

1962-63

PARLIAMENT OF NEW SOUTH WALES

REPORT OF THE TRUSTEES
OF THE
AUSTRALIAN MUSEUM
FOR THE
Year ended 30th June, 1963

Ordered to be printed, 26 September, 1963

Wholly set up and printed in Australia by
VICTOR C. N. BLIGHT, GOVERNMENT PRINTER, SYDNEY, NEW SOUTH WALES

1963

BOARD OF TRUSTEES

PRESIDENT :

Emeritus Professor A. P. Elkin, M.A., Ph.D.

CROWN TRUSTEE :

Frank B. Spencer

OFFICIAL TRUSTEES :

The Hon. the Chief Justice.	The Hon. the Minister for Education.
The Hon. the President of the Legislative Council.	The Auditor-General.
The Hon. the Chief Secretary.	The President of the New South Wales Medical Board.
The Hon. the Attorney-General.	The Surveyor-General and Chief Surveyor.
The Hon. the Treasurer.	The Crown Solicitor.
The Hon. the Minister for Public Works.	

ELECTIVE TRUSTEES :

O. G. Vickery, B.E., M.I.E. (Aust.).	Frank W. Hill.
Prof. A. P. Elkin, M.A., Ph.D.	G. A. Johnson.
F. McDowell.	Prof. J. R. A. McMillan, M.S., D.Sc.Agr.
R. J. Noble, C.B.E., B.Sc.Agr., M.Sc., Ph.D.	S. Haviland, C.B.E.
E. J. Kenny, M. Aust. I.M.M.	Prof. L. C. Birch, D.Sc.
F. L. S. Bell, M.A., F.R.A.I.	G. H. Slade, B.Sc.

STAFF

DIRECTOR :

J. W. Evans, M.A., Sc.D., D.Sc.

DEPUTY DIRECTOR :

H. O. Fletcher, M.Sc.

SCIENTIFIC STAFF :

Fossils :

H. O. Fletcher, M.Sc., Curator.

Mammals :

B. J. Marlow, B.Sc., Curator.

Reptiles and Amphibians :

H. G. Cogger, M.Sc., Curator.

Birds :

H. J. de S. Disney, M.A., Curator.

Fishes :

G. P. Whitley, F.R.Z.S., Curator.

Molluscs :

D. F. McMichael, M.A., Ph.D., Curator.

Crustacea and other Groups :

J. C. Yaldwyn, M.Sc., Ph.D., Curator.

Worms and Echinoderms :

Elizabeth C. Pope, M.Sc., Curator.

Minerals and Rocks :

R. O. Chalmers, A.S.T.C., Curator.

Anthropology :

F. D. McCarthy, Dip. Anthropol., Curator.
D. J. Miles, B.A., Assistant Curator.

Insects and Arachnids :

C. N. Smithers, M.Sc., Curator.

D. K. McAlpine, M.Sc., Assistant Curator.

EDITORIAL ASSISTANT AND PUBLIC RELATIONS OFFICER :

P. F. Collis

EDUCATION OFFICERS :

Patricia M. McDonald, B.Sc., Dip.Ed., Education Officer; Mrs. S. B. H. Maguire, B.A., Assistant Education Officer;
Mrs. Z. M. Harkness, Assistant Education Officer.

LIBRARIANS :

Mary G. E. Davies, B.Sc., L.A.A.

Miss L. Harrison, B.A., Assistant Librarian; Mrs. J. Watson, Clerical Assistant.

MUSEUM ASSISTANTS :

Judith Naughton, Technical Assistant; Robyn Hauenstein; Janice Cave; Klara Kota; Janet Walsh; Gai Fell;
Monica Field; Dorothy Jones; Kathleen Pope.

EXHIBITIONS DEPARTMENT :

J. Beeman (in charge).

Preparation Section :

R. Witchard; K. Gregg; R. Lossin;
M. Cameron; Lorraine Carter.

Art and Design Section :

B. P. Bertram; D. Rae; Elvie Brown;
Judith Taylor.

PHOTOGRAPHER AND VISUAL AIDS OFFICER :

H. D. Hughes, A.R.P.S.

ARTIFICERS :

J. P. Baldie (in charge); A. Carpenter; T. Wright.

OFFICE STAFF :

L. Stomfai (in charge); Beryl Hall; Marilyn Colquhoun; Lynette O'Connell; Caroline Gow; Jeanette Stevenson;
Madeline Hunter.

ATTENDANTS :

R. K. Morris (Chief Attendant); W. Wason (Senior Attendant); J. Sernak; D. Soltan; G. Fairweather; E. Brown;
L. Mathieson; D. Costello; T. Winner (Gardener); Myra Sergeant (Cleaner); M. Bracken (Cleaner).

HONORARY SCIENTIFIC STAFF

Zoologists :

E. A. Briggs, D.Sc.; H. Leighton Kesteven, D.Sc., M.D.; Melbourne Ward, F.R.Z.S.; Tom Iredale, F.R.Z.S.;
Professor A. J. Marshall, D.Sc., D.Phil.; Joyce Allan, F.R.Z.S.; S. J. Copland, M.Sc.; Ellis Troughton, F.R.Z.S.;
A. A. Racek, Dr.rer.nat. (Brno); F. A. McNeill, F.R.Z.S.

Ornithologist :

K. A. Hindwood, C.F.A.O.U., F.R.Z.S.

Philatelist :

Frank W. Hill.

ANNUAL REPORT

OF THE DIRECTOR OF THE AUSTRALIAN MUSEUM

The Year ended 30th June, 1963

CONTENTS

	Page
Introduction	7
Gallery Developments	7
Staff Matters	8
Research	9
Field Work	9
Publications	10
Lectures	11
Co-operation	12
Museum Buildings and Grounds	13
Visitors and Attendance	13
Finance	13
Departmental Reports	14
Accounts (Appendix A)	2
Illustrations	8, 12, 17, 21

ANNUAL REPORT

OF THE TRUSTEES OF THE AUSTRALIAN MUSEUM

For the Year ended 30th June, 1963

To His Excellency The Governor:

The Trustees of the Australian Museum have the honour to submit their 109th Report for the year ended 30th June, 1963.

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

Professor L. C. Birch and Mr. G. H. Slade were elected Trustees in the places of Mr. E. A. J. Hyde and Professor R. L. Crocker, who resigned from the Board in October.

Professor Crocker died in June, and at their monthly meeting the Trustees expressed their sorrow at his passing and placed on record their appreciation of his devoted service to the Australian Museum, as a Trustee, and also to science in Australia.

The five-storey addition to the New Wing of the Museum has not yet been handed over by the contractors, but this will shortly happen and arrangements have been made for the official opening to take place on 9th September. The ceremony will be performed by the Premier, the Hon. R. J. Heffron, M.L.A.

A subsidy of £500 towards Museum development has been received from the Council of the City of Sydney. This much-appreciated donation has been used on improvements associated with the modernization of the Australian Mammal Gallery.

The Museum has seldom in the past benefited from bequests and one of £200 from the estate of the late Miss Camille Perrier has been greatly welcomed by the Trustees.

During the meeting, in Sydney, of the Australian and New Zealand Association for the Advancement of Science, which took place during August, an evening reception was held in the Museum, to which members associated with the Zoology, Biology, Botany, Anthropology and Education Sections were invited. This provided an opportunity for scientific visitors from other States to see the many, and varied, developments which have taken place in the Museum during recent years.

During April a conference on the Pre-History of Australia was held at the Museum. It was immediately followed by a conference of Museum Directors and Museum Anthropologists. Those attending the second meeting discussed various aspects of anthropology in relation to museums in Australia. Both conferences were convened by the Australian Institute of Aboriginal Studies.

Designs for a new Fossil Gallery have been completed and plans for the installation of the necessary fittings in a gallery of the new wing are well advanced. A plan, and a model, for the re-design of the entrance hall and an adjoining gallery, have also been completed. These provide for the gallery, which at present houses foreign mammals, to feature the natural history of New Guinea and Antarctica.

The plans for the proposed new spirit building mentioned in our last report have been re-drawn by officers of the Government Architect's Office and it is hoped that working drawings will soon be prepared.

A room in the south wing of the Museum has been converted by the Department of Public Works into a photographic work room and the alterations are now almost complete.

Provision has been made in the new wing for an Archives Store.

A film entitled "White Clay and Ochre", which depicts Aboriginal cave paintings and engravings and methods of scientifically recording them, has been completed. This was largely financed from the grant received from the Nuffield Foundation, mentioned in our last report.

GALLERY DEVELOPMENTS

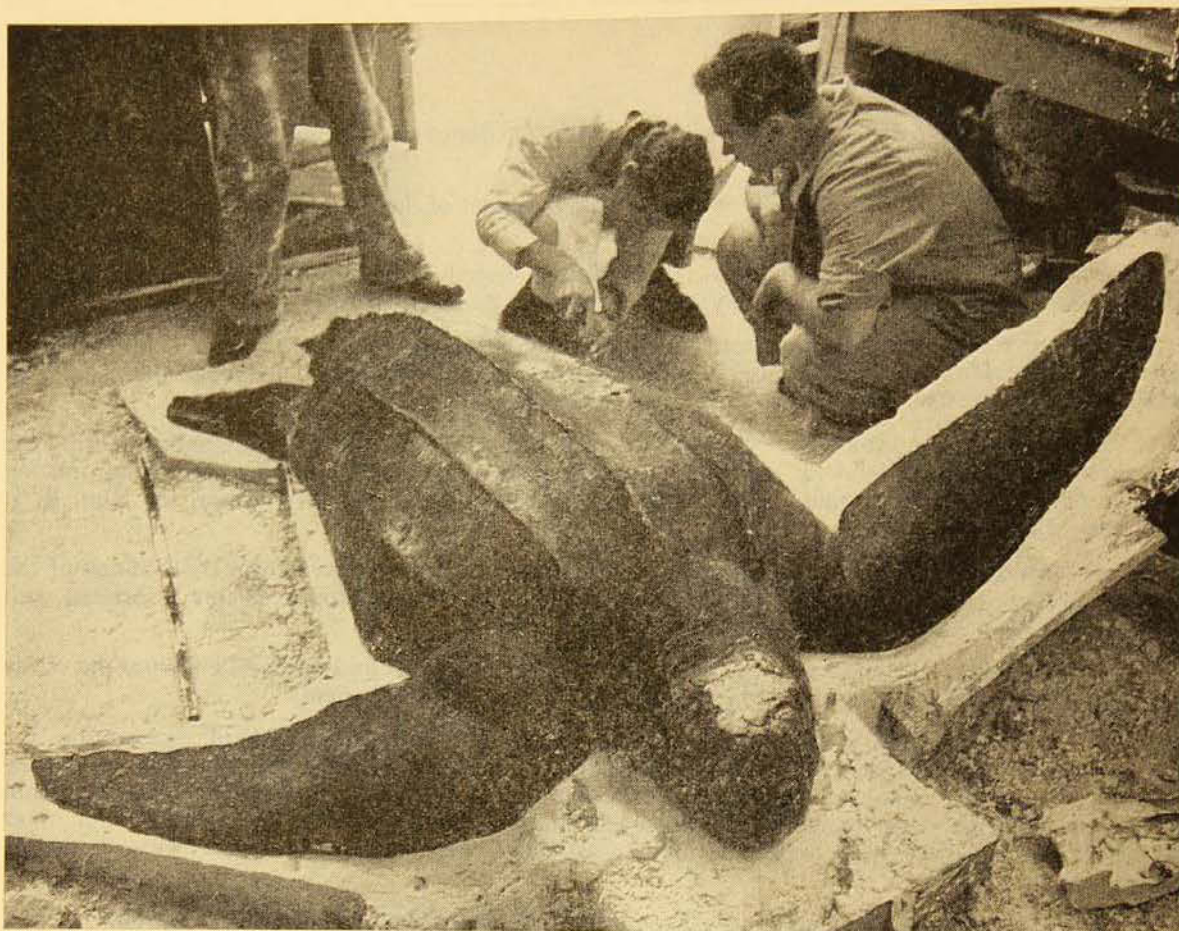
A large and striking notice explaining the functions of the Museum and its general theme has been installed in the entrance hall.

A message repeater, operated by a push-button, has been installed in association with an exhibit known as the "Vertebrate Tree". This provides a spoken explanation of the exhibit, which is of considerable educational importance.

A display of New Zealand birds has been arranged on the landing outside the Upper Bird Gallery.

The new displays in the Australian Mammal Gallery are now complete except for one which will feature the embryology of mammals. This gallery provides an excellent example of modern methods of museum display.

During the year a large fibreglass model of a Luth, or Leathery Turtle, was installed in the front hall as a special exhibit. The animal from which the model was made was presented to the Museum by Mr. E. Geogouras. As well as the special exhibit of a Luth Turtle, other temporary exhibits arranged during the year featured deep water volutes (shells) from eastern Australia, poison cone shells and gemstones.



Casting a Luth Turtle

The whole of the collection of coins and medals has now been transferred to the Museum of Applied Arts and Sciences.

Lighting has recently been installed in the Invertebrate Gallery. This necessitated the complete removal of most of the existing exhibits, which were principally of molluscs and insects. Among the new exhibits which have since been installed are ones dealing with "Shells of the Open Sea", "Shells of the Sea Shore" and "Shells of Coral Reefs".

STAFF MATTERS

The Director has been elected a member of the Executive Committee of the International Council of Museums.

Mr. H. G. Cogger has been promoted to the position of Curator of Reptiles and Amphibians.

Mr. D. Miles, who has been appointed Assistant Curator of Anthropology, commenced duty at the Museum during April.

Mr. J. Beeman, Chief Exhibitions Officer, returned, in July, from the United States where he had been visiting leading natural history museums in order to obtain information on display methods.

Miss E. Pope, Curator of Worms and Echinoderms, left Sydney in June to spend six months studying overseas.

Mr. R. D. Mackay resigned from the staff of the Museum in February, after a period of 18 years' service spent in the Department of Preparation.

Other resignations have been: Miss S. Bradford (Librarian); Miss J. Ferguson (Museum Assistant); Miss E. Davey, Miss E. Emery (Office Staff).

RESEARCH

The manuscript of a monograph on the Cicadelloidea and Cercopoidea (insects) of Australia and New Zealand has been completed, in draft, by the Director, but very numerous illustrations need to be prepared before publication becomes possible.

The Deputy Director has continued with his study of the Silurian and Lower Devonian fauna of the Cobar district and the section concerned with trilobites has been completed. He has been engaged also on a study of the lingulid fauna of the Mootwingee Ranges.

Mr. McCarthy has continued his study of archaeological excavations undertaken in the Capertee Valley, and of cave paintings recorded in central New South Wales.

The progress of Mr. Marlow's investigations of the behaviour of marsupial mice (*Antechinus stuarti*) in captivity has been delayed by sporadic outbreaks of cannibalism in the colony. This has greatly reduced the number of animals. So far, it has been found impossible to determine the reasons for this behaviour.

Investigations of the systematics of some small dasyurids (marsupials) are also being carried out by Mr. Marlow.

Mr. Disney has commenced work on a study of the taxonomic morphology and anatomical relation of the sex and age differences of Australasian birds, with particular regard to moult. This work, which will involve collecting birds for the Museum's reference collection, and banding (through the C.S.I.R.O. scheme) in order to follow changes in the field, will also involve some cage studies.

Mr. Cogger has completed his programme of field research on the biology and ecology of an agamid lizard, which has been undertaken at Nymagee, in western New South Wales. Week-long visits have been paid to this area every two months, during which more than 200 animals have been marked and more than 800 captures made in the six-acre study area. Samples totalling more than 400 specimens have been brought back to the Museum for morphological and reproductive studies.

Mr. Cogger has continued also with his revision of Australian agamid lizards and has begun preliminary work on the preparation of a review of the genera of Australian snakes. He is also working on a long-term project of preparing a check-list and bibliography of Australian reptiles and amphibians.

Dr. McMichael has continued, as time has permitted, his studies of Australian Acavidae (land snails) and Volutidae (marine gastropods).

Mr. Smithers has continued his research on the systematics of several families of African and Australian Psocoptera (insects). With the co-operation of amateur naturalists in New South Wales and elsewhere, he has begun a study of the migrations of some species of butterflies. This has involved recording flight directions in the field and the marking and releasing of specimens. So far more than 7,000 specimens have been marked. This investigation has caused considerable public interest and some schools are co-operating in the marking scheme and using it as project-work for children.

Mr. McAlpine has undertaken research on the systematics of two families of flies (*Helomyzidae* and *Lauxaniidae*). He has also done some work on representatives of other families of Diptera and with the butterfly genus *Ornithoptera*.

Dr. Yaldwyn has continued work on a revision of Crustacea, Decapoda, Natantia (shrimps and prawns) of New Zealand, and in connection with this study has prepared and submitted for publication a manuscript on Antarctic and Sub-Antarctic decapod crustacea. He has also begun work, in co-operation with Dr. R. K. Dell, of the Dominion Museum, New Zealand, on an account of the decapod crustacea of Auckland and Campbell Islands, and in co-operation with Mr. D. J. G. Griffin, of the University of Tasmania, has undertaken some studies of spider crabs.

Mr. Chalmers, Curator of Minerals, together with Mr. H. F. Whitworth, Curator of the Mining and Geological Museum, is undertaking an examination of the Rowena stony meteorite. The work has been somewhat delayed by lack of present facilities for cutting thin sections.

FIELD WORK

In our last report mention was made of a gift of £800 made to the Museum by David Jones Ltd. This was for the purpose of financing a collecting expedition to the Swain Reefs. The expedition left Sydney on a chartered ketch-rigged motor yacht, the *Coongoola*, on 3rd October and returned on 27th October.

Four members of the Museum staff took part in the expedition (Dr. McMichael, Dr. Yaldwyn, Mr. Whitley, Mr. Cogger) and also an Honorary Museum Associate, Mr. L. R. Thomas, who was responsible for much of the preliminary planning and for enlisting the interest and support of the sponsoring firm.

Abundant collections of fishes, corals, echinoderms, crabs, sponges, molluscs and bryozoa were made, and an excellent series of colour transparencies were taken by Mr. A. Healy, who accompanied the expedition. A previously biologically unknown area of the Great Barrier Reef has now been investigated and the Museum collections have been substantially enriched. We wish, once more, to express our thanks to David Jones Ltd., for having made the expedition possible and also to Mr. Thomas for the very considerable part he played in promoting the venture.

The Director spent three weeks collecting insects in western Victoria, particularly at Kiata, where the fauna is of special interest because of its Western Australian associations. During September, he accompanied the Deputy Director to Belmont to obtain supplies of rock from the Upper Permian insect beds. This will be split and examined in the Museum.

The Deputy Director, as a member of an A.N.Z.A.A.S. post-session excursion, spent a week in the Cobar-Broken Hill district collecting fossils. He also visited Canberra to discuss palaeontological problems with Dr. A. Opik, of the Bureau of Mineral Resources.

Mr. Chalmers accompanied Dr. Brian Mason, Curator of Minerals of the American Museum of Natural History and Mr. E. P. Henderson, Associate Curator of Meteorites of the United States National Museum, on an eight weeks' expedition travelling from Sydney to Alice Springs. During the course of the expedition a new australite locality of some importance was discovered in South Australia, 35 miles west of Leigh Creek towards Lake Torrens, and numerous specimens were acquired both by personal collecting and as the result of a gift from the owner of the property on which they were found.

Meteorites were collected at the Henbury meteorite craters and the Box Hole meteorite craters in Central Australia.

In northern New South Wales and north-eastern South Australia surveys were undertaken in the vicinity of the location of several meteorites in the hope of finding more specimens, in view of the current belief that meteorites tend to fall in showers rather than singly. The results of these surveys were negative.

During the year, Mr. Chalmers also paid a visit to the Wallerawang and Rylstone districts in order to inspect a modern plant for separating and concentrating heavy detrital minerals.

Mr. Smithers and Mr. McAlpine have made some 40 short insect-collecting trips during the year and, as a result, have acquired much material of research importance and for the Museum collections.

Miss Pope and Miss McDonald spent a week in the central coastal region of the State assessing shore collecting possibilities and the nature of available facilities for school and university classes.

Mr. McCarthy spent three weeks during November at Aurukun on the western coast of Cape York Peninsula, where he recorded Aboriginal totemic dances and made a collection of specimens for the Australian Institute of Aboriginal Studies.

He also spent the greater part of May, when he was accompanied by Mr. Hughes, the Museum photographer, in far western New South Wales, recording two extensive sites of rock engravings at Euriowie and Sturt's Meadows.

Prior to commencing duty at the Museum in April, Mr. Miles, the Assistant Curator of Anthropology, was in Indonesian Borneo studying the economic and religious life of three types of communities in the delta and source of the Mentaya River.

Mr. Marlow, together with Mr. Disney, took part in an exercise in the Tooloom district of northern New South Wales, which was organized and carried out by members of the crew of the British submarine, H.M.S. *Tabard*. During the period of the expedition, a good series of mammals and a small selection of birds were collected in both rain forest and in open woodland.

Mr. Disney spent two periods at Nymagee collecting birds, and in April he spent a week with the C.S.I.R.O. Division of Wildlife Research at Canberra. This enabled him to become familiar with the work of the Division and to make useful contacts.

Mr. Cogger, as well as participating in the Swain Reefs expedition and visiting Nymagee on numerous occasions in connection with his research programme, has also made several local collecting trips during the year, and during May he visited the rain-forest areas of Dorrig and Point Lookout.

Dr. Yaldwyn, Curator of Crustacea, accompanied Mr. Cogger to Nymagee on one of the occasions he was visiting that area and during December and January took part in the combined Dominion Museum (New Zealand)—D.S.I.R. Auckland Islands Expedition. The scientific party occupied a hut for a month on the northern end of the sub-Antarctic Auckland Island.

Dr. Yaldwyn has also made several short visits to local collecting areas and in June, together with Dr. McMichael, spent two days trawling for marine organisms in the Port Stephens neighbourhood.

The Assistant Preparator, Mr. R. Lossin, spent six weeks in the field accompanying the Harold Hall (British Museum) Bird Collecting Expedition.

PUBLICATIONS

The Museum's publishing increased substantially during the year. For example, nine parts of the *Records of the Australian Museum* were either printed or being printed, compared with three the previous year, and the output of the more popular type of publications increased.

A particularly pleasing feature of the year's publishing was that the number of subscribers to the magazine, *Australian Natural History*, reached a record figure of just over 3,000. This was due mainly to newspaper advertising arranged through the Premier's Department, circulars sent to schools and libraries and the great popularity of two of the special December issues.

Nos. 3, 4, 5 and 6 of Volume XIV of *Australian Natural History* were published. No. 4 was a special issue devoted to the Museum and its activities.

Three parts of Volume XXV of the *Records of the Australian Museum*—Nos. 12, 13 and 14—were published. Nos. 15 and 16 of Volume XXV and Nos. 1, 2, 3 and 4 of Volume XXVI are with the Government Printer. It was decided to improve the appearance of the *Records of the Australian Museum*, as from the start of Volume XXVI, by adopting a light-green, and stronger, cover, a more modern front-cover layout, and larger type throughout.

A new 64-page booklet, *The Natural History of Sydney*, was published. The booklets *The Australian Museum Handbook*, *Australian Aboriginal Decorative Art*, *Australian Aboriginal Rock Art*, the folder *These are Invertebrates*, the pamphlet *Australian Aborigines* and the coloured chart *Life Through the Ages* were reprinted. The booklets *Exploring Between Tidemarks* and *N.S.W. Aboriginal Place Names and Euphonious Words, With Their Meanings*, are in process of reprint.

The increasing public demand for many of the publications may be gauged from the increases in the numbers printed. The printing order for *The Australian Museum Handbook* has been increased from 10,000 to 15,000; for *Australian Aborigines* from 5,000 to 8,000; *These are Invertebrates* from 6,000 to 10,000; *Exploring Between Tidemarks* from 5,000 to 7,500. *Australian Aboriginal Decorative Art* has now reached its 6th edition; *N.S.W. Aboriginal Place Names and Euphonious Words, With Their Meanings*, its 4th; *Australian Aborigines* its 4th and *Exploring Between Tidemarks*, its 3rd.

A new free natural-history leaflet, *Australian Snakes*, is being printed, 21 existing leaflets were reprinted and five are in process of reprint.

Eighteen thousand folders giving information about the publications and containing subscription forms for the magazine were printed, compared with 9,000 in the previous year.

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

Evans, J. W., The Phylogeny of the Homoptera, *Ann. Rev. Ent.* 8: 77.

The Zoogeography of New Zealand Leafhoppers and Froghoppers, *Trans. Roy. Soc. N.Z. (Zoology)* 3 (9): 86.

The systematic position of the Ipsviciidae and some Upper Permian and Middle Triassic Hemiptera from Australia, *J. Ent. Soc. Queensland* 2: 17.

The Life and Work of Robin John Tillyard, *John Murtagh Macrossan Lecture* (1962), Univ. Queensland Press.

McCarthy, F. D., Some comments on the progress of Archaeology in Australia, *Mankind*, 5: 540.

The Archaeology of Australia and Melanesia, *Asian Persp.* 5: 141.

The Rock Engravings of Port Hedland, *Pap. Kroeber Anthropol. Soc. Univ. Calif.* 26: 1-73; (with N. W. G. Macintosh).

The Archaeology of Mootwingee, *Rec. Aust. Mus.* 25: 249.

Marlow, B. J., A recent record of the dugong, *Dugong dugon*, from New South Wales. *J. Mammalogy* 43 (3): 433.

On the occurrence of *Antechinus maculatus* and *Planigale ingrami* in Cape York Peninsular, *J. Mammalogy* 43 (3): 433.

Whitley, G. P., A new fish from the Coral Sea, North Queensland. *Nat.* 30: 3.

Marine Fishes of Australia (Vols. 1 and 2), *Jacaranda Press*, Brisbane.

A new Goby from near Sydney, *Aust. Nat.* 12 (3): 9.

Smithers, C. N., Insects of Macquarie Island (Psocoptera, Philolassidae), *Pacific Ins.* 4: 929.

The generic position of two species of Philotarsidae (Psocoptera), *J. Ent. Soc. Queensland* 2: 60.

Psilopsocus mimulus, sp. n., (Psocoptera, Psilopsocidae) representing a family new to Australia, *J. Ent. Soc. Queensland*, 2: 56.

Two new genera of Elipsocidae (Psocoptera) from Australia, *Proc. R. Ent. Soc. Lond.* 32: 32.

LECTURES

The following Popular Science Lectures were given during 1962: "Aboriginal Artists of the Western Plains" (Mr. F. D. McCarthy); "A Zoologist in East Africa" (Mr. H. J. de S. Disney); "The More We Are Together" (an illustrated lecture on sponge development) (Dr. J. Simons); "The Great Barrier Reef and its Unexplored Areas" (Mr. K. Gillett).

No Popular Science Lectures were given during 1963, since, owing to the poor attendance recorded in recent years, possibly associated with the advent of television, the Trustees have decided to discontinue the series. It is hoped, however, that as the opportunity offers, occasional lectures for the benefit of the general public will be given in the Hallstrom Theatre.

During August, Professor Perry Gilbert, of Cornell University, and Chairman of the United States Shark Research Panel, gave a talk, in the Hallstrom Theatre, on shark attacks and shark repellents. This lecture was sponsored by the University of Sydney Post-Graduate Medical Foundation.

As usual, several members of the staff gave lectures during the year to scientific societies, the Workers' Educational Association and to other groups.

CO-OPERATION

Pastor D. H. Watson has spent much time, on behalf of the Museum, excavating remains of the extinct horned turtle (*Meiolania*), in Pleistocene strata on Lord Howe Island. As a result of these excavations some important additions have been made to the Museum's fossil collections.

Mr. Justice Myers, who was elected an Honorary Associate of the Museum during June, has presented much interesting material over a long period of years; also, many colour slides.

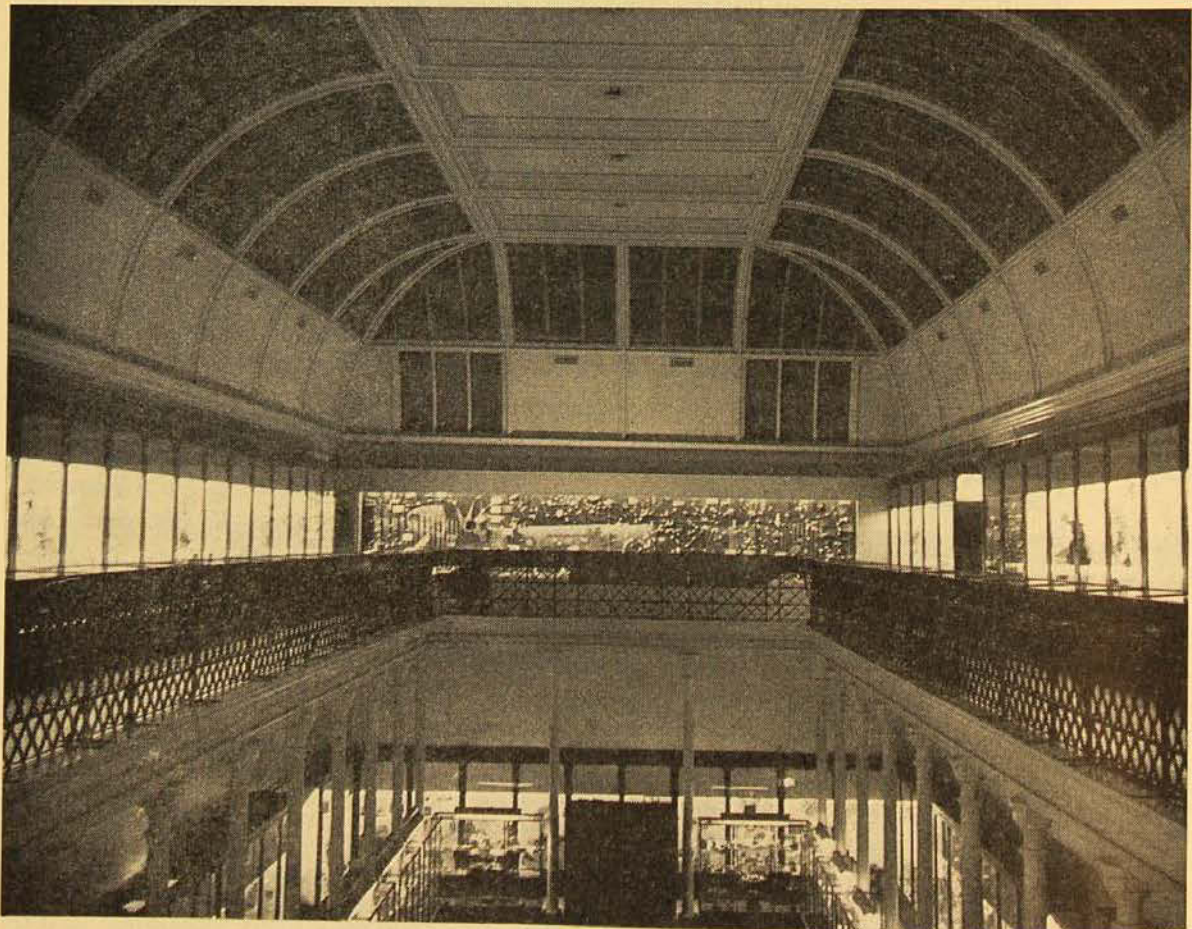
Miss Julie Booth, who, while a resident in Lord Howe Island was an Honorary Associate of the Museum, obtained for the Museum many specimens of a varied nature from this exceptionally interesting part of the world.

Mr. A. Gibson has presented coloured photographs of entomological subjects.

Mr. K. A. Hindwood, Honorary Ornithologist, has, as usual, provided considerable assistance in many directions.

Mr. T. Iredale, Mr. Garrard and Mrs. Kerslake have helped in the Shell Department. Mrs. Kerslake, who has recently left Sydney, worked regularly for one or more days every week in the Shell Department during the six years she lived in Sydney.

Mr. L. Courtenay Haines, Mrs. V. Gregg and Mr. Jobson have rendered service to the Department of Entomology by working on the insect collections and Mr. F. McNeill, Honorary Zoologist, has assisted in the Department of Crustacea.



The Invertebrate Gallery, in which lighting has recently been installed

MUSEUM BUILDINGS AND GROUNDS

The renewing of the Museum roof is now complete, the work having been gradually done over the last nine years.

The Fossil, Mineral and Invertebrate Galleries, the Department of Preparation, the eastern half of the cellar, the Long Room, the office section of the fossil store and the attendants' shower-room have been painted during the year. This is the largest amount of painting completed, in one year, by the Public Works Department for many years. The Public Works Department is to be commended for its helpful co-operation and the high standard of the work done by its staff.

The programme of repairing fretting stone walls in the cellar has advanced another stage. The staff tea-room, the vestibule at the foot of the office stairs, the eastern end of the main cellar, and the batten cellar have been cement-rendered and, where necessary, painted. Outside the building, stonemasons have removed the rosettes from the main gable facing College Street. The flagging and steps to the College Street entrance and exit have been renewed, the stone fence repaired, and fretting stone in one window-sill replaced.

Fluorescent lighting has been installed in the Invertebrate Gallery. Further lighting requested has had to be deferred until the new sub-station is completed and functioning.

The passenger lift in the new building has been handed over to the Museum and lino tiles have been laid in the upper Bird Gallery by the Government Stores Department.

VISITORS AND ATTENDANCES

During the year 332,550 people visited the Museum.

Scientific visitors, most of whom studied some part of the collections, included Dr. A. C. Smith (Smithsonian Institution); Professor R. A. Stirton, Professor Alden H. Miller and Dr. R. Tedford (University of California); Dr. B. Waterhouse (New Zealand Geological Survey); Sir Frank Francis (British Museum, Bloomsbury); Mr. C. P. Mountford; Professor Vandegraef (Institut de Zoologie, Paris); Professor A. A. Kirpichnikov (U.N.E.S.C.O.); Dr. Dean Amadon and Mr. J. Delaney (American Museum of Natural History); Mr. J. D. McDonald (British Museum); Dr. A. Lee (University of Queensland); Dr. A. Kluge (University of California); Professor Perry Gilbert (Cornell University); Professor I. Tomiyama (Misaki Marine Biological Station, Japan); Professor W. Stephenson (University of Queensland); Miss J. Hope Macpherson and Mr. E. D. Gill (National Museum of Victoria); Dr. R. K. Dell (Dominion Museum, New Zealand); Dr. P. N. Fischer (Ecole des Mines, Paris); Miss V. Orr (Academy of Natural Sciences, Philadelphia); Dr. D. Taylor (Harvard University); Dr. E. Callan (South Africa); Dr. J. Mackerras (C.S.I.R.O.); Mr. N. Tindale (South Australian Museum); Dr. J. Szent-Ivany (Department of Agriculture, Port Moresby); Dr. G. Kuschel (Chile); Professor A. E. Emerson (University of Chicago); Dr. T. Connell (University of California); Professor J. Prince (Columbus, Ohio); Dr. T. Woollf (Copenhagen Museum); Dr. R. Endean (University of Queensland); Dr. E. P. Hodgkin (University of Western Australia); Dr. P. Crowcroft (South Australian Museum); Dr. D. Ride (Western Australian Museum); Mr. N. A. Powell (Australian National University); Dr. D. J. G. Griffin (University of Tasmania); Dr. D. Williamson and Dr. J. McIntyre (C.S.I.R.O.); Dr. M. F. Glaessner (University of Adelaide); Dr. D. Chapman and Mr. H. Larsen (National Aeronautics and Space Administration, U.S.); Dr. E. Chao (U.S. Geological Survey); Dr. G. Baker (C.S.I.R.O.); Dr. R. Mason (American Museum of Natural History); Dr. E. P. Henderson (U.S. National Museum); Professor A. H. Voisey (University of New England).

FINANCE

Expenditure from Consolidated Revenue for the year (excluding Statutory Endowment of £1,000) was £97,013 6s. 8d., compared with £88,320 15s. 6d. last year. Net income for Trustees' Funds (including Statutory Endowment) was £9,479 11s. 3d. compared with £11,075 7s. 5d. for 1961-62; while net expenditure amounted to £10,515 10s. 8d., compared with £9,429 12s. 10d. for 1961-62.

The cash balance in the Trustees' Account at 30th June, 1963, was £2,671 10s. 8d. Trustees' Invested Funds at 30th June, 1963, were: Fixed Deposit £4,000; Commonwealth Inscribed Stock £950; Commonwealth Special Bonds £6,100; Metropolitan Water, Sewerage and Drainage Board Inscribed Stock £2,500.

A statement of Receipts and Expenditure for the year is contained in Appendix A.

DEPARTMENTAL REPORTS

Fossils: (H. O. FLETCHER, M.Sc., Curator and Deputy Director; MISS D. JONES, Assistant).

Registrations during the year numbered 673 specimens, many of which were Permian pelecypods and gastropods previously transferred from the Mining and Geological Museum.

Donations of interest have included plaster casts of type specimens in the British Museum collection, representing six species of *Procoptodon* and *Macropus* from the Pleistocene of New South Wales (British Museum); additional well preserved jelly-fish impressions from rocks of Upper Proterozoic age at Ediacara, Flinders Range, and well preserved specimens of archaeocyathids (primitive sponges) from Lower Cambrian rocks at Mt. Scott, near Copley, South Australia (Mr. B. Flounders); a series of corals, to be used as gallery exhibits, from rocks of Middle Devonian age at Isis River, near Murrumbidgee (Mr. C. J. Ivin); a large series of Upper Silurian and Lower Devonian invertebrate fossils from various localities in the Cobar district (Cobar Mines Pty. Ltd.), moulds of type specimens of brachiopods from Lower Devonian rocks at Reefton, New Zealand (New Zealand Geological Survey); fish plates and brachiopod shells from Lower and Upper Devonian formations in the Cobar district (Planet Oil Co. Ltd.); type specimens of *Dicroidium lancifolia* (Morris) and *D. feistmantelli* Johnston from Lower Triassic rock at Narrabeen, and a figured specimen of *Cladophlebis australis* (Morris) from Mt. Nicholas, Tasmania (Dr. A. B. Walkom); a perfectly preserved trilobite, *Leonaspis* cf. *bowringensis* Eth. and Mit. from Upper Silurian rocks near Forbes (Mr. T. Bradley); a type specimen of *Pycnostylus dendroidea* (Etheridge) and a plaster cast of the holotype, in the British Museum collection, of *Trigonotreta stokesi* König (Dr. Ida Browne).

The rearrangement, sorting and cataloguing of the invertebrate collection of fossils have continued. During the year the large collection of fossil insects, and also the trilobites, were transferred from wooden store boxes into new steel storage cabinets. The specimens were checked with the card catalogues and a generic and specific index has been made.

The brachiopod and gastropod collections have been tentatively sorted and a list of the type specimens is nearing completion. Additional steel storage cabinets are being installed in the main fossil store, to house the collections of fishes and plants which are now stored in wooden boxes.

Material made available to other institutions has included specimens of *Molongia elegans* Mitchell (Dr. J. G. Johnson, California Institute of Technology); examples of a Jurassic fish, *Leptolepis talbragarensis* Woodward (Professor O. Nybelin, Swedish Museum of Natural History); series of fossils for teaching purposes (St. Andrew's Cathedral School and Sydney Grammar School); photographs of coral holotype micro-sections (Mr. M. R. Banks and Mr. R. K. Jull, University of Queensland); a latex mould of a holoptychian fish (Professor E. S. Hills, University of Melbourne); plaster casts of holotypes of *Astartila intrepida* Dana and *Cleobis grandis* Dana (Professor A. F. Wilson, University of Queensland).

Material forwarded on loan has included specimens of *Sthenurus atlas* and *Palorchestes azael* (Dr. W. D. Ride, Western Australian Museum); *Diprotodon* teeth (Dr. N. Stephenson, University of Sydney); a collection of Permian fossils from the North Coast of New South Wales (Dr. K. Campbell, Australian National University); series of Permian gastropods and pelecypods (Dr. B. Waterhouse, New Zealand Geological Survey).

More than 200 inquiries were dealt with during the year. These involved the identification of many fossils. Reports of economic importance on the identification and geological age of fossil material were prepared for the Planet Oil Co., Mid-Western Oil Co., the Joint Coal Board and Cobar Mines Pty. Ltd.

Anthropology: (F. D. MCCARTHY, Dip. Anthropol., Curator; MISS M. FIELD, Assistant).

A total of 6,881 specimens was received in 75 acquisitions. Mr. Robert Turner, of Sydney, presented a collection of some 5,124 stone implements from camp sites in New South Wales, in which Bondi points, elouera and uniface pebble implements are particularly well represented; included are several cylindro-conical stones from Queensland, where they are rare, a scraper made from opal, and pebble implements illustrated in papers by the donor and the late W. W. Thorpe.

Other gifts of Australian specimens comprise 4 spears and paddle, Melville Island (Mr. King); wooden harpoon head, Groote Eylandt (Rev. J. Dyer); shield and 3 clubs, Rockhampton, Queensland (Mr. D. Walker); fire-making board, Cairns, Qld. (Rev. Craven Sands); shield, Victoria, 4 hafted axes and spear, Arnhem Land (Mr. S. Kellner); a fine series of 23 axe blanks, 231 flake implements and a flaked pick, Mt. Isa, Queensland (Mr. J. Mathew); 16 flake implements, Kopperemanna, South Australia (Mr. S. Beutel); incised stone, Camooweal, Queensland (Mrs. J. Davidson); 18 flake implements, Maralinga, South Australia (Mr. P. Slack).

From various New South Wales localities the following specimens were received: 38 flake implements from Noola Cave, Capertee Valley (Mr. J. Bland); 6 oyster picks, axe and uniface pebble implements, Crookhaven (Mr. J. Woolley); axe, Parkes (Mr. D. Beal); 2 flake implements, Myall Creek (Mr. L. Moore); uniface pebble implement, Nambucca (Mr. N. Forwood); scraper, Mosman (Mr. G. P. Whitley); red ochre, Dubbo (Mr. C. J. Garnsey); fish hook file, Wallamboola Lake (Mrs. J. R. Sutherland); 262 flake implements, axes and hammer stones from rock shelter floors, Kellyville district (Mr. R. Taplin); 6 axes, 24 flake implements, chopper, knife and axe sharpening stone, Bingara (Mr. R. L. Davies); 2 axes, Currabubula (Mr. N. Walkers); hammerstone, Hawkesbury River (Mr. J. Disney); axe, Burraborang Valley (Mr. D. Walker).

Gifts of Pacific Islands and other material comprise 144 specimens of mats and bags, pottery, weapons, ornaments, inlaid figures, canoe models and other objects from New Hebrides and Solomon Islands, including six of the rare boomerangs from the New Hebrides (Rev. G. J. Stewart); 25 pieces of the shells used in stages in making the discs, and the drill, together with the names of the pieces and processes, employed in the making of Bata shell money on the east coast of Malaita (Brother Colman, Marist Brothers' School, Lunga); 18 weapons and clothing from various islands (Mr. C. P. Richards); comb and shell money, Bougainville (Miss A. Powell); mask, Maprik, New Guinea (Professor A. P. Elkin); mourning apron, New Britain (Mr. F. F. O'Connor); bow and arrows, Buka (Mrs. P. Austin); spatulas, nose bone and bowl, Trobriand Islands (Miss S. Gibbs); mask, New Britain (Miss S. Holmes); figure of mother suckling child, New Georgia (Mrs. J. W. Powell); 2 arrows, New Guinea (Mr. D. S. Skinner); 8 spears, Fiji and Bismarck Archipelago (Mrs. K. Ryan); King spear, Bougainville (Miss A. Helmrich); 2 wooden bowls, Marquesas (late Captain C. W. Ostenfeld); 2 canoes, Gilbert Island (Mrs. Thompson); throwing club, Fiji (Miss C. Barrington); spatula, Trobriand Islands (Misses O. and P. Barnett); set of bull-roarers, Papua (Mr. R. Munn); sorcery object, Sanasan, New Guinea (Mitchell Library); paddle, Bougainville (Mr. D. Walker); hafted axe, Wahgi Valley, New Guinea (Rev. Craven Sands); club, South Africa (Mr. Carter); 2 mats, bark cloth and shield, Borneo (Miss Simpson); bone dagger, New Guinea (Master J. Doyle); 3 sheets of bark cloth, Fiji (Mr. M. Gallagher).

Twenty-seven specimens of blow pipes, baskets, weapons, face masks, fishtrap and drum were collected in Southern Borneo by Mr. D. Miles, Assistant Curator.

Specimens purchased comprise 7 bark paintings, Milingimbi and Yirrkala, Arnhem Land, (from the Methodist Mission); 31 aprons, bags, spatulas, ornaments and spear-throwers (from the Aurukun Mission, Cape York); and 3 axes hafted in deer antler sockets (from Neuchatel, Switzerland).

One hundred and eight stone implements and other specimens were received by exchange for Australian implements from the Robert H. Lowie Museum, University of California.

A collection of 50 Australian Aboriginal crania from the coast of New South Wales has been lent to the Department of Anatomy, University of Sydney, in connection with a research project.

The collections of hafted axes and adzes from Australia and the Pacific Islands and of prehistoric stone objects from New Guinea were moved into the new archaeology store where considerable re-arrangement is in progress. An accumulation of acquisitions of ground edge axes from various parts of Australia and the collection of uniface pebble axes have been catalogued.

The U.N.E.S.C.O. Travelling Exhibit on Aboriginal Culture has been dismantled and the specimens returned to the various State Museums.

The Australian Broadcasting Commission borrowed specimens of Pacific sculpture and of Australian Aboriginal material culture to illustrate telecasts.

Dr. Spiegel has been working at the Museum on Buka (Solomons) art since 1962, analysing the designs on our extensive series of paddles and canoes from this area; Mrs. T. Belleau-Kemp has continued her work on the typology of Tasmanian stone implements; R. Nyandoh, Kuching Museum, Sarawak, has assisted with the cataloguing of stone implements.

The Curator has been elected an Australian representative on the Council of Proto- and Prehistoric Sciences in Europe, and is a member of the Historic Monuments Committee of the Cumberland County Council, Sydney; he is also the Australian representative of the Historic Monuments Committee of U.N.E.S.C.O., and a member of the Interim Council of the Australian Institute of Aboriginal Studies.

Mammals: (B. J. MARLOW, B.Sc., Curator; Miss G. FELL, Assistant).

Ninety-two new mammal specimens were added to the collection during the course of the year, of which 44 were collected and 48 were presented. Included among the latter was a collection of mammals from Borneo which was presented by Mr. D. Miles, Assistant Curator of Anthropology. These included a Slow Loris (*Nycticebus coucang*) and a Flying Lemur (*Cynocephalus variegatus*). These two species, together with a fine skull of an orangutan, are a most valuable addition to the collection.

A pair of potoroos (*Potorous tridactylus*) from King Island, Bass Strait, were presented by Mr. J. Courteney. These are the only specimens in the collection from this locality.

An excellent specimen of the large Northern Territory Tree Rat (*Mesembriomys gouldi*) was received from the Daly River Mission. This rodent was formerly plentiful in this locality but is now rare on the mainland. It is still plentiful on Melville and Bathurst Islands. A fresh specimen of the Brush-tailed Rock Wallaby (*Petrogale penicillata*) was presented by Mr. H. Verboog. This will be displayed in the mammal gallery. These rock wallabies are now uncommon in New South Wales and it is difficult to obtain new specimens.

A series of spirit specimens of various species of vespertilionid bats has been lent to Mr. P. Dwyer (University of New England); Dr. L. Freedman, of the Department of Anatomy, University of Sydney, has been lent for study, skulls of the Long-nosed Bandicoot (*Perameles nasuta*) and Mr. N. Wakefield (Monash University) material of pygmy possums (*Cercartetus* spp.).

A collection of typical North American mammals was lent to Qantas in connection with the opening by Mr. Luther H. Hodges, Secretary, United States Department of Commerce, of the office of the United States Travel Service in Sydney.

A display which deals with reproduction in marsupials is in course of construction. Much valuable assistance in the form of photographs, and the loan of a newly-born Brush-tailed Possum (*Trichosurus vulpecula*), have been obtained from Dr. A. G. Lyne, of the C.S.I.R.O., Prospect.

Birds: (H. J. DE S. DISNEY, M.A., Curator; MISS R. HAUENSTEIN, Assistant).

One hundred and thirty-one specimens were registered during the year. These included 13 Western Australian specimens received from Professor A. J. Marshall. Nineteen specimens, sent frozen, were received from Mr. C. A. Carson from Anir (Feni) Island, east of New Ireland. The Museum expedition to Swain Reefs brought back 11 interesting specimens.

The principal work undertaken during the year has been the continued labelling of the study collection. Work and inquiries have continued to show the great lack of, and the need for, a collection of birds with full data, and also birds showing immature and juvenile plumage. Data sheets giving particulars of plumage, colours of the soft parts, and measurements, are now made for all new specimens handled and also for live birds where the latter are banded and released. Two hundred and fifty new steel trays received during the year have improved the storage of the study collection.

Specimens have continued to be added as they have become available to the Bird Identification Series on display in the Upper Bird Gallery.

About 250 inquiries have been dealt with during the year. Most of the inquiries from the public have been for identification of birds seen, or likely to be seen, in certain areas, and their habits. Requests for information were also received from scientific institutions and Government Departments.

Reptiles and Amphibians: (H. G. COGGER, M.Sc., Curator; MISS R. HAUENSTEIN, Assistant (part-time)).

Some 1,980 specimens of reptiles and frogs were registered during the year.

The research collections have been maintained in good condition. As a result of a small amount of additional shelf space made available in the Spirit House, the complete reorganization of the amphibian collection has been completed, although there is still no room for additional material. As stressed in earlier reports, Spirit House accommodation is of the utmost urgency if the present and growing acquisition rate is to be maintained.

As usual, numerous inquiries were received. These covered a wide range of topics, although the majority concerned the identification of specimens.

Collections of outstanding interest received during the year have included goannas and tiger snakes from Kangaroo Island (Mr. K. Slater); reptiles from Cape York Peninsula (Mr. J. Wassell); reptiles from Brewarrina (Mr. T. Turnbull); tortoises from Tweed River (Mr. N. Williams); reptiles from Central Australia and the Northern Territory (Mr. A. Holmes); and reptiles from Manus Island (Mr. K. F. Silva).

The two major problems facing this department, at present, concern space and assistance. Storage space is desperately short, particularly for larger specimens, and the present high rate of acquisition can continue only as long as other departments permit encroachment on their space.

Fishes: (G. P. WHITLEY, Curator; MISS L. CARTER, Assistant).

Over 1,500 fishes were registered, of which 600 were collected by the Australian Museum 1962 Swain Reefs Expedition. Acquisitions came from every State of the Commonwealth except South Australia and Tasmania. Miss Julie Booth presented specimens from Lord Howe Island and Mr. and Mrs. B. Marsh fishes from Norfolk Island. Numbers of other reef fishes came from the New Hebrides, Fiji, Niue, Raratonga and the Philippines. Mr. George Coates presented rarities from the Townsville area, Queensland, and Mr. W. H. Foley sent an interesting series from Weipa, Gulf of Carpentaria.

All acquisitions have been identified, catalogued and distributed in the collections.

A Black Marlin, some casts of flying fishes and various commercial and other species have been added to the new fish gallery. Work on labelling is progressing and continuous efforts have been made to secure fresh specimens to fill gaps in exhibits.

New ichthyological literature has been card-indexed and check-lists kept up-to-date. A bibliography of Australian ichthyology has been drafted for typing and a draft history of the Museum prepared.

Very numerous inquiries by press, public and institutions were attended to as usual and information was supplied to Fisheries, Customs, Health and other Government Departments, the C.S.I.R.O., and interstate museums.

Data concerning shark attacks has been forwarded to the United States National Museum, Washington, as part of a world survey. Teeth taken from a victim of shark attack were reported upon for the Commissioner of Police, Sydney. There was an almost overwhelming series of inquiries from press, radio and television sources regarding the shark menace.



Arranging new displays in the Invertebrate Gallery

Molluscs: (D. F. McMICHAEL, Ph.D., Curator; MISS J. CAVE, Assistant.)

There have been several substantial acquisitions during the year, as well as smaller amounts received from a number of localities and collectors. Among the major acquisitions were a large series of tropical marine shells collected in Fiji by Mr. John Laceron, on behalf of the Museum. This amounted to several thousand specimens and is now being sorted and studied. A representative collection of marine shells from the Swain Reefs, which totalled several thousand specimens, was made by the Swain Reefs Expedition. A large collection of shells from the west coast of North America was presented by Mr. R. C. Malkin of Vancouver, Canada, and valuable specimens of the Volutidae were presented by Mr. C. Weaver, of Honolulu, and Mr. and Mrs. W. Goode of Brisbane. A fine new species was purchased from Mr. T. Neilsen, of Yeppoon, Queensland.

Apart from the work involved in handling and processing the new material which has been acquired, curatorial activity has been concentrated on the revision of the spirit collection, especially the land mollusca, the Amphineura, the molluscan eggs and the nudibranchs. A number of groups in the dry collection has been reboxed and rearranged, including the families Neritidae, Mytilidae, Ancyridae and some Muricidae. A substantial amount of material which had been placed in the basement duplicate store has been unpacked and restored to the reference collection. A start on this work had previously been delayed owing to lack of space, but the provision of new cabinets in the previous financial year had made its restoration possible. Work has also commenced on transferring the duplicates to the top floor and it is hoped that before long the whole molluscan collection will be housed in the one section of the Museum.

Among those given assistance have been many scientists and Government Departments, including the New South Wales Department of Agriculture; the New South Wales Fisheries Branch; the Queensland Department of Agriculture; the C.I.B. and Government Analyst (in relation to venomous cone shells); Mr. J. Baker (Townsville University College); Dr. R. T. Abbott, Dr. R. Robertson (Academy of Natural Sciences of Philadelphia); Mr. C. Weaver (Honolulu); Dr. W. J. Rees (British Museum (Natural History)); Dr. Goddard and Dr. K. O'Gower (University of New South Wales); Dr. J. Pearson, Professor Stephenson and Mr. Vohra (Queensland University); Dr. I. Hiscock (Monash University); Dr. J. Szent-Ivany (Department of Agriculture, New Guinea); Mr. Kosuge (National Science Museum, Tokyo); Drs. Rehder and Rosewater (United States National Museum); Dr. Clench and Dr. Turner (Museum of Comparative Zoology, Harvard).

Specimens in a number of groups were lent to various specialists for study, including Dr. J. P. E. Morrison, U.S. National Museum (*Fluviolanatus* mussels); Mr. B. Wilson, Western Australian University (*Modiolus* mussels); Dr. Bengt Hubendick, Goteborg Museum, Sweden (*Ancylidae*); Dr. Alan Solem, Chicago Natural History Museum (*Endodontidae*); Dr. A. W. B. Powell, Auckland Museum (*Turridae* and *Patellidae*); Mr. J. Kuiper, Paris (*Sphaeriidae*) and Mr. R. Burn, Geelong (*Nudibranchia*).

Insects and Arachnids: (C. N. SMITHERS, M.Sc., Curator; D. K. McALPINE, M.Sc., Assistant Curator; MRS. K. KOTA, Assistant).

Some 8,872 specimens were received during the year, of which 7,902 were collected and 970 presented.

About 200 specimens were collected for the Museum during an expedition to northern New South Wales, in which members of the Museum staff co-operated in an exercise with the Royal Navy.

Ninety-one types have been registered.

Material despatched for study to outside authorities has included: Hymenoptera (Mr. E. F. Riek, Canberra); Rhagionidae (Dr. B. R. Stickenberg, Peitermaritzburg); Mallophaga (Dr. Theresa Clay, British Museum); Coccinellidae (Mr. Ching Sing Li, Darwin); Lonchaeidae (Dr. J. F. McAlpine, Ottawa); *Atrax* (Dipluridae) (Dr. D. J. Clark, British Museum); Coleoptera (Mr. J. Armstrong, Nyngan); *Atrax* (Dr. V. V. Hickman, Hobart); Lepidoptera (Dr. I. F. B. Common, Canberra); Sciomyzidae (Mr. G. C. Steyskal, Washington); Ephydriidae and Canaceidae (Dr. W. W. Wirth, Washington); Asilidae (Dr. S. J. Paramonov, Canberra).

Material of several groups has been identified for the New South Wales Forestry Commission, the New South Wales Department of Agriculture and the Department of Wood Technology as well as for individual research workers. Psocoptera have been identified, in the course of research work, for other State museums and the C.S.I.R.O. Diptera have been identified for several institutions and individuals. Insect remains from the stomach contents of ducks were identified in connection with research being carried out by the C.S.I.R.O.

Sorting, identifying and placing newly acquired material and old unsorted material have continued, especially in the Plecoptera, Trichoptera and Ephemeroptera. The previously dispersed material of Diptera has now been brought together in two cabinets located in the Assistant Curator's room.

Detailed plans for cabinets to house an identification series of insects have been prepared. This has not been an easy task as the delicate nature of the exhibits makes it essential that, while the specimens can be freely viewed, the drawers need to be protected from rough handling and housed in such a way that they cannot be unduly jarred or removed.

Some 1,960 inquiries have been received from members of the public. This figure includes only casual public inquiries and does not include the large number received from institutions and individuals relating to scientific work.

The Assistant Curator co-operated with the police in recent investigations in which possibilities of deaths from Funnel-web Spider bites were considered.

Worms, Echinoderms, Ascidians and Sponges: (ELIZABETH C. POPE, M.Sc., Curator; MISS J. WALSH, Assistant.)

Some 1,103 batches of specimens were registered, catalogued and incorporated in the reference collections and of these, 77 were microslides.

The year has been marked both by the quality and quantity of invertebrates added to the collections, many coming from extremely interesting localities. This was not accidental, but due to deliberate planning of expeditions and to the encouragement and supervision of volunteer skin-divers by members of the department. Among the more notable acquisitions were the following:—

Worms: A rare polychaete, *Polyodontes australiensis* (Mrs. C. Mom); a rare syllid, believed to be *Myrianida pinnigera*, together with a photographic record of its method of reproduction by gemmation (Mr. Justice F. G. Myers); worms of various sorts from Lord Howe Island (Miss Julie Booth); polychaetes from the Gulf of Carpentaria (Mr. Webster); earthworms (Dr. B. Jamieson).

Barnacles: A batch of giant barnacles (*Alepas pacifica*) attached to the jellyfish *Cyanea* (Mrs. T. Stead); a live *Lepas fascicularis* (providing colour records for the species) (Dr. J. Child); a batch of six American species of the genus *Chthamalus*, a most valuable addition to the collections (Dr. Zullo, U.S.A.).

Echinoderms: A further batch of echinoderms has been received from Weipa in the Gulf of Carpentaria (Mr. Webster) and a valuable series of the sea urchin, *Pseudoboletia indiana* (Mr. Wilson, Mr. Hughes and Miss Walsh).

Ascidians: A large collection of specimens from localities all round Australia, comprising at least 170 registrations, in the ascidian groups *Aplousobranchiata* and *Didemnidae* (Mrs. Mather); included in this are at least 12 types.

Six new storage cabinets have been obtained for the sponge collection and re-organization of the dry sponge collection is now well advanced. The spirit collections of sponges have likewise been re-organized.

The following collections have been sent, on loan, for study: Earthworms of the genus *Digaster* (Dr. B. Jamieson); Holothurians (Dr. D. Pawson, Victoria University of Wellington, New Zealand); leeches from frogs (Dr. K. Mann, Reading University).

Crustacea, Coelenterata and Other Groups: (J. C. YALDWYN, Ph.D., Curator; MISS G. FELL, Assistant).

Large and small general collections of invertebrates continue to come in from both individual collectors and institutions. By far the largest collection acquired during the year was that obtained by the Australian Museum Swain Reefs Expedition of which the curator was a member. In addition to large collections of Crustacea, especially Decapoda, an outstanding collection of corals was brought back. This coral collection, numbering approximately 550 specimens, is by far the largest collection the Museum now has from any circumscribed area.

Important acquisitions during the year include numerous live alcyonarians and corals from the Sydney area (Mr. Don Wilson and other skin-divers); extensive collections of named corals from the Barrier Reef (Mr. L. Thomas); Coelenterata and Crustacea dredged off Lord Howe Island and Middleton Reef (Dr. J. MacIntyre, C.S.I.R.O.); types of terrestrial isopods (Miss A. Green, University of Tasmania); additional type microslides of fresh-water copepods (Mr. I. A. E. Bayly, University of Queensland); crabs and other Decapoda dredged off Weipa, Gulf of Carpentaria (Mr. H. Foley); extensive collections of Crustacea from Lord Howe Island, including observations on, and specimens of, a luminous alpheid snapping shrimp (Miss J. Booth); collections of fresh-water crabs, including types, from widespread localities throughout New South Wales and Queensland (Mr. J. Bishop, University of Sydney); collections of pandalid and penaeid prawns trawled off the coast of New South Wales and Queensland (Dr. A. A. Racek, University of Sydney) and a living pair of the Banded Coral Shrimp, *Stenopus hispidus*, taken in Botany Bay by a skin-diver, Mr. C. Lawler, and kept under observation for several months by Mr. Justice F. G. Myers. This is the southernmost record of *Stenopus* in Australian waters and the aquarium observations have added greatly to our knowledge of the biology of this unusual species.

The reorganization of the extensive coral collections into the new steel cabinets on the upper floor of Room 3 continued throughout the year. This work, and the reorganization of the bryozoan collections, was begun by Mr. L. Thomas (Honorary Associate) some years ago, under the supervision of Mr. F. McNeill. Mr. Thomas continued with this work until his transfer to Western Australia in March, 1963.

During Mr. D. J. G. Griffin's visit in January, 1963, a start was made on the reorganization of the crab collections. Mr. Griffin worked through our extensive collection of spider crabs (*Oxyrhyncha*) and re-identified all previous material. This allowed the integration of all unworked and unregistered spider crabs and the complete overhaul of our holdings and files on this group.

Material of the following groups has been sent out on loan during the year:—

Several collections of portunid and calappid crabs (Professor W. Stephenson, University of Queensland); spider crabs and grapsid crabs (Mr. D. J. G. Griffin, University of Tasmania); procellanid crabs (Mr. J. Greenwood, University of Queensland); scyllarid lobsters to Dr. L. Holthuis (Rijksmuseum van Natuurlijke Historie, Leiden); terrestrial isopods (Dr. M. R. Warburg, University of Adelaide); parasitic isopods (Mr. G. Hewitt, Victoria University of Wellington, New Zealand); several collections of fresh-water copepods (Dr. I. A. E. Bayly, University of Queensland); marine ostracods (Mr. K. McKenzie, University of Western Australia); selected Bryozoa (Mr. N. A. Powell, Australian National University).

Major inquiries have included assistance with check-lists of New Zealand Decapoda (Mr. E. W. Dawson, New Zealand Oceanographic Institute); literature of Australian pycnogonids (Dr. W. C. Clark, D.S.I.R., New Zealand); nomenclature and distribution of Australian grapsid crabs (Mr. B. Campbell, University of Queensland); identification and biology of deep-water prawns (Dr. R. Pike, New Zealand Marine Department); identification and literature of deep-water crabs (Dr. R. K. Dell, Dominion Museum); identification of intertidal crabs from Moreton Bay (Mr. F. C. Vohra, University of Queensland), as well as identification and literature of New South Wales hermit crabs (Dr. D. Williamson, Cronulla).

Mineralogy and Petrology: (R. O. CHALMERS, Curator; MRS. J. NAUGHTON, Technical Assistant).

The number of minerals at 30th June, is 41,292, an increase of 341. Many of these specimens were received last year, though not registered until this year. Some choice columbite crystals and a specimen of semi-gem tourmaline, all from Western Australia, were purchased from Mr. A. H. Giles. An exchange collection of minerals was received from Mr. Martin Ehrmann, a mineral collector from U.S.A., who was visiting Sydney. It contains choice specimens of brazilianite, kunzite and chrysoberyl from Brazil, and a magnificent large specimen of amethyst from Uruguay. Some choice polished specimens of sulphide ore minerals, replacing folded banded sediments from Rammelsberg, Germany, were received in exchange from Mr. F. Boevers. The large collection of stilbite and associated minerals from Arkaroola Creek and other minerals from elsewhere in the north eastern Flinders' Ranges collected by Mr. Ben Flounders and the Curator last year have now been registered. Mr. Flounders has presented unique specimens of gypsum crystals encrusting vegetation, from South Australian salt lakes.

The number of rocks at 30th June, is 8,160, an increase of 21.

The transfer of mineral specimens to the store is proceeding steadily. The mineral specimens in the lift well (with the exception of large specimens in special boxes) have now been transferred to the store and a start has been made in moving mineral specimens at present housed in steel cabinets in the basement passage-way in the old wing.

Largely as a result of the introduction of the new six-year syllabus into N.S.W. secondary schools the demand for collections of common rocks and minerals increased and 17 collections were sent out before it eventually became necessary to discontinue the practice and refer inquiries to the N.S.W. Geological Survey which has undertaken the responsibility of making up and supplying such collections.

A large number of specimens have been made available to research workers at various institutions: Meteorites (Prof. J. Frankel, University of New South Wales); cobalt-bearing minerals from Torrington, N.S.W. (Prof. L. J. Lawrence, University of N.S.W.); sulphide ore minerals from Tolwong, N.S.W. (Dr. N. L. Markham, University of N.S.W.); thin sections of bore cores of sediments from various parts of the Sydney Basin (Dr. J. J. Connolly, University of N.S.W.); stannite (visiting Professor P. Ramdohr, University of N.S.W.); stannite, arsenopyrite, bournonite and other sulphide ore minerals from Tolwong and Ettre, N.S.W. (Mr. Ross Kennedy, University of N.S.W.); large number of auriferous and ore sulphide minerals from New England localities (Mr. H. Gutsche, University of New England); type specimens, sedimentary rocks from Kempsey district originally collected by Professor A. H. Voisey (Mr. J. Lindsay, University of New England); native iron from Greenland (Dr. J. F. Lovering, Australian National University); large collection of sulphide ore minerals from Zeehan, Tasmania and numerous localities in central and eastern New South Wales (Mr. J. Harris, Australian National University); few grains of iridosmine (Mr. J. Morgan, Australian National University); common opal from Tintenbar and Ballina (Dr. J. B. Jones, University of Adelaide); heulandite (in connection with experiments on disposal of atomic wastes by ion exchange methods) (Mr. H. W. Fander, Australian Mineral Development Laboratories, Adelaide); small specimen of Binda meteorite (Dr. W. Nichiporuk, California Institute of Technology); fragments of small stony meteorites (Dr. B. Mason, American Museum of Natural History).

An inspection of a large number of rocks from Macquarie Island was made by Dr. Tilley (Department of Geography, University of Sydney), and an inspection of numerous pyrite specimens by Mr. G. Gibbons (N.S.W. Geological Survey).

A small collection of minerals has been presented to the Hastings and District Historical Society's Museum, Port Macquarie.

Minerals have been sent in exchange to the following: Mr. Ben Flounders; Dr. C. Guillemin (Bureau de Recherche Geologique, Paris); Mr. F. Boevers (Mining Engineer, Rammelsberg, Germany); Mr. Martin Ehrmann, (mineral collector, Los Angeles); and Mr. W. W. Campbell (mineral collector, Auckland, New Zealand).

About 250 inquiries were attended to. As usual, these were concerned mainly with the identification of minerals, rocks and gemstones. Quite a number of the inquiries were from architects on suitable types of building stones. A number were also received from various people, with sources of supply of ornamental stones, who were anxious to find possible overseas markets for these. These were referred to the Department of Trade.

An examination and report on bore cores from the site of the proposed power station at Munmorah, near Tuggerah, N.S.W., was made for the Joint Coal Board.

School Service: (Miss P. M. McDONALD, B.Sc., Dip. Ed., Education Officer; MRS. S. B. H. MAGUIRE, B.A., and MRS. Z. M. HARKNESS, Assistant Education Officers.)

The total number of children attending the Museum classes organized by the Education staff was 19,021 for the year. These attended during 470 class visits. Of these, 34 classes visit the Museum regularly once a month, each following an individual course of natural science and social studies.

Five classes were taken on field trips, to study either the ecology of a marine rock platform, or a freshwater creek, or to look for fossils. It is hoped to extend these activities in the coming year.

In addition, 220 other classes visited the Museum and studied the exhibits with the help of their teachers.

Students from Sydney, Balmain, Newcastle and Alexander Mackie Teachers' Colleges watched demonstration lessons at the Museum and were given lectures on the Museum educational services. A series of visits was made by students from Sydney Technical College, zoology students from the University of Sydney and trainees from the N.S.W. Ambulance Transport Service Board.

The total attendance at school-vacation films was 9,803.

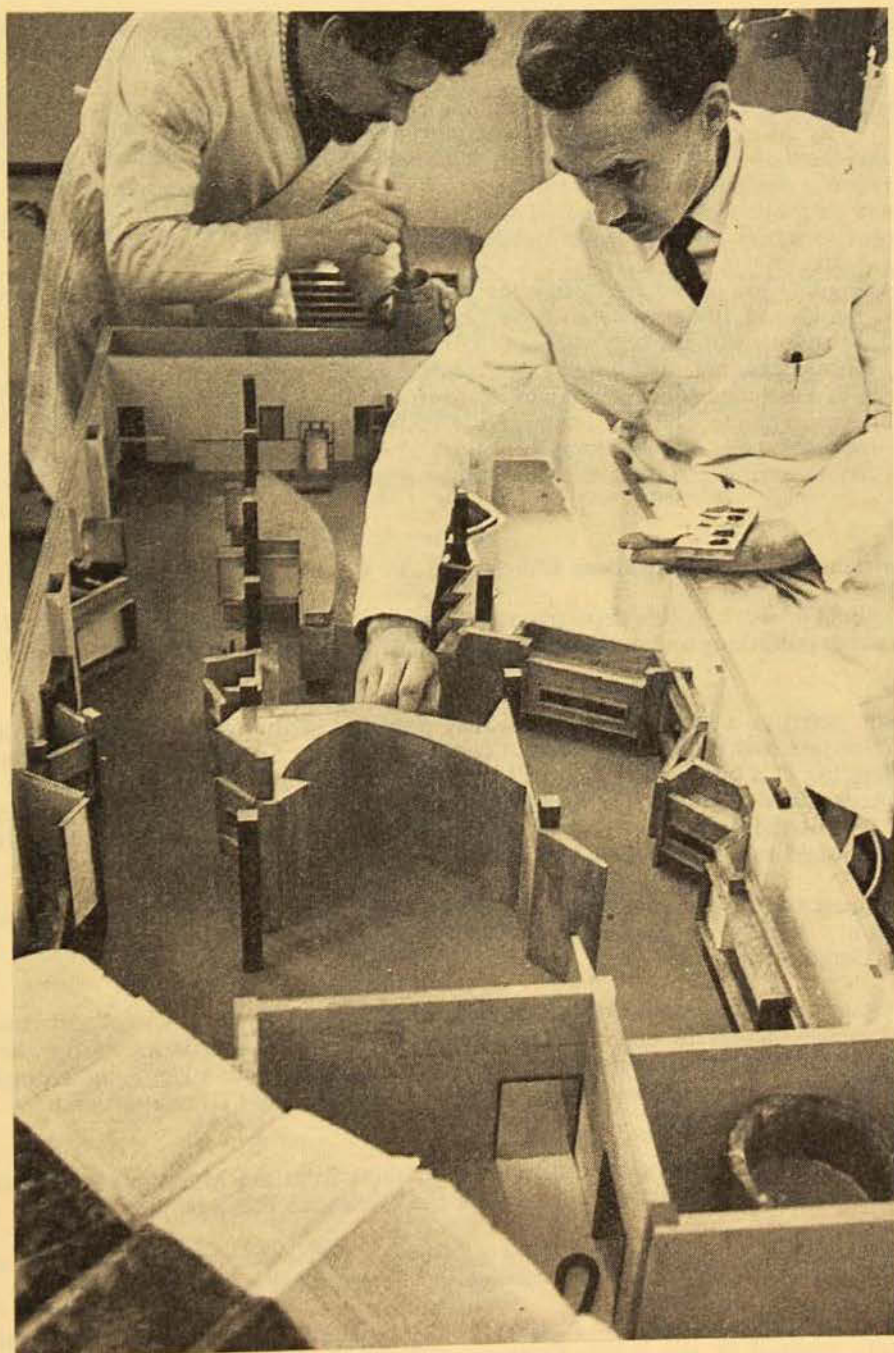
The Museum again co-operated with the N.S.W. Department of Education Play Centres during the January school vacation and many Centres attended the film screenings.

The Children's Room was open during the three long school vacations and approximately 350 people visited it each day. Special exhibits for children, both live and mounted material, centred around a theme, e.g., "Animals in Your Garden", "Australian Minerals". Various activities were also available, including drawing, painting and modelling materials, quizzes, Aboriginal toys and sand games.

An innovation was the "Museum Walkabouts", a series of quizzes which could be answered from the gallery exhibits. Their aim is to provide more interest for visiting children and to give some direction to their studies. It is also hoped that these Walkabouts may encourage children to become regular and frequent Museum visitors. A new series will be prepared three times a year and children may thus progress from one series to the next. The Walkabouts are available throughout the year as well as during school holidays.

During Education Week, August 5th-11th, 1962, a special exhibition of project books, posters, models and collections of specimens prepared by children as a result of their Museum visits, was on display near the main entrance. A sum of £10 was provided by the Trustees for book prizes. This exhibition attracted much interest and was left on view throughout the September school vacation.

Schools in both city and country borrowed material from the loan collection of specimens and photographs, 125 loans being made during the year. This is about double the amount of material borrowed during the previous twelve months. Various specimens were added to the collections from the scientific departments of the Museum. Mr. Justice Myers continues to supply coloured slides for the loan collection and for teaching purposes.



A model, showing installations, of the Fossil Gallery planned for the new wing

The volume of correspondence is still mounting; 1,335 letters from teachers and pupils were answered and 79 schools were sent copies of free Museum leaflets for their school libraries. In addition there were numerous telephone inquiries and interviews with teachers, students and parents requiring information.

Work continues on the preparation of a new Natural Science curriculum for primary schools. Weekly meetings of the Committee have been held throughout the year, entailing a considerable amount of time and effort.

Visitors to the Museum who studied educational work at the Museum included three biology teachers from New Zealand in April; twelve directors of education, teachers' college lecturers and school inspectors from African countries in March; Miss Chira Chandronannayavinit, National Museum, Bangkok.

Library: (MISS M. G. E. DAVIES, B.Sc., Librarian; MISS L. HARRISON, B.A., Assistant Librarian; MRS. J. WATSON, Clerical Assistant.)

During the year 415 volumes were added to the library, of which 150 were books; the rest were periodicals or parts of series. Of these volumes 311 were presented or received in exchange and 16 were part of a bequest from the late Mr. Musgrave. Two hundred and ninety-five volumes were bound for the library, of which 226 were new bindings, the rest being rebindings.

Several sets of back numbers of periodicals, subscriptions of which lapsed in 1940, have been purchased and current subscriptions for them have been placed.

Loans made to many libraries in Australia, including both Government and private ones, totalled 889. The Museum borrowed 48 volumes from other libraries. The interlibrary loans are steadily increased as more workers realise the valuable material in the Museum library, and there were many requests for microfilms and photocopies. Visiting scientists and research workers, both from Australia and overseas, made use of the library. There were also requests for information and visits from members of the general public.

Re-cataloguing has continued during the year as well as new cataloguing. Two hundred and seventy-seven books and 109 periodicals have been classified and catalogued. One thousand, nine hundred and thirty-one old cards have been withdrawn and 5,041 new cards inserted in the two catalogues. Three hundred and thirty-two cards have been made for "Union Catalogue of Monographs in Australian Libraries" and 65 cards for "Union List of Scientific Serials in Australian Libraries" and sent to the National Library of Australia and C.S.I.R.O. Head Office, Melbourne, respectively.

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

The volume of work in this department increased substantially during the year. There was a marked increase in publishing and in the publicity the Museum received in newspapers and on television and radio.

Museum activities which received particular publicity in the form of newspaper articles and photos and television and radio items, were: The expedition to Swain Reefs; the butterfly tagging scheme; the casting of a big turtle presented to the Museum; a display of venomous cone shells; and work in the preparators' section. The Swain Reefs expedition was publicised on all Sydney television stations and several radio stations, and in nearly all daily and Sunday newspapers. In addition, newspapers published many comments by Curators on natural-history items in the news.

Outstanding among Museum broadcasts was a series of talks by the Director and six Curators on the Museum's field work and research collections. This was broadcast by the Australian Broadcasting Commission.

Advertising of the magazine, *Australian Natural History*, in Sydney newspapers continued and was extended to newspapers in other States. Sydney newspaper advertisements for the children's film screenings and for the Museum generally were also continued. This advertising, arranged through the Premier's Department, has substantially increased the magazine's circulation and the attendance at the film screenings.

The *Education Gazette* concluded a series of extracts from the Museum's free natural history leaflets and began a series of illustrated articles on the Museum's other publications.

The new booklet, *The Natural History of Sydney*, was extensively reviewed in educational journals, and articles in several issues of the magazine were quoted by newspapers.

About 500 inquiries on natural history subjects, including 400 requests for identification of specimens, were received by the Public Relations Officer, who answered many inquiries about the Museum and its activities from newspapers and television and radio stations.

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

Art and Design Section: (D. RAE, B. P. BERTRAM, Artists; MRS. E. BROWN, MRS. J. TAYLOR, Ticket writers).

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

Plans for the occupation of the new wing have been taken a step further by the preparation of detailed construction drawings and specifications of the proposed Fossil Gallery. A set of these drawings has been forwarded to the Public Works Department. It is understood that funds are available for this work to proceed and tenders will be called when the contractor's maintenance period has expired. A preliminary selection of exhibition materials has been made for the vestibule cases.

Detailed construction drawings have been completed also for the main entrance of the Museum and for the Antarctic, New Guinea and the Races of the Pacific sections. These plans include a shop, public telephones, rest area and a bag storage for visiting school children. The Public Works Department has been requested to estimate the cost of these installations, so that steps can be taken to seek the necessary funds.

Some seals, specially obtained for the Museum by the Antarctic Division of the External Affairs Department, which were intended for the Antarctic Exhibit, were dumped at sea by order of the Commonwealth Health Department. It is hoped that the restrictions which prevent the landing of specimens from the Antarctic can be overcome before the exhibit is due to be installed.

All exhibits in the Mammal Gallery have been finished except the new embryo exhibit, which is almost ready for installation, and a new stand for the dugong which has been commenced. The "Flying Fish" and the "Eggs and Young" exhibits are ready for installation in the Fish Gallery.

Several diorama shells have been made for future installation in the new Fossil Gallery and the initial experimental work has been undertaken.

Equipment has been ordered to enable the production of labels and illustrations by the photographic silk screen method. This will help cope with the increasing demand made upon the ticket writers by the gallery programme and the lettering for publications.

Museum Photographer and Visual Aids Officer: (H. D. HUGHES, A.R.P.S.).

In the previous Annual Report it was mentioned that the Public Works Department was shortly to commence work converting Room 6, South Wing, for photographic purposes. This work is now almost completed and occupancy is shortly expected. These modern quarters, comprising photographic studio, dark room and work area, with many storage cabinets, will be supplied with hot and cold water and air conditioning. The improved accommodation will greatly benefit Museum photographic work which has wide application throughout all the Museum's activities.

Two films, on frogs and lizards, are in course of preparation. An additional 1,200 feet of colour film which deals with Aboriginal rock engravings was obtained during recent field work in western New South Wales.

A. P. ELKIN, President.

J. W. EVANS, Director.

Appendix A

**THE AUSTRALIAN MUSEUM—SUMMARISED STATEMENT OF RECEIPTS AND
PAYMENTS FOR THE YEAR ENDED 30th JUNE, 1963**

R E C E I P T S								£	s.	d.	£	s.	d.
Appropriation Account—											97,013	6	8
Treasury Appropriations													
Trustees' Account—								1,000	0	0			
Statutory Endowment								2,000	0	0			
Grant towards Museum Requirements								3,809	17	10			
Museum Publications—Sales and Subscriptions								144	3	4			
Museum Shop Sales								230	10	8			
Donations								200	0	0			
Legacy								500	0	0			
Subsidy by City Council								565	10	7			
Interest								43	10	0			
Advertising								344	19	1			
Postage Receipts								37	15	4			
Refund of Customs Charges								564	17	6			
Sale of Cabinets								35	0	0			
Compensation for damaged paintings								3	6	11			
Miscellaneous Receipts											9,479	11	3
Balance as at 1st July, 1963—								5,707	10	1			
Cash at Bank and in hand								11,550	0	0			
Investments											17,257	10	1
											123,750	8	0

P A Y M E N T S								£	s.	d.	£	s.	d.
Appropriation Account—								85,858	5	7			
Salaries, etc.								52	10	0			
Tea Money								50	0	0			
Insurance on Buildings								1,239	8	6			
Travelling and Subsistence Expenses								100	0	0			
Freight, Cartage and Packing								1,700	0	0			
Books, Periodicals and Papers								49	11	1			
Fees, Commissions, etc.								88	3	4			
Laundry Expenses								329	18	9			
Postal and Telegraphic								595	3	0			
Other Insurances								2,999	19	6			
Stores, Plant and Equipment								2,000	0	0			
Grant towards Museum requirements								1,950	6	11			
Storage Equipment											97,013	6	8
Trustees' Account—								6,329	9	0			
Museum Publications—Cost								104	7	9			
Stock for Museum Shop								1,666	5	3			
Stores, Plant and Equipment								145	0	3			
Publication Sales Receipts paid to Treasury								352	15	7			
Postage Receipts paid to Treasury								175	16	1			
Travelling Expenses								207	8	5			
Expenses paid from Nuffield Grant								966	7	11			
Swain Reefs Expedition								224	2	8			
Museum Specimens								313	9	8			
Entertainment								30	8	1			
Miscellaneous Expenditure											10,515	10	8
Balance as at 30th June, 1963—								2,671	10	8			
Cash at Bank and in hand								13,550	0	0			
Investments											16,221	10	8
											£123,750	8	0

J. W. EVANS, Director.