sc.

EDUCATION SERVICE

Education Officer-in-Charge	..	..	..	..	..	P. M. McDonald, B.Sc., M.Ed.
Education Officers	..	..	..	..	..	G. S. Hunt, B.Sc., Dip.Ed., S. B. H. Maguire, B.A., M. M. Tyler, A.S.T.C. (part-time), E. J. Wilson, B.Sc.
Preparator	..	..	..	..	..	R. C. Inder
Typists	..	..	..	..	..	T. Tanaka (half-time to 26-7-73), J. E. Watson (from 1-8-73)

EXHIBITIONS DEPARTMENT

Chief	..	..	..	..	..	B. Bertram
Typists	..	..	..	..	..	L. Stark (from 8-4-74), T. Tanaka (to 9-4-74)
Exhibition Officers	..	..	..	..	..	D. Rae, J. Freeman

DESIGN AND ART SECTION

Artists	..	..	..	..	..	D. Brennan (5-11-73 to 6-5-74), J. Clarke (to 13-7-73), K. Gregg, K. Cowell (to 31-8-73), R. McCabe (19-10-73 to 30-1-74), S. Robinson (from 16-4-74)
Assistants	..	..	..	..	..	L. Clapton, G. Leigh

PREPARATION SECTION

Chief Preparator	..	..	..	..	..	J. Frazier
Preparators	..	..	..	..	..	R. Lossin, R. Witchard
Assistant Preparators	..	..	..	..	..	S. Clark, G. Hangay, J. Heller (from 21-1-74), M. White

ARTIFICER'S SECTION

Artificer-in-Charge	..	..	..	..	..	A. Carpenter
Artificers	..	..	..	..	..	K. Forster, T. Lang

MATERIALS PRESERVATION SECTION

Officer-in-Charge	S. M. Walston, Dip.Inst.Arch. (from 7-9-73)
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LIBRARY

Librarian	M. G. E. Davies, B.Sc., A.L.A.A.
Assistant Librarian	D. South, Lib. Cert., Teachers Cert., A.L.A.A.
Library Officer	B. Mew, Lib. Cert., A.L.A.A. (part-time from 24-4-74)
Typists	H. Spitzer (from 31-7-73), J. E. Watson (to 30-7-73)
Clerical Assistant	L. E. Ryan (from 17-12-73)

PHOTOGRAPHY AND VISUAL AIDS SECTION

Photographer and Visual Aids Officer	H. Hughes, F.R.P.S., A.I.A.P.
Photographers	G. J. Millen (from 25-2-74), C. V. Turner (to 24-12-74)
Photographic Assistants	H. McLennan (from 10-9-73)

PUBLICATIONS AND SCIENTIFIC INFORMATION OFFICE

Scientific Information Officer	A. Hughes (to 31-1-74), N. Smith (from 29-4-74)
Assistant Editor	P. F. Collis

ADMINISTRATION

Secretary	M. McNamara, A.A.S.A.
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GENERAL OFFICE

Officer-in-Charge	B. Shepherd
Clerks	S. Gulson (from 1-6-73), S. McDougall, W. M. McGuirk
Clerical Assistants	M. Clarke (to 25-1-74), M. LeHen
Clerical Assistants (Bookshop)	S. Hanley (to 28-6-74), P. Russell (from 14-6-74)

Stenographer/Typist	..	..	..	..	..	..	S. Burgess (to 7-9-73), S. Henry, J. Newton (from 5-11-73), L. Oxley, D. Sharpe, C. Sinclair, J. Williams (from 9-7-73), B. Wright (from 30-7-73)
Receptionist/Typist	..	..	..	..	..	..	C. Spicer
Telephonists	..	..	..	..	..	..	G. Jones (to 22-2-74), S. Smart (from 18-3-74), C. Targett
Storeman/Driver	..	..	..	..	..	..	B. Bellamy (from 1-9-73), C. Randall (to 30-8-73)

ATTENDANTS AND SECURITY

Supervisor	..	..	..	..	..	..	W. Wason
Senior Attendant	..	..	..	..	..	..	J. Lewis
Attendants	..	..	..	..	..	..	R. Aylward, N. Bevan, B. Buckley (to 2-11-73), L. Coops, M. Duncan, M. Harris, R. Holmes, D. Hodges, R. Miller, M. Neligan, E. Papadellis, E. Randall (retired 27-6-74), H. Randall, S. Reardon, C. Smedley, H. Smith, J. Soloman, D. Walden, S. Zimeris, L. Eade (to 8-10-73), R. Hansell
Night Security Officers	..	..	..	..	..	..	R. Heland, D. Paterson, H. Pierson, P. Sharff (to 19-10-73), R. Souter, H. Ward, R. West
Cleaners	..	..	..	..	..	..	B. Childs, M. Fernandez, F. O'Connor, R. Diaz, E. Dracoulaki

NATIONAL PHOTOGRAPHIC INDEX OF AUSTRALIAN BIRDS

Executive Officer	..	..	..	..	..	..	A. D. Trounson
Clerical Assistants	..	..	..	..	..	..	R. McDonnell (to 21-9-73), G. Miller (to 14-9-73), A. Nurcombe (from 18-6-74)

THE AUSTRALIAN MUSEUM SOCIETY

Executive Vice-President	..	..	..	..	..	..	F. Cameron, B.A.
Office Assistant	..	..	..	..	..	..	V. Anderson (to 24-8-73), B. Thomas (from 8-10-73)

APPENDIX I DONATIONS

Principal donations to the Department of Anthropology were Melanesian and Australian artefacts from Ms J. Campbell, prehistoric New Guinea stone carvings from Professor R. N. H. Bulmer, and extensive stone collections from Northern N.S.W. from Professor Isabel McBryde.

A large collection of the Swordgrass Brown Butterfly was received from Dr B. Conroy, and Psocoptera collected in various parts of New South Wales from Mr M. S. Moulds. Collections of spiders were donated by Dr H. Heatwole, Mr C. Coleman, Mr E. Ball, Mr B. Gray.

Valuable donations of herpetological material were made by Mr W. McReaddie, Dr G. Webb, Dr S. Minton, Mr M. McCoy, Mr F. Parker, Mr P. Comerford, Mr Wells, and the Zoology Department of the University of New England.

Important collections of fishes were given to the Department of Ichthyology by Mr N. Coleman, Mr R. Kuitert, Dr N. Williams and N.S.W. State Fisheries. Type material was donated by Dr G. Allen, Dr T. Fraser, Mr W. Ivantsoff, Ms P. Kailola, Dr J. McCosker, and Dr J. Randall.

The Department of Malacology received a valuable shell collection from William and Edith Campbell and other collections of molluscs came from Mr J. Bailey, Dr E. and Prof. H. Vokes, Mr I. Loch, Ms J. Hunter, Ms H. Woodood, Mr B. Stobbs, Mr N. Coleman, and Ms J. Kerslake.

Donations of mammal specimens were received from Dr D. Kitchener, Western Australian Museum; Mr P. Temple-Smith, Department of Zoology, Australian National University; Dr C. A. Repenning, U.S. Geological Survey; and Dr G. V. Morejohn, University of California, San Jose.

Collections of crustaceans came from Mr M. C. Geddes, Monash University; Dr I. A. E. Bayly, Monash University; Ms M. Drummond, Victorian Fisheries and Wildlife Division; Dr M. A. Chapman, University of Waikato, New Zealand; Dr T. E. Bowman, Smithsonian Institution, Washington, D.C., U.S.A.; Dr P. De Dekker, Macquarie University; Mr Nyan Taw, University of Tasmania; Dr A. H. and Ms D. M. Banner, University of Hawaii, U.S.A.; Mr P. C. Roberts, University of Tasmania; Dr R. D. Simpson, University of New England; and Mr S. Shepherd, South Australian Fisheries Department. Mr N. Coleman, Sydney, donated a large collection of crustaceans, worms and echinoderms, and Ms Edith Campbell, Sydney, presented sponges and echinoderms.

Donations to the bird collection came from Ms Butler, Padstow; Ms E. Girovand; and Mr Alan Leishman, Lakes Entrance.

Donations of minerals were made by Mr and Ms W. Smith, Mr W. Lynch, Mr B. Maladad, Mr B. Andrews, Mr J. Gordon, Mr S. Dvos, Mr L. Johnson and Mr J. May (various minerals from Central Australia); Mr and Ms Stringer (a selection of zeolite minerals); The Opal Centre (an opalized shell); Mr V. Daddow (jade specimens); Mr R. Hill (gem gravel); Mr A. Chubb, Mr C. Poe, Mr J. Brookes (various concretions); Mr H. Dineen (a range of copper arsenates and copper minerals from Dome Rock Copper, S.A.); Mr D. McColl (tungsten ore specimens and associated lead minerals from Cordillera Mine, N.S.W.); Mr and Ms O. Branfort (polished agate); Mr E. Holland (specimens of amethyst on smoky quartz); Mr M. Farrand (stibnites from the New England area); Ms T. H. Awley (nephrite); Mr P. Morrissey (sulphides and secondary minerals from Woodlawn Mine, Tarago); Mr H. E. Millson (fluorescent calcite); Mr R. Currie (a pyrite "dollar"); Mr B. Hesp (muscovite); Mr D. Jennings (sapphires); Mr T. Moriarty (minerals from Western Australia); Mr B. Mason (bobierrite); Mr L. J. Wilson,

Mr H. Boucher, Geopeko Co. Ltd, and Mt Newman Co. Pty Ltd (a range of minerals from Western Australia). Rocks were donated by Mr A. Chubb, Mr W. H. Shields, Mr J. Hewitt, Mr S. A. Baggs, Mr Q. Webb, Mr J. Stewart, Mr V. Daddow, Mr H. Phillips, Mr O. Finch, Mr J. Davis, Mr B. Reane, Mr R. Hill, Mr S. Stubbs, Mr B. Mason, and Ms J. Campbell. A meteorite was donated by the Scots College, Sydney.

Donations to the palaeontological collections included Ordovician trilobites from near Orange (Mr Derek Blew), a fine collection of Devonian brachiopods and corals from type localities in Western Canada (Dr C. K. Crickmay, Calgary), Jurassic ammonites from Wewak, Papua New Guinea (Ms Betty Crouch, Wewak). Triassic fish specimens from Bowral, N.S.W. (Dr Anne Howie, Melbourne), Mesozoic and Tertiary molluscs from the U.S.A. (Ms J. Campbell, Gosford), and a fine specimen of *Cleithrolepis* from a new locality at Somersby (Mr Kirkness, Gosford). A large opalized reptilian bone from the Cretaceous of Lightning Ridge has been placed in the Museum collections on long-term loan by Mr Heinz Fischer, Lightning Ridge, N.S.W.

TIME-LIFE International (Australia) Pty Ltd donated twenty-four copies of the LIFE Nature Books to the Education Section for final awards in the Museum Walkabout series.

Among the publications donated to the Library during the year are *Sea Stars of Sagami Bay* presented by the Emperor of Japan; *Fishes of South and West Japan* Vol. I, by T. A. Glover, a facsimile edition presented by The Faculty of Fishes, Nagasaki University; AUSTRALIA'S WILDLIFE HERITAGE, monthly, by the Paul Hamlyn Group; *Parrots of the World*, by J. M. Forshaw, presented by the author, and *Birds of Prey of Australia* a limited edition, by F. Morris, presented by the author.

APPENDIX 2 ACKNOWLEDGEMENTS OF CO-OPERATION

The following organizations provided general assistance to the Museum and its staff in important ways including provision of research facilities and advice:

New South Wales State Fisheries; N.S.W. National Parks and Wildlife Service; N.S.W. Departments of Health, Mines (including the N.S.W. Geological Survey and the Mining Museum), and Education (Teaching Resources Centre); Lord Howe Island Board; N.S.W. Forestry Commission (including Division of Wood Technology); State Pollution Control Commission (Air and Water Pollution Control Branches); National Herbarium; N.S.W. Zoological Parks Board; Macquarie University (School of Earth Sciences); University of Sydney; Australian National University (Research School of Earth Sciences); N.S.W. Institute of Technology; James Cook University; CSIRO Divisions of Wildlife Research, Fisheries and Oceanography, Mineralogy and Computing Research; Bureau of Mineral Resources; Royal Australian Navy; Tasmanian Museum; Commonwealth Serum Laboratories; the *Sydney Morning Herald*; the N.S.W. Department of Public Works.

The following individuals also helped the Museum during the year:

Dr M. Weissman-Best, Leiden, Netherlands; Ms Carden Wallace, Queensland Museum; Prof. M. Pichon, Marine Biology Department, James Cook University; Dr P. Beveridge, School of Natural Resources, University of the South Pacific, Fiji; Dr B. J. Smith, National Museum of Victoria, Melbourne; Dr and Ms B. Goldman, University of the South Pacific, Fiji; Mr D. Beechey, CSIRO Division of Computing Research; Mr G. George, Baiyer River Sanctuary, Mt Hagen, PNG; Ms G. Brown and Ms J. Long of TAMS; Mr J. Bland, Kirconnell Orchard;

Mr and Ms G. Dibley; W. T. Cooper; Mr R. McDonald; Mr C. Carter; Mr M. S. Moulds; Mr J. V. Peters; Mr C. E. Chadwick; Ms J. A. Rosenthal; Ms A. Madden; Dr Leon Hughes, University of N.S.W.; Dr Valerie Morris, University of Sydney; Mr David Popham, University of Sydney; Mr Chris Meagher, Museum of Applied Arts and Sciences; Dr M. R. Dickson, University of N.S.W.; Dr J. Sved, University of Sydney; Dr E. Lassak, Museum of Applied Arts and Sciences; Dr J. S. Stewart, University of N.S.W.

APPENDIX 3 OVERSEAS VISITORS

Almost a hundred scientists and museum specialists from nineteen countries visited the Museum during the year to study and consult. Among the visitors were:

- Canada: Dr C. S. Churcher, University of Toronto and Royal Ontario Museum; Prof. H. F. Howden, Carleton University; Dr B. Waterhouse, Dept of Geology, University of Toronto
- Denmark: Dr K. R. Pedersen, University of Aarhus
- England: Dr A. Birtles; Dr A. Campbell, Oxford University; Dr P. E. Gibbs, Plymouth Laboratory; Sir Robert and Lady Sainsbury, Council for the Arts, London; Sir Peter Scott, Severn Wildfowl Trust, London; Mr H. R. Singleton, Director, Department of Museum Studies, University of Leicester
- France: Dr M. Pichon, Marseille
- Germany: Mr Franz Lazi and assistants, Stuttgart
- Holland: Dr M. Weissman-Best, Leiden
- India: Mr Ishwar Prakash, Central Arid Zone Research Institute, Jodhpur; Dr K. R. Suranje, Institute of Palaeobotany, Lucknow
- Indonesia: Dr Amir Sutaarga, National Museum, Jakarta
- Italy: Prof. E. Anati, Centro di Studi Preistorici, Val Camonica
- Japan: Prof. R. Ishiyama, Tokyo University of Fisheries; Dr Y. Kuwano, National Science Museum; Dr I. Nakamura, Kyoto University; Prof. Y. Nishiwaki, University of Osaka; Dr Y. Ono, Kyushu University; Prof. M. Watanabe, Waseda University
- Malaysia: Dr Ong Jin Eong, University Sains Malaysia, School of Biological Sciences
- New Zealand: Dr A. Baker, National Museum; Dr P. Barrett, Victoria University, Wellington; Prof. P. Berquist, University of Auckland; Mr W. O. Cernohorsky, Auckland Institute and Museum; Ms Rosemary Kyle, Victoria University, Wellington; Mr R. Wilton, The Otago Museum, Dunedin; Dr K. Wodzicki, Department of Scientific and Industrial Research, Wellington; Dr J. C. Yaldwyn, National Museum
- Papua New Guinea: Dr B. J. Egloff, Public Museum and Art Gallery, Port Moresby; Mr G. George, Baiyer River Sanctuary, Mt Hagen; Dr B. Gray, Department of Forests; Dr L. Gressitt, Wau Ecology Institute; Ms P. Kailola, Department of Agriculture Stock and Fisheries, Port Moresby;

- Mr D. Smidt, Public Museum and Art Gallery, Port Moresby; Mr M. Wilson, Department of Agriculture Stock and Fisheries, Port Moresby
- Pacific Islands: Ms A. Craven, Solomon Islands Museum, Honiara, Solomon Islands; Dr B. Goldman, University of the South Pacific, Fiji
- South Africa: Dr T. H. Barry, South African Museum; Dr C. K. Brain, Transvaal Museum; Dr Edna Plumstead, Bernard Price Institute
- U.S.A.: Dr A. C. Allyn, Florida; Prof. W. F. Barr, University of Idaho; Dr Paul Birkhead, Clemson University; Prof. C. Loring Brace, University of Michigan; Dr T. L. Bullock, Scripps Institute of Oceanography; Prof. J. B. Burch, University of Michigan; Dr J. Case, University of California, Santa Barbara; Dr P. Colin, Institute of Marine Sciences, Miami; Mr R. H. Curner, California; Dr Bruce Erickson, Science Museum, St Paul, Minnesota; Dr T. Fraser and Mr M. Goman, Smithsonian Institution, Washington; Dr Max Hecht, American Museum of Natural History, New York; Dr E. A. Kay, University of Hawaii; Dr J. Lee, University of Georgia; Dr G. V. Manley, Michigan; Mr Alexander Marshack, University of Pennsylvania; Dr B. Mason, Smithsonian Institution; Mr D. Newton, Museum of Primitive Art, New York; Mr R. Orenstein, Museum of Zoology, University of Michigan; Mr B. Palmer, East-West Center, Honolulu; Dr D. L. Pawson, Smithsonian Institution; Dr L. Peterson, Chicago; Dr J. Randall, B. P. Bishop Museum, Honolulu; Dr H. Rehder, Smithsonian Institution; Prof. Alfred Sherwood Romer, Museum of Comparative Zoology, Harvard University; Prof. J. Smiley, University of Idaho; Prof. B. Smith, East-West Center, Honolulu; Dr W. Smith-Vaniz, Philadelphia Academy of Sciences; Dr A. Solem, Field Museum, Chicago; Dr Michael Soule, University of California, La Jolla
- Switzerland: Mr H. Webber

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APPENDIX 5 FINANCIAL STATEMENT

During the year total funds available to the Museum (excluding amounts for construction and maintenance of buildings and purchase of furniture) increased to \$1,355,442, almost 33 per cent more than the previous year's figure of \$1,019,832. Income increased by 38 per cent to \$1,281,525 compared with \$927,566 in 1972-73. Whilst funds from State Government increased to over \$1,008,581, 30 per cent higher than in the previous year, funds provided by way of grants and contracts rose by an extraordinary 159 per cent to \$173,510. Thus N.S.W. State Treasury contributed 78 per cent of the Museum's total income during the year compared with 83 per cent in the previous year. Increased activities through the year led to an increase in total expenditure of 38 per cent more than the previous year (\$1,312,464 compared with \$945,915), an increase 5 per cent greater than the rise in income. Salaries accounted for 69 per cent of the expenditure in the current year compared with 73 per cent in 1972-73 but gross payments by way of salaries increased by 32 per cent over the previous year. With expenditure running ahead of income the Trustees were forced to liquidate investments of \$30,000. Investments and cash reserves stood at \$42,978 at the end of the year compared with \$73,917 at 30th June, 1973, and \$92,266 at 30th June, 1972.

With invested funds under heavy pressure because of rapidly rising expenditure and a greater dependence on funds other than those from State Treasury, which are not increasing as rapidly as is necessary to maintain the Museum's programmes, the year ahead is likely to be a difficult one financially.

**THE AUSTRALIAN MUSEUM
CONSOLIDATED FINANCIAL STATEMENT
FOR YEAR ENDING 30TH JUNE, 1974**

										1974	1973
										\$	\$
RECEIPTS											
Balance at 1st July, 1973	..	..	..	..	..	..	..	..	..	73,917	92,266
Treasury appropriations, etc.	..	..	..	..	..	..	..	..	..	1,008,581	774,142
Trustees account	..	..	..	..	..	..	..	..	..	53,747	50,841
Grants and contracts	..	..	..	..	..	..	..	..	..	173,510	66,932
Donations, etc.—special projects	..	..	..	..	..	..	..	..	..	45,346	35,651
										<u>1,355,442</u>	<u>1,019,832</u>
PAYMENTS										\$	\$
Salaries	..	..	..	..	..	..	..	..	..	914,815	691,374
Stores and equipment	..	..	..	..	..	..	..	..	..	126,484	80,100
Travel	..	..	..	..	..	..	..	..	..	45,341	26,801
Other Payments	..	..	..	..	..	..	..	..	..	225,824	147,640
Balance at 30th June, 1974	..	..	..	..	..	..	..	..	..	42,978	73,917
										<u>1,355,442</u>	<u>1,019,832</u>

**THE AUSTRALIAN MUSEUM
STATEMENT OF RECEIPTS AND PAYMENTS
FOR THE YEAR ENDED 30TH JUNE, 1974**

CONSOLIDATED REVENUE—RECEIPTS

	1974 \$	1973 \$
Appropriations	979,581	735,642
	<u>979,581</u>	<u>735,642</u>

TRUSTEES FUNDS—RECEIPTS

	1974 \$	1973 \$
Balance as at 1st July, 1973	49,713	40,163
Consolidated Revenue—		
Statutory Endowment	2,000	2,000
Contribution towards Museum Requirements	27,000	36,500
Museum Shop Sales	22,152	19,453
Australian Natural History Magazine Sales	6,189	439
Red Telephone	177	170
Photocopies	430	850
Grant by BHP Ltd for Film Production	8,000	11,165
Cinefilm Sales	6,012	3,480
Royalties and Copyrights	4,717	4,713
Ecology Lecture Series .. .. .	..	600
National Parks and Wildlife Service—Subsidy	750	1,500
Donations	297	1,813
Interest	3,672	3,572
Miscellaneous	1,351	1,086
Sydney County Council—Subsidy .. .. .	..	2,000
	<u>132,460</u>	<u>129,504</u>

CONSOLIDATED REVENUE—PAYMENTS

	1974	1973
	\$	\$
Salaries, etc.	808,441	621,842
Meal allowances	1,512	1,021
Rent, Rates, etc.	38,557	19,498
Insurance .. .. .	..	2,480
Travelling and Subsistence Expenses	17,099	10,615
Motor Vehicles—Running Costs, etc.	9,997	4,998
Freight, Cartage and Packing	3,443	3,365
Books, Periodicals and Papers	8,913	5,563
Postal Expenses	5,998	4,467
Fees for Services Rendered	1,083	150
Stores and Provisions, etc.	48,291	35,132
Printing	10,875	8,000
Laundry Expenses	382	342
Other Insurance	2,035	2,083
Equipment for Storage of Museum specimens	19,923	16,087
Overseas Travel	2,954	..
Minor Expenses	75	..
	<u>979,581</u>	<u>735,642</u>

TRUSTEES FUNDS—PAYMENTS

	1974	1973
	\$	\$
Stock for Museum Bookshop	20,353	16,363
Stores, Plant and Equipment	30,928	20,039
Travelling Expenses	18,610	5,933
Computer Costs	7,522	3,867
Entertainment	2,351	661
Purchase of Specimens	9,848	4,736
Research Grants	1,474	2,645
Freight	38	573
Cinefilm Production	11,385	7,172
Photocopies	834	1,944
Library Purchases	712	194
Honoraria	4,364	3,590
Reprints	341	385
Printing	3,928	2,723
Red Telephone	150	185
Cost of Publishing Australian Natural History	3,988	3,337
Miscellaneous	4,013	3,444
Bonnard Exhibition .. .. .	..	2,000
Fees for Services Rendered	3,624	..
Marine Hall	1,882	..
Royalties	1,225	..
Balance at 30th June 1974	4,890	49,713
	<u>132,460</u>	<u>129,504</u>

THE AUSTRALIAN MUSEUM STATEMENT OF RECEIPTS AND EXPENDITURE

GRANTS ACCOUNT

	RECEIPTS		EXPENDITURE		BALANCE	
	1974	1973	1974	1973	1974	1973
	\$	\$	\$	\$	\$	\$
Australian Research Grants Committee	32,203	14,859	37,212	27,965	(4,012)	997
Joint Coral Reef Research Project	25,014	283	48,112	5,346	(15,956)	7,142
Ian Potter Foundation	7,600	5,651	7,999	1,932	3,570	3,969
National Geographic Society .. ..	..	9,729	387	9,342	..	387
Siboga Trust .. .. .	..	250	..	75	431	431
Bushell Trust .. .. .	..	500	..	500	..	..
Australian Institute for Aboriginal Studies	10,000	1,780	3,937	5,256	8,693	2,630
Rural Credits Development Fund ..	..	..	1,032	2,467	(610)	421
CSIRO Science and Industry Endowment Fund .. .. .	..	1,000	1,000	..	..	1,000
Prime Minister's Department—						
Australian Council for the Arts ..	250	4,300	203	1,031	6,915	6,869
Keith Hindwood Memorial Fund ..	65	803	45	2,150	1,464	1,444
Shelf Benthic Survey—						
Sewerage Outfall Study	73,613	20,653	47,094	35,322	12,604	(13,914)
CSIRO Eurobodalla Survey	2,576	..	1,436	..	1,140	..
Indonesian Exhibition	9,499	7,124	6,708	2,804	1,278	(1,514)
Australian Biological Resources Study	12,690	..	..	..	12,690	..
	<u>173,510</u>	<u>66,932</u>	<u>155,165</u>	<u>93,291</u>	<u>28,207</u>	<u>9,862</u>

AND PAYMENTS FOR THE YEAR ENDED 30TH JUNE, 1974

THE AUSTRALIAN MUSEUM SOCIETY

RECEIPTS

	1974	1973
	\$	\$
Balance at 1st July, 1973	3,294	5,269
Members Subscriptions	4,302	..
Lecture Admissions	5,952	12,165
Interest	101	126
Donations	1,460	..
	<u>15,109</u>	<u>17,560</u>

PAYMENTS

	1974	1973
	\$	\$
Lecture Fees	170	200
Members' Functions	4,940	8,173
Salaries	2,052	1,832
Stores, Equipment, and Freight .. .. .	..	395
Printing and Stationery	892	1,338
Honoraria	3,208	1,316
Postage and Mailing	1,302	510
Telephone and Miscellaneous	232	502
Australian Natural History Magazine	684	..
Miscellaneous	470	..
Balance at 30th June, 1974	1,159	3,294
	<u>15,109</u>	<u>17,560</u>

THE AUSTRALIAN MUSEUM STATEMENT OF RECEIPTS

NATIONAL PHOTOGRAPHIC

GENERAL ACCOUNT—RECEIPTS

	1974	1973
	\$	\$
Balance at 1st July, 1973	7,048	10,613
Donations	18,758	17,081
Colour Slides	580	168
Cards	..	44
Interest	244	161
Miscellaneous	500	366
Recoup from N.S.W. Grants Scheme..	1,512	..
	<u>28,642</u>	<u>28,433</u>

READERS DIGEST PROJECT ACCOUNT—RECEIPTS

	1974	1973
	\$	\$
Balance at 1st July, 1973	4,000	..
Donation—Readers Digest Association	1,850	4,000
Interest	6	..
	<u>5,856</u>	<u>4,000</u>

BANK OF NEW SOUTH WALES GRANTS SCHEME—RECEIPTS

	1974	1973
	\$	\$
Donations—Bank of New South Wales	10,000	..
Interest	81	..
	<u>10,081</u>	<u>Nil</u>

AND PAYMENTS FOR THE YEAR ENDED 30TH JUNE, 1974

INDEX OF AUSTRALIAN BIRDS

GENERAL ACCOUNT—PAYMENTS

	1974	1973
	\$	\$
Salaries	8,379	9,250
Entertainment	66	61
Printing, etc.	1,131	1,965
Clerical Assistance	2,386	818
Travel and Subsistence	767	1,777
Stores and Equipment	447	1,696
Miscellaneous	470	345
Telephone	389	..
Postage	364	405
Insurance	197	..
Photography	9,250	4,086
Grant .. .. .	..	..
Balance at 30th June, 1974	4,796	7,048
	<u>28,642</u>	<u>28,434</u>

READERS DIGEST PROJECT ACCOUNT—PAYMENTS

	1974	1973
	\$	\$
Option fees for photographs	5,745	..
Miscellaneous	11	..
Balance at 30th June, 1974	100	4,000
	<u>5,856</u>	<u>4,000</u>

BANK OF NEW SOUTH WALES GRANTS SCHEME—PAYMENTS

	1974	1973
	\$	\$
Grants	2,780	..
Equipment	2,381	..
Repairs and Maintenance	133	..
Films and Processing	815	..
Hire of Equipment	130	..
Miscellaneous	17	..
Balance at 30th June, 1974	3,825	..
	<u>10,081</u>	<u>Nil</u>

THE AUSTRALIAN MUSEUM **STATEMENT OF BALANCES AS AT 30TH JUNE, 1974**

FUNDS								1974	1973
								\$	\$
Trustees Account .. .. .	..	..	..	..	..	..	..	4,890	49,713
Grants Account .. .. .	..	..	..	..	..	..	..	28,207	9,862
National Photographic Index of Australian Birds—									
General Account .. .. .	..	..	..	..	..	..	..	4,797	7,048
Readers Digest Project .. .. .	..	..	..	..	..	..	..	100	4,000
Bank of N.S.W. Grants Scheme .. .. .	..	..	..	..	..	..	..	3,825	..
The Australian Museum Society .. .. .	..	..	..	..	..	..	..	1,159	3,294
								<u>42,978</u>	<u>73,917</u>

REPRESENTED BY									
Investments—								\$	\$
Trustees Account .. .. .	..	..	..	..	..	..	..	10,588	58,912
Grants Account .. .. .	..	..	..	..	..	..	..	26,742	8,418
National Photographic Index of Australian Birds—									
General Account .. .. .	..	..	..	..	..	..	..	5,000	5,000
								<u>42,330</u>	<u>72,330</u>
Cash at Bank and on hand—									
Trustees Account .. .. .	..	..	..	..	..	..	..	(5,698)	(9,199)
Grants Account .. .. .	..	..	..	..	..	..	..	1,465	1,444
National Photographic Index of Australian Birds—									
General Account .. .. .	..	..	..	..	..	..	..	(203)	2,048
Readers Digest Project .. .. .	..	..	..	..	..	..	..	100	4,000
Bank of N.S.W. Grants Scheme .. .. .	..	..	..	..	..	..	..	3,825	..
The Australian Museum Society .. .. .	..	..	..	..	..	..	..	1,159	3,294
								<u>42,978</u>	<u>73,917</u>