

1964

---

PARLIAMENT OF NEW SOUTH WALES

---

REPORT OF THE TRUSTEES  
OF THE  
AUSTRALIAN MUSEUM  
FOR THE  
Year ended 30th June, 1964

---

---

*Ordered to be printed, 24 September, 1964*

---

---

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

---

1964

## BOARD OF TRUSTEES

### PRESIDENT :

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

### CROWN TRUSTEE :

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

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

## 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. R. McMichael, M.A., Ph.D., Curator.

#### Insects and Arachnids :

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

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

### 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.

Mrs J. Stevenson, Library Assistant; Mrs. J. Watson, Clerical Assistant

### MUSEUM ASSISTANTS :

Judith Naughton, Technical Assistant; Robyn Hauenstein; Janice Cave; Klara Kota; Janet Walsh; Gai Fell;

Helen Ashton; Dorothy Jones; Kathleen Pope; Diane Raffles; Robyn Spalwit.

### 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. (in charge); C. V. Turner.

### ARTIFICERS :

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

### OFFICE STAFF :

L. Stomfai (in charge); Carmel Deguara; Marilyn Colquhoun; Nancy O'Connor; Caroline Gow; Elynne Downey;  
Mignon Locke; Helen Bamford.

### 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); R. Bennett.

### HONORARY SCIENTIFIC STAFF

#### Zoologists :

E. A. Briggs, D.Sc.; 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.



## CONTENTS

	Page
Introduction .. .. .	7
Progress and Plans .. .. .	7
Gallery Developments .. .. .	8
Staff Matters .. .. .	8
Research .. .. .	9
Field Work .. .. .	10
Publications .. .. .	10
Acknowledgements of Co-operation .. .. .	12
Museum Buildings and Grounds .. .. .	12
Visitors and Attendance .. .. .	12
Finance .. .. .	13
Departmental Reports .. .. .	13
Accounts (Appendix A) .. .. .	23
Illustrations .. .. .	9, 11, 13, 15



# ANNUAL REPORT

## OF THE TRUSTEES OF THE AUSTRALIAN MUSEUM

For the Year ended 30th June, 1964

To His Excellency The Governor:

The Trustees of the Australian Museum have the honour to submit their 110th Report for the year ended 30th June, 1964.

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

The Crown Trustee, Mr. Frank B. Spencer, submitted his resignation to the Minister for Education during February. Mr. Spencer, who had been a Trustee of the Museum for 24 years, had served as Crown Trustee for six years. In expressing our regret that ill-health had made it necessary for Mr. Spencer to resign from the Board we take the opportunity, also, of recording the Trustees' appreciation of the services which he has rendered the Museum and of his many personal kindnesses to his fellow Trustees. In June, Mr. O. G. Vickery, B.E., M.I.E. (Aust.), resigned from the Board of Trustees as he now resides permanently at Blackheath. The President expressed regret that Mr. Vickery had found it necessary to resign and recorded the thanks of the Trustees for the very close and active interest that Mr. Vickery had taken in the affairs of the Museum during his 22 years service as a Trustee.

Mr. F. L. S. Bell, who has been a Trustee for 17 years, died in January. At our meeting held in February we asked that our regret at his passing and our appreciation of his services be recorded in the Minutes of our Meeting.

Professor D. P. Mellor was elected to the Board in April and Professor Elkin became Crown Trustee in May.

During the year the Museum was honoured by an unofficial visit from the Governor-General, the Viscount De Lisle, V.C., P.C., G.C.M.G., G.C.V.O. His Excellency, who was received by the President and the Director, after inspecting the public galleries visited the workshops of the Exhibitions Department. Other distinguished visitors have been the Hon. E. Wetherell, M.L.A., Minister for Education, Dr. H. S. Wyndham, Director-General of Education, and Lord Portal of Hungerford.

### PROGRESS AND PLANS

The Museum continues to progress and develop in many directions and we express our acknowledgement to the Government, which has done much to make this possible through the provision of the necessary funds.

The five upper floors of the seven storey new wing of the Museum were officially opened on 9th September by the Hon. R. J. Heffron, M.L.A., Premier of New South Wales, in the presence of representatives of Government Departments and scientific organisations. The opening ceremony, which took place on the top floor, was followed by a reception in the Australian Mammal Gallery.

This gallery adjoins the main entrance hall of the Museum, on the other side of which is one at present containing foreign mammals. During the year designs and plans have been prepared by Mr. D. Rae, an Artist in the Museum's Exhibitions Department, for the conversion of this gallery into one in which composite exhibits relating to New Guinea and Antarctica will be displayed. Associated with this change will be the transformation of the central entrance area into a hall more in keeping with those parts of the Museum which have recently been reconstructed. It is our hope that a start will soon be made with the necessary structural alterations.

We are also hopeful that an early start will be made on the construction of a new building to house scientific collections stored in spirit and have been informed that the necessary working drawings have been completed. The accommodation which this building will make available is urgently needed as the overcrowded condition of the existing store is hampering research activities in more than one department.

The top floor of the new wing has been equipped as a Cafeteria by the Public Works Department and this amenity, which is for the use of members of the visiting public, was opened for business during December.

The patronage which it has already received is gratifying and affords proof that it is welcomed by visitors as are also the rest areas, where smoking is permitted, provided in the vestibules of each floor of the new wing.



Although, apart from the Cafeteria, none of the floors of the new wing are yet accessible to the public, good progress has been made in the preparations for the two floors which are to become "exhibition galleries". In one of these ethnological specimens will be shown and the other will be a fossil gallery. The latter, which will, in our opinion, be the most outstanding gallery in any museum in Australia, has been constructed from plans prepared by Mr. B. Bertram, a member of the staff of the Exhibitions Department. Several miniature dioramas, showing examples of the life of former geological periods, will be installed in this gallery and a few of these have already been completed. They are the work of Mr. Bertram and Mr. Rae and have been pronounced by scientific visitors from the American Museum of Natural History and the United States National Museum as good as the best museum exhibits of this nature to be found anywhere in the world.

Although the Australian Museum is a State institution its activities have never been limited by State boundaries and in a later section of this Report will be found particulars of field expeditions undertaken during the current year. One of these has been to New Guinea where another is currently being planned to take place late in 1964. We regard it as particularly important that Australia should take an ever increasing interest in the fauna and ethnology of this interesting part of the world and intend to do our utmost to ensure that the Australian Museum shall play its part in this regard.

In the pages of this Report there will be found accounts of the many other directions in which the Museum is progressing. Some of these have to do with material gains such as the acquirement of new facilities, for instance a new photographic workshop and new equipment, including a Zeiss Operation microscope, a new cine camera and new motor vehicles. Others relate to additional staff posts. We appreciate, nevertheless, that however important such additions may be in benefiting the working conditions of the staff, it is on the staff itself that must depend the progress of the Museum as a scientific and educational institution. We accordingly have satisfaction in expressing our opinion that the staff of the Australian Museum, in all categories, is, at the present time, serving the Museum not only actively and loyally but with skill and initiative never formerly surpassed.

### GALLERY DEVELOPMENTS

An exhibit on reproduction in vertebrates has been completed and installed in the Australian Mammal Gallery. It consists of a series of marsupial embryos at different stages of development and models demonstrating the differences between the embryonic development of fishes, reptiles and amphibia, marsupials and placental mammals.

In a case at the top of the main staircase an exhibit on centipedes and millipedes has been installed and the arachnid display has been completed.

Six new displays have been arranged in cases in vestibules of the new wing and the objects shown have been selected from the collections of the Anthropological Department.

The installation of exhibition cases on the floor of the new wing which is to be concerned with fossils has been completed by the contractor, and specimens have been selected for display. Good progress has been made in the preparation of miniature dioramas which will illustrate examples of the life of the various geological periods.

### STAFF MATTERS

There have been no changes in the scientific staff during the year. Dr. F. H. Talbot, Curator of Fishes at the South African Museum, who has accepted a corresponding post at the Australian Museum, has secured a passage from Capetown on 21st August and is due to arrive in Sydney on 9th September.

Four new positions have been created during the year as follows: two Museum Assistants, an Assistant to the Photographer and Visual Aids Officer and a Technical Officer who will be attached to the Education Section.

Mr. McCarthy has acted, for the greater part of the year, as Executive Member of the Council of the Institute of Aboriginal Studies. He has also played an active part in many local and international organisations concerned with anthropology and archaeology.

Dr. McMichael has continued to represent the Museum on the Council of the National Trust and the Director to represent the Museum on the Fauna Protection Panel.

Mr. Whitley and Miss Pope have, in turn, filled the office of President of the Linnean Society of New South Wales and Mr. Smithers was re-elected President of the Royal Zoological Society of New South Wales.

The Director has been elected a Fellow of the Institute of Biology.

Miss Pope was overseas for six months during the year and visited several museums in the United States and in Europe.





The Premier of New South Wales, the Hon. R. J. Heffron M.L.A. and the President of the Board of Trustees, Emeritus Professor A. P. Elkin, after the Premier had unveiled a plaque commemorating the completion of the new wing of the Museum

### RESEARCH

Mr. Fletcher has completed his investigation of the linguloid fauna of the Mootwingee Ranges and, as time permits, is continuing studies of the Upper Silurian and Lower Devonian faunas of the Cobar district.

Mr. McCarthy has continued work on the preparation of a report on the 32 sites of cave paintings recorded by a Museum field team in 1961.

Mr. Miles has supervised the excavations of a rock shelter floor at Ball's Head in Port Jackson and has participated in excavations of shelter deposits being carried out by the Anthropology Department of the University of Sydney in the Royal National Park and on the Hawkesbury River.

Mr. Marlow has continued his study of the ecology and behaviour of a marsupial mouse (*Antechinus stuarti*) and of the systematics of marsupial mice belonging to the genus *Planigale*. He has also carried out a comparative investigation of the locomotion of the hopping rodent *Notomys* and the dasyurid *Antechinomys*.

Mr. Cogger has completed his study of a population of Agamid lizards in western New South Wales. This had been undertaken over a period of three years and had entailed making some 13 separate visits to the study area. He has also completed a revision of Australian lizards belonging to the family Agamidae and has made good progress in an investigation of the osteology and generic systematics of Australian elapine snakes.

Dr. McMichael has completed his study of Acavid land snails and has continued with his research on shells belonging to the family Volutidae. His minor research projects have had to do with the venomous octopuses *Hapalocheaena maculosa* and *H. lunulatus* and the mollusca of archaeological sites.

Mr. Smithers has continued his studies of the systematics of the Psocoptera and has also undertaken some biological studies with these minute insects. He has in addition continued investigations of butterfly migration, in particular the movements of the Wanderer Butterfly (*Danaus plexippus*).

Mr. McAlpine has undertaken systematic research on flies belonging to the families Pallopteridae, Platystomatidae and Trypetidae.

Dr. Yaldwyn has continued his work on the revision of the Crustacea Decapoda Natantia of New Zealand and on other projects mentioned in last year's Report. He has commenced a study of the fresh-water crayfish of New Guinea.

Mr. Chalmers has made an examination of a stone marketed under the misleading term "Australian Jade". This has turned out to be chrysoprase, a green variety of chalcedony from Marlborough, Queensland.



## FIELD WORK

The Director spent a week in Thailand during November where, on behalf of UNESCO, he conferred with those desirous of having a natural history museum developed in Bangkok. Before returning to Australia he visited Paris to discuss the project with the Museums and Monuments Division of UNESCO. In February he visited the Cradle Mountain National Park in Tasmania for insect collecting purposes.

In company with Dr. E. Lundelius of the University of Texas and Mr. A. D. Turnbull of the Chicago Natural History Museum, and on other occasions with Dr. E. H. Colbert of the American Museum of Natural History, Mr. Fletcher visited several parts of the State for the purpose of inspecting vertebrate fossil horizons.

During June, Mr. McCarthy, accompanied by Mr. Hughes, Museum Photographer, visited the Carnarvon Ranges, Mt. Moffat, Blackall and other Aboriginal sites in Queensland, for the purpose of studying and filming rock engravings and paintings. In the Mt. Isa district, axe quarries were examined and sample collections of implements made on campsites.

Mr. Marlow and Mr. Disney, accompanied by a Preparator, Mr. R. Lossin, travelled to Normanston, on the Gulf of Carpentaria, towards the end of 1963. The principal purpose of the expedition was to seek specimens and to study in the field marsupial mice belonging to the genus *Planigale*. Although very few of these mice were found, good collections were made of other mammals. During May, Mr. Marlow, in company with another Preparator, Mr. M. Cameron, visited the Coolabah district to seek specimens of another marsupial mouse (*Antechinomys laniger*).

In connection with his research project on the sex and age differences of birds, with particular reference to moult, Mr. Disney has visited an area near Nowra for five days in each month since February.

Mr. Cogger has spent four months in Papua and New Guinea making collections of reptiles and amphibians. Among the several thousands of specimens obtained were several previously unrepresented in the Museum collections. Mr. McAlpine, who accompanied Mr. Cogger to New Guinea, collected insects for the Museum collections.

During December Dr. Yaldwyn and Dr. McMichael travelled to Karumba, on the Gulf of Carpentaria. There they took part in a survey of the prawn fishing potential of the Gulf which is being conducted by the C.S.I.R.O. and the Queensland Department of Harbours and Marine. Large series of representatives of many marine organisms were collected.

Dr. Yaldwyn and Dr. McMichael also spent a short period in the Grafton area, where, with the assistance of a team of skin divers, they obtained extensive collections of intertidal and shallow-water organisms.

In company with Mr. R. Reeve, of Lismore, Mr. Chalmers visited several mineral localities in the New England district and in the far north coast area of the State. In June he left Sydney on an expedition to search for australites in company with Dr. B. Mason of the American Museum of Natural History and Dr. E. P. Henderson of the United States National Museum.

Mr. Smithers has made some 20 visits to the Camden area in connection with his butterfly migration studies.

Mr. Fletcher, Mr. Whitley, Dr. McMichael, Dr. Yaldwyn, Miss Pope, Mr. McCarthy, Mr. Marlow, Mr. Disney and Mr. Miles attended the meeting of A.N.Z.A.A.S. which was held in Canberra during January.

## PUBLICATIONS

The publication of *Records of the Australian Museum* increased during the year. Twelve parts of the *Records* were either printed or being printed, compared with nine the previous year. The parts published were Nos. 15 and 16 of Volume 25 and Nos. 1, 2, 3, 4, 5, 6, 7, 8, and 9 of Volume 26. The index to Volume 25 was also published. No. 10 of Volume 26 is with the Government Printer.

Improvements to the appearance of the *Records*—a light-green (instead of white) and stronger cover, a more modern front cover layout, and larger type throughout, started with Volume 26 and have proved a success.

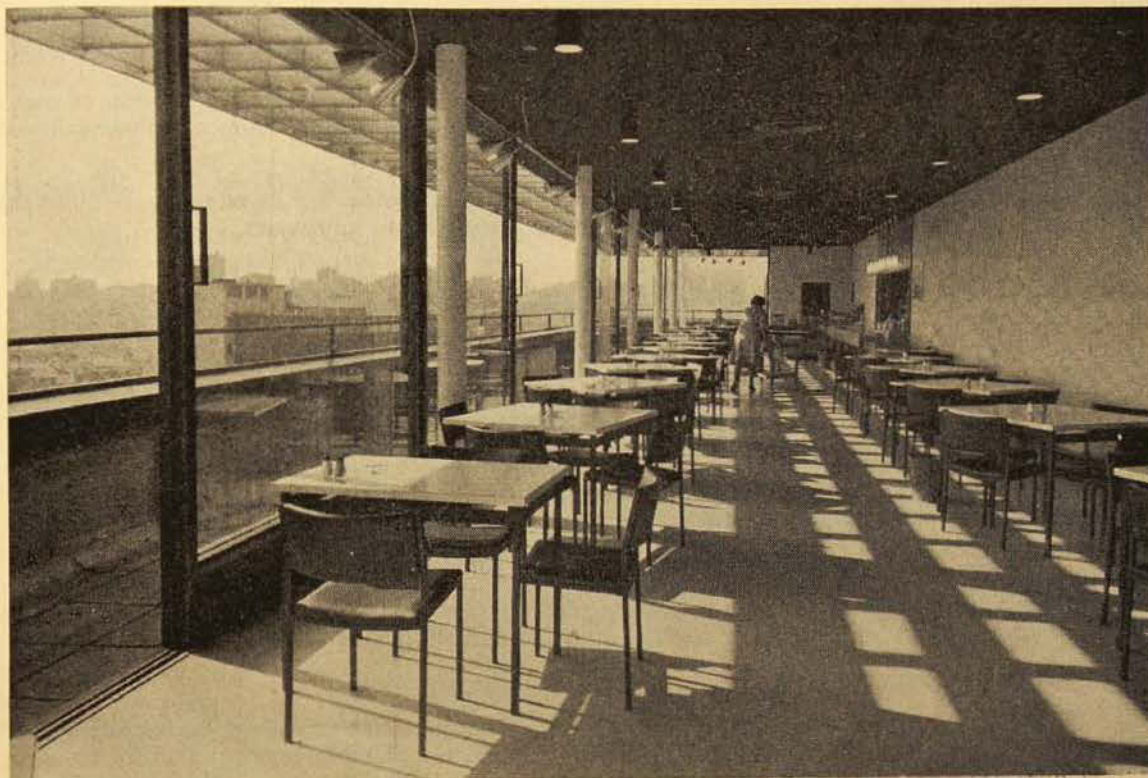
The number of subscribers to the quarterly magazine, *Australian Natural History*, increased from 3,008 to the record figure of 3,412. Nos. 7, 8, 9 and 10 of Volume 14 of the magazine were published. No. 8 was a special issue devoted to the Australian and Tasmanian Aborigines and their prehistory. It contained seven extra pages, and 5,000 copies, a record number, were printed.

A third edition of the booklet *Exploring Between Tidemarks* was published, the printing order being 7,500 copies, an increase of 2,500 over previous editions. A fourth edition of the booklet *New South Wales Aboriginal Place Names and Euphonious Words, With Their Meanings*, was published.



Three new free natural-history leaflets, *The Australian Museum*, *Australian Snakes*, and *The Australian Museum's Educational Facilities*, were printed, and two other new ones, *Sea Anemones* and *Crabs of the Sydney Foreshores*, are with the Government Printer. Three existing leaflets were reprinted and four are in process of reprint.

Other reprints were: 10,000 folders giving information about publications and containing subscription forms for the magazine; 2,000 circulars publicizing the magazine, for sending to schools; and 1,000 photographs of the Museum's exterior, for sale at the Museum.



The Cafeteria on the top floor of the new wing

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 Functions of Natural History Museums. *Museum* 16 (4) : 227

The Periods of Origin and Diversification of the Superfamilies of the Homoptera-Auchenorrhyncha as determined by a study of the wings of Palaeozoic and Mesozoic fossils. *Proc. Linn. Soc. Lond.* 175: 171.

McCarthy, F. D.—

The Art of the Rock Faces, in *Australian Aboriginal Art*, Ure Smith Pty. Ltd., Sydney.  
Ecology, Equipment, Economy and Trade, in *Australian Aboriginal Studies*, Oxford University Press.

Miles, D. J.—

The Ngadju Longhouse, *Oceania*. 34 (4).

Whitley, G. P.—

Fishes of the Coral Sea and Swain Reefs. *Rec. Aust. Mus.* 26 (5): 145

Scombrid Fishes of Australia and New Zealand. *Proc. Sympos. Scombroid Fish.* (Mandapam Camp, India) 1 : 221.

New Records of Fishes from Australia. *Aust. Nat.* 12 (4) : 7.

Smithers, C. N.—

New Species and Records of Elipsocidae from South Africa (Psocoptera). *J. ent. Soc. S. Afr.* 25 : 255.

New Records of Myopsocidae (Psocoptera) from Africa. *J. ent. Soc. S. Afr.* 26 : 187.

The Elipsocidae of Australia. *Pacific Ins.* 5 : 885.

Records of Cave and Mine-Dwelling Psocoptera in Australia. *J. ent. Soc. Qd.* 3 : 85.

The Archipsocidae (Psocoptera) of Australia. *J. ent. Soc. Qd.* 3 : 79.



## ACKNOWLEDGEMENTS OF CO-OPERATION

Mr. L. Haines, Mr. J. H. L. Wassell, Mr. A. D'Ombra and Mr. T. Healy have been elected Honorary Associates of the Museum in recognition of the very considerable help they have rendered it in various ways.

Mr. K. A. Hindwood, Honorary Ornithologist, and Mr. T. Iredale, Honorary Zoologist, have continued their valuable services to the Bird and Mollusc Departments respectively. Mr. J. Voorwinde, Mr. C. Huenecke and Mr. J. Garrard have also given help in the Department of Molluscs.

In another section of this Report reference is made to the excavation of an Aboriginal site at Ball's Head. Help and co-operation which greatly assisted this work were provided by the North Sydney Council, the North Sydney Junior Chamber of Commerce, the Cliff Search and Rescue Squad of the Police Department, the Departments of Anatomy, Anthropology and Archaeology of the University of Sydney, the Public Works Department and the Geological Survey of New South Wales.

Mr. Justice F. G. Myers, Honorary Associate, has once more benefited the Museum in many ways and Mr. J. V. Peters has helped the Department of Entomology by providing assistance in insect migration studies.

Appreciation is expressed to the Council of the City of Sydney for its annual subsidy to the Museum and to the Public Works Department for the many services it provides.

## MUSEUM BUILDING AND GROUNDS

The Museum building has given very little trouble during the past year and only a few minor leaks have occurred in the roof and guttering during heavy storms. These have been attended to at once and there has been no damage.

Some damage to the stone and railing at the William Street entrance to the new wing was caused by a truck rolling down while unattended.

Work on the Department of Photography is now completed.

Work on the Silk Screen Room is well under way and should be completed early in the new financial year. A gas hot water unit has been installed and all lighting and power finished.

Work has begun on the ground improvements of the new wing.

The Council sub-station in the Museum grounds, adjacent to the new wing, has been completed and the main electrical board is situated in the sub-basement. This has begun a plan for diverting power lines to different parts of the Museum and the installation of a great number of sub-boards. The proposed plan includes the removal from the face of the Museum of as much conduit as possible.

Lighting has been installed in the Placental Mammal case, two wall cases on the top landing of the main stairway, the new wing library, and seven diorama cases.

The Department of Public Works has been very co-operative in this work and particularly in electrical maintenance, and approximately 500 fluorescent tubes have been replaced in the building.

The area used by the Museum at the Shea's Creek store has been reduced by over a half as most of our stored showcases were sold and a great deal of material and specimens brought back to the Museum. The principal items still at the Shea's Creek store are: fossils, canoes, Antarctic material, some specimens of fish and mammals, skeletons and several storage cupboards. Several hundred storage boxes are stored awaiting disposal by auction.

## VISITORS AND ATTENDANCE

During the year 344,766 people were recorded as having visited the Museum. This figure represents considerably less than the total number of visitors as no counting device has yet been installed in the entrance vestibule of the new wing.

Scientific visitors, most of whom studied some parts of the collections, included: Dr. E. H. Colbert, Dr. B. Mason (American Museum of Natural History), Dr. J. C. Moore, Mr. W. C. Turnbull (Chicago Museum of Natural History), Dr. J. Garrick, Dr. E. P. Henderson, Dr. E. Lachner (United States National Museum), Professor J. G. D. Clark (University of Cambridge), Mr. R. E. Moreau (University of Oxford), Dr. Yosio Kobayasi (Natural Science Museum, Tokyo), Professor E. Lundelius (University of Texas), Dr. W. B. Berry, Dr. A. S. Leopold (University of California), Dr. L. van der Leeden, Dr. S. Kooiman (Ethnology Museum, Leiden), Dr. J. Prakash (UNESCO, New Delhi), Dr. H. Saint-Giron (Paris), Professor Perry Gilbert (Cornell University), Professor E. Alison Kay (Honolulu), Dr. J. Tomlinson (San Francisco State University), Dr. W. A. Starck (University of Miami), Dr. D. I. Williamson (Isle of Man Biological Station), Dr. J. S. Garth (Allan Hancock Foundation), Dr. J. A. Keast (Queen's University of Canada), Professor W. Stephenson (University of Queensland), Professor A. J. Marshall (Monash University), Dr. H. Hinton (Bristol University), Dr. J. Kukawa (University of New England), Mr. J. McNally (National Museum of Victoria), Mr. W. B. Hitchcock (C.S.I.R.O.), Dr. A. W. B. Powell (Auckland Museum), Mr. N. Milward (University of Queensland).



## FINANCE

Expenditure from Consolidated Revenue for the year (excluding Statutory Endowment of £1,000) was £104,729 9s. 6d., compared with £97,013 6s. 8d. last year. Net income for Trustees' Funds (including Statutory Endowment) was £9,669 7s. 8d. compared with £9,479 11s. 3d. for 1962-63, while net expenditure amounted to £11,676 1s 10d., compared with £10,515 10s. 8d. for 1962-63.

The cash balance in the Trustees' Account at 30th June, 1964, was £664 16s. 6d. Trustees' Invested Funds at 30th June, 1964, 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

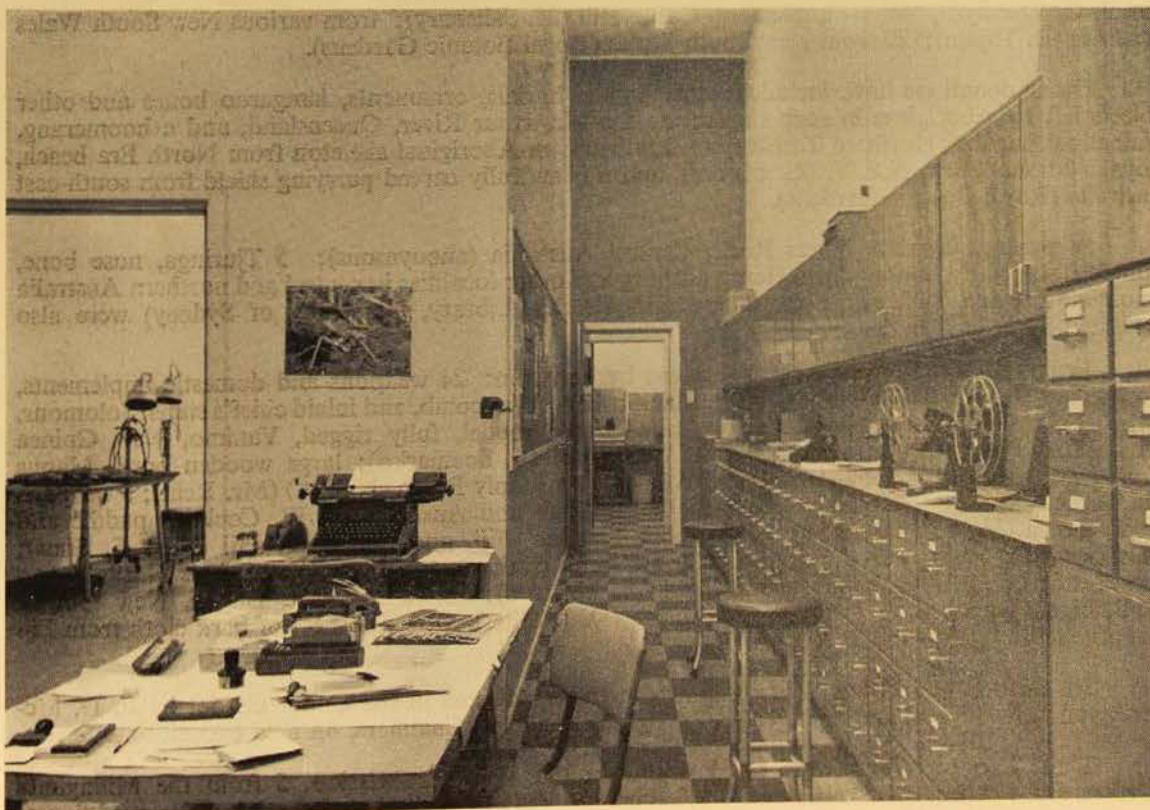
**Fossils:** (H. O. FLETCHER, M.Sc., Curator and Deputy Director; MISS D. JONES, Assistant).

Registrations during the year numbered 617 specimens, including material transferred from the Mining and Geological Museum.

Donations of particular interest consisted of additional jelly-fish and worm impressions from rocks of Upper Proterozoic age at Ediacara, Flinders Range, South Australia (Mr. B. Flounders); well preserved pelecypods of Permian age from Ravensfield quarry (Mr. A. D'Ombrian); gastropod and brachiopod shells of Carboniferous age from Barrington Tops (Mr. F. Slip); a large series of brachiopod shells from Lower Permian rocks at Texas, Queensland (Union Oil Development Corp.); crinoid calices of Devonian age from U.S.A. (Dr. I. Browne); remains of Horned Turtle, *Meiolania platyceps* Owen, including a nest of eggs, from Lord Howe Island (Pastor D. H. Watson); a collection of Upper Silurian and Lower Devonian fossils from the Cobar districts, N.S.W. (Cobar Mines Pty. Ltd.); Upper Devonian lingulids, Cambrian worm-tubes and trilobite wallows from near Kayrunnera, north of Broken Hill, N.S.W. (Mr. G. Rose).

Material transferred from the Mining and Geological Museum included about 100 type specimens of vertebrate, invertebrate and plant fossils. The fossil plants are those described by C. Ettinghausen in 1888.

Rearrangement of the collection of fossils continued during the year and is now nearing completion. The collections of fossil plants and fishes were transferred from wooden store boxes into steel cabinets and arranged in stratigraphical order. The sorting, naming and arrangement of the pelecypod and branchiopod collections are well advanced and during the year the collection of byozoa was completed. In this final arrangement of the collections ample space is being provided for the future expansion of all groups.



The new photographic workshop



Material made available to other institutions has included latex moulds and casts of hypotypes of *Cardiola (Slava) fibrosa* Sowerby and *Cypricardina contexta* Barrande (Dr. Jiri Kriz, Charles University, Prague); a latex mould and cast of *Dipnorhynchus susmilchi* Eth. (Dr. K. Campbell, Australian National University); two specimens of *Spirinella calcistriata* Johnson (Dr. J. G. Johnson, California Institute of Technology); photographs of the holotype of *Climacograptus hastata* (Hall) (Dr. W. B. N. Berry, University of California); photographs of nine Tasmanian Ordovician and Silurian fossils (Mr. M. Banks, University of Tasmania); photographs of type specimens of *Gravicalymene australis* Eth. and Mit. (Mr. E. D. Gill, National Museum of Victoria); plaster casts of holotypes of Permian pelecypods (Dr. J. B. Waterhouse, New Zealand Geological Survey).

Material forwarded on loan has included crustacean remains from Middle Triassic rocks at Brookvale (Mr. Edgar Riek, C.S.I.R.O., Canberra); Permian fossils of the family Pachydomidae (Dr. J. B. Waterhouse, New Zealand Geological Survey); Permian dielasmids (Dr. K. Campbell, Australian National University); large series of marsupial skulls and mandibles from alluvium deposits at Weetalibah and cave-breccia from Wombeyan Caves (Mr. W. C. Turnbull, Chicago Natural History Museum); specimens of *Calymene australia* Eth. and Mit.; four species of *Conularia* from Permian rocks of New South Wales (Dr. G. A. Thomas, University of Melbourne); a series of Upper Silurian brachiopods (Mr. K. J. Kemezis, Australian National University); specimens of *Gangamopteris* sp. nov. for description (Mr. J. F. Rigby, Newcastle University College); a large series of Silurian and Devonian corals (Mr. A. Pedder, New England University); crinoid calices of *Pisocrinus yassensis* Eth., and *Lecanocrinus breviararticulatus* Chapman (Dr. G. M. Philip, New England University).

Collections of fossils were presented to St. Andrew's Cathedral School, Sydney, and to St. John of God Hospital, Richmond.

The preparation of a complete list of all fossil type specimens in the collection is proceeding satisfactorily. Work is now in progress in compiling a list of types in the brachiopod, pelecypod and fish collections.

More than 250 inquiries were dealt with during the year including the identification of many fossils and general information on palaeontological matters.

**Anthropology:** (F. D. MCCARTHY, Dip. Anthropol., Curator; D. J. MILES, B.A., Assistant Curator; MISS K. POPE, Assistant).

A total of 1,531 specimens was received in 44 acquisitions.

Gifts of Australian stone implements comprise 43 uniface and biface spear points from McArthur River, Queensland, representing the first record of these points in north-west Queensland (J. Mathew); 122 from Quibray and 437 from Singleton (F. A. Davidson); 241 from rock shelter floors and surrounding surface sites, Chillagoe, Queensland, (S. Tresize); 252 from Lake Hart, Arcoona, Andamooka and Koolymilka, South Australia (A. C. Davies); 22 from Condobolin and Lake Cowal, N. S. W. (L. N. Abott); 7 painted totem stones, Milingimbi (K. Kupka); iron chisel, Delamere (G. Collings); incised cylcon, Lake Conjola, N.S.W. (R. Gimbert); 2 axes, Mulgon (Mrs. Seccombe); stone ochre container and ground chisel, Seven Hills, N.S.W. (Mr. Munro); axe, Normanton, Queensland (Dr. J. C. Yaldwyn); pebble implement, Castle Hill (M. Salisbury); from various New South Wales localities (R. Taplin); 20 from New South Wales (Royal Botanic Gardens).

Other donations have included: two bundle burials, ornaments, kangaroo bones and other objects left by Aborigines in rock shelters on the McArthur River, Queensland, and a boomerang, Walhallow Lagoon, Northern Territory (J. Mathew); an Aboriginal skeleton from North Era beach, Royal National Park, N.S.W. (G. Moore), and a beautifully carved parrying shield from south-east Australia (Royal Botanic Gardens).

A waninga symbol, Ayers Rock, Central Australia (anonymous); 5 Tjuringa, nose bone, painted stone, and a carving from Hermannsburg and other localities in central and northern Australia (anonymous), and a shield, Central Australia (Burkitt Library, University of Sydney) were also presented.

From the Pacific Islands were received by donation: 24 weapons and domestic implements, mostly New Guinea and Solomons, (J. M. Black); 12 arrows, comb, and inlaid chief's staffs, Solomons, (Mrs. E. D. Douglas); a beautifully decorated canoe model, fully rigged, Vanimo, New Guinea (Mrs. M. Stewart); carved figure, Asmat, West Irian (B. Soemarko); large wooden bowl, Manus (J. R. L. Morgan); fish hook, Ulawa Island (found on Manly Beach, N.S.W.) (Mr. Rein); 5 weapons and barkcloth, New Hebrides, Solomons, Tonga, Bali and Australia (J. W. Cocks); paddle and spear, Papua (Miss E. L. Gibbs); whale tooth Tambua, Fiji, and barkcloth, Fiji (Miss E. Sims); Ghurka and Burmese knives (Dr. Shellshear); batik cloth, central Java, (Yami Anis Hasan); two carved crocodiles, Bougainville and Rabaul (A. Martson); hafted axe, Mt. Hagen, New Guinea (E. B. Bignold); stone tapa beater, New Guinea (D. J. Miles). A large sheet of bark cloth from Fiji was purchased from Mrs. N. Neal.

Six hundred and fifteen stone implements were collected in the Cobar district by F. D. McCarthy and H. Hughes, and 10 at Lake Callabonna by R. O. Chalmers, on field expeditions.

Three bark paintings were purchased from the Yirrkalla Mission, 5 from the Milingimbi Mission, and 57 from the Croker Island Mission. In addition, 7 bark paintings and 8 carved figures were purchased from Mrs. S. Holmes.



Several important reorganisations of the reference collection were completed. One was the rearrangement, according to locality and type, of the archaeological collection. It is now stored in 55 standard steel cabinets which provide ready access for study. Another move was the transfer of the collection of 65 carved trees (N.S.W.) from the Mascot store to the Museum where they are now arranged in a line against a wall so that each one may be examined separately. The African, Asiatic, Indonesian and American ethnographical material has been moved into large steel cabinets in the new wing, and the collections of Australian bark paintings and musical instruments from various parts of the world have been stored in new cabinets. The Public Works Department has completed the construction of three large glass-fronted cabinets each 21 feet long in the main Anthropology store in the new wing into which the reference collection of Pacific islands ethnography will be transferred from its temporary store in the now-closed New Guinea gallery.

The card catalogue of Aboriginal relics in situ in New South Wales, comprising some 1,200 entries, was rearranged according to shires and municipal councils. A large number of additional references obtained in a survey made by R. Taplin have also been collated. From this catalogue a complete list of the sites in the Kuring-gai Chase National Park was supplied to the Trust.

Action was taken by the Museum to prevent the destruction by roadwork of an extensive group of rock engravings in the Kuring-gai Chase National Park. Part of the route of a new expressway to Newcastle was examined, at the invitation of the Main Roads Board, when it was found that two interesting groups of engravings are situated right in the middle of the planned road; as the road cannot be diverted, and the cost of cutting out the figures would be well over £1,000, nothing can be done to save these groups and detailed records of them have been made.

**Mammals:** (B. J. MARLOW, B.Sc., Curator; MISS G. FELL, Assistant, part-time).

One hundred and seventy-three new specimens were added to the collection during the year, of which 56 were presented and 117 were collected. Among the donations were planigales, *Planigale ingrami*, and a specimen of the blossom bat *Syconycteris australis*, from Port Macquarie (Mr. R. Pawlowski, of Karumba, North Queensland). A live specimen of the New Guinea dasyurid, *Planigale novaeguineae*, was obtained by Mr. H. Cogger. This animal, which is the second known specimen of this species, is still alive in the Museum. A good series of the small dasyurids *Antechinomys spenceri* and *Dasyuroides byrnei*, both poorly represented in the collection, was obtained during a field trip to western Queensland. A good series of skulls and flippers of pilot whales, *Globiocephala melaena*, was obtained at Seal Rocks. These had been buried there on behalf of the Australian Museum by Mr. W. Dawbin of Sydney University. A very valuable collection of small mammals in spirit was donated to the Museum by Dr. E. Bulmer, Department of Anthropology, University of Auckland, New Zealand. This collection also contained a fine series of pygmy possums, *Cercatus caudatus*, and of prehensile tailed rats, *Pogonomys sylvestris*. The latter species is new to our collection.

A series of four insectivorous marsupials, *Antechinomys laniger*, was collected in the Coolabah district of New South Wales. These valuable specimens were needed for comparison with specimens of *Antechinomys spenceri*.



A miniature diorama depicting life in the Cretaceous era. This is one of 12 such dioramas being prepared for installation in the fossil gallery



Work has continued during the year on the reorganisation of the mammal collection particularly on the skins and skulls of bats. Approximately half the collection of bats has been dealt with. The skeletal material, foreign mammals and the remainder of the bats have still to be done. The accommodation for the mammal collection is unsatisfactory since the present mammal room is very damp.

Assistance and facilities for examination of the collections have been given to several workers including Professor K. Cleland (marsupial testes); Mr. J. Mahoney (rodents); Miss Illitson (rodent testes); Mr. D. Drummond (bats); Dr. L. Freedman (bandicoots); Mr. E. Hamilton-Smith (bats); Dr. A. Keast (Dasyurids); Dr. J. C. Moore (whales); and Mr. K. Keith (tree kangaroos).

Investigations have continued on the long term project of the study of the ecology and behaviour of the marsupial mouse, *Antechinus stuarti*, in the field. The investigation of the systematics of the genus *Planigale* has continued and further specimens of these flat-headed marsupial mice have been obtained for the collection or received on loan. Expeditions to collect specimens of *Planigale* have taken place and are planned for the future. Valuable living examples have been obtained and are being studied at present in the laboratory.

An investigation has been carried out on a comparison of the locomotion of the hopping rodent, *Notomys*, and the dasyurid *Antechinomys*. The techniques involved have included cinephotography and the registration of tracks on a carbon trace. These have shown that unlike *Notomys*, with which it has always been compared in the past, *Antechinomys* does not ricochet but runs quadrupedally.

**Birds:** (H. J. de S. DISNEY, M.A., Curator; MISS G. FELL, Assistant, part-time).

During the year 310 specimens were registered and 73 specimens were presented. These included a very fine specimen of Buller's Albatross, *Diomedea bulleri*, found on Thirroul Beach, New South Wales (Mr. P. Strong). This is the first record of this albatross for Australia. A further 11 specimens were received from Anir (Feni) Island, east of New Ireland (Mr. C. A. Carson). Specimens collected by the Museum staff on Museum field trips totalled 237.

The labelling of the study collection in the steel cabinets in the main store is nearing completion and work will then start on the large birds stored in the gallery.

Since February five days have been spent every month at a study area near Nowra, south of Sydney, where by means of collecting and banding the sex and age differences of the birds in the area and their breeding cycles are being studied.

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

Major acquisitions during the year included a large series of marine molluscs, collected by a Museum party at Minnie Waters and neighbouring localities in November, 1963. Subsequently much useful material from the same area has been received from Mr. G. Biddle, who has specialised in collecting and photographing nudibranchs and has found some new species and records for Australia and New South Wales. Another large series of shells was received from the Duke of York Islands, New Guinea, collected by Mr. P. Savelieff. Among these shells was a specimen of *Conus gloriamaris* Chemnitz, one of the world's most highly prized sea-shells which was presented by Mr. George Edwards, through Mr. Savelieff. This shell was specially exhibited during November at the Museum and later by Trans Australia Airlines in their head offices at Sydney and Melbourne. A further large series of shells and spirit specimens was collected by the Curator and Dr. J. C. Yaldwyn at Karumba and nearby localities, Gulf of Carpentaria, during December, 1963. Valuable South American shells were received in an exchange with Dr. E. de Carvalho Rios. Land snails and some marine shells were collected by the Curator in New Zealand and other rare Volutes acquired by exchange.

Additional cabinets constructed during the last financial year have enabled further reorganisation of the Mollusca collections to be achieved. A room has now been set aside as a processing room, where material can be sorted, labelled, and stored prior to incorporation in the general reference collection. Plans towards a card catalogue of the Australian Mollusca have been laid and it is hoped to commence this project in the coming year.

Steady work on the replacement and redesign of the shell displays has continued throughout the year. Some exhibits were restored to the table cases prior to the opening of the new wing. Plans are in hand to complete the remainder of the display by the end of 1964. Plans for the improvement of the table cases by the use of mirrors and the construction of a step to help young people see into the cases, are in hand.

Among the scientific bodies and individuals given assistance were the following: Dr. J. Pearson (University of Queensland); Dr. I. McBryde (University of New England); Mr. J. Hails (University of Sydney); Dr. Shirley (University of Sydney); Dr. J. Brereton (University of New England); Miss J. Morris (Macleay Museum); Mr. V. Megaw (University of Sydney); Mr. D. Hepple (British Museum); Dr. R. K. Dell (Dominion Museum); Dr. J. Rosewater (United States National Museum); Mr. B. Wilson (University of Western Australia); Mr. R. Burn (National Museum, Melbourne). Specimens have been lent to Dr. S. Kosuge (National Science Museum, Tokyo); Mrs. R. Kerslake (National Museum, Melbourne); Mr. T. Darragh (University of Melbourne); Mr. Anthony D'Attilio (American Museum of Natural History); Dr. J. Tomlinson (San Francisco State College).

A great number of enquiries from the public were received after publicity concerning *Conus gloriamaris* and some hundreds of specimens of cone shells were submitted for identification.



**Fishes:** (G. P. WHITLEY, Curator; Miss H. ASHTON, Assistant).

More than 1,150 fishes were received, registered and embodied in the collections during the year. Australian Museum collectors obtained freshwater fishes from Papua and marine species from northern Queensland and northern New South Wales. Mr. George Coates sent further fine consignments from the Townsville area, Queensland. Mr. Barry Mitchell presented material trawled off Port Stephens, New South Wales. Mr. Anthony Marston supplied collections from the Gilbert Islands, the Solomons and Norfolk Island. Madame R. Catala sent rarities from New Caledonia and various other donors gave welcome specimens from Australia and the Pacific Islands. Mr. Ian Munro, C.S.I.R.O., presented a collection of fishes from the Gulf of Carpentaria, which included several genera new to our collection and possibly several species new to science. Of particular note were: portions of a 30 foot long Whale Shark (Mr. A. D'Ombrian), coral reef fishes (Mr. K. Gillett), some small, unnamed species from tropical Australia, and several new records for New South Wales.

Many fresh exhibits and new labels have been added to the Fish Gallery, notably in the Classification, Flying Fish, Sea-horse and Commercial Fish sections.

Information on various sharks and fishes, or references to literature, was supplied to H. M. Navy, C.S.I.R.O., Cronulla, the Premier's Department, Marineland at Manly, Taronga Park Aquarium, the Fisheries Branch of the Chief Secretary's Department, to the Shark Research Society and to various inquirers in United States of America and New Zealand.

**Reptiles and Amphibians:** (H. G. GOGGER, M.Sc., Curator; Miss R. SPALWIT, Assistant).

One thousand one hundred and seventy-four specimens of reptiles and frogs were registered during the year (this number does not include approximately 3,000 specimens collected in New Guinea, not yet registered).

The research collections have been maintained in good order. Complete occupation of all available spirit house accommodation has made it necessary to store some thousands of recently acquired specimens on the floor of one of the galleries of the new wing and lack of accommodation has brought the reorganisation of the collections to a standstill.

This year has seen a significant increase in the number of inquiries received, particularly from other States. As usual they covered a wide range of topics, from the identification of specimens to advice to the press and medical authorities on snake distribution and snake-bite emergencies. Collections of reptiles and frogs were identified for various students, scientific workers and institutions.

Collections received of particular interest have included frogs from New Guinea (Dr. A. Lee); Victorian reptiles (Zoology Department, University of Melbourne); reptiles from Cape York Peninsula (Mr. J. L. H. Wassell); reptiles from Solomon Islands (Mr. F. Parker); reptiles from Alice Springs (Dr. D. Linder); reptiles from various localities (Mr. A. Holmes); skeletal material of geckos and legless lizards (Dr. N. G. Stephenson).

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

Specimens added to the departmental collections during the year are as follows: collected 12,597, presented 495, total 13,092. Many of these were collected in New Guinea.

Three hundred and four type specimens were registered. They included several types from the E. Zeck collection. The extensive moth collection of Mr. L. Haines is now housed in the Museum and will eventually become the property of the Museum.

Identification of Museum material has continued in several groups in which the Curator and Assistant Curator specialize and material has been identified for the Forestry Commission, the Department of Agriculture in Papua, the C.S.I.R.O. and for the Bernice P. Bishop Museum, Hawaii, as well as for many individual research workers.

Some progress has been made in the labelling, sorting and storing away of insect material collected in past years and an attempt is being made to deal with recent acquisitions immediately.

The Trypetidae have been rearranged and many groups have been rehoused in the new cabinet system.

Work is in progress on rearranging the spirit collection. A start on this has been made possible by the appointment of a second Assistant.

Material has been despatched to 18 specialists in different parts of the world and returned, and identified material has been received from 11 workers.

Some 3,586 inquiries were received from members of the public. This figure does not include inquiries received from research workers of institutions relating to scientific work.



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

The continuation of the policy of planned collecting from new areas has resulted in the acquisition of important representative collections of invertebrates from the Gulf of Carpentaria and northern New South Wales, thanks to the efforts of Drs. McMichael and Yaldwyn and the C.S.I.R.O. Prawn Survey in the north.

Among the more notable acquisitions were the following: a collection of Sydney Harbour sponges with duplicates made with the help of Dr. Pat Berquist; type Acanthocephalid worms (Dr. S. Edmonds, South Australia). Through the offices of Professor W. Stephenson some valuable Queensland marine worms have been presented. The first batch comprises five new species. The second batch includes two new species of the genus *Nephtys*. Some 23 species of eastern Pacific echinoderms were obtained from Captain F. Ziesenhenné of Los Angeles and two rare species of echinoderms were collected at Long Reef.

The catalogue of the revised collections of dry sponges has been completely typed and after checking will be incorporated in the main catalogue. Revision of the extensive spirit collection of sponges has progressed.

A large number of inquiries has been dealt with. The Glenfield Research Station sought identification of earthworms living in the wool of a sheep. The Atomic Energy Commission sought identifications of four species of annelid worms that are being used as indicators of pollution by atomic wastes in some nearby waterways. A worm found in some ice cream proved to be an earthworm accidentally introduced into the container. The Holothurian *Urodemas perspicillum* was identified for an inquirer who reported an invasion of them on the sea floor near the mouth of Sydney Harbour. Identification was sought of a sea urchin living in numbers on algae harvested in Tasmanian seas (*Holopneustes inflatus*).

**Crustacea, Coelenterata and Other Groups:** (J. C. YALDWYN, Ph.D., Curator; Miss R. HAUENSTEIN, Assistant).

Mixed general collections of invertebrates continue to come in from institutions and individuals at an ever-increasing pace. The problem is to sort and house these adequately with existing staff and space and there is a real need for an additional scientist to work with some of the groups.

During the year a large and completely identified collection of penaeid prawns, including the types of about 20 species, was transferred to us by Dr. A. A. Racek (University of Sydney) and Dr. W. Dall (University of Queensland). This is additional to the collections and types upon which authors based their earlier studies on this group and the Australian Museum now possesses an outstanding, and by far the largest, completely documented collection of Indo-Pacific penaeid prawns available for study anywhere in the world. Many species are of major commercial importance in the area.

Other important acquisitions during the year include unusual local corals from the Sydney area (C. Lawler and R. de Preux); collections of intertidal corals from the Grafton area (G. Biddle and Museum party); preserved specimens and photos from life of the sea wasp, *Chironex* (K. Gillett); trawled Crustacea from southern Queensland and northern New South Wales (T. Garrard and N. Bale); further type micro-slides of freshwater and marine copepods (Mr. I. A. E. Bayly, University of Queensland); types of a new species of *Anaspides* from Tasmania and of two species of blind cave shrimp from the Northern Territory (Dr. W. D. Williams, Monash University); freshwater crayfish from New Guinea (H. G. Cogger, Museum expedition); pelagic crabs from New Guinea and western Pacific waters (Miss Isobel Bennett, University of Sydney); extensive series of crabs from Lady Elliot Island, Queensland (Mrs. C. Wright); crabs from Macquarie Island (A.N.A.R. Expeditions), and representative New Zealand crabs (Dr. R. K. Dell, Dominion Museum).

The extensive reorganisation of the coral collections into steel cabinets on the top floor of Room 3 continued throughout the year. More cabinets arrived during this period and the great majority of the dry corals have now been checked and housed on steel shelving. The remainder of the Swain Reef corals (referred to in the last Annual Report) have now been cleaned and prepared for permanent storage.

A long-term overhaul of the spirit collections in the Little Spirit House has been commenced in order to have them ready for a possible transfer to the proposed new spirit house. The alcyonarian material, including numerous types, is well under way and this project will continue with the remaining groups of the Coelenterata and with the spirit material of the Bryozoa.

The pycnogonid reference collection has also been overhauled following the return of the bulk of the Australian material from loan to Professor W. C. Clark.

The publication by D. J. G. Griffin (University of Tasmania) of a study of two southern spider crabs has allowed us to reorganize parts of our collections of this group.

The remaining unidentified groups of decapod Crustacea taken by the expedition of the F. I. S. *Endeavour* off south-eastern Australia more than 40 years ago have now been returned to us from the United States National Museum.



The extensive collection of crabs and other decapod Crustacea made by Melbourne Ward in Torres Strait and along the Barrier Reef during the period 1928-1933, has recently been examined and is slowly being sorted and integrated with the main collection. The dry crab collections have been overhauled and repaired where necessary.

Material of the following groups has been sent out on loan during the year: selected medusae (Dr. W. J. Rees, British Museum); selected Bryozoa (Mr. N. A. Powell, Australian National University); parasitic copepods (Dr. Z. Kabata, Department of Agriculture and Fisheries, Scotland); marine isopods (Dr. D. E. Hurley, N.Z. Oceanographic Institute); mantis shrimps (Professor W. Stephenson, University of Queensland and Dr. R. Manning, United States National Museum); alpheid snapping shrimp (Dr. A. H. and D. M. Banner, University of Hawaii); scyllarid lobsters (Dr. L. Holthuis, Museum of Natural History, Leiden); porcellanid crabs (Miss J. Haig, Allan Hancock Foundation); spider crabs (Mr. D. J. G. Griffin, University of Tasmania); grapsid crabs (Mr. B. Campbell, University of Queensland).

Work on locating and recording Haswell's type Crustacea has continued through the year. The problem of Haswellian type material of many species being housed both at the Macleay Museum, University of Sydney, and in our collection has complicated the picture.

Major scientific inquiries have been dealt with and numerous minor inquiries by telephone, interview and mail answered, covering such subjects as stinging medusae, commercial prawns, crayfish and other crustaceans, as well as general aspects of marine biology, the Barrier Reef and general invertebrates.

**Mineralogy and Petrology:** (R. O. CHALMERS, A.S.T.C., Curator; MRS. J. NAUGHTON, Technical Assistant).

The total number of minerals is 41,585, an increase of 326. These include a few interesting specimens of amethyst on loan from Walter Nicholls for many years which were registered after his recent death; a collection of common opal from the old Rocky Bridge Creek field near Trunkay, New South Wales, was presented by Mr. I. Smith and Mr. D. Gregson; a good collection of Broken Hill minerals mainly from the north end of the lode collected by the late Mr. H. H. Bampton, mine manager and presented by his widow; chrysotile asbestos and magnesite, from Baryulgil, presented by Asbestos Mines Pty. Ltd; calcite and aragonite from the Public Works Department quarry at Terranora near Tweed Heads, presented by Mr. Colin Barr. The following were collected by the Curator on an official field trip to northern New South Wales: magnetite from Fine Flower, Grafton district; emerald, topaz, fluorite from the old Emerald Mine, near Emmaville, which is reopened; argentiferous galena and tetrahedrite from Collison's Mine (formerly Webb's Silver Mine) near Emmaville; blue stalactitic chalcedony from Terranora.

An outstanding and unique specimen of gypsum crystals of recent origin and growing on vegetation from salt lakes near Whyalla, South Australia, was presented by Mr. Ben Flounders. Bowenite and nephrite slabs from New Zealand were obtained by exchange from Mr. W. Campbell.

The number of rocks at 30th June is 8,281, an increase of 178. One hundred and twenty-four of these are meteorite fragments from the Henbury and Box Hole meteorite craters collected by the 1963 meteorite expedition in Central Australia. Fused rock and shocked sandstone were also registered from Henbury. Other acquisitions are an iron meteorite of unknown location but possibly from Glen Helen district, 130 miles west of Alice Springs, presented by Mr. D. Boerner; the main mass and large fragments of the Rowena stony meteorite from between Burren Junction and Collarenebri, north-western New South Wales; meteorites from the United States were received in exchange.

Two hundred and ninety-one australities were obtained in the sandhills to the east of Lake Torrens, South Australia, by the Meteorite Expedition. Of these 191 were collected and 100 presented by Mrs. M. H. Smith, owner of "Myrtle Springs" station, the property on which they were found. One third (viz. 91) are in our collection.

Thirty-five australites from the Pindera Downs, Tibooburra district, north-west New South Wales, were presented by Mr. V. C. W. Nicholls and his son Mr. Frank Nicholls. Since the Lake Torrens and Pindera specimens are the subject of study they have not been registered as yet. There is a photographic record of both collections.

Sediments fused by the heat from natural fires in the Leigh Creek coal seams were registered.

The transfer of the mineral collection is proceeding. Nine of the steel cabinets have been moved from the basement passage in the old wing to the mineral store. All collections have been moved from the Shea's Creek Store. The large mineral specimens are now stored on heavy duty steel shelving in the room at the eastern end of the ground floor exhibition hall, new wing.

A number of specimens usually in the form of small fragments or slices cut from registered specimens has been given for research purposes, as follows: molybdenite to Dr. Reilly of the Atomic Research Establishment, who is examining the mineral for rhenium content; Weekeroo iron meteorite to Professor A. E. Ringwood, Australian National University, Canberra; sections from complex sulphide minerals from New England, New South Wales, for the Imperial College, London; sillimanite to Dr. D. Swaine, C.S.I.R.O., Division of Building Research.

All the Lake Torrens australites have been sent on loan to Dr. Dean Chapman, Ames Research Centre, National Aeronautics and Space Administration, California.



A 100g. mass of the Binda meteorite was given to Professors Harold Urey, G. Coles and F. Suess, University of California, San Diego, for estimation of the abundance of minor trace elements by neutron activation. The fragments will be returned.

Australites were exchanged with the Thailand Department of Mineral Resources for Thai tektites.

Approximately 250 inquiries were answered. Half of these were mineral and rock specimens for identification, mostly from school children and teachers and a few from students of various Teachers' Colleges. The remainder were from prospectors and people in the country with an amateur interest in geology. A quarter of the inquiries were concerning gemstones and ornamental stones. With the great increase of interest in lapidary work and mineral collecting many of the requests were for information on the geology of particular localities, localities where minerals can be collected, semi-popular books on rocks, minerals and gemstones and places where specimens can be purchased.

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

The total number of children attending the Museum classes organised by the Education staff was 20,798 for the year. These attended during 491 class visits. Of these, 39 classes visited the Museum regularly once a month, each following an individual course of lessons.

Four classes were taken on field trips to study the ecology of either a marine rock platform or a freshwater creek. These trips were associated with Museum lessons on these topics.

In addition, 195 other classes were recorded as having visited the Museum to study the exhibits with the help of their teachers.

A series of visits was made by students from Sydney Technical College, Zoology students from the University of Sydney, and trainees from the New South Wales Ambulance Transport Service Board. Balmain and Alexander Mackie Teacher's Colleges sent several groups of students, some of which watched demonstration lessons.

The loan collection of specimens and photographs was in constant demand by both city and country schools and while 141 loans were made during the year, many more applications were received than could be fulfilled. It is hoped that the pending appointment of a technical officer to increase the scope of the loan collections will remedy this position in the coming year.

Various specimens were added to the collections, mainly from the curatorial departments, and Mr. Justice Myers continued to supply coloured slides both for the loan collection and for teaching purposes.

The total attendance at school vacation films was 9,059.

In the January school vacation, many of the Play Centres organised by the New South Wales Department of Education attended these film screenings.

Since its inception in January, 1962, the Childrens' Room has proved extremely popular with young visitors. Open on week-days during the three long vacations of each school year, the room provides a focal point for those children interested in natural science. For each vacation, new displays considered especially suitable for children are prepared, materials for various activities such as painting and modelling are provided, and always the room is supervised by an Education Officer. This officer also performs the important function of providing helpful and friendly advice and encouragement to those who request them.

The Museum Walkabouts, a series of quizzes to be answered from the gallery exhibits, are also fulfilling their aim of providing more interest for children and encouraging regular Museum visiting. Three new Walkabouts are devised each term and during the year 265 children completed these sheets. Of these, 12 children have completed every sheet since the Walkabouts began in May, 1963, and have attained the rank of "Museum Explorer". Museum Handbooks are awarded to these children.

Project books, posters, models and collections of specimens formed a special exhibition for Education Week, 4th-10th August, 1963. This material was prepared by children who had previously studied the various topics during their Museum lessons. The Trustees of the Australian Museum provided £15 for book prizes in the various sections. As the exhibition attracted a great amount of comment and commendation from the public, it was left on display until the opening of the new wing a month later.

Some 815 letters from teachers and pupils were answered and 59 schools were supplied with sets of Museum leaflets. The figures are lower than those recorded for the preceding two or three years. It seems that the long-awaited result of placing sets of leaflets in the schools may at last be having the desired effect of reducing the volume of correspondence. There were also numerous telephoned inquiries and interviews with teachers, students and parents requiring information.

Miss Gretchen Sibley, Chief Education Officer at Los Angeles Country Museum, and two of her staff studied the educational work here in July, 1963. Working under the Colombo Plan, 12 African nationals examined the educational services provided here with the view of developing similar services in their own countries.



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

During the year 250 volumes were added to the Library, of which 162 were books, the rest being periodicals or parts of series. Of these volumes 147 were presented or received on exchange including 21 presented by Mr. T. Iredale. Two hundred and seven volumes were bound for the Library, of which 149 were new bindings, the rest being rebindings.

One thousand and three loans were made to libraries all over Australia, both Government and private. The Museum borrowed 32 volumes from other libraries. As can be seen, the number of loans to other libraries is still increasing. As well as loans, there were many requests for microfilms and photocopies. With the new copying machine, the number of loans should decrease sharply because in most cases it will be better to send a copy rather than the original. Visiting scientists and research workers both from Australia and overseas made use of the Library, as also did members of the general public.

Recataloguing has continued during the year; 280 books and 55 periodicals have been classified and catalogued. Three hundred and ten old cards have been withdrawn and 1,743 new cards have been inserted into the catalogues; 351 cards have been made for the "Union Catalogue of Monographs in Australian Libraries", and 46 cards for "Union List of Scientific Serials in Australian Libraries", and sent to the National Library of Australia, Canberra, and C.S.I.R.O. Head Office, Melbourne, respectively. One thousand seven hundred and fifty cards have been made for the new shelf list for the books and periodicals to be stored in the new wing.

The area in the new wing to be used as a stack room has now been fitted with steel shelving and lighting has been installed. The periodicals from the basement and elsewhere are expected to be moved into this area during July, 1964.

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

The work of this department consisted of producing the Museum's publications, obtaining publicity for the Museum in newspapers and on television and radio, and generally strengthening relationships between the Museum and the public.

There was a marked increase in Museum publicity during the year and as well as newspapers publishing articles and photographs on many Museum activities, much television and radio publicity was received.

The Editorial Assistant and Public Relations Officer wrote a series of articles for *The Education Gazette* on the Museum's publications, and is preparing another series for that journal on Museum exhibits.

Advertising of the magazine, *Australian Natural History*, in Sydney and interstate newspapers continued, and similar advertising of the Museum's other publications began. Advertising of the film screenings and of the Museum generally in Sydney newspapers also continued. This advertising, arranged through the Premier's Department, has greatly assisted the sales of the publications and attendances at the film screenings.

Several articles in the magazine were quoted by newspapers and several issues were reviewed by newspapers and educational journals.

About 400 requests for identification of specimens were received and passed on to Curators by the Public Relations Officer, who also answered many inquiries about the Museum generally from the public and Press.

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

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

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

Apart from the illustrations and labellings, the main activities of the department have been concentrated on gallery exhibits with the main emphasis being placed on the miniature dioramas. Much time has been spent on the preparation of specimens for the study collections.

Several exhibits were completed before the opening of the new wing. One of these is the Embryo Exhibit which is a series of five exhibits showing embryo development in amphibians, birds, marsupials and placentals, also another panel showing very early stages of development in marsupials.

A new stand was made for the dugong. However, as the dugong is now exposed, repeated damage has been caused to this specimen by the public.

Nine ethnological exhibits were prepared for the vestibule cases.

A contract was let for the case construction of the proposed fossil gallery to the firm of H. and E. Sidgreaves Pty. Ltd., and the construction work has been completed. Of the 12 miniature dioramas for this gallery three have been finished and another two have been commenced. Several exhibits, including *Diprotodon*, have already been installed in the gallery.



In the Fish Gallery the Flying Fishes Exhibit and the Eggs and Young Exhibit were completed while other specimens and labels were put in the following exhibits: Commercial Fishes, Game Fishes, Classification of Fishes, Parts of a Fish, Freshwater Fishes, Blackfish and Sea Horse.

A new exhibit panel on millipedes and centipedes was prepared for the arachnid case. The Arachnid Exhibit was revised and a temporary exhibit on the casting of snakes installed on the other side of this case. The Rocky Sea Shore Exhibit, in the Invertebrate Gallery, has been completed and further progress has been made on a Zonation Exhibit.

Out of the 467 labels for the Upper Bird Gallery all 342 have been prepared and will be installed when the information for the distribution maps has been obtained.

Drawings of each section and rooms of the projected Spirit House were prepared for the Public Works Department and the consultant architects.

Designs have been drawn up for a new notice board facing College Street, and a smaller one near the steps of the new wing in William Street.

During the year, normal routine cleaning and maintenance were carried out in the galleries and in some collections. All mounted mammals and birds from Shea's Creek were brought back and stored in the Museum.

The conversion of the old Dark Room to a Silk Screen Room has not, as yet, been completed. This has limited the use of the Silk Screen equipment. Improvised arrangements were made to enable labels for several exhibits, as well as the 1963 Museum Christmas cards, to be printed.

Large individual pieces of work undertaken during the year were the casting of a large Captain Cook Stingray and moulds of two dolphins.

The fifth of the series of Aboriginal murals has been commenced. The subject is the Melville Island Grave Post Ceremony.

**Museum Photographer and Visual Aids Officer:** (H. D. HUGHES, A.R.P.S., in-charge; C. V. Turner, Assistant).

Over 200 colour transparencies have been registered and added to the collection. A large number of colour slides were presented to Mr. A. Givson and Mr. A. Sinclair for lecture purposes.

One-day excursions were made in the field to record cave excavations at Ball's Head and to obtain negatives to be enlarged to 6 feet by 4 feet for Invertebrate Gallery purposes.

A total of 60 rolls of 36 exposure 35 mm. film were exposed and processed from field work in May, 1963. Printing of all these negatives is proceeding.

Remodelling of the photographic quarters was completed in August and the improved facilities, which include temperature controlled and filtered water supply as well as air-conditioning, have overcome the major problems of the previous quarters.

Apart from photographic equipment and materials the collection of over 10,000 negatives had to be cleaned, sorted and stored in the new filing system. These negatives range in size from 10 in. x 8 in. (glass) to 35 mm. (film).

Work has commenced cataloguing and filing accumulated negatives and colour transparencies. To save unnecessary work, only photographs considered to have some future value are to be registered and this work cannot interfere unduly with normal production.

The 16 mm. colour sound film entitled *White Clay and Ochre* was printed and 40 copies made. Half of these have been sold and a National and International Television Broadcast contract has been signed with the Australian Broadcasting Commission.

A copy of the film has been supplied to the New South Wales Government Offices in New York who may be able to arrange sales in the United States.

Footage exposed last May has been work-printed and initial editing completed. Additional footage is to be exposed in June during field work in Queensland. The film on Aboriginal rock engravings will supplement *White Clay and Ochre* which deals mainly with Aboriginal cave paintings.

Receipt of a new Arriflex 16 mm. cine camera in May will enable work to proceed on two other films, *Frogs* and *Lizards*.

The year's activity included the preparation of photographic, illustrative and visual aids material of wide application throughout the Museum and in its national and international relations.

A. P. ELKIN,  
President.

JOHN W. EVANS,  
Director.



## Appendix A

**THE AUSTRALIAN MUSEUM—SUMMARISED STATEMENT OF RECEIPTS AND  
PAYMENTS FOR THE YEAR ENDED 30th JUNE, 1964**

R E C E I P T S								£	s.	d.	£	s.	d.
Appropriation Account—													
Treasury Appropriations	..	..	..	..	..	..	..				104,729	9	6
Trustees' Account—													
Statutory Endowment	..	..	..	..	..	..	..	1,000	0	0			
Grant towards Museum Requirements	..	..	..	..	..	..	..	2,000	0	0			
Museum Publications—Sales and Subscriptions	..	..	..	..	..	..	..	3,267	15	8			
Museum Shop Sales	..	..	..	..	..	..	..	108	19	8			
Donations	..	..	..	..	..	..	..	188	15	5			
Sale of Television Rights	..	..	..	..	..	..	..	250	0	0			
Subsidy from Sydney City Council	..	..	..	..	..	..	..	500	0	0			
Interest	..	..	..	..	..	..	..	760	8	9			
Postage Receipts	..	..	..	..	..	..	..	274	9	6			
Sale of Waste Paper	..	..	..	..	..	..	..	13	8	8			
Sale of Camera	..	..	..	..	..	..	..	25	0	0			
Sale of Cabinets	..	..	..	..	..	..	..	67	10	0			
Compensation for damaged specimens	..	..	..	..	..	..	..	20	0	0			
Rental for Cafeteria	..	..	..	..	..	..	..	105	0	0			
Sale of Film—White Clay and Ochre	..	..	..	..	..	..	..	1,088	0	0			
											9,699	7	8
Balance as at 1st July, 1963—													
Cash at Bank and in hand	..	..	..	..	..	..	..	2,671	10	8			
Investments	..	..	..	..	..	..	..	13,550	0	0			
											16,221	10	8
											130,620	7	10
P A Y M E N T S													
Appropriation Account—													
Salaries, etc.	..	..	..	..	..	..	..	91,518	2	11			
Tea Money	..	..	..	..	..	..	..	38	10	0			
Insurance on Buildings	..	..	..	..	..	..	..	49	7	2			
Travelling and Subsistence Expenses	..	..	..	..	..	..	..	1,496	0	6			
Freight, Cartage and Packing	..	..	..	..	..	..	..	99	19	3			
Books, Periodicals and Papers	..	..	..	..	..	..	..	1,905	5	6			
Fees, Commissions, etc.	..	..	..	..	..	..	..	40	16	7			
Laundry Expenses	..	..	..	..	..	..	..	89	12	11			
Postal and Telegraphic	..	..	..	..	..	..	..	499	19	11			
Other Insurances	..	..	..	..	..	..	..	803	10	1			
Stores, Plant and Equipment	..	..	..	..	..	..	..	3,688	4	8			
Grant towards Museum requirements	..	..	..	..	..	..	..	2,000	0	0			
Storage Equipment	..	..	..	..	..	..	..	2,500	0	0			
											104,729	9	6
Trustees' Account—													
Museum Publications—Cost	..	..	..	..	..	..	..	3,025	15	9			
Stock for Museum Shop	..	..	..	..	..	..	..	64	7	5			
Stores, Plant and Equipment	..	..	..	..	..	..	..	5,707	11	8			
Publication Sales Receipts paid to Treasury	..	..	..	..	..	..	..	98	1	9			
Postage Receipts paid to Treasury	..	..	..	..	..	..	..	273	18	0			
Travelling Expenses	..	..	..	..	..	..	..	853	2	4			
Cost of Film—White Clay and Ochre	..	..	..	..	..	..	..	1,125	16	5			
Museum Specimens	..	..	..	..	..	..	..	287	1	2			
Entertainment	..	..	..	..	..	..	..	208	16	6			
Miscellaneous Expenditure	..	..	..	..	..	..	..	31	10	10			
											11,676	1	10
Balance as at 30th June, 1964—													
Cash at Bank and in hand	..	..	..	..	..	..	..	664	16	6			
Investments	..	..	..	..	..	..	..	13,550	0	0			
											14,214	16	6
											£130,620	7	10

J. W. EVANS, Director.