

1966-67

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PARLIAMENT OF NEW SOUTH WALES

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REPORT  
OF THE  
TRUSTEES OF THE AUSTRALIAN  
MUSEUM

FOR THE

Year ended 30th June, 1966

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*Ordered to be printed, 23 February, 1967*

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# ANNUAL REPORT

## OF THE TRUSTEES OF THE AUSTRALIAN MUSEUM

For the Year ended 30th June, 1966

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To His Excellency The Governor:

The Trustees of the Australian Museum have the honour to submit their 112th Report for the year ended 30th June, 1966.

Emeritus Professor A. P. Elkin was re-elected President of the Board of Trustees at the Annual General Meeting.

The Board remained unchanged during the year. Two honours were conferred on Trustees during the year. Emeritus Professor A. P. Elkin was appointed a Companion of the Most Distinguished Order of St Michael and St George, and Mr G. A. Johnson was made a Member of the Order of the British Empire.

### INTRODUCTION

One of the important problems facing us today is the conflict between the land hunger of our expanding communities and the need to retain undeveloped areas of countryside for their aesthetic value, for recreation, and for the conservation of plants and animals of possible future use to man. The outcome of this conflict will to a large extent depend on our ability to educate our community to make wise decisions on overall land usage. In this regard Museums have a vital role to play, for they are directly concerned with our natural history.

It is for us to decide in what kind of country we wish to live. We can, if we wish, choose to save some areas of undeveloped land to use and enjoy. In our cities we, as a community, can accept the loss of green headland and foreshore to the press of land needs, or we can, with effort, prevent the loss of such areas. To choose wisely between these alternatives, we must be aware of what we have and what is worth preserving. By revealing the richness of our natural heritage in Australia, by arousing awareness of the choices before us, and by instilling the knowledge necessary for intelligent decisions, the Australian Museum is playing an increasingly important role, particularly in regard to the 70,000 schoolchildren who come in classes to study in the display galleries and Museum Lecture Theatre each year.

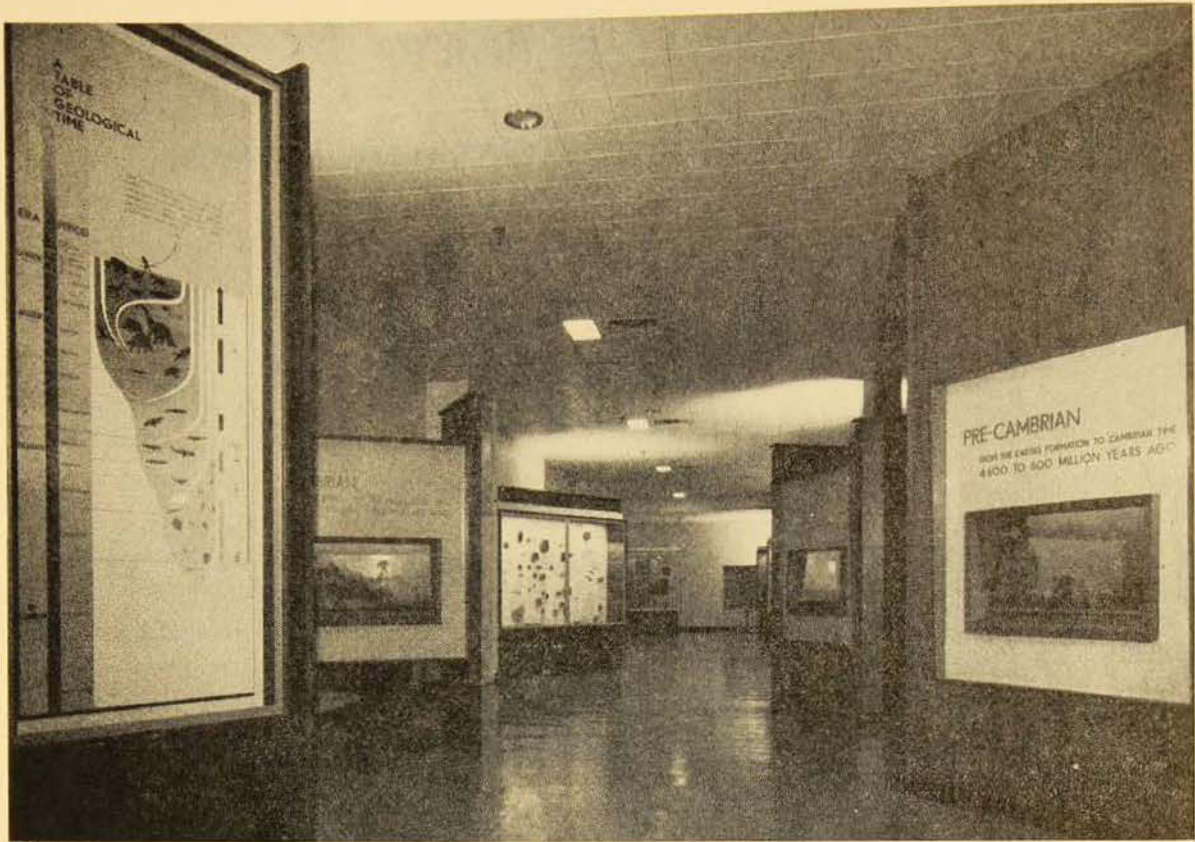
On the research side, more Museum effort must be put into investigating the effect that man is having on the unique Australian environment. The next decade should see great changes in the Australian landscape with necessary agricultural development. Greater knowledge of our fauna, and of what unique areas of both fauna and flora may be disappearing, is urgently needed. Without such a background no sane and balanced land usage policy can be developed. There are few federal and state biologists working on these problems, and co-operative effort and expansion of such work is essential, if competent advice on the conservation side of land usage is to be available to government.

These two major activities of the modern Museum, research into our natural history, and education, are indivisible. The first provides the knowledge for the second. The huge collections kept in the storage areas of a Museum are not kept because they are interesting in themselves—they are one of the aids to a knowledge of the evolution and diversity of life. As such they help us to understand our biological environment, and so, in small measure, to understand ourselves.

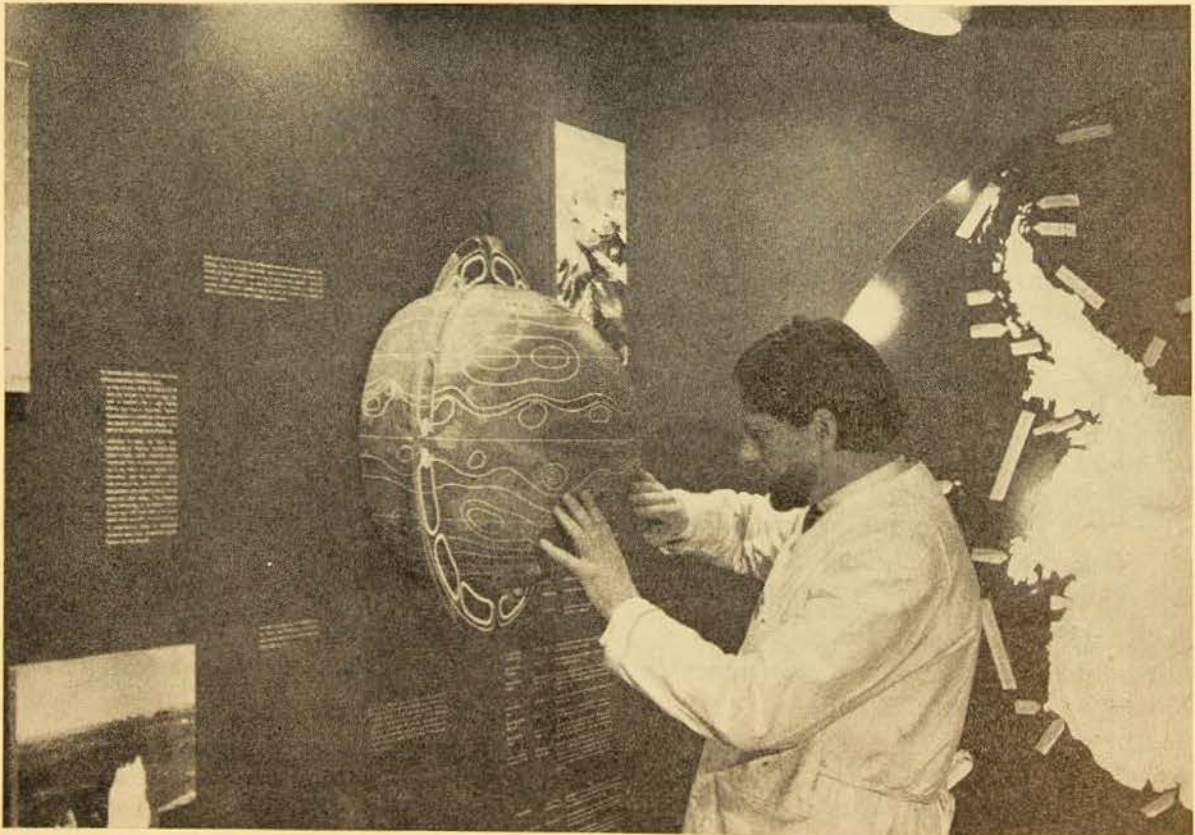
### SPACE NEEDS

The shortage of storage space is now a critical factor in the development of the Museum in that the existing building housing collections in spirit is full, and valuable collections are being placed in the unopened display halls of the new East Wing. These are needed for display development in late 1967, and it is to be hoped that the new storage and research building for which working plans have been drawn up, will be approved for building in the next financial year.





A completed section of the new Hall of Fossils which will be officially opened in November, 1966



An exhibit nearing completion in a new hall at the Museum entrance, which has been designed to display striking aspects of the geology and biology of Antarctica and Papua-New Guinea



## GALLERY DEVELOPMENTS

Work on the new Hall of Fossils has advanced rapidly and an opening date for this hall, the first to be completed in the new East Wing, has been set in November, 1966. This gallery includes a rich array of fossil material and attempts to give a fairly full idea of the forms of life co-existing in each geological period as well as their evolutionary development. It should prove valuable as a display hall for the general public, and high school and university students should also find it useful.

The south end of the Entrance Hall has been refurnished in a modern and attractive manner by the Department of Public Works, and has been designed to display striking aspects of the geology and biology of Antarctica and Papua/New Guinea, because of Australia's interest in these two Territories. Work on these exhibits is well under way.

The second hall of the new East Wing to be opened will be the Temporary Exhibitions Hall. Its first display will consist of New Guinea and Aboriginal anthropological material, which is now being prepared.

## STAFF

After giving outstanding service to the Museum as Director for 11 years, Dr J. W. Evans retired on 16th January. He will be concentrating on his entomological research, and has been elected as an Honorary Associate. The Museum has been transformed during Dr Evans' tenure of office, and the Trustees wish to place on record their indebtedness to him.

The incoming Director, Dr F. H. Talbot, took office on the 17th January. Dr Talbot was previously Assistant Director of the South African Museum, Cape Town, and held the post of Curator of Fishes in the Australian Museum from 9th September, 1964.

Dr Evans, Dr Talbot and Mr Marlow represented the Museum at the Congress of the Australian and New Zealand Association for the Advancement of Science held in Hobart in August, 1965. In addition, Miss Elizabeth Pope attended as a delegate of the Linnean Society of New South Wales.

Mr D. R. Moore joined the staff on the 1st July, 1965, as Curator in the Department of Anthropology.

Mr D. J. G. Griffin joined the staff on the 21st June, 1966, as Assistant Curator in the Department of Marine Invertebrates (Crustacea).

Dr J. C. Yaldwyn was elected President of the Royal Zoological Society of New South Wales for the year.

Miss Elizabeth Pope edited the Newsletter of the Australian Marine Sciences Association.

Dr D. F. McMichael represented the Museum on the National Trust of Australia (New South Wales), and was elected Chairman of the Montagu Island Committee and Vice-chairman of the Conservation and Landscape Committee.

## HONORARY STAFF

Many of the Honorary Associates of the Museum gave considerable aid to the Museum during the year. Mr A. Healy gave much photographic help and Mr K. Gillett aided with printing and photography. Mr A. D'Ombraïn gave much useful information on matters relating to fishes. Mr Ellis Troughton, Mr F. A. McNeill, Mr T. A. Garrard, Mr T. Iredale, Mr J. Voorwinde, Mr G. P. Whitley and Mr L. Courtney-Haines, worked regularly in the Museum during the year. Mr Garrard donated his large mollusc collection to the Museum and began registering and incorporating it. Mr Gilbert Whitley gave continued valuable service in the Ichthyology Department.

## RESEARCH AND FIELDWORK

Active research work of many kinds was pursued during the year, of which details are given in the Departmental Reports. The following selection may be mentioned to give an idea of the type of work encompassed: A study on the comparative cytology of Diptera (Mr McAlpine); a continuation of a world systematic revision of psocopterous insects (Mr Smithers); chromatography of molluscan tissues (Dr McMichael); growth changes in Honeyeaters (Mr Disney); studies of intertidal zonation (Miss E. Pope); study of butterfly migration (Mr Smithers); a systematic study of New Zealand and Australian prawns and shrimps (Dr Yaldwyn); a study of social behaviour in the marsupial *Antechinus stuarti* (Mr Marlow); a systematic study of the reptiles and amphibians of New Guinea (Mr Cogger); an archaeological survey of the Hunter River valley (Mr Moore).



Over seventy field study or collecting excursions were undertaken during the year by members of the staff, ranging from 7 weeks to 1-day trips. The major field trips were the following: A preliminary survey along the Great Barrier Reef to find a suitable site for a coral reef ecology study (Dr Talbot, Dr McMichael); ten field excursions (including two with teams of six staff members), to study the archaeology of the Hunter River Valley, and to excavate an aboriginal shelter at Sandy Hollow (Mr Moore, plus others); one for collecting insects to the Iron Range, North Queensland (Mr McAlpine); a visit to Karkar Island, New Guinea, to collect reptiles and amphibia (Mr Cogger); a visit to the Nullabor Plain, and one to the Lake Torrens Area, South Australia, to collect tektites (Mr Chalmers); four visits at spaced intervals to the burnt-out bird study area at Nowra to watch fire effects on the bird fauna (Mr Disney); a visit to Darwin to collect marine invertebrates, and study intertidal ecology (Miss E. Pope); a field trip to South Australia to study the behaviour of the endemic sea-lion *Neophoca cinerea* (Mr Marlow); one of 2 weeks to Lord Howe Island to collect reptiles (Mr Cogger); and a field trip to southeastern New South Wales to collect freshwater crayfish (Dr Yaldwyn, Mr Beeman).

## PUBLICATIONS

Four parts of *The Records of the Australian Museum* were published during the year. These were the last two numbers of Volume 26, Nos 16 and 17, and Nos 1 and 2 of the Volume 27. Nos 3 and 4 of Volume 27 are with the Government Printer.

Nos 3, 4, 5 and 6 of Volume 15 of the quarterly magazine *Australian Natural History* were published.

No. 4 was a special and larger issue, devoted to the natural history of the deserts and other arid areas of Australia's interior.

Production has begun of Australian Museum Memoir No. 12, *The Leafhoppers and Frog-hoppers of Australia and New Zealand*, by Dr J. W. Evans. The third edition of the booklet *Australian Aboriginal Rock Art*, by Frederick D. McCarthy, Principal of the Australian Institute of Aboriginal Studies, Canberra and formerly Curator of Anthropology at the Australian Museum, was in process of production; 7,000 copies of this booklet will be printed, an increase of 1,000 over the second edition.

Strong public demand for the free natural history leaflets continued. Three new leaflets—*How to Make a Shell Collection*, *Australian Leeches* and *The White-Stemmed Gum Moth* were published. Fifteen existing leaflets were reprinted and ten were in process of reprint. The total number of leaflets is now sixty-six.

As well as articles contributed to the magazine, the following scientific papers by members of the staff were published during the year:

Cogger, H. G.—

*Animals and their young*. Longmans, Green & Co. Melbourne, pp. 1-16.

A new hylid frog from Australia. *Aust. Zool.* 13: 220-223.

Griffin, D. J. G.—

The genus *Chlorinoides* (Crustacea, Brachyura, Majidae). 1. A redescription of *C. tenuirostris* Haswell and the status of the genus *Acanthophrys* A. Milne Edwards. *Rec. Aust. Mus.* 27 (1): 1-16, 11 figs.

McMichael, D. F.—

A new subspecies of *Volutaconus grossi* (Iredale) (Gastropoda: Volutidae) from North Queensland. *J. Malac. Soc. Aust.* 9: 53-56, pl. 14.

Pope, Elizabeth—

A Review of Australian and some Indo-malayan Cthamalidae (Crustacea: Cirripedia). *Proc. Linn. Soc. N.S.W.* 90 (1): 10-77, 2 pls.

Smithers, C. N.—

Supplementary note on Elipsocidae (Psocoptera) from South Africa. *J. ent. Soc. S. Afr.* 27: 216-218, 5 figs.

A Bibliography of the Psocoptera (Insecta). *Aust. Zool.* 13: 137-209.

*Caecilius soehardjani*, a new name for *Caecilius ferrugineus* Soehardjan (Psocoptera: Caeciliidae). *Aust. Zool.* 13: 136.

A note on overwintering in *Danaus plexippus* (L.) in Australia. *Aust. Zool.* 13 (2): 135-136.

Descriptions and new records of Atropetae, Psocatropetae and Amphientometae (Psocoptera) from Africa. *J. ent. Soc. S. Afr.* 28: 44-49, 5 figs.

The insects and mites associated with stored products in Queensland. 1. Psocoptera. *Q. J. Agric. Anim. Sci.* 22 (3): 259-262.

On a migration of *Vanessa kershawi* (McCoy) (Lepidoptera: Nymphalidae) in Australia. *J. ent. Soc. Qd.* 5: 67-69.



Talbot, F. H.—

A Description of the Coral Structure of Tutia Reef (Tanganyika Territory, East Africa), and its Fish Fauna. *Proc. Zool. Soc. Lond.* Vol. 145. Part 4, pp. 431-470.

*Ctenogobius cloatus* Smith, 1960. A Synonym of *Ctenogobius saldanha*. (Barnard, 1927). *Ann. S. Afr. Mus.* 48 (8). Pp. 189-193. (With M.-L. Wapenaar.)

Troughton, E. le G.—

*Furred Animals of Australia.* 8th Edition. Angus and Robertson I-XXXII, 376 pp. Plates I-XXV.

Whitley, G. P.—

Some Fish Genera Scrutinized. *Proc. Roy. Zool. Soc. N.S.W.* 1964-65, pp. 25-26.

*Mene maculata.* *Proc. Roy. Zool. Soc. N.S.W.* 1964-65, pp. 32-33, pl. IV.

Some early references to the extinct marsupial, *Zygomaturus*. *Aust. Zool.* 13 (3), pp. 228-230, pls. XVIII-XIX.

Genera Piscium: Work in Progress. *Aust. Zool.* 13 (3), pp. 231-234.

Notes on some Queensland fishes. *Aust. Zool.* 13 (3), pp. 235-243, pls. XII-XIV, text-figs. 1-5.

Yaldwyn, J. C.—

Antarctic and Subantarctic Decapod Crustacea. In: *Biogeography and Ecology in Antarctica.* W. Junk, The Hague, pp. 324-332.

Protrandrous Hermaphroditism in Decapod Prawns of the Families Hippolytidae and Campylonotidae. *Nature* 209, pp. 1366.

#### ACKNOWLEDGEMENTS OF CO-OPERATION

The Australian Institute for Aboriginal Studies, Canberra, made a grant-in-aid to Mr Moore for archaeological research in the Hunter River Valley.

The Science and Industry Endowment Fund gave a grant-in-aid to Mr Cogger towards a visit to Karkar Island, New Guinea, for further studies on New Guinea Reptiles and Amphibia.

The Division of Fisheries and Oceanography, CSIRO, donated important material to the Museum from the Gulf of Carpentaria prawn survey, and from the collecting of benthic fauna on the continental shelf from the H.M.A.S. *Gascoyne*.

The Trustees of the Taronga Zoological Park donated material including a large leopard seal.

The Australian National Antarctic Research Expedition gave great aid in obtaining seal and bird material for the new Antarctic Exhibit under construction.

#### FINANCE

Expenditure from Consolidated Revenue for the year (excluding Statutory Endowment of \$2,000) was \$236,741.84 compared with \$240,155.04 last year. Net income for Trustees' Funds (including Statutory Endowment) was \$15,764.29 compared with \$17,400.78 for 1964-65, while net expenditure amounted to \$14,774.12 compared with \$16,718.48 for 1964-65.

The cash balance in the Trustees' Account at 30th June, 1966, was \$3,102.13. Trustees' Invested Funds at 30th June, 1966, were: Fixed Deposit \$8,000; Commonwealth Inscribed Stock \$8,730; Commonwealth Special Bonds \$5,200; Metropolitan Water, Sewerage and Drainage Board Inscribed Stock \$5,000. A Statement of Receipts and Expenditure for the year is contained in Appendix A.

#### ATTENDANCE

During the year 382,107 people were recorded as having visited the Museum. As no counting device has yet been installed in the new East Wing, this once more represents considerably less than the total number of visitors. These included 24,924 children who attended classes given by the Museum teaching staff. Many other classes had to be refused because of the shortage of staff to deal with them. Additional classes comprising over 40,000 children came to the Museum and were taken through the display halls by their own teachers. Eight thousand and seventy-six children and adults attended the film screenings in vacations, and over 9,000 children used the Children's Room.



## DEPARTMENTAL REPORTS

**Department of Anthropology:** (D. R. MOORE, M.A., Dip. Anthropol., Curator; KATHLEEN POPE, Assistant).

A long-term project for an archaeological survey and excavation in the Hunter Valley was commenced with a survey of the upper Hunter and the completion of a rock shelter excavation near Sandy Hollow by parties of Museum personnel. The survey has been extended to the Singleton area and excavations completed at three points on the 200 ft contour west of the town. The material obtained was similar to the Bondaian industry excavated at Sandy Hollow. The survey has been extended to the Bulga-Milbrodale region.

Photography of cave paintings and rock carvings in the Berowra, Wollombi and Hunter Valley areas has been carried out. The excavation of an aboriginal burial reported at Windang, Lake Illawarra was carried out in August, 1965 and the skeleton deposited at the Department of Anatomy, University of Sydney. Three burials at Mona Vale were excavated and the skeletons handed over to the Police Department.

Ten field trips were undertaken during the year.

The registration and cataloguing of the large collections from the Sepik river areas of New Guinea collected by the Australian Museum expedition in 1965 by Mr D. Miles and Mr B. Craig were completed during the year and the Bulmer collection of prehistoric stone carvings from the New Guinea Highlands was registered and catalogued. The anthropological reference library and the Departmental filing system were reorganized. Reassembly of the Roth collection from North Queensland is well advanced.

A number of travelling exhibitions have been prepared, notably for Tokyo on behalf of the Commonwealth Department of Trade; one hundred and thirty Melanesian items for the Art Gallery of New South Wales; and a Maori collection for the New Zealand Trade Commissioner in Melbourne.

Requests for information from the Department both by the general public and specialists have been extremely time-consuming. The appointment of an Assistant Curator should enable this side of the work to be divided and will relieve the pressure to some extent.

The Curator contributed a series of three articles on "The Australian Aborigines: Thei, past, present and future" to the *Journal of the Rotary Clubs of Australia* in October-November 1965. He also prepared, with assistance from Mr Howard Hughes, a brochure on the Foundation for Aboriginal Affairs. On behalf of the Foundation, he prepared a submission on the same subject for consideration by the Joint Parliamentary Committee on Aborigines in New South Wales.

During the year, the Curator was elected a Member of the Australian Institute of Aboriginal Studies and Chairman of its Advisory Committee on Material Culture. He was Vice-chairman of the Foundation for Aboriginal Affairs and Hon. Secretary of the Anthropological Society of New South Wales. He also attended the Annual General Meeting of the Australian Institute for Aboriginal Studies in May, 1966.

Kathleen Pope, Assistant to the Department, gained credits in second year Anthropology at the University of Sydney and is now working on her thesis for the Diploma.

During the year the collections were studied by many people from Australian Universities, notably: Mr R. V. S. Wright, Mr R. Jones, Mr V. Megaw and Mrs J. Birmingham, all of Sydney University; Mr J. Golson, Mr J. D. Mulvaney, Mr J. Specht, Mr R. Lampert and Mr D. Cram, all from the Australian National University; Miss I. McBryde and Mr W. Webster of New England University; and also by Mrs M. Tuckson, Dr H. Spiegel, Mrs T. Kemp, Mr B. Craig, Mr I. Sim and Mr B. Plomley.

Visitors during the year included Dr Alice Keller of Basel; Professor E. Ruhe of the University of Kansas; Dr Walter Wood of Port Moresby; Professor Haynes of the University of New South Wales; Dr Schuster and Mr C. Kaufman of Basel; Dr Schultz-Westrum of Munich; Dr W. Laade of Berlin; Dr Freedman of the University of Sydney; Mr Copley and Mrs Seagrist of South Africa; Dr Dyall of Newcastle; Dr Sinoto from the Bishop Museum, Hawaii.

Thanks for donations during the year are due to Dr La Monte West; Mrs Macdonald; Mrs E. M. Smith; Mrs G. A. Minnikin; Miss J. Mackenzie; Mr A. Berglund; Mr A. S. Beveridge; Mr G. E. Core; Mr and Mrs T. H. May; Mrs R. Long; Miss G. Rodway; Mrs M. Baldwin; Mr F. Slip; Mrs Trezise; Mr W. Langford-Penny and Dr Dyall. The only purchases during the year were five Arnhem Land bark paintings collected by Mrs Sandra Holmes.

**Department of Entomology:** (C. N. SMITHERS, M.Sc., Curator; D. K. McALPINE, M.Sc., Assistant Curator; JANET WALSH, Laboratory Assistant, from 3rd November, 1965; G. A. HOLLOWAY, Technical Assistant, from the 14th March, 1966; KLARA C. KOTA, Assistant; JANET L. A. O'HARA, Assistant, until 13th August, 1965).

Research has continued on the taxonomy of African, Australian and Indonesian Psocoptera by the Curator. A request for a revision of New Zealand Psocoptera has resulted in virtually all available New Zealand material of this order being sent to the Curator for study. Preliminary work on the ecology and anatomy of Psocoptera was commenced. Work on a world list of Psocoptera species was commenced and a manuscript is now in press. Migration studies of *Danaus*



*plexippus* and other species has continued with the assistance of voluntary co-operators in many parts of the country. Parasites have been reared from *D. plexippus*. Life history work on the moth *Orgyia anartoides* was carried out and a paper is in preparation.

The Assistant Curator has been working on the cytology of Diptera and the systematics of Heleomyzidae. Studies were made of an Anthomyzid associated with wild arums.

Much fieldwork was undertaken during the year; thirty-two one-day trips were made for the study of butterfly migration and for collecting. Longer trips were made to northern coastal New South Wales, to the Upper Allyn, to southern New South Wales, the Dungog area, and to the Iron Range in northern Queensland.

Seven thousand five hundred and eighty-five specimens were added to the Departmental collections during the year and the G. H. Hardy collection was also acquired. One hundred and thirty-seven type specimens were registered, and a large number of spirit-preserved paratype Psyllids were registered. In the dry collection new material has been sorted and added to the collection. Rearrangement and incorporation of old material into the collections has continued with the movement into new cabinets. The butterfly genus *Ornithoptera* and several families of Diptera have been rearranged as well as the Coccid (scale insects) collection. A large part of the moth collection was transferred to new cabinets. The rearrangements necessitated the transfer of the Australian Orthoptera collection and the Waterhouse butterfly collection to other storage areas.

In the spirit collection, work has continued on rearrangement and sorting of unidentified material. Some parts of the spirit collection have been rebottled including the Waterhouse larval butterfly collections and several groups of arachnids. Material of the following orders have been sorted prior to despatch to specialists for study: Diplura, Ephemeroptera, Coleoptera, Dermaptera, Odonata, Thysanoptera, Strepsiptera. Some of the slide collection has also been arranged. Collections of material have been sent to seventeen specialists for study.

One thousand six hundred and thirty-nine inquiries from the public were dealt with during the year. Forty-one visitors entered the Department to study the collections or discuss entomological matters with the scientific staff. During the University vacations in December, 1965, and early 1966 the services of a student were obtained. This proved extremely satisfactory. It was possible to use the knowledge of the student in several tasks, such as rearing specimens and life-history recording, sorting less obviously differing species etc. It is to be hoped that similar assistance can be obtained in future years.

The Curator accepted the task of editing the News Bulletin of the newly formed Australian Entomological Society.

Identification of material was carried out for the CSIRO, the Forestry Commission and the Department of Agriculture as well as several overseas research workers.

An exhibit was arranged for a *Conversazione* held at the University of New South Wales by the Linnean Society. The Curator was elected to represent the Royal Zoological Society of New South Wales on the Council of the Australian Entomological Society.

The Curator and Assistant Curator have continued to work in close collaboration with the CSIRO on the production of the new textbook of Australian Entomology. The Curator visited Canberra for a few days to discuss insect migration work and the Assistant Curator spent some time at the University of Melbourne studying cytological techniques.

Appreciation is due to the voluntary assistance given to the Department by Mrs V. Gregg—spiders; Mr L. Courtney-Haines—Lepidoptera; Mr J. Peters—Migration work.

#### **Department of Herpetology: (H. G. COGGER, M.Sc., Curator; ROBYN D. SPALWIT, Assistant).**

Apart from several minor taxonomic studies of Australian reptiles and frogs, current research has been largely concerned with the systematics of the herpetofauna of New Guinea. Also, a series of keys to the reptiles and amphibians of Australia have been prepared specifically for use by field workers and it is hoped that each of these will eventually be published, family by family, together with appropriate check-lists.

Assisted by a grant from the CSIRO Science and Industry Endowment Fund, most of September and October, 1965, was spent on Karkar Island, off the north coast of New Guinea. Karkar Island is a dormant volcano about 15 miles in diameter and rises to more than 6,000 feet above sea level. It is separated from the New Guinea mainland by a narrow, deep water strait. The purpose of this visit was to study the composition, distribution and ecology of the reptiles inhabiting an island which has been separated from the mainland throughout its geological history, and which possesses such a rich variety of habitats.

In June, 1966, a two-week visit was made to Lord Howe Island. The purpose of this trip was to collect and study the island's lizards, three species of which have been recorded, one erroneously. The major interest of this work concerned the degree of differentiation of populations from the small offshore islands.

One thousand four hundred and eighty-eight specimens of reptiles and frogs were registered during the year.



The material acquired in recent years can no longer be considered as readily available for research purposes. Lack of adequate storage and working space, as outlined in previous Annual Reports, has brought reorganization of the herpetological collections to a virtual standstill.

The following individuals visited the Department during the year to discuss matters of mutual interest, obtain herpetological assistance or work on the collections: Miss P. Graff, Tucson, Arizona; Dr A. R. Main, University of Western Australia; Dr H. R. Bustard, Australian National University; Mr S. Gorham, New Brunswick Museum, Canada; Dr T. Schultze-Westrum, University of Munich; Mr H. Butler, Western Australian Museum; Mr E. J. Morris, California Academy of Sciences; Mr D. Horton, University of Melbourne; Professor C. H. Campbell, School of Public Health and Tropical Medicine, University of Sydney; Miss D. Levitt, Groote Eylandt; Mr N. B. Blood, Madang, New Guinea; Mr A. A. Martin, University of Melbourne; Mr D. Stammer, Mount Isa, Queensland.

Collections of particular interest were received from the following people to whom our thanks are due: Mr J. Dixon (reptiles and frogs from coastal New South Wales); Mr F. Parker (reptiles and frogs from New Guinea); Miss D. Levitt (reptiles and frogs from Groote Eylandt); Mr W. Irwin (frogs from New Guinea); Dr W. Dawbin (reptiles and frogs from the British Solomon Islands); Dr B. MacMillan (reptiles from Darwin and Cocos Islands); Mr D. Stammer (reptiles from Mount Isa, Queensland); Mr I. Straughan (type specimens of frogs from Queensland and New South Wales); Mr P. Lewis (lizards from Yuendumu, Northern Territory).

During the year a display of live reptiles used in current research was provided for a Conversation of the Linnean Society of New South Wales at the University of New South Wales.

The Curator attended the inaugural meeting of the Australian Society of Herpetologists at the University of Melbourne in August, 1965. He gave a number of lectures to various natural history societies during the year.

**Department of Ichthyology:** (F. H. TALBOT, M.Sc., Ph.D., until 17th January, 1966, Curator; SONDR E. BERESFORD, ASSISTANT).

Work during the year was concentrated on completing a manuscript on an ecological survey of tuna off South Africa, which was sent to press, and on a world wide revision of the snapper or hussar genus *Lutjanus*. At the request of the Department of Fisheries, Victoria, a key for the identification of Victorian flatheads was prepared. The work for this was done by Mr B. Goldman under the supervision of the Curator.

A field trip to the Great Barrier Reef was undertaken to collect *Lutjanus* material, study members of this family underwater, and search for an area suitable for a study of coral reef fish distribution and feeding. A field trip was also made to study the marlin catch brought in by the large interclub game fishing competition held annually at Port Stephens.



This coelacanth fish—*Latimeria chalumnae*—was purchased during the year and is to be displayed in the fish gallery. Coelacanths were thought to have become extinct at the close of cretaceous times about 80 million years ago but living specimens are now being caught off the South African coast



Useful collections of fishes were obtained during the year from the field trips mentioned above. Mr George Coates of Townsville continued his long and valued association with the Museum and sent down some interesting collections of fishes from the Great Barrier Reef. Local collecting in Port Jackson surprisingly yielded rare species.

An important acquisition during the year was a fine 4 ft specimen of *Latimeria chalumnae*, the famous coelacanth or "fossil fish" purchased from the Comorian Government. This, the first specimen in Australia, is to be displayed in the Fish Gallery.

Thanks for material, or for assistance in various ways during the year, are due to the following people and organizations: the CSIRO Division of Fisheries and Oceanography; the New South Wales Department of Fisheries; Mr George Coates, Townsville; Miss Carmel White, Australian National University; Mr B. Goldman, Sydney University; Sydney Game Fishing Club; New South Wales Game Fishing Association; Dr R. Catala, New Caledonia; Mr Fitzmaurice, Kurramine; Mr P. Goadby, Sydney; Mr G. Goadby, Sydney; Mr G. Biddle, Grafton; Mr R. Poulson, Heron Island; Department of Harbours and Marine, Brisbane; Master Peter Wurth, Sydney; Master David White, Sydney.

Popular and scientific inquiries continued to be heavy during the year. Aid in the identification of material was given to many hundred members of the public. Archaeological material was identified for the Department of Archaeology, Australian National University. Information on the fishes of the Hawkesbury-Broken Bay area was given to the Park Service, Bureau of the Lands Department, New South Wales, for publication. The compilation of a national list of skin diving records presented problems of identification and standard common names, and aid was given to the clubs involved in this work.

The Curator attended the A.N.Z.A.A.S. meetings in Hobart in 1965, and the Marine Sciences Association Meeting at Eagle Hawk Neck which preceded it. A number of seminars and public lectures were given during the year.

**Department of Invertebrates (Crustaceans, Coelenterates):** (J. C. YALDWYN, M.Sc., Ph.D., Curator; D. J. G. GRIFFIN, M.Sc., Assistant Curator from 21st June, 1966; KATHERINE A. TROUTT, Assistant).

Work continued during the year on various research projects. The Curator's major project, the long-term revision of the Crustacea Decapoda Natantia (shrimps and prawns) of New Zealand and their relationship to the Australian fauna, moves slowly ahead. Several manuscripts dealing with aspects of this project are currently in preparation or in press. The Assistant Curator was appointed on 21st June.

A ten-day field trip to southeastern New South Wales, was made with Mr F. J. Beeman in February. The object of this trip was to obtain a series of freshwater crayfish from this virtually unsampled area. Specimens of three genera were taken from the watersheds of the Clyde, Moruya, Tuross, Bomballa and upper Snowy rivers.

Several days were spent in Brisbane in May to attend meetings of the Australian Marine Sciences Association. Five days were spent in June at the National Museum, Victoria examining and reorganizing their Crustacean collections.

The major acquisition during the year was the CSIRO Division of Fisheries working collection from the Gulf of Carpentaria prawn survey. This collection consists of a selected series of all the fish, crustaceans, worm, echinoderms and other invertebrates as recognized, named or code numbered by the survey team working under Mr I. S. R. Monro during two years at the Karumba field laboratory. Other important acquisitions during the year include commensal crabs with photographs from the Great Barrier Reef (Miss J. Booth); type ostracods from Tasmania (Dr K. McKenzie, Monash University); type copepods from Tasmania and Queensland (Dr I. A. E. Bayly, Monash University); type isopods from Tasmania (Miss A. J. A. Green, University of Otago), and a series of selected macrophthalmid crabs from Queensland and Northern Australia (Mr R. S. K. Barnes). Many of the smaller collections have been intergrated with the main collections during the year.

During the year information was given to the CSIRO Division of Fisheries on unexploited potentially-commercial crustacean species. Aid was given to the following: Dr A. A. Racek of the University of Sydney (literature of penacid prawns); Dr D. Fielder, University College of Townsville (literature and distribution of palaemonid prawns); Dr and Mrs A. H. Banner, University of Hawaii (literature of alpheid shrimps); Dr W. D. Williams, Monash University (distribution and literature on fresh water shrimps and other organisms); Canterbury Museum, Christchurch (information on fossil New Zealand Crustacea); Mr B. M. Campbell, Queensland Museum (distribution of grapsid crabs); Professor W. Stephenson, University of Queensland (literature of swimming crabs); Mr R. S. K. Barnes, University of Queensland (literature and distribution of ocypodid crabs).

The following visitors worked on the collection and literature in the Department during the year: Dr R. George, Western Australian Museum—ocypodid crabs. Mr E. F. Riek, CSIRO Entomology Division—freshwater crayfish. Mr Brian Jones, CSIRO Division of Fisheries—commercial Crustacea. Mr H. Genthe, Allan Hancock Foundation, Los Angeles—oceanic shrimps. Miss May Rees, University of Queensland—portunid crabs. Mr R. S. K. Barnes, University of Queensland—ocypodid crabs.



During the year, Mr F. A. McNeill, previous Curator of this Department and an Honorary Associate of the Museum, completed a major manuscript on the decapod Crustacea of the British Great Barrier Reef Expedition 1928-29, and submitted it for publication to the British Museum (Natural History). Three manuscripts were submitted for publication by the Curator during the year. These were a joint account with R. G. Wear of Victoria University of Wellington of a new species of the blind, burrowing shrimp *Jaxea*; a short account of copulation in the crab *Hemigrapsus crenulatus* and an account of the shrimps taken during the Royal Society Expedition to southern Chile in 1958-59.

**Department of Invertebrates (Worms and Echinoderms):** ELIZABETH C. POPE, M.Sc., Curator; JANET WALSH, Assistant (1st July, 1965, to 3rd November, 1965); ELIZABETH CRAIG-SMITH, Assistant (15th October, 1965, to 2nd June, 1966).

Work during the year was concentrated on the taxonomy of barnacles from tropical Australia including the Gulf of Carpentaria, a collection from Bountiful Island made by Dr Yaldwyn and a collection from Darwin. A new record for Australia was found among them. Preliminary statistical data were gathered concerning the frequency of occurrence of the Gephyrean worm *Phascolion* in Turritellid mollusc shells from an area in Dr McIntyre's benthos survey, and investigations made of the relationship of the worm and mollusc. This material will be passed to Dr Edmonds of South Australia for inclusion with his systematic account of the worm. An account of the zonation of the intertidal zone at Darwin is being prepared for publication and has reached the second draft stage. Further identifications of molluscs, coelenterates and bryozoa are awaited before the final draft is complete. It is hoped that the paper will be finished within two to three months. Field trips were made to Northern New South Wales from 24th to 27th September, and to Darwin, Northern Territory, from 8th to 30th October, 1965. Substantial collections resulted and an ecological study of the intertidal zonation at Darwin was made. In addition several local field trips were carried out in connection with collections needed for gallery exhibits and a number of trips have been made during weekends with a group from the local Underwater Research Group who are specially associated with this Department.

During the year the reorganization of sponge collections both wet, dry and preserved was completed.

New catalogues have been typed. Duplicate material from *Endeavour* collections has been sorted, dried and incorporated in the dry collections. Collections of all species of Australian chthamaliid barnacles were distributed to fourteen institutions and workers overseas. This was to repay in part the kindness of Museums which allow the Curator to work in their collections and in part to solicit in exchange barnacle genera and species not represented in the collections of the Australian Museum. Valuable material has been received and is being added to the collections. Important additions to the collections during the year were made from the Curator's field trip to Darwin, Northern Territory; from the CSIRO Division of Fisheries and Oceanography Prawn Survey in the Gulf of Carpentaria, and from a group of Sydney skin divers making collections of rarer local subtidal fauna. A large series of serpulid worm from the eastern half of Australia was presented by Dr Dale Straughan, including new types of genera and species in manuscript.

A second batch of echinoderms from the Abrolhos Islands has been received from the St Aquinas College (Perth) Expedition and contained rare material. Notable local sea urchins and crinoids have been taken subtidally in Port Hacking, and Sydney Harbour by Mr C. Lawler's group of scuba divers and by Mr D. Wilson. These have included *Toxopneustes pileolus*, the second record in Australia and the first in New South Wales of this poisonous sea-urchin.

Aid was given during the year to other scientists or scientific institutions, including the following: Drs Pawson, Jones and R. Manning from the U.S. National Museum, Washington; Professor Webber of Pennsylvania State University, U.S.A.; Dr Irene Bernasconi, Argentine Museum of Natural Sciences; Report on information on *Acanthaster planci* (Crown of thorns starfish) for the CSIRO and Queensland Department of Harbours and Marine jointly; Dr E. Robinson, University of New South Wales; Dr Pickett, Department of Mines, N.S.W.; Dr Foster of Auckland University, New Zealand; Mr R. Price, School of Botany, Melbourne University.

Visitors during the year included: Professor George Knox, New Zealand; Professor J. H. Prince, Ohio State University, U.S.A.; Misses Brenda Walter and Jean Reed under the auspices of the Internat. Fed. Univ. Women; Dr Rai of Australian National University; Professor Alec Stock, New England University; Sir Gilbert Archie, New Zealand and Professor and Mrs Lorus Milne.

The Curator attended the Australian Marine Sciences Conference at Eaglehawk Neck, Tasmania; the ANZAAS Congress in Hobart; and the Australian Marine Sciences Association Conference on "Tropical and Subtropical Marine Science" in Brisbane in May, 1966. A course of four lectures was given by the Curator on "Intertidal Zonation" under the auspices of the Zoology Department, University of New England, partly at their field station at Arrawarra and partly at the New England University in Armidale. While in Darwin talks were given to their adult education group, to Rotary and to the local Underwater Spearfishermen's Association. Five additional talks were also given during the year. The Curator was a Councillor and Vice-President of the Linnean Society of New South Wales during the year, a Councillor for the Australian Marine Sciences Association and Editor of the quarterly Newsletter and served as President of the Warrah Sanctuary Trust.



**Department of Malacology:** (D. F. McMICHAEL, M.A., Ph.D. Curator; JANICE E. CAVE, Assistant).

Some progress has been made with a study of the chromatography of molluscan tissues, Janice Cave having worked in association with the C.S.R. Research Laboratories at Roseville, and further work having been done in the Department. It is proposed to pursue this work further during the coming year when additional equipment may be available. Continued research on the family Volutidae has included dissection of a number of additional species and in this regard much help has been received from C. S. Weaver of Honolulu who has provided a number of rare species for dissection. A chapter on Freshwater Mollusca of Australia was completed with an illustrated key for their identification. Further research on material from archaeological sites and on fossil land and freshwater molluscs has been done. A start has been made on the development of marking methods for marine molluscs, for use at One Tree Island. Preliminary tests are being made at Bottle and Glass Rocks, Vacluse. Some time has been devoted to library research into the biological problems associated with marine National Parks.

The major field work was seven weeks in Queensland with Dr Talbot and Mr Cameron, when a survey of various Great Barrier Reef Islands was made. General collections were made but most time was devoted to the search for living Volutidae so that suitable tissue extracts for chromatography could be made. A number of species were located. A short visit to the South Coast of New South Wales was made in October, when land snails were collected in company with Dr Alan Solem of the Field Museum of Natural History, Chicago, and Dr A. W. B. Powell, of the Auckland Institute and Museum, Auckland, New Zealand. One-day field trips were made to Long Reef, Bottle and Glass Rocks, Berowra Waters, Quarantine Bay, and dredging was done between the Heads.

Steady progress has been made with Curatorial work on the shell collections. Reboxing of the marine bivalves has continued and selected groups have been revised or rearranged as the occasion demanded. Janice Cave has continued with her respiriting of the wet collections and these have been placed in better order. The R. C. Malkin collection of mainly west coast American shells was unpacked and arranged for incorporation into the collection. The reorganization of the shellgrit and dredging collection continued and is now in a satisfactory state. Plans for the new spirit room were approved and work has commenced on this. It is hoped that the spirit collections can be transferred from the old spirit house during the year.

The major acquisition during the year was the large general collection of Mr T. A. Garrard, Honorary Associate, who is at present transferring the collection to the Museum, registering and incorporating it. It consists of thousands of lots of shells, many of them rare species and some paratypes and will be a major addition to our holdings. Other important material was received from the CSIRO Division of Fisheries and Oceanography, who presented the collections of the Gulf of Carpentaria prawn survey, and material collected by CSIRO, working from H.M.A.S. *Gascoyne* on the Australian continental shelf, was also incorporated into the collection. Selected material was collected during field work in Queensland.

Visitors during the year included Dr Alan Solem, Field Museum of Natural History, Chicago; Dr A. W. B. Powell, Auckland Institute and Museum, New Zealand; Mr John Peake, British Museum (Natural History); Dr Yoshio Kondo and Mr George Arneman, Bishop Museum, Honolulu; Mr T. A. Darragh, National Museum of Victoria; Dr Ian Hiscock and Dr Brian Smith, Monash University, Victoria; Dr Paul Fisher, formerly Director, Heron Island Marine Station; Dr Nell Ludbrook, South Australian Department of Mines; Mr P. J. Coutts, Australian National University; Mr V. Megaw, Department of Archaeology, University of Sydney; Mr N. Robinson, CSIRO Wildlife Division.

During the summer vacation, Lesley Mulligan worked in the Department for six weeks, during which time she was able to unpack and label the R. C. Malkin collection which had been awaiting attention for some years. She has continued to assist in a voluntary capacity from time to time since that date. Margaret Barber also gave voluntary assistance during the university vacation. Messrs T. A. Garrard and J. Voorwinde have continued regular work at the Museum and their assistance is greatly appreciated. The former has concentrated on identification and is working towards the production of a checklist of Queensland Mollusca, while the latter has sorted large quantities of small shells and is revising the Rissoacea, a large group of small gastropods.

The Curator continued as honorary Secretary/Treasurer of the Malacological Society of Australia and edited Journal No. 9 of the Society. He also acted as Editor for the Australian Marine Sciences Association. The Curator gave popular science lectures to a number of shell collector groups including the Conchology Section of the Royal Zoological Society of New South Wales, and the Branches of the Malacological Society of Australia at Sydney, Melbourne, Proserpine and Townsville.

**Department of Mammalogy:** (B. J. MARLOW, B.Sc., Curator; GAI FELL, Assistant, until 22nd July, 1965; JANET L. A. O'HARE, Assistant, from 11th August, 1965).

Studies on the social behaviour of the small dasyurid, *Antechinus stuarti*, have continued and a new observation cage has been constructed. This cage is fitted with time switches which allow the light to be changed from white to red, and in this way it is hoped that a reversal of daily behaviour pattern may be induced. This will allow observations to be made on the animals under red light during the day. A field study of the social and reproductive behaviour of the sea-lion, *Neophoca cinerea*, has been initiated and possible sites for long term investigation have been examined. It is hoped to compare the reproductive and social behaviour of this sea-lion with that of the closely



allied New Zealand sea-lion, *Neophoca hookeri*, and also with fur seals, *Arctocephalus*, in Australasian waters. The general biology of *Neophoca cinerea* is very poorly known when compared with other eared seals such as *Arctocephalus pusillus* of South Africa and *Callorhinus ursinus* of North America.

The opportunity to collect small mammals in Tasmania was taken during a visit to Hobart for the ANZAAS Congress in August, 1965. The species collected included the small dasyurid, *Antechinus swainsoni* and the native rodent, *Rattus lutreolus*. A party of Museum Assistants was taken into the field at Upper Allyn near Barrington Tops between 19th and 21st January, 1966, for initial instruction in techniques of collecting and preparing specimens in the field. The party was given instruction in various methods of collecting specimens, e.g. trapping, mist netting, spotlighting. The specimens so obtained were then measured, weighed and prepared as study skins and skulls under field conditions. It is hoped that further training expeditions may take place at a later date. A visit was made to South Australia between 6th and 20th June, 1966, to investigate possible sites for a comparative study of the hair seal, *Neophoca cinerea*. Colonies on the mainland and Kangaroo Island were investigated and a visit was made to one of the many islands in Spencer Gulf which have populations of seals. The continued accessibility and elevated vantage point of Point La Batt on the mainland are factors of considerable importance in comparison with the islands which are difficult of access and of low elevation.

Acquisitions during the year included a female leopard seal, *Hydrurga leptonyx* donated by Taronga Zoological Park and two Weddell seals, *Leptonychotes weddelli* and a crab-eater seal, *Lobodon carcinophagus* donated by A.N.A.R.E. This material was of considerable value because of the paucity of seal material in the collection. A valuable collection of bats and cuscuses was donated by Dr W. Dawbin of Sydney University who collected them while in the Solomon Islands. The allotype of *Canis hallstromi* which had been alive in Taronga Park Zoo was donated to the Australian Museum. The continued existence of potoroos, *Potorous tridactylus*, in the Gosford area was indicated by a receipt of a specimen from Mrs Sourey.

Reorganization of the collections and the rebottling of the spirit collections has begun. It is anticipated that this programme will take about two years. The housing for the collection of skins and skulls is still substandard and gives cause for concern. The mammal room is extremely cold and damp which provides ideal conditions for the growth of mould on the skulls which is difficult to eradicate. The new spirit house is urgently needed for proper storage for this valuable material.

During the year, assistance was given to the following people: Dr W. Dawbin, Sydney University (dissection of dolphins); Mr Rhys Jones, Sydney University (identification of sea skulls); Miss J. Partridge, Monash University (examination of potoroos); Dr E. Manchester, Sydney Hospital (examination of mammal femora); Mr J. Veron, New England University (examination of phalangers); Dr N. Stevenson, Sydney University (photography of wombat skeletons); Dr A. Crompton, Peabody Museum (newly hatched monotreme material); Dr R. Davis, Callen Park (examination of baboon skulls); Mr J. Mahoney, Sydney University (rodents).

Visitors during the year included: Professor R. A. Stirton who studied specimens in the mammal collection; Dr Murray Johnston, Curator of Mammals, University of Puget Sound, Tacoma, Washington; Mrs Q. Seagrist and Mr R. Copley, Transvaal Museum, South Africa who visited the Museum to discuss the distribution and systematics of Australian bats.

The Curator filled the position of Honorary Secretary of the Australian Mammal Society during the year and attended the ANZAAS Meeting in Hobart and the Meeting of the Australian Mammal Society which preceded it.

**Department of Mineralogy and Petrology:** (R. O. CHALMERS, A.S.T.C., Curator; JUDITH E. NAUGHTON, Laboratory Assistant).

Work continued during the year on the morphology and physical properties and field occurrence of australites. Two months were spent in the field, one month on the Nullarbor Plain in South and Western Australia with Drs Brian Mason and E. P. Henderson of the Smithsonian Institution, Washington; and one month in two new areas in the Lake Torrens area of South Australia with Messrs A. A. and D. F. Walker and D. F. Hamlyn of Adelaide. In the latter trip the voluntary aid of the three co-workers was of great assistance.

Five hundred and eighty australites, mainly fragmentary in nature were collected on the Nullarbor Plain and 460, many of them of good shape from the Lake Torrens region. On the latter trip an unsuccessful search of sandhill country was made along Strzelecki Creek between Lake Callabonna and Innamincka, South Australia. Further work was done on the transfer of the mineral collection from the basement passageway in the Old Wing to the mineral store. Three small collections of rocks and minerals were made up for schools, and one small collection for a small Museum being established at Hill End, New South Wales. A collection of fluorescent minerals was lent to the Encyclopaedia Britannica. Crystal models have been lent to the Department of Geology, Macquarie University, for reproduction for teaching in 1967. Small portions of minerals were given to the following research workers: Mr J. F. Lovering, Department of Geophysics, School of Advanced Studies, A.N.U.; Mr John Kleeman, Department of Geophysics, School of Advanced Studies, A.N.U.; Mr Brian Gulson, Department of Geophysics, School of Advanced Studies, A.N.U.; Dr R. N. Clayton, Enrico Fermi Institute, Chicago, U.S.A.; Mr Ian Threadgold, University of Sydney; Mr W. D. Ehmann, University of Kentucky, U.S.A.; Mr Hans Voshage, Max Planck



Institute, Mainz, Germany; Professor J. Wasson, University of California, Los Angeles; Dr W. A. Hodgson, University of Otago, New Zealand; and the CSIRO Division of Radiophysics. Material was lent to Dr Brian Mason, Smithsonian Institution; to Professors Bowles and Hatherly, School of Metallurgy, University of New South Wales. Minerals were exchanged with the Department of Geology, University of Adelaide, South Australia; Dr F. H. Pough, Santa Barbara Museum, California and local collectors Messrs A. H. Chapman and D. Pohl, Sydney, and Messrs Davy and Lithgow, Broken Hill. Important donations during the year were obtained from the old Broken Hill Propriety Mine through Mr A. Campbell, Mr J. Allchin, Mr D. Mountford, Mr F. Albutt, Mr A. A. Wirth, Mr W. McDowell and Mr B. Cole.

Visitors during the year included: Professor Amalinx, Belgium; Professor Albrecht, U.S.A. (Astronomer inspecting the australite collection); Professor T. Sahama, Geochemist, Finland; Dr N. G. W. Croxford, research Mineralogist, Mount Isa Mines Ltd; Dr Mather, Geochemical and Mineralogical Laboratories Pty Ltd, Sydney; Dr Peter Howard, Chief Geologist of the International Mineral and Chemical Company; Mr G. Shaw, Curator of Display, Western Australian Museum; Mr Matta, visiting Indian Architect, for advice on building stones; Mr J. A. Fleming, London gem merchant; Mr K. W. Buchester, author of *Australian Gem Hunter's Guide*.

Four popular lectures were given during the year by the Curator and a talk on meteorites for the ABC.

Aid during the year was given to the Federal Government for its exhibit at the Montreal Exhibition; to the Curator of Geological Bureau of Mineral Resources, to the Department of Main Roads Geologist, at Wagga; to the Department of Geology, University of Sydney by preparing a cast of a stony meteorite; and to the Visual Education Section of the Department of Education. Information on Australian meteorites was given to the University of Jena, East Germany.

The Curator was given financial assistance from the Science and Industry Endowment Fund and from the British Council for an overseas trip to study collections of meteorites.

Judith Naughton passed examinations in second year Mineralogy and Petrology at the University of New South Wales enabling her to be classified as Laboratory Assistant.

#### **Department of Ornithology:** (H. J. DE S. DISNEY, M.A., Curator; ROBIN D. HAUENSTEIN, Assistant).

Two years have now been completed on collecting birds through the year mainly at the study area near Nowra to investigate sex and age differences. Some results of this work are now being worked out and a short paper has been completed to be given to the XIVth International Ornithological Congress at Oxford in July, 1966.

The banding of birds carried out by Mr Lossin, Chief Preparator, who has accompanied the Curator on his field trips has given interesting information on the return of birds to the burnt study area.

No long field trips were undertaken this year. Four visits were paid to the burnt study area at Nowra at 2 months, 4 months, 6 months and 1 year after the fire, and birds recaptured which had been banded before the fire, also notes and photos taken on the progress of regeneration by the vegetation. In December a trip was made to Narrandera and several interesting parrots were seen and collected. Two trips were made to the Upper Allyn near Barrington Tops, to study rain forest birds.

Type lists for the Department are now complete.

Four hundred and fifty-two bird specimens were registered during the year. One hundred and five specimens collected by the late Mr E. Thomas Gilliard of the American Museum of Natural History, New York, in 1953-54 and under the collecting permit had to be returned to New Guinea have been sent to us for storage until facilities are available to store them in New Guinea. These are a valuable addition to our collection of New Guinea birds. Ninety-eight specimens were donated. The Queensland Government kindly granted a permit to collect four specimens of the new Hall's Babbler, *Pomatostomus halli*, discovered by the British Museum Harold Hall Expedition in 1963 in South Central Queensland. Two hundred and twenty-six birds were collected by the Museum staff on field trips. A collection of 26 specimens from Antarctica of penguins, skuas, petrels were kindly obtained by the A.N.A.R.E. for our new Antarctic exhibit. The following rare visitors to our shores were presented by Mr P. D. Strong; a white tailed Tropic bird, *Phaeton lepturus*, a Grey-backed Shearwater, *Puffinus bulleri* and a White-headed Petrel, *Pterodroma lessoni*.

The labelling of the old collection has continued, and is now almost finished in the main store. A start has been made on the specimens stored in drawers in the Public Gallery.

The taxidermist has been busy mounting specimens for the new Antarctic Exhibit and additions have been made to the Identification Gallery.

Inquiries from the public, scientific organizations and Government Departments have numbered about 260 over the year. Most public inquiries were as usual for identification of birds seen or found dead or information on available books and societies.



Loans have been made available to other State Museums and the British Museum (Natural History) London; Monash University, Victoria and to various workers in the Division of Wild Life Research, CSIRO Canberra.

Visitors during the year included the following: Dr Carl B. Koford (National Institute of Health, Punta Santiago, Puerto Rico, U.S.A.); Professor A. J. Marshall (Monash University); Dr D. L. Serventy, Division of Wildlife Research, CSIRO Perth; Brigadier H. R. Officer, Melbourne; Lord Medway, Department of Zoology, University of Singapore; Mr I. Rowley and Mr J. Forshaw, CSIRO Division of Wildlife Research, Canberra.

Mr K. A. Hindwood, Honorary Ornithologist, has as usual visited the Museum regularly and been most helpful.

**Department of Palaeontology:** (H. O. FLETCHER, M.Sc., Curator and Deputy Director; DOROTHY JONES, Assistant).

Fieldwork was restricted to a visit to Coolah to investigate an occurrence of vertebrate remains and a visit to Milton where road excavations had uncovered fossiliferous rocks of Permian Age.

Registrations during the year numbered 211 specimens of which 124 were presented.

Donations of interest have included a Permian bivalve, hypotype *Aphanaia mitchelli* (M'Coy), from Glendon (Dr I. Browne); a series of Lower Cambrian archaeocyathids from east of Lake Torrens, S.A. (Mr W. B. Mosser); type material of a new plant, *Lepidopteris madagascarensis* Townrow, from Triassic rocks at Turrinetta Head and Coalcliff (Dr E. S. Townrow); a series of fish and plant remains from Jurassic beds at Talbragar (Mrs Horan); well preserved Silurian Trilobites, *Sphaerexochus mirus* Beyrich, from near Orange (Mr W. Simpfendorfer); a collection of excellently preserved Devonian and Carboniferous plants from Iowa, U.S.A. (Professor B. Glenister); a labyrinthodont jawbone, *Deltosaurus* sp., from Triassic rocks of the Erskine Range, W.A. (Mr D. Walker). Material received in exchange consists of a collection of models of Palaeozoic fishes (American Museum of Natural History) and a series of Brachiopods (Dr D. Macurda, University of Michigan, U.S.A.).

The rearrangement and sorting of the fossil collection has continued as time permitted and is now nearing completion. Additional steel storage cabinets have been installed in the main fossil store and the new Fossil Gallery store. The collection of fishes has been transferred into the gallery store to make space available for the extension and arrangement of the invertebrate groups of fossils. Some time was spent on sorting and checking the collection of brachiopods. During the last six months of the year all available time has been devoted to the preparation of labels for exhibits in the new Fossil Gallery and the selection of material for exhibition. This work is well advanced and the Gallery will be completed before November.

Material that was made available to other institutions for research purposes included plaster casts of chitons, *Permochiton australiensis* Iredale and Hull and *Chelodes calceoloides* Etheridge, both holotypes (Dr E. Yochelson, United States Geology Survey and Dr A. Smith, California Academy of Sciences); moulds and casts of trilobites (Dr B. Daily, University of Adelaide); casts of blastoids (Dr D. Macurda, University of Michigan); photographs of a coral, *Rhizophyllum enorme* Etheridge, (Dr D. L. Strusz, Bureau of Mineral Resources, Canberra); photographs, moulds and casts of Upper Devonian fishes (Professor E. S. Hills, University of Melbourne); moulds of Silurian trilobites (Professor H. K. Erben, Geological and Palaeontological Institute, Germany); photographs of coral, *Acanthophyllum mansfieldense* Dun (Dr D. L. Strusz, Bureau of Mineral Resources, Canberra); photographs of *Diprotodon australis* Owen (Professor D. Ride, Western Australian Museum).

A final checking of the list of type fossils is well advanced and it is hoped to have it completed and ready for publication by the Bureau of Mineral Resources within the next five months.

Approximately 230 inquiries on palaeontological matters were dealt with during the year, including the identification of a large number of fossils.

**Education Service:** (PATRICIA M. McDONALD, B.Sc., M.Ed., Education Officer-in-Charge; STELLA B. H. MAGUIRE, B.A. and ZELMA M. HARKNESS, Assistant Education Officers; Mr R. C. INDER, Technical Assistant).

The Museum lesson programmes provided for schools were very much in demand and a substantial number of applications for assistance had to be refused because of the lack of staff and facilities to cater for them. By the end of first term the rest of the year was completely booked. Even so, 520 classes, totalling 24,924 children, attended organized lessons and of these, 48 classes visited the Museum regularly once a month and several others made a series of visits. Over 40,000 children made unscheduled visits in classes. These were aided with questionnaires.

Groups of handicapped children, e.g. from St Edmund's School for Blind Boys and from Windgap School for the Mentally Retarded, were given special instruction. In addition, 230 other classes (from 128 secondary and 93 primary schools) were recorded as having visited the Museum to study the exhibits with the help of their teachers.



Two classes were taken on field trips to study the ecology of a marine rock platform and a freshwater creek; these excursions were associated with lessons at the Museum. Other requests for field work had to be refused due to lack of time.

A series of visits was made by trainee teachers from Sydney, Balmain and Alexander Mackie Teachers' Colleges; they were given lectures on the Museum educational services and some groups watched demonstration lessons. Special lectures were arranged for the trainees of the New South Wales Ambulance Transport Service Board. Students from the University of Sydney, the University of New South Wales and Sydney Technical College studied various exhibits as part of their class work.

A total of 197 collections of specimens and photographs was lent to schools during the year. The new travelling cases were much in demand and 17 loans were made of the nine cases available. A further nine cases on "Molluscs" are in course of preparation and others are planned. Many more applications were received than could be attended to because of the lack of material.

Various specimens were added to the loan collections from the curatorial departments and others were collected during field trips to local areas. Special thanks for gifts of photographs or colour transparencies for the loan collections are due to Mr A. Healy, Mr Justice Myers and CSIRO Division of Wildlife, Canberra. Mr Healy, Miss I. Bennett and the New South Wales Gould League of Bird Lovers have also allowed us to make copies of their colour transparencies for use in the travelling cases lent to schools.

Attendance at the Film Screenings held in each vacation was as follows: September, 1965, 3,096; January, 1966, 3,330; May, 1966, 1,650: total 8,076. Many of the Play Centres organized by the New South Wales Department of Education attended the film screenings during the January vacation.

The *Children's Room* has again proved popular with young visitors and some 9,000 children—and average of 253 per day—came during the three school vacations. In September, 1965, the special display there was "Skeletons"; in January, 1966, "Animals on our New Coins and Stamps" (to coincide with the introduction of decimal currency) and in May "Museum Activities". The number of regular visitors is growing steadily and these children are proving helpful with other, newer visitors.

The *Museum Walkabouts* quizzes are also maintaining their popularity with young visitors and some 815 children attempted to answer them during the year. Thirteen children have completed the whole series, including the special Walkabout on "Evolution" and are now members of the Discoverers' Club. These children meet every vacation and present papers on the work they have been studying during the term. They were taken on a field trip to study the ecology of a freshwater creek on 12th April, 1966, and subsequently prepared reports on their findings. Other activities are planned for the future.

During the week 8th-14th August, 1965, and continuing through the following school vacation, an exhibition of Children's project books, models, collections and other materials was mounted in the main Entrance Hall of the Museum. Prizes were awarded by the Museum Trustees for the best work in the various sections. The exhibition as usual attracted great interest from members of the public.

Since so many schools have been supplied with sets of the free Museum leaflets, the volume of correspondence has dropped to fairly reasonable proportions. A further 63 schools were sent 12 sets of leaflets and 654 letters from teachers and children were answered, together with countless telephone calls and interviews with students, teachers and parents.

A lecture on the Museum educational services was given to a group of teachers at Armidale Teachers' College in August, 1965, and a lecture on the Australian fauna to members of the New South Wales Exchange Teachers' Club in March, 1966. From March to May, 1966, a series of 10 lectures on marine biology was given at the Museum under the auspices of the Department of Adult Education and the Workers Educational Association. It is hoped that this co-operation may be continued in a further series of lectures by Museum staff next year.

Miss McDonald spent two days in August, 1965 in Armidale examining the education work of the Folk Museum and the School Museum. In March, 1966, she paid a visit to Canberra to select photographs from the files of CSIRO Wild Life Division for the loan cases and to visit Museums in the Capital.

Mr R. L. Jensz, Education Officer at the National Museum of Victoria, spent one week in November studying the educational services provided here. Mr Thein Maung, District Education Officer, Burma, spent some time examining the education service with the view of adapting our work to his own country and ten West African nationals visited the Museum for the same purpose under the auspices of the Commonwealth Office of Education.

**Library:** (MARY G. E. DAVIES, B.Sc., L.A.A., Librarian; LEONIE E. TAGGART, Assistant; JESSICA E. WATSON, Clerical Assistant).

During the year, 266 volumes were added to the Library, of which 189 were books, the rest being periodicals and parts of series. Of these volumes 158 were received on exchange or given to us, including a set of the current edition of *Encyclopaedia Britannica*. This generous gift was made through the kind offices of Mr J. J. Salmon Jnr, Managing Director of Encyclopaedia Britannica Incorporated. Sixty-five volumes have been bound during the year of which 50 were new binding, the rest being repairs or rebinding.



Nine hundred and sixty loans were made to Libraries all over Australia, both government and private. This is a slight decrease from last year, and is due to the increased number of photocopies being supplied instead of loans, particularly for overseas requests, which are growing. A few requests were supplied in the form of microfilm. The Museum borrowed 54 items from other Libraries and other requests were supplied as xerox or photocopies instead of the original articles. Visiting scientists and research workers both from Australia and overseas made use of the Library, as did members of the general public.

Recataloguing and new cataloguing has continued and 336 books and 140 periodicals were catalogued and classified. Two hundred and ninety three old cards have been withdrawn from, and 3,404 new cards have been inserted into, the two catalogues. Three hundred and twenty-three cards have been made for the "Union Catalogue of Monographs in Australian Libraries" and sent to the National Library of Australia, Canberra. The entries in the "Union List of Scientific Serials in Australian Libraries" (S.S.A.L.) are being checked against the Museum's actual holdings and amended cards are being sent to the publishers, CSIRO, Head Office, Melbourne. To date the letters A-S have been checked and 992 cards of amendments and new entries have been despatched to Melbourne, which include entries for new periodicals received during the year.

Visitors to the Library during the year to study Library practise or holdings included Mr Lai Nhung, (Oceanographic Institute, Nhatrang, South Vietnam); Dr R. M. Gascoigne, (University of New South Wales); and Mr R. Archbold, (South Australian Museum).

**Exhibitions Department:** (F. J. BEEMAN, Officer-in-Charge);

*Art and Design Section:* (D. RAE, B. BERTRAM, Artists; ELVIE BROWN, Ticket Writer; HELEN R. ASHTON, Production Assistant).

*Preparators' Section:* (R. WITCHARD, R. LOSSIN, K. GREGG, LORRAINE CARTER, M. CAMERON).

Approval was given for the establishment of the new position of Production Assistant in the Exhibitions Department. Helen Ashton was transferred to this position from 25th October, 1965.

Following the decision to open the Hall of Fossils in November, 1966, this Gallery has been given priority and as a result of this the other functions of this department have been restricted.

Progress on the Hall of Fossils has been satisfactory, with the sequential exhibits from Pre-Cambrian to Permian estimated to be completed early in July. This represents half the display area. The introductory exhibits are complete with the exception of the geological time scale, which is started and should also be completed in the first half of July.

Among the incidental displays, the Canowindra fish fossils of Devonian Age have been mounted in position. The glass cover to this exhibit has been temporarily installed, permanent installation depending on nomination and registration of type specimens on the slab. A reconstruction of a labyrinthodont has been modelled and is in the process of being cast, while the sandstone impressions of its tracks against which it is to be displayed have been installed. The two major murals have been commenced, one being well advanced. Other exhibits completed are the Giant Sloth, *Tyrannosaurus* skull, *Camarasaurus* Evolution of the Horse, and Diprotodon.

A total of seven dioramas were installed.

Last year detailed drawings were submitted to the Government Architect for alterations to the entrance and for new cases in the East new Wing adjoining the entrance. These plans include the Main Entrance, the shop, the Antarctic/New Guinea Gallery and an exhibit on the Races of Man. This work is under way, and contour maps of Antarctica and New Guinea are almost complete, the large steel wall map of the Pacific area is finished, and much material for this Gallery is ready.

The Main Entrance is to be redesigned with a new travertine floor, automatic glass doors, electronic eye counter, and free standing shop.

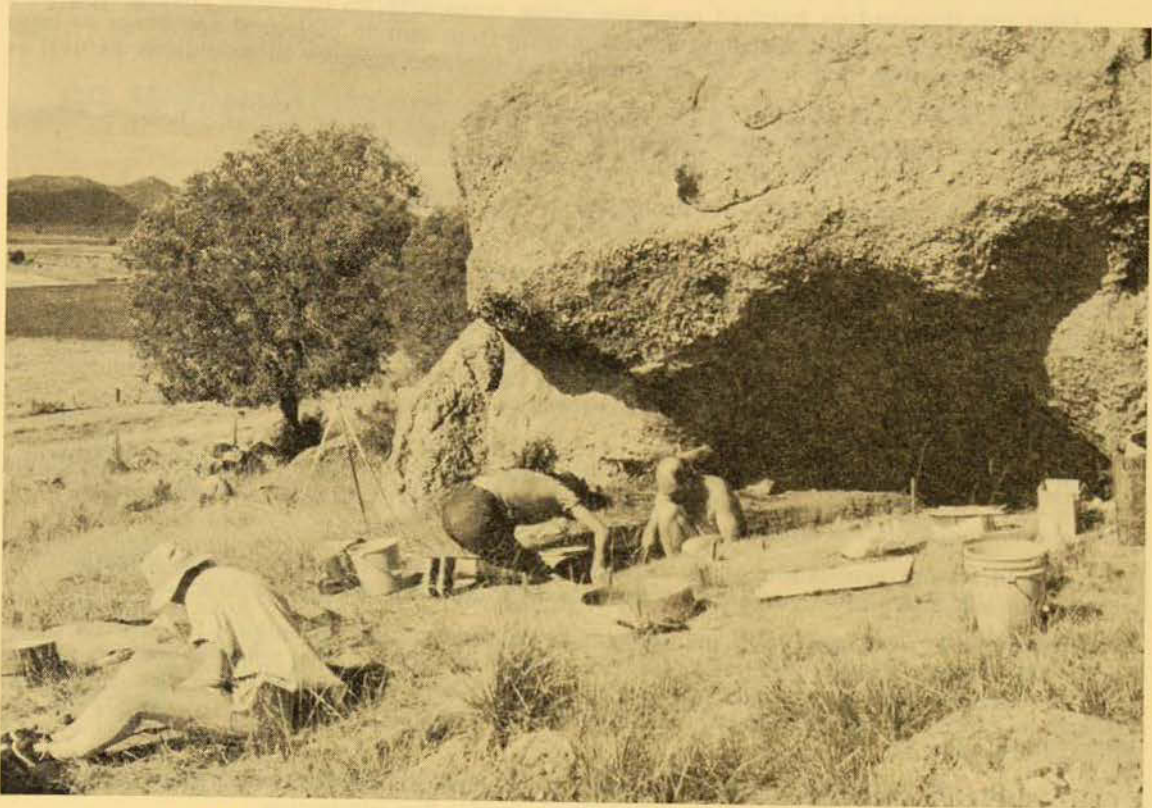
Several new exhibits were placed in the Galleries during the year. These included a pair of dolphins and an exhibit on intertidal zonation. Two large Canadian totem poles were relocated and a display of Capt. Cook's relics was prepared for the Waratah Festival.

In the Preparation Section, a number of moulds and casts was prepared during the year, including a large cast of a sunfish and a mould of a map for the Photographic Section. Three hundred and seventeen birds and 71 mammals were prepared for the collection. While A.N.A.R.E. were collecting specimens for us for exhibition, we took the opportunity of also asking them to collect seals for the collection. Three large seals were collected, skinned and the skeletons removed. A large sea leopard from Taronga Park Zoo was also skinned and skeletonized.

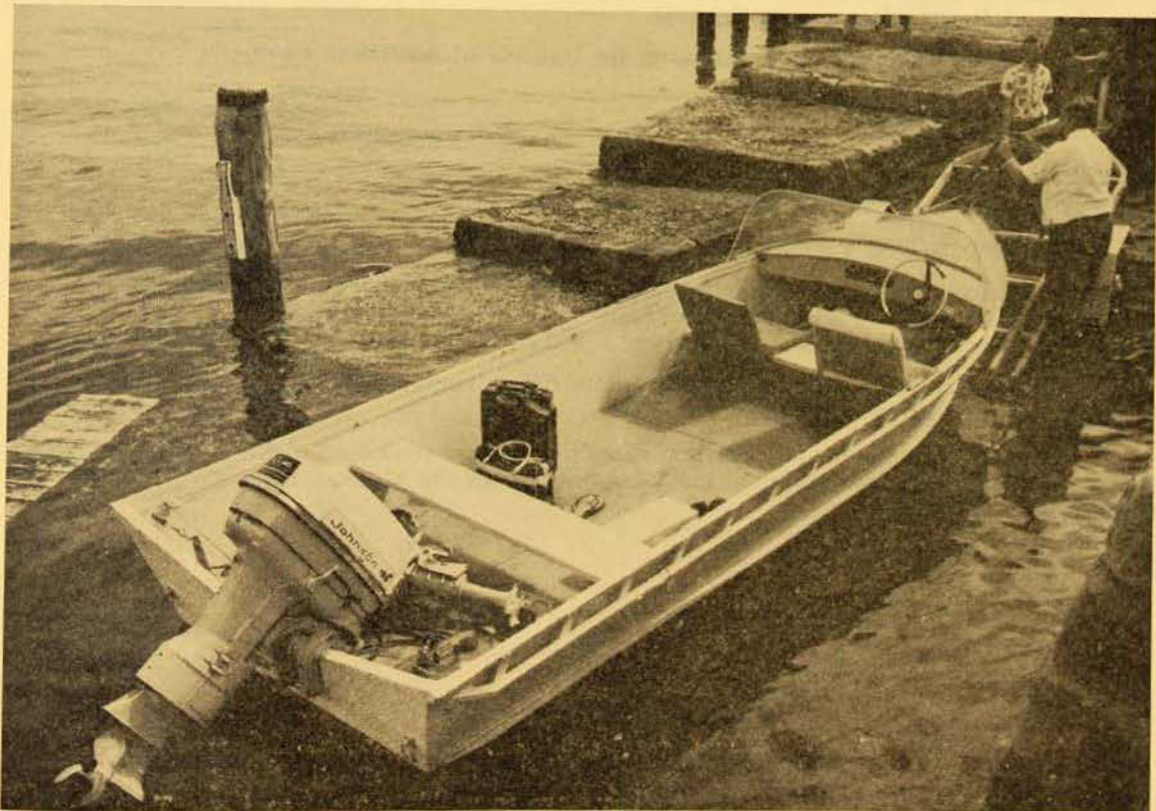
Staff training classes were held in drawing, taxidermy, articulation and silk screening. The pressure of work on the new Hall of Fossils has forced a temporary postponement of these classes until next year. Field training was given to a number of younger members of the staff in archaeological techniques and in field collecting of mammals and bird banding.

A number of visitors came to study techniques in use at the Australian Museum during the year. They included Mr G. Shaw, Western Australian Museum; Mr D. Vernon, Queensland Museum; Mr A. Coor, Institute of Applied Science of Victoria; Mr R. Stone, Museum of Anatomy, Canberra; Mr S. Smith-White, Kosciuszko State Park Trust.





A museum field party carrying out an archaeological survey and excavation in the Hunter Valley, N.S.W.



One of the museum's aluminium boats which are invaluable in marine research projects



**Photographic and Visual Aids Section:** (H. D. HUGHES, A.I.A.P., A.R.P.S. In charge; C. V. TURNER, Assistant).

Over two thousand six hundred negatives, prints, transparencies or colour photographs were made during the year. These included material ranging from minute biological specimens to large anthropological carvings, and were for Australian and overseas research organizations as well as many Museum services.

Additional work included photographs for the book *Wild Life of Australia*, being published by Ure Smith Pty Ltd, in co-operation with the Australian Museum.

Enlarged photographs have been supplied to the Museum Education Service for use in school travelling cases.

Work commenced on the production of a 16 mm colour, sound, film depicting Museum activities and this was made first priority film work for the year. Technical aspects, such as the lighting of difficult situations, were largely overcome by devious means. For important sequences the staff co-operated fully in acting out special parts, such as those of visitors, public and etc. This film work itself is practically completed, the editing of the monochrome work print is being finalized and work has commenced on writing the commentary. It is intended to have music specially prepared for the background effect.

A number of live animals were filmed (and photographed) for other projects and a short film showing some Aboriginal cave paintings and rock engravings in Central Queensland has been edited and an initial draft commentary has been prepared.

The increasing application of photography to the preparation of enlarged positive transparencies for silk screen use is reported to have expedited labelling of gallery exhibits.

Experiments were made with the application of photographic techniques for silk screening of half tone images. Initial application to gallery display involved the reproduction of difficult pencil line drawings. The photographic techniques have been developed to a stage where very satisfactory results are being obtained. Both half-tone photographs and prints in multiple colours should also be possible.

A number of one-day excursions were made to various localities for the purposes of obtaining photographs for school service travel cases and sequences for film production.

Four days were spent at the Upper Allyn River with Messrs Disney and Lossin to obtain film sequences for the film on the Museum. At the same time some habitat photographs were made for school travel cases and reference purposes.

During the year two copies of the film "White Clay and Ochre" were sold to the New Zealand National Film Library.

Professor A. P. Elkin donated 150 negatives of anthropologic subjects from Northern Australia and New Guinea during the year.

Mr Hughes was made an Associate of the Institute of Australian Photographers during the year.

**Editorial Assistant and Public Relations Officer:** (P. F. COLLIS).

Details of the year's publications appear in this Report under the heading "Publications".

The Museum continued to receive publicity in the newspapers, on television and radio, and in other media. Advertising of the publications in Sydney and Interstate newspapers continued, as also did advertising of the film screenings and of the Museum generally in Sydney newspapers.

The Editorial Assistant and Public Relations Officer continued writing a series of articles for *The Education Gazette* on the Museum's exhibits.

About 200 requests for identification of specimens were passed on to Curators by the Public Relations Officer, who also answered many inquiries about the Museum from the public and the newspapers.

A. P. ELKIN,  
President.

F. H. TALBOT,  
Director.



## Appendix A

THE AUSTRALIAN MUSEUM—SUMMARIZED STATEMENT OF RECEIPTS AND  
PAYMENTS FOR THE YEAR ENDED 30th JUNE, 1966

| RECEIPTS  |  |  |  |  |  |  |  | \$        | \$           |
|---|--|--|--|--|--|--|--|-----------|--------------|
| Appropriation Account—  |  |  |  |  |  |  |  |           |              |
| Treasury Appropriations .. .. .                               |  |  |  |  |  |  |  |           | 236,741.84   |
| Trustees' Account—  |  |  |  |  |  |  |  |           |              |
| Statutory Endowment .. .. .                                   |  |  |  |  |  |  |  | 2,000.00  |              |
| Grant towards Museum requirements .. .. .                     |  |  |  |  |  |  |  | 4,000.00  |              |
| Museum Publications—Sales and Subscriptions .. .. .           |  |  |  |  |  |  |  | 4,914.89  |              |
| Museum Shop Sales .. .. .                                     |  |  |  |  |  |  |  | 177.76    |              |
| Donations .. .. .   |  |  |  |  |  |  |  | 275.42    |              |
| Grant from Australian Institute of Aboriginal Studies .. .. . |  |  |  |  |  |  |  | 300.00    |              |
| Subsidy from Sydney City Council .. .. .                      |  |  |  |  |  |  |  | 1,000.00  |              |
| Interest .. .. .  |  |  |  |  |  |  |  | 1,665.63  |              |
| Postage Receipts .. .. .                                      |  |  |  |  |  |  |  | 414.39    |              |
| Sale of Furniture .. .. .                                     |  |  |  |  |  |  |  | 146.25    |              |
| Sale of Specimens .. .. .                                     |  |  |  |  |  |  |  | 10.00     |              |
| Rental for Cafeteria .. .. .                                  |  |  |  |  |  |  |  | 520.00    |              |
| Sale of Film—White Clay and Ochre .. .. .                     |  |  |  |  |  |  |  | 200.00    |              |
| Miscellaneous Receipts .. .. .                                |  |  |  |  |  |  |  | 69.95     |              |
|   |  |  |  |  |  |  |  |           | 15,694.29    |
| Balance as at 1st July, 1965—                                 |  |  |  |  |  |  |  |           |              |
| Cash at Bank and in hand .. .. .                              |  |  |  |  |  |  |  | 2,011.96  |              |
| Investments .. .. .   |  |  |  |  |  |  |  | 27,100.00 |              |
|   |  |  |  |  |  |  |  |           | 29,111.96    |
|   |  |  |  |  |  |  |  |           | \$281,548.09 |

| PAYMENTS                                    |    |    |    |    |    |    |    |    |              |
|---|----|----|----|----|----|----|----|----|--------------|
| Appropriation Account—                      |    |    |    |    |    |    |    |    |              |
| Salaries, etc.                              | .. | .. | .. | .. | .. | .. | .. | .. | 207,867.83   |
| Tea Money                                   | .. | .. | .. | .. | .. | .. | .. | .. | 111.60       |
| Rates                                       | .. | .. | .. | .. | .. | .. | .. | .. | 202.22       |
| Insurance on Buildings                      | .. | .. | .. | .. | .. | .. | .. | .. | 96.00        |
| Travelling and Subsistence Expenses         | .. | .. | .. | .. | .. | .. | .. | .. | 2,998.91     |
| Freight and Cartage                         | .. | .. | .. | .. | .. | .. | .. | .. | 459.38       |
| Maintenance of Motor Vehicles               | .. | .. | .. | .. | .. | .. | .. | .. | 1,279.30     |
| Books, Periodicals and Papers               | .. | .. | .. | .. | .. | .. | .. | .. | 4,400.00     |
| Fees, Commissions, etc.                     | .. | .. | .. | .. | .. | .. | .. | .. | 69.37        |
| Laundry Expenses                            | .. | .. | .. | .. | .. | .. | .. | .. | 239.40       |
| Postal and Telegraphic                      | .. | .. | .. | .. | .. | .. | .. | .. | 800.00       |
| Other Insurances                            | .. | .. | .. | .. | .. | .. | .. | .. | 1,618.20     |
| Stores, Plant and Equipment                 | .. | .. | .. | .. | .. | .. | .. | .. | 8,999.81     |
| Grant towards Museum requirements           | .. | .. | .. | .. | .. | .. | .. | .. | 4,000.00     |
| Storage Equipment                           | .. | .. | .. | .. | .. | .. | .. | .. | 3,599.82     |
|   |    |    |    |    |    |    |    |    | 236,741.84   |
| Trustees' Account—                          |    |    |    |    |    |    |    |    |              |
| Museum Publications—Cost                    | .. | .. | .. | .. | .. | .. | .. | .. | 2,694.70     |
| Stock for Museum Shop                       | .. | .. | .. | .. | .. | .. | .. | .. | 64.90        |
| Stores, Plant and Equipment                 | .. | .. | .. | .. | .. | .. | .. | .. | 8,515.74     |
| Publication Sales Receipts paid to Treasury | .. | .. | .. | .. | .. | .. | .. | .. | 284.21       |
| Postage Receipts paid to Treasury           | .. | .. | .. | .. | .. | .. | .. | .. | 585.49       |
| Travelling Expenses                         | .. | .. | .. | .. | .. | .. | .. | .. | 887.30       |
| Museum Specimens                            | .. | .. | .. | .. | .. | .. | .. | .. | 181.12       |
| Entertainment                               | .. | .. | .. | .. | .. | .. | .. | .. | 331.28       |
| Miscellaneous Expenditure                   | .. | .. | .. | .. | .. | .. | .. | .. | 133.59       |
| New Guinea Expedition                       | .. | .. | .. | .. | .. | .. | .. | .. | 1,095.79     |
|   |    |    |    |    |    |    |    |    | 14,774.12    |
| Balance as at 30th June, 1966—              |    |    |    |    |    |    |    |    |              |
| Cash at Bank and in hand                    | .. | .. | .. | .. | .. | .. | .. | .. | 3,102.13     |
| Investments                                 | .. | .. | .. | .. | .. | .. | .. | .. | 26,930.00    |
|   |    |    |    |    |    |    |    |    | 30,032.13    |
|   |    |    |    |    |    |    |    |    | \$281,548.09 |