

1971-72

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PARLIAMENT OF NEW SOUTH WALES

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REPORT  
OF THE  
TRUSTEES OF THE AUSTRALIAN  
MUSEUM  
FOR THE  
Year ended 30 June, 1971

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*Ordered to be printed, 17 February, 1972*

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BY AUTHORITY

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\* Deceased May, 1971

### NATIONAL PHOTOGRAPHIC INDEX OF AUSTRALIAN BIRDS

A. Donald Trounson, Executive Officer; Miss M. C. Clampett, Hon. Secretary; Mrs A. D. Trounson, Hon. Assistant



# ANNUAL REPORT

## OF THE TRUSTEES OF THE AUSTRALIAN MUSEUM

For the Year ended 30th June, 1971

To His Excellency The Governor:

The Trustees of the Australian Museum have the honour to submit their 117th report for the year ended 30th June, 1971.

Mr W. H. Maze, M.Sc., was elected President of the Board of Trustees at the annual meeting.

It is with regret that the Board reports the death of Professor H. N. Barber, F.R.S., F.A.A., on 16th April, 1971. Professor Barber had been a member of the Board since September, 1964.

Mr S. Haviland, C.B.E., and Professor L. C. Birch, D.Sc., F.A.A., resigned from the Board of Trustees during the year and Mr J. S. Proud, B.E., and Professor M. G. Pitman, M.A., Ph. D., were elected to fill the vacancies.

The museum has maintained close co-operation with various State organizations and with universities.



(From right to left), The Hon. Mr G. F. Freudenstein, Minister for Cultural Activities, and Dr F. H. Talbot, Director of The Australian Museum, inspecting the model of the "Hall of Life", with Exhibitions Officer, Mr David Rae

Photo by Charles V. Turner, *The Australian Museum*



## OUR DWINDLING NATURAL HERITAGE

BY FRANK HAMILTON TALBOT

This last decade's industrial growth and the overall development of the continent has helped to make Australia the vital and forward-looking country it is today. But this vigorous development, allied with our population growth, has also had some detrimental effects on the way we live, and we are all now aware of the increasing impact on our environment.

With these rapid changes our efforts to preserve the rich variety of animal and plant life on the land and in our streams, lakes and coastal waters, are often hampered by lack of knowledge. Few of Australia's animals have been well-studied. For the majority we have inadequate knowledge of their distribution and abundance and know almost nothing of their requirements in the way of food, shelter, space, and their interaction with other animals and plants. Much more of this kind of information is necessary if we are to preserve them.

Governments and private industry, with the progressively increasing impact of their activities on the environment, are becoming aware of the need for guidance in the field of ecology. They are now realizing the value of using prior biological surveys and relevant ecological data in helping to minimize detrimental effects of major developments.

The Australian Museum is dedicated to the study of wildlife—its diversity, distribution and ecology, and is being increasingly asked for aid in faunal and environmental problems. Because it concerns our irreplaceable living heritage, such advice must be well-researched and soundly based.

Dr Lee M. Talbot, Senior Scientist to President Nixon's Council on Environmental Quality, has recently said that even the United States is short of ecological expertise. One can thus realize how minimal our own ecological information is. Recently, for a biological survey requested by a governmental agency and organized by the Australian Museum, twelve scientists from four Federal and State departments were needed to make up a team with the necessary expertise. No single Australian organization could have produced the required information. Yet, if we are to protect our natural heritage in the face of development, such information *must* be available, and because of the complexity of natural communities, biological surveys themselves are often necessarily complex and detailed if information of value is to be provided—and poor ecological advice can lead to expensive mistakes.

Because it is so important to solve problems of environmental deterioration, it is very necessary that those with knowledge, whether they be in government, universities, or private industry, work together to protect our natural heritage in a rapidly developing Australia.

## THE FUTURE PATHS OF MUSEUM EDUCATION

### AN OPINION

PATRICIA M. McDONALD, Education Officer-in-Charge

The population explosion has been a spectre hovering over us for some years now and its effects are felt in museums as in all other sections of the community. From 1960 to 1970 our visitor population rose 40 per cent; assuming this rate will remain constant, and with an annual attendance this year of some 465,000 visitors, we can expect to have at least 1.5 million visitors by the turn of the century. There has also been a great increase in the better-educated section of the population—children stay longer at school, more go on to universities, there is more interest in, and time for, leisure activities of a cultural nature. Studies at this museum and others have shown that there is a higher proportion of museum visitors with better educational qualifications than is found in the population as a whole.

What effect should these two factors—increased numbers and better educated visitors—have on our educational activities? In which directions should museum education policy be moving? Before attempting to answer these questions, another should be posed: what do we hope visitors will gain from a visit to this museum? The answer here is not difficult to define in general terms. It is hoped that visitors will develop a greater interest in the natural environment and a greater understanding and knowledge of its various components; it is hoped this interest will be extended into other fields so that visitors will have a better appreciation of ecological principles and the necessity for conservation of our natural resources; it is hoped that visiting the museum will prove an enjoyable experience so that visitors will wish to return.

With these stated as general educational principles, then, how are we to develop our educational programmes to meet them? If we are to cope with 1.5 million visitors a year, an obvious first step would be to enlarge the building. Already week-end crowds in summer are uncomfortably large, another. The success of the Cook-Banks Exhibition, which attracted 100,000 visitors during six weeks, is a foretaste of what is to come. How soon will we reach the stage of, for example, the Museum of Science, in Toronto, or the Deutsches Museum in Munich, where queues form at the entrance?



Another solution is to spread the visitor population over a wider time span by increasing the number of hours the museum is open. Instead of 3-7 hours per day as at present, we could open 12 hours every day, 9 a.m. to 9 p.m.

Still another possible solution is an active policy to keep people out of the building. We could provide more frequent and more elaborate travelling exhibitions, so that visitors do not necessarily have to come to College Street to see a particular exhibit. We could set up branch museums in the suburbs and country towns; we could arrange special exhibitions in shopping plazas or civic centres. We could organize regular television programmes, more talks on radio, more outside lectures, more articles in journals and magazines. Such suggestions, however, could prove a two-edged sword. They might encourage people to make a visit to the parent institution instead of having the desired opposite effect.

For those who do come to the museum, what educational programmes can we offer in addition to the gallery exhibits? Several spring readily to mind—guided tours (either transistorized or personally conducted), audio-visual units such as films or slide and tape recordings, general public lectures and demonstrations of exhibits. Could we have attractive "souvenir" guide books or pamphlets, for the museum as a whole or for individual galleries or subjects? Well illustrated and containing questions and information, these could be an interesting do-it-yourself guide to the museum.

How much does the "average" visitor gain in educational experience from such additional programmes? Is the time, money and effort expended by the museum on these, sometimes very elaborate and costly, displays or courses worthwhile? We know very little of audience reaction to our programmes, we need far more "feedback"; experimental studies of assessment should provide a clearer picture of the degree of educational effectiveness of museum programmes and the reasons for their success or failure.

We do know that a cardinal principle of education is involvement—the pupil should actively participate in the lesson if the educational value is to be enhanced, the museum visitor should actively join in any programme designed for his further education. Should we therefore concentrate our efforts on such educational programmes as workshop sessions, practical courses, field studies, small groups for seminars on narrowly defined topics? Many such programmes could be developed given sufficient staff, space and funds, but here we come once more against the problems of increasing numbers of visitors. Inherent in the success of such courses is the proviso that groups be relatively small.

It was felt, for example, that the series of six lectures and discussions on "Ecology for Conservationists" held this year should be limited to 100 people—maximum number the theatre can conveniently accommodate. However, enrolments were twice this number and the series will be repeated to avoid disappointing those who applied too late.

It seems then we may have to make a choice. Should we try to help all visitors or should we concentrate on the interested minority? From studies already carried out at this museum, it appears that the majority of visitors were not greatly interested in any particular topic or section of the museum; they came "to have a general look around". On this basis, are we justified in ignoring the majority as far as special educational programmes are concerned, leaving them to understand and enjoy the gallery exhibits as best they may? Can we ever hope to cater for the millions and should we try?

The opposite viewpoint would hold that the not-so-interested majority are the very people the museum should be trying to help, by involving them as much as possible in attractively presented, stimulating programmes perhaps of a less academic nature.

All the foregoing suggestions are applicable to children's groups as well as adults', only the level of programme need be adjusted. And both groups, either separately or combined in "family" groups, should be considered.

Following the evidence already available that the numbers of better-educated visitors are higher than in the total population, should we consider these as a special group and provide more detailed courses for them? Should the museum take on the mantle of a "College of Advanced Education" in its own particular field? Such a policy has been followed successfully in museums overseas; there is no reason why it should not be so here.

As well as deciding which paths its educational programmes are to follow, museum policy must also indicate the proportion of its total effort which is to be directed towards organized education. At present this proportion, considered in the light of available staff and facilities, is quite small in relation to the other major areas of research and preservation of collections. If workshops and seminars are envisaged, then facilities must be provided—well-equipped workrooms or laboratories, small and large lecture theatres, teaching and technical staff, fees for visiting lecturers and so on. Quite a large budget would be needed.

I am firmly of the opinion that the future paths of education in the museum should follow two basic patterns. Firstly, they should aim to involve the visitor as much as possible in any programme, an active participation rather than a passive looking and listening. And secondly, every programme should have built into it some means of assessment of its educational value, so that this information can then be used for planning with more confidence of success in the future.





"The Tree of Life", the centrepiece of a new permanent exhibition now under construction. The exhibition, known as "The Hall of Life", will cover the second floor of the new wing

Photo by Charles V. Turner, *The Australian Museum*.

### HONORARY STAFF

Mr L. Haines has continued to assist the Department of Entomology in research and collection work. Mr M. Moulds has assisted in field work and is at present compiling a Bibliography of literature on the Australian Hesperioidea and Papilionoidea, a very large undertaking now nearing completion. Mr J. V. Peters has assisted with field work since termination of his secondment to the museum. Mr G. Daniels has assisted in the field on three occasions.

Mr W. McReaddie continued to provide much valuable material for the Herpetology Department research collections.

Mr Gilbert Whitley continued his work in the Ichthyology Department; his help and co-operation are much appreciated.

Mr T. Garrard, Honorary Associate, Department of Malacology, has completed a revision of the mesogastropod family Turritellidae and is commencing a revision of the neogastropod family Cancellariidae. Mr J. Voorwinde has continued the sorting, and addition of minute molluscs to the collections.

Mr C. J. Lawler, an Honorary Associate, Marine Invertebrates (Worms and Echinoderms), was co-author of a book, *Beneath Australian Seas*, published by A. W. and A. H. Reed, which features some local underwater animals identified and held in the museum's collections.

The museum suffered a great loss when Mr K. A. Hindwood, Honorary Associate, Department of Ornithology, collapsed and died on the 18th March, 1971. Mr Hindwood had been closely associated with the museum for over 40 years, and in that time had provided invaluable assistance to the Department of Ornithology.



## STAFF MATTERS

The Director was invited to participate in the U.S.A. "Tektite II" man-in-the-sea project, and spent 2½ weeks underwater in a four-man habitat on a coral reef in the U.S. Virgin Islands. Dr Talbot worked with Dr Bruce Collette of the Smithsonian Institution, on nocturnal and diurnal fish behaviour.

Miss Elizabeth Pope, Deputy-Director and Curator of Marine Invertebrates—Worms and Echinoderms, is a Vice-President and Council Member of the Linnean Society of New South Wales.

Dr C. N. Smithers, Curator of Insects, has continued to serve as the organizing secretary of the 14th International Congress of Entomology, to be held in August, 1972, and was re-elected to the Council of the Australian Entomological Society as a representative of the Royal Zoological Society of New South Wales. He attended the ANZAAS Congress in Port Moresby, in August, 1970, and the annual and scientific meetings of the Australian Entomological Society at Southport, in May, 1971, having been invited to act as chairman at one of the scientific sessions. An A.R.G.C. grant, held jointly with Professor I. W. B. Thornton of La Trobe University, was renewed for continuance of work on the "Psocoptera of the Inner Melanesian Arc". Dr Smithers spent several weeks in the field, in New Guinea, as part of the project.

Dr D. K. McAlpine was appointed research scientist by the Public Service Board, and seconded back to the museum as Assistant Curator (Insects)

Mr M. R. V. Gray, Assistant Curator (Arachnids), is undertaking work towards his Ph.D., at Macquarie University.

Dr J. R. Paxton, Curator of Fishes, spent 4 weeks in New Caledonia studying and collecting deep sea fishes.

Mrs Judith E. James (formerly Naughton), resigned on 30th June, 1971, after more than 13 years valuable and conscientious service in the Department of Mineralogy.

Mr H. J. de S. Disney, Curator of Birds, visited Lord Howe Island for 2 weeks in February and April studying the population of the unique Lord Howe Island woodhen, on the top of Mount Gower, as part of the fauna and flora survey of the island for the Lord Howe Island Board; this study is continuing. He was re-elected as Vice-President of the Royal Zoological Society, and also Chairman of the Field Investigation Committee of the R.A.O.U. He is also a member of the Scientific Committee for the XVI International Ornithological Congress to be held in Canberra in 1974 and a member of the Advisory Council. Mr Disney served on a committee set up to study the effect of dieldrin coated grass seed for harvest ant control and how birds may be affected by this material.

Dr D. J. G. Griffin, Curator of Marine Invertebrates—Crustacea and Coelenterates, completed a visiting postdoctoral research associateship at the Smithsonian Institution in October, 1970. He returned to the museum late in December after visiting museums and zoological institutions in England, Europe, Israel, India and Singapore.

## OVERSEAS VISITORS

Overseas visitors to the museum during the year included: Dr A. Kaeppler, Bishop Museum, Hawaii; Mr D. Newton, Museum of Primitive Art, New York; Mr R. P. Soejono, Archaeological Institute, Djakarta; Dr W. E. Taylor, Director, National Museum of Canada; Dr A. Ghosh, Calcutta; Dr Misra, Bombay; Dr Pow-Key Soku, Korea; Mr R. Cox, Norfolk Island; Mr T. V. Bourke, Territory of Papua and New Guinea; Dr P. Cochereau, O.R.S.T.O.M., Noumea; Dr Wong Siu Kai, Levin, New Zealand; Mr O. Evans, Administration, Norfolk Island; Dr J. L. Gressitt, Bishop Museum, Hawaii; Dr J. N. Holloway, U.K.; Mr L. Weatherell, S.A.; Captain A. Gillogly, Republic of Vietnam; Professor J. Day, University of Cape Town, S.A.; Dr D. Edwards, British Museum (Natural History), U.K.; Dr J. Bailey, Duke University, U.S.A.; Professor H. McCrimmon, Guelph University; Dr W. Burgess, University of Hawaii; Dr R. Ibara, University of California at Santa Barbara; Dr R. K. Dell, Dominion Museum, Wellington, N.Z.; Professor J. B. Burch, University of Michigan, U.S.A.; Dr H. Ladd, Smithsonian Institution, Washington D.C., U.S.A.; Dr P. Luckens, N.Z. Oceanographic Institute, Wellington, N.Z.; Professor A. Martin, University of Seattle, Washington State, U.S.A.; Dr J. Rosewater, Smithsonian Institution, Washington D.C., U.S.A.; Dr R. D. Turner, Harvard University, Boston, Mass., U.S.A.; Professor Paul Ramdohr, The University of Heidelberg; Professor Cornelius Hurlbut, University of Harvard; Dr W. R. Drury, Research Director, Massachusetts Audubon Society; Dr F. Glenney, Fairleigh Dickinson University; Professor Lloyd P. Parratt, Chaffey College, Alta Loma, California; Dr K. Wodzicki, N.Z.; Dr Paul Tasch, Wichita State University, Kansas; Mrs Pat Vickers Rich and Dr R. H. Tedford, American Museum of Natural History, New York; Professor Alfred S. Romer, Museum of Comparative Zoology, Harvard; Dr G. Stevens, Geological Survey, N.Z.; Mr S. M. Pathek, Fiji; Mr E. M. Ngari and Mr M. Z. Nbilu, Kenya; Dr Lucas Chin, Sarawak Museum, Kuching, Sarawak.



## ACKNOWLEDGEMENTS OF CO-OPERATION

The museum has pleasure in acknowledging the assistance of the following organisations and individuals:

The Lord Howe Island Board and its employees, for rendering every possible assistance to museum staff during the Ecological Survey of the island.

Officers of the Department of Agriculture, Stock and Fisheries, Territory of Papua and New Guinea, for assistance to staff during field work in the Territory.

The Australian Research Grants Committee for invaluable financial assistance which has enabled the museum staff to undertake independent research projects.

Members of the Oatley Fauna and Flora Society and the Illawarra Naturalists' Society, who have assisted in the museum's butterfly tagging programme. Acknowledgements are also due to the other co-operators in the scheme. Without their assistance the programme could not have reached its present advanced stage.

The Technical Committee on Oceanography; the Royal Australian Navy; New South Wales Fisheries Department; Department of Zoology and Microbiology, Sydney University; Department of Biology, Macquarie University; Oceanography Section O.R.S.T.O.M., Noumea; Taronga Zoological Trust; B.R.M., Canberra; Royal Prince Alfred Hospital, Department of Morbid Anatomy; the Director and staff of the Western Australian Museum; Eastern Gem Co. Ltd.; CSIRO Division of Mineral Chemistry; National Parks and Wildlife Service of New South Wales; CSIRO Division of Wildlife Research, Canberra; Forestry Commission of New South Wales; the Director and staff of the Department of Scientific and Industrial Research (Antarctic Division), Christchurch New Zealand and Scott Base Antarctic, have all given generous aid and assistance to the museum and members of its staff.

The museum is indebted to the following persons, for assistance rendered to the institution in the fields of research, collections and field expeditions: Professor R. H. Clark, Department of Geology, Victoria University, Wellington, New Zealand; Dr Peter Barrett and Mr Barry Kohn, Leader and Deputy Leader of the Victoria University Antarctic Expedition; Mr Tom Guiton; Mrs Aedeen Madden; Mrs Mel Ward; Miss A. G. C. Grandison, London; Mr P. Pethon, Oslo; Dr Vestergren, Stockholm; Dr F. W. Braestrup, Copenhagen; Dr G. Peters, Berlin; Dr P. Kuenzer, Göttingen; Professor R. Mertens and Dr K. Klemmer, Frankfurt; Professor L. D. Brongersma, Leiden; Dr D. Hillenius, Amsterdam; Mr G. de Witte, Brussels; Mme. Roux and Professor J. Guibe, Paris; Dr J. Eiselt, Vienna; Dr R. G. Zweifel, New York; Mr E. Malnate, Philadelphia; Professor E. Williams, Harvard; Dr H. Marx, Chicago; Dr A. Leviton, San Francisco; Mr J. A. Mahoney, Department of Geology, University of Sydney; Mr M. Archer, Western Australian Museum, Perth; Mr L. S. Brown; Dr D. J. Swaine and Dr A. R. Ramsden, CSIRO Division of Mineral Chemistry, and H. O. Fletcher.

## SPACE PROBLEMS

In many departments of the museum lack of space is a serious problem. In some cases, notably Anthropology, irreplaceable material is badly stored and overcrowded.

In other departments, particularly Malacology and Palaeontology, overcrowding and lack of proper laboratory space and facilities are mitigating against the departments' functioning with full efficiency.

The school programme and facilities for children in holiday periods are so cramped that it is impossible to cope with increasing demands. The Education Service was unable to give lessons to over 50,000 school children whose teachers requested aid.

## LECTURES

Dr C. N. Smithers gave lectures to the following groups during the year: the New South Wales Bushwalker's Club; the Entomology Section, Royal Zoological Society of New South Wales; Hunter's Hill Fauna and Flora Society.

Mr M. R. Gray gave two lectures on arachnids.

Dr Recher and Mr Clark lectured at Macquarie University and Dr Recher also lectured at Sydney University. Dr Recher initiated a series of six public lectures on ecology at The Australian Museum. These were jointly sponsored by the museum and the Conservation Society of New South Wales. Lecturers in the series were from the museum and the University of Sydney.

Dr J. Paxton gave a 3rd year course on "The Biology of Fishes", at Macquarie University, for one term. He gave seven other talks to various university classes and angling clubs.

Mr B. J. Marlow gave a series of three lectures on "The Biology of Mammals", to students of vertebrate zoology at Macquarie University.



Miss E. Pope gave the latter part of a course on invertebrates at Macquarie University in November, 1970, and took part in a field excursion with the external students. Talks have been given to various women's groups, the Hornsby and Ku-ring-gai Angling and Casting Club and to Altrusa International Sydney Club. Several radio interviews were given for the ABC Children's Session's "Information Desk".

Dr A. Ritchie presented talks on Antarctic research projects to the ANZAAS Congress, to various local natural history societies and to other organizations. He also gave his annual course of thirteen lectures and practicals on Vertebrate Palaeontology at Macquarie University to a class of seventeen students.

### NATIONAL PHOTOGRAPHIC INDEX OF AUSTRALIAN BIRDS

The year saw the completion of a three-stage trawl across the entire spectrum of the 700 or so species of photographs already taken—stage 2 being devoted to passerines and stage 3 to non-passerines (other than parrots, which were the subject of stage 1).

The adjudication of material took place on 8th, 9th and 10th September, 1970, and 17th, 18th and 19th June, 1971 respectively—within the ceilings and terms of reference prescribed by the Bird Index Trustees. Selection was entrusted to independent panels of experts, namely the late Mr Keith Hindwood (Chairman of the stage 2 panel), Mr H. J. de S. Disney (Science), Mr Arthur Robinson (Art), and Mr Ederic Slater (Technical). For stage 3 onwards, it was decided that final selections should be reached by consensus of opinion among the three jurymen.

A revelation has been the unexpected amount of information of scientific value which is conveyed by photographs which do not rate for selection for the Index on purely photographic grounds. Provision has therefore been made for the inclusion of such material under a special classification designated "O".

The results achieved during the stage 2 and 3 adjudications are incorporated in the tables below:

TABLE A

	Photographs submitted for adjudication	Photographs accepted for the Index
Stage 1 .. .. .	489	127
Stage 2 .. .. .	1,344	425 ( 85)*
Stage 3 .. .. .	2,064	480 (145)*
	3,797	1,032 (230)*

\* "O" classification

TABLE B

	Species included in the submissions	Species included in the acceptances
Stage 1 .. .. .	55	50
Stage 2 .. .. .	213	190
Stage 3 .. .. .	251	183
	519	422

TABLE C

	Photographers who submitted work for adjudication	Photographers whose work was accepted for the Index
Stage 1 .. .. .	39	17
Stage 2 .. .. .	56	40
Stage 3 .. .. .	108	73
	Photographers who submitted work for adjudication on one or more occasions—134	

From these figures it will be seen that 905 photographs, covering 372 species, were added to the Index during the year under review. An encouraging feature has been the steadily increasing support received from nature photographers.

The collection up to the end of stage 2 was handed over to the museum for public use during the year—under the charge of the Librarian, Miss M. G. E. Davies. Complete duplicates of the material were made available for incorporation in the replica of the index at the National Library in Canberra.

Much of the committee work and the routine work connected with the photographs, particularly the exacting task of controlling the flow of photographs submitted for adjudication and the installation and cataloguing of material in the index, continues to be voluntary.



The Trustees met, under the Chairmanship of Sir Percy Spender, on 9th October, 1970. The Executive Committee, under the Chairmanship of Mr R. W. Turner, held eleven meetings during the year.

The stage 1 exhibition, Australia's parrots, was opened at the Museum by the Hon. T. L. Lewis, Minister of Lands, on 22nd July, and remained on view until mid-December. The exhibition was opened at the Queensland Museum on 13th January, 1971, by Mr Fletcher, Queensland's Minister of Education, and remained on view for a month. It was subsequently placed in store at the museum pending arrangements for its future use.

During the year, the Index Trust was depleted with the death of Mr F. P. Buckley, O.B.E. A decision was taken to expand the Trust to include a representative in each State, and to this end, the following new Trustees were appointed during the year:

Mr J. C. H. Gill, B.A., LLB., F.R.Hist.S.Q. (Queensland).

Mr Robert E. Porter (South Australia).

The Trust, therefore, consisted of eleven members as at 30th June, 1971.

Receipts during the year totalled \$23,316.68 (\$22,985.94 from donations and \$330.74 from the sale of slides, prints and catalogues). Expenditure totalled \$15,541.18.

## ANTHROPOLOGY

**Research.** The Curator carried out further work on the Hunter River archaeological survey and the Assistant Curator continued his ethno-archaeological research project at the University of California at Berkeley, U.S.A., under a Harkness Fellowship.

**Field Work.** The Curator carried out two excavations in the Wollombi area, and in June made a preliminary reconnaissance of the Cape York-Torres Strait region for a future archaeological field project.

**Collections.** The Asian, African and American collections were removed and restored in the Rushcutters Bay store. The bulk of the Melbourne Ward collection was removed from Medlow Bath to Rushcutters Bay. A number of purchases and donations were added to the Melanesian and Australian collections.

**Information and Services.** Requests for information and assistance were continuous, both from the public and from overseas research workers and institutions.

The Curator served on a number of committees and advisory bodies.

## ENTOMOLOGY

**Research.** The Curator has continued work on the "Psocoptera of Australia and the Islands"; this material is in process of being prepared for publication. Extensive collections from the Bernice Bishop Museum, Hawaii, are also being studied.

Analysis of a considerable amount of accumulated data on insect migration is in progress, including some not directly concerned with migration; this includes life-cycle, cluster behaviour and distributional data.

Studies were made of Mecoptera from Central Africa; butterflies from Lord Howe Island and the Warrumbungles area, and the Satyrid butterfly, *Heteronympha merope*.

The Assistant Curator (Insects) has continued studies on the family *Platystomatidae*. Newly acquired material of the genera *Euprosopia* and *Duomyia* has been examined critically. A new species group of the former, and several additional new species of the latter genus have been discovered and descriptions drawn up.

The genus *lenopila* was the object of special field study. It is a systematically isolated genus of doubtful subfamily location endemic to Australia; five of the six species are associated with the endemic plant *Xanthorrhoea* (black-boys or grass-trees) as adults, and possible as larvae.

An examination of generic limits and nomenclature in the complex, generally (incorrectly) known as *Lyciella*, of the family Lauxaniidae, has been made using both European and Australian material.

The limits and nomenclature of the genus *Czernyola*, family Clusiidae, have been re-examined, and a paper on the subject accepted for publication.

Museum material of the family Ephydriidae has been studied and a preliminary key to Australian genera prepared.

A study of available information on the protected New Guinea butterfly known as *Ornithoptera allotiei*, showed it to be almost certainly the result of chance or artificial hybridization between two common species.



The Assistant Curator (Arachnids) has continued his work on the family Gradungulidae in Australia and New Zealand in co-operation with Dr R. R. Forester of the Otago Museum, New Zealand.

The distribution and taxonomy of the mygalomorph genus *hexathele* in eastern New South Wales is under investigation, together with systematic work on the genera *Atrax* and *Stanwellia*.

The biology and systematics of *Stanwellia* will form the basis of a Ph.D. project to be undertaken by the Assistant Curator (Arachnids) in 1972.

**Field Work.** The Curator carried out field trips to New Guinea (22-8-70—8-9-70), and to Lord Howe Island (17-2-71—26-2-71) during the last financial year. Several smaller trips were made to locations in Australia, including periodic visits to Camden, New South Wales, for butterfly migration studies.

The Assistant Curator (Insects) carried out collecting trips to northern New South Wales, Warrumbungle Ranges and the Mendooran district. A week was spent on Lord Howe Island assisting in the fauna survey being made for the Lord Howe Island Board. Several short trips were made in the area around Sydney.

The Assistant Curator (Arachnids) spent 2 weeks on Lord Howe Island assisting in the faunal survey. Other shorter trips were made to northern New South Wales and western New South Wales.

**Collections.** These continued to expand at the maximum rate possible. New acquisitions totalled over 23,500 specimens, 484 of these being types. 2,700 specimens were sent on loan and 80 specimens were returned from loan.

Mr John Peters completed the re-housing of the Australian butterfly collection and part of the foreign collection, before his term of secondment expired early in 1971.

Routine curatorial work and maintenance of the general collections were continued. The extensive material of the dipterous families Lauxaniidae and Ephyridae was revised and placed in new cabinets.

A valuable and well maintained collection of several thousand spiders was donated to the Museum by Mr R. Mascord. Most of the material is identified to genus or species level; some non-spider arachnid material was also included.

The Pycnogonida collections were rearranged and housed with the Arachnid material. An exchange of pycnogonid material was made with the Smithsonian Institution.

**Information and Services.** Over 4,000 general enquiries were received; many others came from research workers and institutions requiring more specialised information.

## ENVIRONMENTAL STUDIES

**Research.** The Curator completed studies on the ecology and behaviour of Australian honeyeaters. Research continued on the relationship between habitat structure and fish species diversity and on population dynamics of small mammals.

The Assistant Curator carried out further work on the regeneration of coastal vegetation following beach mining.

At the request of the Lord Howe Island Board, the Museum, and in particular Environmental Studies, co-ordinated an environmental survey of the island. The survey involved scientists from the Australian Museum, the Royal Botanic Gardens, National Parks and Wildlife Service of N.S.W. and Canberra.

An environmental survey off the coast of northern New South Wales was completed for the Scientific Committee on Parks and Reserves.

**Field Work.** Two visits were made to Lord Howe Island in conjunction with the environmental survey, for a total of 6 weeks, and 4 weeks were spent at Nadgee Nature Reserve studying small mammal populations. Short trips to Brisbane Water National Park were made to finalize work on Australian honeyeaters.

The Assistant Curator spent 4 weeks on Lord Howe Island and one week in Canberra in connection with the environmental survey of the island. He also spent a total of 15 weeks on various trips to the North Coast of New South Wales.

**Information and Services.** The department co-operated in biological survey work for the Scientific Committee on Parks and Reserves, and for the National Parks and Wildlife Service of N.S.W. Assistance was also given to a number of other government agencies, conservation societies and the press. The Curator and Assistant Curator presented testimony before the House of Representatives Select Committee on Wildlife Conservation.



## HERPETOLOGY

**Research.** Work continued on the population biology of the agamid lizard *Amphibolurus fordi* at Round Hill Fauna Reserve, in western New South Wales.

With the aid of funds provided by the Trustees of the Australian Museum, the Science and Industry Endowment Fund of CSIRO, the British Council and the Explorers' Club of New York, the Curator spent 6 months overseas studying collections of Australian reptiles and amphibians. The main purpose of this work was to examine type material prior to completing a catalogue of Australian reptiles and amphibians. The opportunity was also taken to study data processing techniques in museums.

In 1966 the Curator took part in a CSIRO faunal survey of the Coburg Peninsula in the Northern Territory. Since that time additional material has been collected by Mr David Linder, ranger at the Coburg Peninsula Reserve. Work was completed on this material and a report submitted to the Division of Wildlife Research of CSIRO in January, 1971.

**Field Work.** No field work was undertaken during the year. The Curator attended the ANZAAS Congress in Port Moresby in August, 1970.

**Collections.** Work continued on the re-organization of the collections in the New Spirit Block. The Macleay Museum collection of types of amphibians and reptiles, acquired on permanent loan last year, was incorporated into our own collections. No further work was carried out on the use of automatic data processing techniques for the research collections.

Nine hundred and nine specimens were registered during the year.

**Information and Services.** Apart from large numbers of public enquiries, most being concerned with the identification of specimens, the department continued to provide a wide range of advisory and identification services to other scientific and governmental institutions.

## ICHTHYOLOGY

**Research.** The Curator completed a study of the whalefish family, *Rondeletiidae*, as well as a bibliographic survey of the Cetomimiform fishes of the eastern North Atlantic. Work continues on the midwater fishes of New Guinea and eastern Australia. Studies were begun on the behaviour of shallow water luminescent fishes, in conjunction with the Microbiology Department of Sydney University.

The Assistant Curator has begun revisionary studies of Australian gobies.

**Field Work.** The Curator spent two weeks collecting on the New South Wales North Coast and at Jervis Bay with his class from Macquarie University. Four days were spent collecting midwater fishes aboard the New South Wales Fisheries research vessel *Kapala* off Sydney, and a month in New Caledonia, studying the midwater fish collection in the Oceanography Section of ORSTOM, joining a four-day collecting cruise on the ORSTOM vessel *Coriolis*, and acting as cruise leader on a seven-day collecting cruise of HMAS *Kimbla* to the New Hebrides.

The Assistant Curator spent 5 days in the field collecting at Upper Allyn and Smiths Lake with a class from Macquarie University.

**Collections.** In addition to the specimens resulting from the above fieldwork, important collections were received of New South Wales benthic fishes (from exploratory prawn trawling), and New South Wales freshwater fishes. More than 6,400 specimens were registered during the year. The skeletal collection was reorganized and recatalogued; it numbers 269 whole or part specimens.

**Information and Services.** Public and scientific enquires continued at a high rate, totalling more than 600 for the year. A total of 14 visitors worked in the department during the year, including 5 from overseas. 19 separate loans were made, totalling 349 specimens.

## MALACOLOGY

**Research.** The Curator's research has continued on certain groups of minute gastropods and bivalves. In addition two families of neogastropods were investigated and the generic relationships of some of the problematical Australian and tropical Indo-Pacific species clarified. Work is also progressing on the Indo-Pacific species of the genera *Murex*, *Xenophora*, and *Boloma*.

Field investigations continued on the distribution of the Queensland land snail genus *Varohadra*.

Several manuscripts by the curator have been submitted for publication this year.

Mr T. Garrard, an honorary of this department, has completed a revision of the mesogastropod family Turritellidae and is commencing a revision of the neogastropod family Cancellariidae.

**Field Work.** The second Australian Shell Conventions in September attracted six Australian and overseas malacologists to Yeppoon, Queensland. The opportunity was taken by Mr Colman and the Curator to spend 3 weeks collecting terrestrial and coral reef habitats.



Mr Colman spent 3 weeks in New Guinea where it was intended he work on a trawler off Yule Island. Circumstances prevented much useful work being completed, but useful collections were made in Port Moresby.

The Curator visited the South Australian Museum in January, and did some marine field work in the vicinity of Adelaide.

Mr Colman spent 3 weeks on Lord Howe Island assisting with the "Terrestrial Survey", and also spent 5 weeks in New Caledonia. He collected mostly in the vicinity of Noumea, and spent a weekend on H.M.A.S. *Kimbla* dredging between New Caledonia and the New Hebrides.

Local field work included several marine excursions, and the Curator spent a few days at the University of New South Wales field station at Wallis Lake. Dr Talbot kindly made his yacht available for dredging off Manly in June.

**Collections.** The very extensive Mel Ward Shell collection was acquired, and is now stored at Rushcutters Bay. In addition the collection of the late Mr E. V. Finch was donated by his son. These collections, and the Woolacott collection acquired last year, will substantially increase the present museum research collections, but before this can be done there is a great deal of curation required. A temporary assistant and Miss Robinson have been working on the Woolacott collection at Rushcutters Bay over the past month, but many more months of work will be required before the bulk of these collections will be accessible to research workers. The smaller Jackson, Marsh and Colman collections acquired over the last 2 years have largely been incorporated. Mr T. Garrard and Mrs J. Kerslake are both donating their collections piecemeal and do the bulk of the curatorial work required before the material reaches the museum. In addition to the major acquisitions, a large number of smaller collections from several individuals, have substantially increased the holdings from several poorly collected parts of Australia. Contacts have also been established in other parts of the world in an attempt to build up foreign comparative material. The F.R.V. *Kapala* has provided some interesting deepwater material from the New South Wales Continental Slope.

The material from the departmental field work is being incorporated at a steady rate in both the dry and wet collections. Both these collections are in an overcrowded state and it is already impossible to incorporate new material in some areas. The number of registered lots since 1969 has increased about fifteen fold over the average for the last 20 years. It is estimated that the collections will, at the average rate of increase over the last 3 years, double in size in 5-6 years. The wet collection has already more than doubled in size in most groups.

A number of other people have assisted through the year in the department, including in particular Mrs J. Kerslake and Mrs G. Thornley.

Special emphasis is being placed on adding minute molluscs to the collection. The Curator and Mr Voorwinde do nearly all the work involved in this area, which includes a substantial, and largely unworked portion of the molluscan fauna. The extremely time consuming nature of this work is severely cutting into other activities such as research.

**Information and Services.** Two graduate students have been regularly using the facilities of this department, and the usual help in the way of identification and information has been given to the public, government departments, other museums and universities.

Both the Curator and technical assistant are council members of the Malacological Society of Australia, and both serve on the local branch committee of the society. The Curator also serves on the editorial board of the society's *Journal* and is an overseas editor for *Malacological Review*.

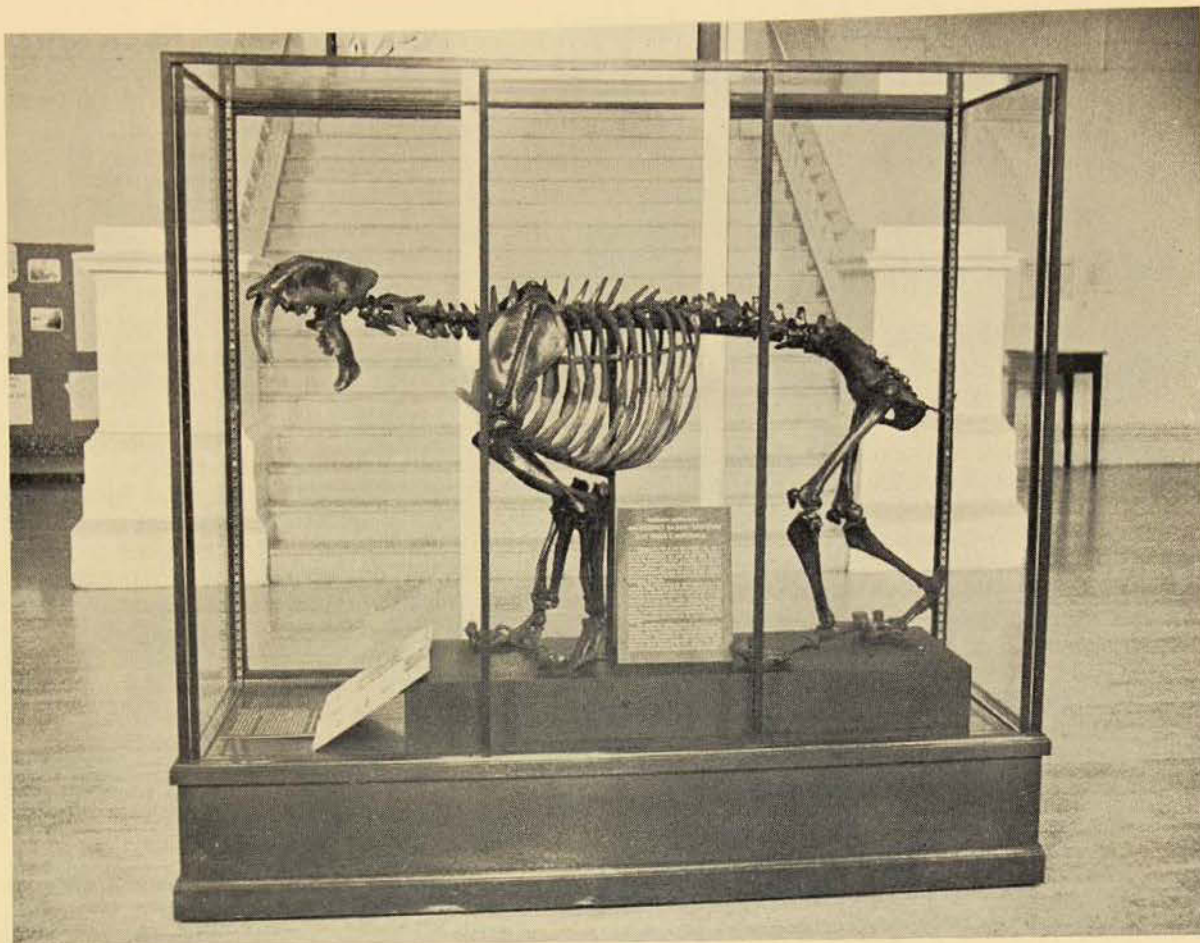
## MAMMALOGY

**Research.** Studies have continued on the behaviour of the Australian sea-lion, *Neophoca cinerea*, at Dangerous Reef, South Australia. Further information has been obtained on their reproductive and social behaviour, and the pup-marking programme begun in 1969 has continued.

**Field Work.** A field trip extending from 8th October to 14th December was undertaken to Dangerous Reef in connection with research on the behaviour of sea-lions. Two short field trips were made in late January and early February, to Smith Lakes near Bulahdelah and Upper Allyn in the Barrington Tops region, with a party of about fifteen students from Macquarie University in connection with practical instruction in vertebrate zoology.

**Collections.** Installation of the new cabinets to house the collection of mammal skins and skulls in the New Spirit Building, has been completed. Work has begun on the transfer of the collection, but it is anticipated that this will take some time, as the whole collection is to be reorganized. The mammal osteological material has already been transferred, and the removal of the spirit collection has begun.





**Californian Sabre-Toothed Cat**

Photo by Charles V. Turner, *The Australian Museum*

**Information and Services.** Loans of material were made to the following institutions and workers:

Dr Elizabeth Horner, Smith College, Northampton U.S.A.—Rodents; Miss Joan Dixon, National Museum, Victoria—Bandicoots; Dr J. Bannister, W.A. Museum, Perth—small dasyurids; Mr N. Wakefield, Monash Teachers College, Vic.—Phalanger; Mr W. Ivansoff, Macquarie University, Sydney—Mammal skulls; Mr C. Watts, South Australian Museum, Adelaide—Rodents;

Facilities to examine material in the collections were given to:

Mr J. Mahoney, Sydney University; Mr Peter Johnson, Macquarie University; Mr Michael Archer, W.A. Museum; Mr David Nicholls, Geelong Grammar School, Vic.

A mounted specimen of a platypus was lent to Pilgrim Films Ltd, for the making of a film on Aboriginal legends.

The 11th meeting of the Australian Mammal Society was held in Brisbane, from 20th to 22nd May, 1971. The Curator attended, and delivered a paper on the "Problems in the Behaviour of the Australian sea-lion, *Neophoca cinerea*". The Curator attended the 43rd ANZAAS Congress, held in Brisbane, from 24th to 28th May.

Two lectures were given to keepers at Taronga Park Zoo in March and April on, "Marsupial and Primate Systematics and Behaviour", in connection with a course on animal care.

A symposium "Kangaroos and Men" organized by the Royal Zoological Society and Taronga Park Zoo, was held at the museum on 4th July, 1970. The Curator and Mr R. Strahan, Director of Taronga Park Zoo, were joint organizing secretaries.

The Curator attended a demonstration of military surveillance equipment and its application to field studies of animal behaviour, held at Taronga Park Zoo.

## **MARINE INVERTEBRATES**

### **CRUSTACEA AND COELENTERATES**

**Research.** The Curator continued studies on Indo-Pacific spider crabs. At the Smithsonian Institution, the collections of the International Indian Ocean Expedition and the Philippine cruise of the *Albatross* were studied. Extensive collections of type material were examined in museums in England, Europe and India.



Work has commenced on collections made by the "Siboga" Expedition, (Zoological Museum, Amsterdam), the Israel Red Sea Expeditions (Rijksmuseum, Leiden and Zoology Departments of Hebrew University and University of Tel Aviv), the Mariel King Memorial Expedition to the Moluccas (Western Australian Museum) and by several Danish expeditions in the Indo-Pacific (Zoological Museum, Copenhagen).

A study has been initiated of the midwater shrimps and prawns and deepwater benthic decapod crustacea off New South Wales. Collections are being made by the New South Wales Fisheries research vessel *Kapala*.

**Field Work.** Dr Griffin attended the ANZAAS Congress in Brisbane and the Australian Marine Sciences Association meetings.

**Collections.** The moving of dry and spirit collections to the New Spirit Block was completed. A total of 260 registrations have been added to the crustacea collections; a large part of the coral collection was revised with the co-operation of Mr S. Domm. The entire collection of coelenterates was revised and thoroughly checked. A separate catalogue of type material of crustacea was commenced.

**Information and Services.** A large number of public and professional enquiries were answered. Most public enquiries concerned freshwater and marine crayfish, and stinging jellyfish. Material from the collections were sent on loan to many scientists in Australia and overseas.

Dr Griffin was re-elected Treasurer of the Australian Marine Sciences Association. He was also elected to the council of the newly-formed Australian Society for the Study of Fish Biology. He continued to serve as a councillor on the New South Wales Public Service Professional Officer's Association and was elected to the executive as a Trustee.

## MARINE INVERTEBRATES

### WORMS AND ECHINODERMS

**Research.** Much of the Curator's time was taken up with duties of Deputy-Director but work has continued on the intertidal surveys of two localities in the north of Western Australia and on the identification of recent collections of tropical starfishes.

The Assistant Curator is specializing in polychaete worms and has begun work on the systematics of the family Terebellidae.

**Field Work.** The Curator completed her field studies in the northwest of Western Australia in the first 2 weeks of the 1970-71 period and spent fifteen days working on collections of tropical starfish in the Western Australian Museum, collaborating in the writing of a paper on Fiji starfishes with Mrs Loissette Marsh.

The Assistant Curator made several local field trips, and spent 2 weeks on Lord Howe Island collecting earth worms and leeches for the terrestrial ecological survey of the island being carried out by the Australian Museum. Five days were spent on the North Coast of New South Wales collecting worms. The Assistant Curator also attended the Australian Marine Association Conference and the ANZAAS Congress held in Brisbane in May, 1971.

**Collections.** The routine curation of the collections in the following phyla has been handed over to the Assistant Curator:—Annelida, Nematoda, Nemertinea, Sipunculoidea, Echiuroidea, Phoronida and Platyhelminthes.

Although the transfer of all spirit collections belonging to the Department from the "Little Spirit House" was completed in the 1969-70 period, there is still considerable reorganization needed and changes in the cataloguing system are required to complete the removal operation. This work is now in progress and the opportunity is being taken to bring the phylogenetic classification up to date.

Registrations of new collections have continued satisfactorily. A total of 225 registrations of worms have been made including 6 paratypes. A holotype sponge was donated by Dr Bergquist and paratypes of several new species of Echinoderms have been lodged here by Mr A. Dartnall. Type ascidians have been donated by Dr P. Mather.

**Information and Services.** Numerous requests from overseas and local areas have been received for authentic information on the "Crown-of-Thorns" starfish as a menace to coral. Identifications of cirripeds and echinoderms have been supplied to other research scientists, and a number of loans have been made to research workers in other institutions and countries covering ascidians, sponges, echinoderms and worms. Several scientists worked on the research collections during the university vacations.

The identification of a large collection of worms from Wallis Lake is at present in progress for the School of Biology, University of New South Wales. Identifications of worms have also been supplied to Queensland University, New South Wales State Fisheries, the Health Department and the Department of Agriculture. The Assistant Curator has been helped in the task of identification of Annelids by Mrs Hannelore Paxton who was employed as a casual worker during the University summer vacation.



## MINERALOGY

**Research.** In connection with the preparation of a short paper for the *Journal of Gemmology*, studies on the texture and mineral composition of two new Australian occurrences of nephrite were undertaken, and specimens of rough and cut material from a new occurrence of gem quality labradorite were described and the exact identity established.

**Field Work.** A visit was paid to the site of the Willaroy stony meteorite, 70 miles north of White Cliffs. The fragments were brought back, and an unsuccessful search made for further specimens. An inspection was made of the White Cliffs opal field.

A visit was paid to the Dungowan area to study the geological occurrence of nephrite.

A visit was paid to a number of sapphire mining sites in the Glen Innes-Inverell District.

**Collections.** The number of minerals is 42,517, an increase of 198; the number of rocks, meteorites and tektites is 9,122, an increase of 79.

A number of interesting minerals from recently discovered Australian occurrences have been acquired by exchange.

**Information and Services.** 396 enquiries on minerals, rocks and meteorites were received. 102 of these were on the specific subject of gem and ornamental minerals.

Loans and gifts of specimens to various research workers and small teaching collections numbered 16. Three requests from research workers in the U.S.A. for specimens of the Murchison meteorite were refused because the bulk of specimens are now in museums in the U.S.A.

A collection of building stones was lent to the National Trust for temporary exhibition.

Advice was given to the Bureau of Mineral Resources on the establishment of a geological museum in Canberra.

Commentaries were made on three television stations on the discovery by the United States National Aeronautics and Space Administration, of amino-acids in the Murchison meteorite.

An address was given on "Tektites" to the staff of the CISRO Division of Mineral Chemistry. A public address on "Gem Minerals of Australia", organized by the Queensland branch of the Gemmological Association, was given in Brisbane. Two lectures, one on "Cook's Geological Landmarks" were given to lapidary clubs.

The manuscript of the book *Gem Minerals of Australia*, to be published by the Trustees, is almost completed.

The display on "Introduction to Minerals" has been re-organized, and a very good set of crystal models has been added to the display.

A small temporary exhibit of "Cobalt Minerals in Queensland" includes two of the finest erythrite specimens in existence.

A collection of rocks and minerals has been made available for the travelling train exhibit.

## ORNITHOLOGY

**Research.** A preliminary survey was made to decide on a study area for work on birds inhabiting pine forests.

A population survey of the Lord Howe Island Woodhen and general ecology has been started as part of a fauna and flora survey for the Lord Howe Island Board.

Work on the sexing and ageing of birds by external characters has continued and four papers published on this work.

Work has also continued on the "Pneumatization of Bird Skulls and The Age of Breeding" and a paper read on this subject to section 11, Zoology of 43rd ANZAAS Congress in Brisbane on 25th May, 1971.

**Field Trips.** An initial survey from 19th to 24th October was made of the State pine forests in the Jenolan, Oberon, Orange area, in the company of officers of the Forestry Commission to decide on an area for a survey of the birds inhabiting pine forests.

A visit was made to the Iluka coastal rain forest from 23rd to 28th November to study the regent bower bird and other rain forest birds, and two papers were published on the regent bower bird.

A week was spent in December with Dr D. L. Serventy and Dr G. Van Tets of the CSIRO on Flinders Island working on the short-tailed shearwater colony, which Dr Serventy has been studying since 1948.



In February (16th February to 4th March) work on the Lord Howe Island woodhen was started as part of the terrestrial survey of that island. Five days were spent on the top of Mt Gower, the only place these birds are now found, banding the birds with metal and coloured bands. Help was then given with the survey of sea bird colonies.

In April, 12 days (16th to 28th) were spent on top of the mountain surveying the woodhens and marking the sightings to eventually try and determine the size of their territories and a general study of their habits. This work is continuing.

**Collections.** 226 specimens were registered during this year. 95 specimens were donated and 131 collected by museum staff. More birds were actually received, but owing to shortage of staff these could not be processed until recently.

**Information and Services.** The Curator gave information and answered about 370 enquiries from the public and other government departments.

Loans of specimens were made to other museums.

### PALAEONTOLOGY

**Research.** The Curator continued research on Devonian vertebrate faunas of Australia and Antarctica. Analysis of the large quantities of fish remains from the Mulga Downs Formation of western New South Wales is almost complete and preparation of the new Antarctic material is under way. The comparative collections of Devonian vertebrates have been improved by exchange of specimens and casts.



(Left) Emeritus Professor A. S. Romer, ex-Director of the Museum of Comparative Zoology, Harvard University, U.S.A., examines some Devonian fossil fishes brought back from Antarctica by Dr Alex Ritchie, Curator of Palaeontology (right)

Photo by Charles V. Turner, *The Australian Museum*



**Fieldwork.** The only major field trip during the year was an expedition to Southern Victoria Land, Antarctica. In November, 1970 the Curator, with Mr Gavin Young of the Bureau of Mineral Resources, Canberra, as his field assistant, joined forces with six geologists from Victoria University, Wellington, New Zealand. Victoria University's 15th Antarctic Expedition visited a wide area of Southern Victoria Land about 120 miles west of Scott Base in the Ross Sea to collect fossil and lithological material from Devonian, Permian and Triassic successions. An earlier Victoria University Expedition (VUWAE 13 in 1968/9) had collected Devonian fish material from the same area which was sent to the Curator for study and description. The party was flown from Christchurch to McMurdo Sound and later airlifted to the Skelton Neve on the western edge of the Transantarctic Mountains. For the next 2 months, travelling by motorized toboggan and sledge, they measured and collected from Devonian, Permian and Triassic sediments in the Boomerang Range, the Warren Range, Mt Metschel, Portal Mountain and the Lashly Mountains. The Curator and Mr Young recovered over 2,000 lb of fish-bearing material from the Devonian Aztec Siltstone, and, although articulated individuals proved to be very rare, brought back the largest and best-preserved collection of Devonian fish ever found in Antarctica. The material, which is now being studied and prepared in Sydney and Canberra includes various forms of placoderms (arthrodires and antiarchs), acanthodians, crossopterygians, dipnoans, palaeoniscids and possibly elasmobranchs. The expedition worked in the area until mid-January, 1971 when the Curator returned to New Zealand; other members of the team later visited the little known Darwin Mountains but no more fish material was discovered.

The most important finds of the Antarctic expedition were put on temporary display in the Long Gallery, accompanied by a slide show and commentary by the Curator.

**Collections.** 273 specimens were registered during the year of which 16 were presented and 257 were collected.

The large, new collections of Devonian vertebrates have been brought together in a modernized room at the rear of the fossil store. The little spirit store in the old wing is still awaiting conversion into the badly-needed joint preparation laboratory to be used by the Palaeontology and Mineralogy Departments. Much of the necessary equipment has now been acquired and detailed plans have been drawn up for the construction of a mezzanine floor and the installation of dry and wet preparation facilities to cater for all aspects of geological preparation. Copies of these plans, accompanied by an appeal for financial assistance, have been sent out to various industrial and mining concerns.

The laboratory will be operated by Mr C. I. Macadie, formerly an assistant experimental officer in the Department of Palaeontology, British Museum (Natural History) and for the last year a preparator in the Cleveland Natural History Museum, Ohio, U.S.A. Whilst at the British Museum Mr Macadie carried out extremely skilful preparations of important Australian Devonian fossil fish from New South Wales and the Kimberleys, W.A. His main task in the Australian Museum will be to continue this work on the large collections of Australian and Antarctic Devonian fish material, some of which will require the development of new preparation techniques.

**Information and Services.** Some 200 fossil enquiries were answered last year in person, by correspondence or telephone. The Antarctic Expedition and the resulting fossil discoveries resulted in considerable press, TV and radio publicity.

The old version of the "Succession of Life" wall chart finally sold out. A completely new version has been prepared by the Curator and Mrs Janet Boddy, of the Art Department, and is now in the hands of the Government Printer.

## EDUCATION SERVICE

**Staff Changes.** Mrs W. J. Goldstein, Assistant Education Officer, resigned on 2nd October, 1970 and Mrs J. H. Ruello commenced duty as Assistant Education Officer on 21st December, 1970. Mrs Z. M. Harkness was appointed as a part-time relief teacher for 15 days per annum.

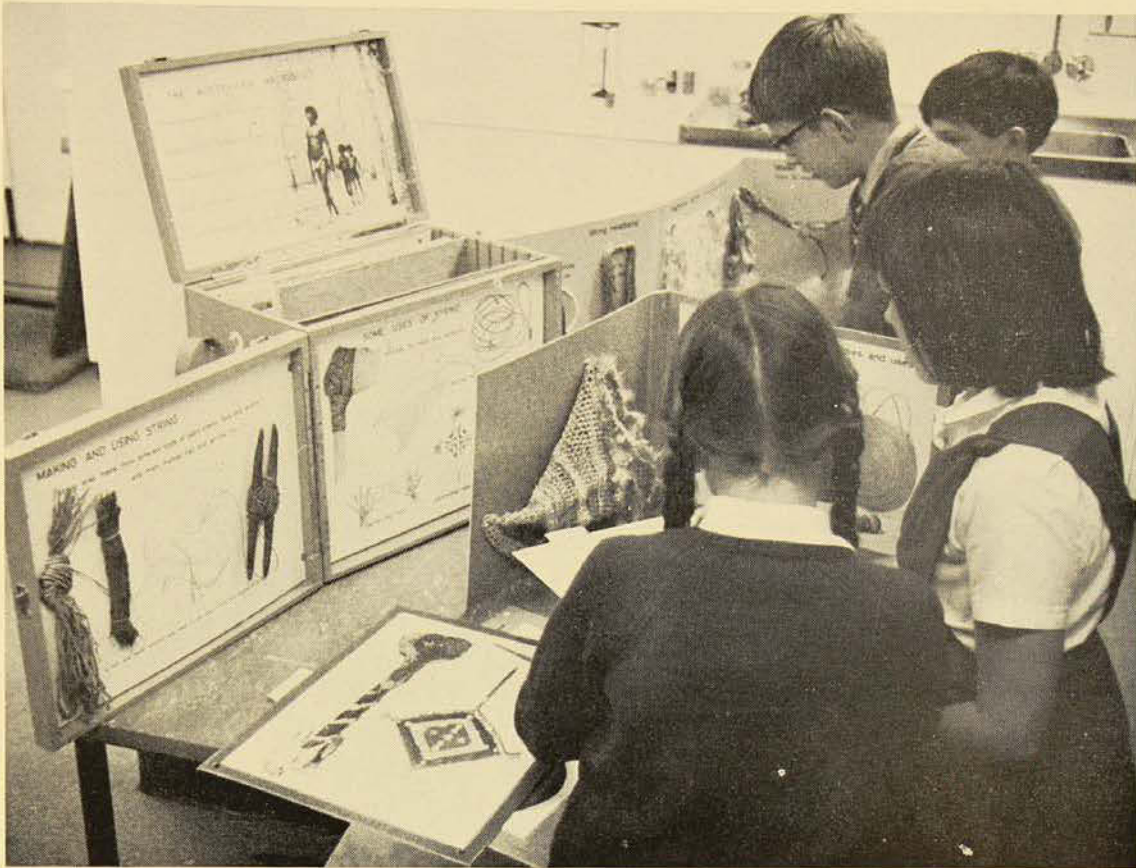
**School Visits to Museum.** The total number of children attending the museum classes organized by the education staff was 31,214, comprising 629 visits. As usual, our available lesson time for the whole year was completely booked by the middle of first term, and not all other requests for lessons had to be refused. For some it was possible to fit in a short film between morning and afternoon classes, and for others question sheets were supplied, but the majority were unable to obtain any help from us at all. There were 860 classes—a total of some 50,000 children—who visited the museum without appointment and received no help from us.

Until more space is provided in the new Education Block, and more staff, this situation will not improve.

Five classes were taken on field trips to study marine ecology. Several groups of handicapped children—spastic, deaf, blind—were given special lessons suited to their disability and one lesson was given in a hospital school.

**Visits of Tertiary Students.** Demonstration lessons, and lectures on the museum's educational services were given to various groups of trainee teachers from Sydney, Balmain and Alexander Mackie Teachers Colleges, from St Joseph's Catholic Teachers College and St Scholastica's Training Centre, Strathfield, and from the English Teaching Centre. Education students from Macquarie University were also helped with their course work, and arrangements were made for two Sydney Technical College groups studying museum techniques to visit the Education Section workroom and other areas of the museum.





A group of children show interest in one of the Museum's travelling cases. These study cases are used by teachers for class demonstration, the Museum's Education Service supplying them to State schools on loan

Members of the New South Wales Ambulance Transport Service Board continued their series of visits to study venomous animals.

**Loan Services.** A total of 287 loans was made during the year, comprising 122 collections of specimens and photographs and 165 travelling cases. Three new cases on possums were completed and two duplicates of the platypus case were brought to an advanced stage of completion. There was an increase in the incidence of transit damage to the cases, necessitating some time spent on repairs. A new type of foam-lined plastic carton is at present being tried out and it is anticipated its general use will eliminate most of the damage from this source.

Renovations and repairs were carried out continuously on the loan items, but some specimen withdrawn, and most of the mammals and birds are in such poor condition they should be discarded. Replacements are urgently needed to bring the collection up to standard.

**School Vacation Activities.** Attendances at the school vacation film screenings were as follows:

Spring, 1970	..	..	..	..	..	2,403
January, 1971	..	..	..	..	..	3,222
May, 1971	..	..	..	..	..	1,100
Total	..	..	..	..	..	6,724

Many of the play centres organized by the New South Wales Department of Education attended these film screenings, as well as visitors to the museum.

A "Fossil Day," when children could bring their specimens for identification was held on 2nd September, 1970. Dr Ritchie and Mr Fletcher discussed the fossils with the young collectors.

The *Children's Room* was visited by a total of approximately 9,385 people during the three school vacations, an average daily attendance of 285. Different displays and activities were arranged in the room for each vacation: "Fossils" in September, "Materials used by Stone Age Man" in January and "Spinning and Weaving" in May.

*Museum Walkabout* question booklets were completed by 1,183 children.

*Museum Discoverers' Club.*—Twelve children qualified for membership during the year, bringing the total active membership to 122. Field studies were made of the effects of controlled burning at Wahroonga Nature Reserve and of rocks and minerals at the Hornsby quarry by courtesy of Farley and Lewers Ltd.



The Senior Discoverers' Club has held regular meetings and has begun a comprehensive survey of the Towlers Bay area, partly in conjunction with the Youth Hostels Association. Nine members of the club undertook a field work training programme at Nadgee Nature Reserve in January, under the direction of Mr Clark, Assistant Curator of Environmental Studies and with help from the education staff. The party was cut off by floodwaters for 5 days but this did not seem to dampen their spirits, and the time was used to make insect collections for the reserve museum and to clear the road of flood debris and sand and to rebuild the causeway.

Five members of the club assisted in the curatorial departments of the museum for 3 weeks in the January school vacation, the Trustees providing an honorarium of \$50 (\$10 each).

**Information and Services.** Sets of free museum leaflets were sent to 61 school libraries, including those in other States and the Territory of Papua and New Guinea. A further 1,109 letters from teachers and pupils, requesting information, were answered.

Many of the museum leaflets were revised before being reprinted.

Lectures were given to the Avalon Naturalists' Society, Senior Citizens Club of Woollahra, St Joan's Alliance and apprentices at Lysaght Bros & Co. Ltd. Mrs Pallin gave a paper on the museum's role in conservation at a conservation seminar arranged by the School Library Association (Liverpool Branch) on 29th June, 1971. Miss McDonald and Mrs Pallin attended a one-day seminar arranged by the Australian Science Education Project to study and evaluate their teaching materials.

Miss McDonald acted as chairman for the anthropology section of the ANZAAS Film Competition.

Mrs Pallin is preparing a conservation folder for the use of teachers. Other conservation activities include continued work by Miss McDonald on the Education Committee of the Australian Conservation Foundation and participation in the symposium on field studies centres arranged by this Committee.

**Display.** All gallery labels were checked and revised before their inclusion in new or renovated exhibits.

Three special displays were prepared and mounted in the Children's Room (see School Vacation Activities) and an exhibition of children's work was arranged for "Education Week".

Planning has continued throughout the year for the travelling exhibition in two railway carriages. Detailed designs and labels were prepared under the theme "The Earth—Our Space Ship" and sources and specimens, models and photographs were located for future use.

**ICOM Seminar on Museum Education.** The first Australian ICOM Seminar "Museum Contributions to Education" was held at the National Gallery of Victoria, Melbourne 9th–12th March, 1971. Miss McDonald formed one of the organizing committee for this seminar, which was attended by Mrs Maguire, Mrs Pallin, Mr Inder and Miss McDonald. At this seminar, an ICOM working group in Museum Education was formed and Miss McDonald was elected chairman of the group.

Following the success of this seminar, a further one-day seminar on "Educational Resources Within Museums and Other Institutions" was held in Sydney on 7th June, 1971, at the instigation of Mr B. G. Hamilton, Staff Inspector. Directors and education staffs of museums, and officers from the New South Wales Department of Education, discussed the possibilities for increasing co-ordination and liaison among the various bodies concerned.

**Donations.** Mr Justice Myers continued his gifts of colour transparencies for teaching purposes. The managing director of Time-Life International (Australia) Pty Ltd donated twenty-four copies of the *Life Nature* books for final awards in the museum "Walkabout" series. The Children's Book Council donated a selection of books on natural science for the junior library.

**Visitors.** The newly appointed education officers at the Geological and Mining Museum, Miss K. Pankhurst, and at the National Parks and Wildlife Service, Miss E. Dunfield, studied our education services. Other visitors who studied our services and watched demonstration lessons were Mr G. Bradbury, Science Museum of Victoria; Miss Sue Cook, South Australian Museum; a group of West Irian students and another group from Uganda.

Dr J. Lang, science specialist from the Australian Science Education Project, discussed the inclusion of museum resources in their teaching materials.

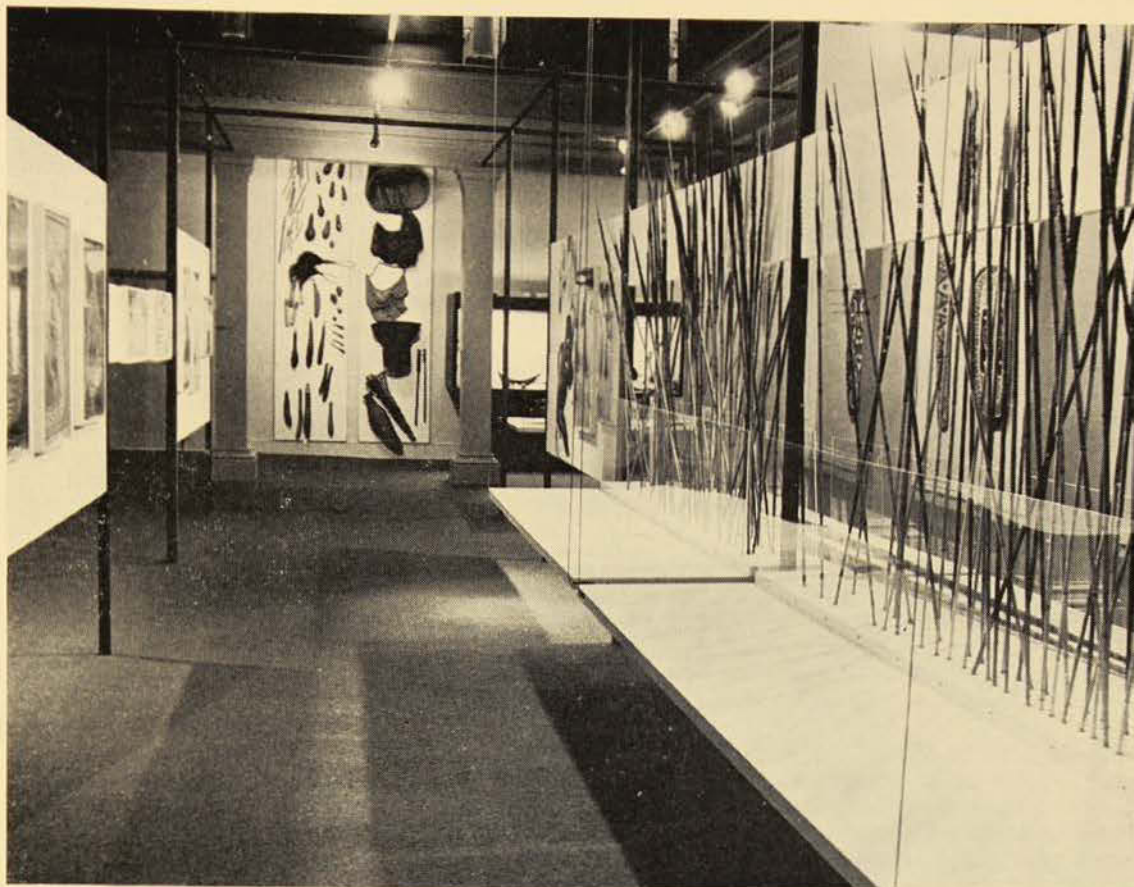
Miss Adrian and Miss Felton of the Publications Department of the Geological Survey of New South Wales sought information on exchange of free publications.

## EXHIBITIONS DEPARTMENT

The department has been engaged in three main fields this year: in the major "Hall of Life" project; in the mounting of temporary exhibitions, and in the renovating of some of the older exhibits.

Construction of fixtures has now started in the "Hall of Life", and the exhibits which centre around the outside "vine" are under way. In addition the very impressive Geophysical Globe has been received, although not yet painted.





Recent acquisitions; a temporary exhibition of anthropological material on display in the "Long Gallery"

Photo by Charles V. Turner, *The Australian Museum*

Temporary exhibitions included the Australian bird index parrot photos, a display of recent anthropological acquisitions, a multiple-projection slide show of N.A.S.A. moon-landing photos and an exhibition of Antarctic fish fossils with associated slide show.

Renovations have been carried out to the dioramas in the Long Gallery and some mammal and bird exhibits have been relabelled. The Australian Aboriginal Gallery is at present being renovated. Some small showcases on Indonesian culture were also installed during the year.

The department was also involved for some time in moving part of the collections into storage at Rushcutters Bay.

The small amount of graphic work undertaken during the year included as its main item a revised and enlarged chart, "Life Through the Ages".

**Field Work.** Several short field trips for collecting birds were undertaken and yielded some thirty-five new mounts for the gallery.

## LIBRARY

The museum library is growing steadily and so are the demands on it. The number of visitors using the library has increased greatly, especially post-graduate students from the three universities, who find the library's resources invaluable. This requires a lot more time and effort from the library staff who are becoming hard pressed.

### Accessions and Binding:

Volumes added	Books	Serials	Presented and Exchanged
496	260	236	256

During the year, 496 volumes were added to the library, 260 being books, the remainder being periodicals or parts of series. Of these volumes, 256 were received on exchange, or were given to us, either for review or as donations. Currently the museum receives approximately 1,800 periodical titles of which we subscribe to 220, the rest being received on exchange or as gifts. Because of the staff changes and also because of the increasing work load very little preparation for binding has been done. One lot of 65 volumes has been processed and returned and another lot of 100 volumes is ready to be sent to the Government Printer.



**Loans:**

To other libraries	To Museum	Xerox jobs	No. sheets
902	92	400	5,988

Loans totalling 902 were made to libraries in all Australian states, government, university and others. 400 lots of xerox copies were supplied to both Australian and overseas libraries, especially to New Guinea and New Zealand, these copies amount to 5,988 sheets. During the first part of the year, some of these xerox copies were made in answer to requests to the Linnean Society of New South Wales. The museum borrowed 92 items from other libraries and was also supplied with xerox copies in lieu of loans. Many visiting scientists and research workers, members of the general public and post-graduate students have made use of the library.

**Bequests.** The Melbourne Ward Library has now been listed and insured on the basis of a flat rate of \$2 per volume.

**Cataloguing.**

No. books	No. serials	Cards withdrawn	Cards made	Catalog. Monogs.	S.S.A.L.
305	256	155	1,840	404	74

A total of 305 books and 256 serials have been catalogued and classified this year. 155 old cards have been withdrawn from the 1,840 new cards inserted into the library's catalogue. 404 cards have been made for the union catalogue of monographs and sent to the National Library, Canberra. 74 cards were made for scientific serials in Australian libraries and sent to CSIRO Canberra. An officer from the National Library came in November, 1970, and photographed all the book entries in the museum catalogue which had not been supplied to them already.

**Rearrangement of Library.** The major move of the library from the old wing to the new wing stacks has had to be postponed. Early in November, 1970, the Linnean Society of New South Wales, who have to leave their present quarters, suggested that their library should be amalgamated with the museum library. This suggestion meant that the move had to be entirely replanned and reorganized, with a consequent postponement. During the first 2 or 3 months of 1971 the fate of the Linnean Society's library was undecided but eventually their suggestion of amalgamation was withdrawn. The move to the new wing is now to take place during the next financial year.

**Archives.** Archival material has been used by some research workers but unfortunately there has not been the staff available to box and arrange more of the old files which are still stored in the strong room.

**PHOTOGRAPHY AND VISUAL AIDS**

**Field Work.** During August, Howard Hughes visited the Edward River Aboriginal Reserve to film Aboriginal handicrafts. This was initially for the Institute of Aboriginal Studies, Canberra. The anthropologist working at the station was Mr John Taylor. Over 8,000 feet of 16 mm colour film was exposed showing details of the making of a three-pronged man spear, a woomera and a string basket. This footage has since been purchased by this Museum from the Australian Institute of Aboriginal Studies.

During December-January, Howard Hughes accompanied Mr G. Holloway (Entomology Department) to Western Australia. Here, in the southwest corner of the continent, insects and other native fauna and flora were filmed for future film production work. Over 2,000 feet of 16 mm colour film was exposed.

A small aircraft was hired in March for a flight to western New South Wales to film floodwaters from the air for use in future films.

Mr Charles Turner accompanied Mr Steve Clark (Environmental Studies) to Port Stephens and Port Macquarie in July and September to photograph sand (rutile) mining operations.

Both photographers also made short excursions, filming or photographing butterfly tagging operations, wombats and various wild life subjects.

**Collections.** Pressure of work has been so great this year that no negatives have been registered.

**Information and Services.** Photographs were prepared for publication in research and popular publications, for research record as well as overseas and foreign uses.

More than 1,214 prints of all sizes were made: 907 negatives; 887 colour slides; 131 monochrome slides and 491 colour prints; large format transparencies; silk screen masters, etc., and including over 80 X-rays of specialized subjects. This represents an increase of about 50 per cent work volume over last year's production and would have cost over \$10,548 dollars if produced outside the museum.

Photographs have been supplied, not only for exhibition in this Museum for special displays, but also for the National Trust and the National Parks and Wildlife Service of New South Wales.



Four films have been completed for the series sponsored by the Broken Hill Proprietary Company Limited. An extra seven films are currently being worked on, and another two are well advanced in their planning stages. These are colour, sound films of 16 mm gauge. The first four films have featured original music specially composed by well-known musician, Mr John Sangster, and this music is being used in an L.P. disc due for release shortly. This music from the films should give the museum good publicity, as well as help film circulation.

Other films produced in previous years are still being circulated widely through various libraries, and have been screened throughout Australia on television. A number of overseas inquiries indicate that our films are also being screened fairly widely in North America.

At present arrangements are being made for the visit of the Governor-General to a Premiere of certain BHP-sponsored films early in the new financial year.

**General.** Improved facilities are needed for cine work and storage of cine film, as well as more studio space for filming and photographing live animals and other subjects, some of which need to be kept in photographic cages for some period of time.

Other sections of the museum staff are being increased and the requirements for photographs are also increasing, but there has been no proportionate increase in photographic staff. It is difficult to keep up with registrations and certain other work without trained staff to assist.

### SCIENTIFIC INFORMATION OFFICER

The scientific information officer commenced duty in November. Areas in which the scientific information officer is active include advertising and publicity, public relations, and scientific information services.

**Advertising and Publicity.** During the year, museum advertising was placed with all Sydney daily newspapers. This consisted of display advertising for the museum generally, the special temporary exhibition of Antarctic fossils (from 8th May), children's holiday film showings, museum publications, museum bookshop, Australian natural history, and the public lecture given by Dr P. Chapman, of N.A.S.A. (U.S.A.).

Publicity coverage was given by city, suburban and country press, city and country television channels, and radio. Press releases were sent to media on the following topics: Dr A. Ritchie's expedition to Antarctica; Dr H. Recher's lecture series, "Ecology for Conservationists"; the temporary exhibition of Antarctic fossils; preparation of statement for publication by the *Sydney Daily Telegraph* on the "Earth Day Conservation Contest"; the Lord Howe Island ecological survey; and the forthcoming Bonnard art exhibition. Interesting highlights noted in the press included an article on venomous creatures: John Haugie (visiting Melanesian student of anthropology)—*Sydney Morning Herald*; taxidermy—*Brisbane Courier Mail*; coverage of entomological field trip by Dr D. McAlpine and the Scientific Information Officer to North Coast areas of New South Wales in country media; and the identification of an oriental goby found in Sydney Harbour.

**Public Relations.** Lectures and functions included the public lecture by Dr P. Chapman of N.A.S.A., and a series of six lectures, "Ecology for Conservationists", for selected audiences from conservation organizations.

An environmental evening was held on 12th May. The Minister for Environment Control, the Hon. J. G. Beale, delivered the opening remarks, and Prof. Slatyer (Australian National University, Canberra) gave an address to local government officials from the metropolitan area, prior to the showing of a film on pollution, "The Time of Man", provided by the U.S. Information Service. Special invitations were issued, and arrangements for refreshments were made.

During the year, members of the museum staff gave talks to the following groups: Rotary, Methodist Young People's Group, VIEW, and John Lysaght Pty Ltd. Liaison with media for interviews with museum staff was maintained. The use of the museum facilities was afforded to various educational and commercial interests for photographic purposes. The following visitors were welcomed to the museum: Viscountess Monk (Gt Britain); Mr T. A. Fasuiyi (Director of Art, Nigerian Federal Department of Education); Mr Selvay (Deputy Editor of Publications, Victorian Education Department) and Mrs Elizabeth James (Buffalo Museum of Science, U.S.A.).

Co-operation, in the form of promotional writing, captions, etc., was given to the record company, "Cherry Pie". A record featuring music from the sound tracks of two recent museum films is being produced by this company.

An entomological field trip of 11 days duration in January provided interesting opportunities for contact with country media, as well as an opportunity to assist and observe field work in progress. Two 1-day trips were also made to Camden to observe butterfly collection and tagging.

The scientific information officer acts in the capacity of editor of the annual report and staff newsletter. The recent acquisition of a small offset duplicator by the museum will mean that brochures for temporary exhibitions, newsletters, internal forms and general literature may be produced internally.

Two films on pollution were obtained by the scientific information officer from the U.S. Information Service, for staff viewing.



## ARTIFICERS

**Museum Building.** The Department of Public Works has completed the following work:

- Repairs to main stairways and landings.
- Strengthening mezzanine floor of the mineral store room seven, south wing.
- Painting of Deputy-Director's Office.
- Painting of Attendants' room.
- Additional rails on stairway to new Spirit Block.
- Extra water cock direct from main to sink in Dr Cogger's Lab.
- New Spirit Block.
- Painting of fossil store south wing.
- Supply and fitting of two C.O.s fire extinguishers to each gallery of New Wing.

**Ventilation Plant.** The plant is checked periodically by private contractor through Public Works Department, the boiler uses approximately 500 gal of fuel per winter season, plant is running trouble free.

### Electrical:

- Additional lighting in fossil store new wing.
- 6 single 40 watt fluorescent fittings.
- 3 double 40 watt fluorescent fittings.
- Fluorescent fitting in spray booth, new spirit block.
- 4 exhaust fans installed in preparation rooms 1 and 2.
- The Department of Public Works has been co-operative in electrical installations and maintenance.

### Work at present being carried out at the Museum:

- Concreting of area between the south wing and the New Spirit Block by Public Works' Engineers Branch.
- Alterations and building of new offices in sub-basement new wing by Public Works.
- Work has commenced on the Hall of Life Exhibition by the artificers, Art and Preparation Departments.
- Aboriginal Gallery show cases are in the process of being painted, re-arranging of exhibits and making of new labels.

### Work requested and held in abeyance:

- Public toilets, Cafeteria area.
- Extension to reception desk and partition new wing.
- Alterations to ceiling Aboriginal Gallery.
- Alterations to Old Spirit House and education rooms.
- Mezzanine floors in Molluscs Department.

### General:

- Fifteen standard insect cabinets for Entomology Dept.
- Steel shelving for Library.
- Steel shelving for Mineral Dept.
- Cabinets built onto compactus trolleys for Mammal Dept, New Spirit Block.
- Steel shelving in Mollusc Department.

### Motor Vehicles:

- One Land Rover E2P-377 with 41,000 miles recorded is to be replaced with a new vehicle.
- A new Holden Station Sedan was purchased on 16/11/70.
- ACQ-767, a replacement vehicle. Also an additional vehicle was purchased BDQ-335 Mini Van.
- A short wheel base Land Rover has been handed over from the National Parks and Wildlife Service for the Environmental Studies Department. This makes a total of two Station Sedans, one Mini Van and four-wheel drive vehicles.

**Work by Artificers Department.** General maintenance requiring attention to electrical faults and regular inspection of water pumps and motors, air ventilation and oil tanks, emergency lighting unit, motor vehicles and the Museum building.

Artificers work consisting of Hall of Life showcases and general Carpentry and Joinery.

## ASSISTANT EDITOR—PUBLICATIONS

Nos 11 and 12 of volume 16 and nos 1 and 2 of volume 17 of the quarterly magazine *Australian Natural History* were published during the year, and no. 3 was in process of production. No. 12 (December, 1970) was a special issue devoted to the subject of modern man and his environment. It contained sixty-four pages, twice as many as in normal issues. Because of public demand for this issue and because of the public importance of its content, preliminary plans were made for the issue to be reprinted as a book.

The index to volume 16 of *Australian Natural History* was published and distributed to subscribers of the magazine. It is also available, on application, to any of the magazine's readers.



Two articles published in *Australian Natural History* were reprinted for their authors.

Nos 2, 3 and 4 of volume 28 of the *Records of the Australian Museum* were published, and nos 5, 6 and 7 were in process of printing.

The printing of no. 13 of the *Memoirs of the Australian Museum* neared completion, and work began on the publication of no. 14.

The fifth edition of *New South Wales Aboriginal Place Names and Euphonious Words, with their Meanings* is being printed. The printing order is 7,000 copies, an increase of 2,000 over the previous edition.

The pamphlet *Australian Aborigines* was reprinted. Fifteen thousand copies were printed, three thousand more than the previous reprint.

A new free natural history leaflet, *Melanesia*, and new editions of seven existing leaflets, were published, and new editions of fifteen existing leaflets were in process of publication.

Coloured folders, for holding free natural history leaflets, are in process of production. They will be given to members of the public receiving leaflets in quantity.

Fifteen thousand folders giving information about the museum and its publications and containing subscription forms for *Australian Natural History* were printed.

The sending of circulars to schools, with a view to enrolling them as subscribers to the magazine, was continued.

In addition to articles contributed to *Australian Natural History*, the following papers and books by members of the staff were published during the year.

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## ATTENDANCE

During the year 465,400 people were recorded as having visited the museum. As the counting devices have been malfunctioning during the past year, this figure represents considerably less than the total number of visitors, so that the number of visitors to the museum has increased from 358,044 in the year 1965, to almost half a million in 1970-71.

Thirty-one thousand two hundred and fourteen children attended classes given by the Education Service teaching staff. Additional classes comprising over 50,000 children visited the museum without appointment, and were conducted through the displays by their teachers. 6,724 children attended the school vacation film screenings, and the Children's Room was visited by 9,385 people.

## DONATIONS

The following donations of important material are gratefully acknowledged.

Mrs Melbourne Ward (Melbourne Ward collection.); Mr Mascord, Sydney (a large collection of arachnids); Mr O. K. McCaw, Territory of Papua and New Guinea; Mr Carnaby, Western Australia; Mr G. Daniels, Sydney; Captain A. Gillogly, Republic of Vietnam; Mr D. Sands, Sydney; Mr M. Fletcher, Sydney. (Donations to Department of Entomology).

Mr W. McReddie (reptiles and frogs from New South Wales and Queensland); Mr G. Gow (reptiles from central Australia); Mr B. Knight (frogs from New South Wales); Mr R. Mackay (reptiles from southern New South Wales); Dr H. Heatwole (reptiles from the New England district, N.S.W.); Mr R. Pengilley (frogs from New South Wales).

Dr T. Berra; Dr A. Bruce; Mr D. Buckmaster; Mr G. Coates; Mr J. Lewis; Mr N. Coleman; (Donations to Department of Ichthyology).

Mrs H. Blackburn; Mr J. Cameron; Dr and Mrs R. Catala; Mr N. Coleman; Dr E. Finckh; Mr T. Garrard; Mr A. Hinton; Mrs J. Kerslake; Mr I. Loch; Mr T. Nielson; Mrs D. Reverce; Mrs Ward; Mrs S. White. (Donations to Department of Malacology).

Barry Richardson of the University of New South Wales. (A large collection of wallaroo material).

Mr J. Kikkawa of the University of Queensland. (A series of rodent specimens).

The Western Australian Museum, Perth (crabs from northwestern Australia), Smithsonian Institution, Washington (spider crabs from the Indian Ocean), Mr N. Coleman, Perth (crustacea from Western and South Australia), Miss Alison Green, Tasmanian Museum (types of isopod crustacea), Mr L. Craighead, University of the South Pacific, Fiji (intertidal crabs), Miss L. Curlis, Melbourne (Australian and New Zealand crabs), Dr C. V. G. Phipps, University of Sydney (deep water crustacea from Bass Strait), Mr M. Geddes, Monash University (type material of anostracan crustacea).

South Australian Barytes Co. and C. Kovac (Barite); Mrs D. Morgan and R. L. Burns (silicified crocidolite); Mrs B. G. Amey and Mrs A. C. Clay (nephrite); B. M. England (levynite); J. E. Johnson (gregite); Mr N. Searl, Mrs D. Davis, P. Curtis, and T. Rogers (gem labradorite); F. C. Loughnan (dawsonite and norstrandite); Western Australian Government Chemical Laboratories (moraosite); Dr Henry Massey (U.S. minerals); Mrs N. Searl and C. Rossiter (quartz varieties); A. Patrick (sapphirine and scorzalite); A. W. Chubb (gem varieties of corundum, apophyllite and "thunder eggs"); Central Pacific Minerals Co. (vesuvianite); Base Minerals Ltd (cassiterite); R. Cameron (flint clay); H. Souwer (opal); W. L. Westerweller (prehnite); Mrs N. G. Eddy (cerussite and malachite); J. Wilson (pyroxene); D. C. Harris (epidote); Gordon Hume (Australites from New Queensland locality and erythrite).

Mr John Hallstrom, (rare birds from the estate of Sir Edward Hallstrom), Taronga Park Zoo. National Parks and Wildlife Service. Commonwealth Animal Quarantine Service. Mr L. C. Haines, R. Russell, J. S. P. Ramsay, K. A. Hindwood. (Donations to Ornithology Department).

Mr Justice Myers (colour transparencies); Time-Life International (Australia) Pty Ltd (Life Nature Library books); Children's Book Council (books).



## Appendix

THE AUSTRALIAN MUSEUM—SUMMARIZED STATEMENT OF RECEIPTS AND  
PAYMENTS FOR THE YEAR ENDED 30TH JUNE, 1971

	RECEIPTS	\$	\$
Appropriation Account—			
Treasury Appropriation .. .. .			573,038.20
Trustees' Account—			
Statutory Endowment .. .. .		2,000.00	
Grant toward Museum Requirements .. .. .		9,000.00	
Grant for Hall of Life .. .. .		20,000.00	
Broken Hill Proprietary Limited Grant for Films First Instalment .. .. .		10,000.00	
National Parks and Wildlife Service Grant .. .. .		2,500.00	
Prime Minister's Contribution to Cook/Banks Exhibition .. .. .		5,000.00	
Council of the City of Sydney Subsidy .. .. .		2,000.00	
British Council Final Instalment Contribution Cook/Banks Exhibition .. .. .		1,070.00	
Museum Shop Sales .. .. .		15,439.07	
Australian Natural History Magazine Sales Museum Shop .. .. .		539.12	
Donations .. .. .		338.50	
Sale of Cine Film .. .. .		1,062.50	
Interest .. .. .		1,647.04	
Postage Receipts .. .. .		250.78	
Red Telephone Receipts .. .. .		52.44	
Nationwide Food Service—Profit from Cafeteria Sales .. .. .		1,700.27	
Royalties and Copyrights .. .. .		381.37	
Museum—Ecology Lecture Series .. .. .		220.00	
Miscellaneous Receipts .. .. .		2,150.43	
			75,351.52
Grants—			
Australian Research Grants Committee—			
Australian Research Grants Committee—Director .. .. .		13,384.47	
Australian Research Grants Committee—Ichthyology .. .. .		1,862.00	
Australian Research Grants Committee—Palaeontology .. .. .		2,657.00	
Australian Institute of Aboriginal Studies .. .. .		300.00	
Rural Credits Development Fund Grant Director .. .. .		5,000.00	
Chief Secretary's Grant Lord Howe Island—Ecology Survey .. .. .		500.00	
National Photographic Index of Aust. Birds—			
Donations .. .. .	\$	22,985.94	
Photographic Sales .. .. .		330.74	
		23,316.68	47,020.16
Balance as at 1st July, 1970—			
Cash at Bank and in Hand—			
Trustees' Funds .. .. .		6,661.21	
Grants—			
Australian Institute of Aboriginal Studies .. .. .		255.94	
National Parks and Wildlife Service .. .. .		1,246.07	
Rural Credits Development Fund .. .. .		72.83	
Australian Research Grants Committee—Director .. .. .		1,832.41	
Australian Research Grants Committee—Ichthyology .. .. .		2,113.18	
Prime Minister's Department Grant for Training Aboriginal Preparator .. .. .		5,000.00	
National Photographic Index of Australian Birds .. .. .		4,338.16	
Investments .. .. .		22,330.00	
			43,849.80
			\$739,259.68
	PAYMENTS	\$	\$
Appropriation Account—			
Salaries .. .. .		437,091.59	
Temporary Assistance .. .. .		2,438.39	
Allowances .. .. .		1,497.00	
Retirement Leave .. .. .		746.60	
Overtime .. .. .		7,362.50	
Tea Money .. .. .		386.50	
Rates .. .. .		19,893.14	
Travelling Expenses .. .. .		8,998.04	
Motor Vehicles .. .. .		3,529.50	
Freight and Cartage .. .. .		1,229.99	
Postal Expenses .. .. .		2,866.17	
Books and Periodicals .. .. .		3,732.21	
Printing .. .. .		8,000.00	
Other Insurance .. .. .		4,500.00	
Equipment, Stores, etc. .. .. .		26,399.66	
Fees and Commissions .. .. .		144.24	
Laundry .. .. .		300.00	
Purchase of Exhibits .. .. .		29,000.00	
Equipment for Storage .. .. .		14,922.67	
			573,038.20



## Appendix—continued

## Trustees Account—

Cost of Publishing Museum Magazine .. .. .	1,820.07	
Stock for Museum Shop .. .. .	9,140.01	
Stores Plant and Equipment .. .. .	11,245.36	
Travelling Expenses .. .. .	10,231.38	
Museum Specimens .. .. .	8,533.39	
Entertainment .. .. .	999.22	
Freight .. .. .	2,170.76	
Miscellaneous Expenditure .. .. .	1,960.31	
Royalties and Copyrights .. .. .	69.41	
Cinefilm Production .. .. .	13,563.23	
Research Grants .. .. .	3,599.28	
Grant to the Great Barrier Reef Committee .. .. .	150.00	
Teaching Aids for Education Section .. .. .	360.00	
Cafeteria Equipment and Fittings .. .. .	637.36	
Library Purchases .. .. .	325.94	
Hireage Red Telephone .. .. .	72.92	
Hireage Public Works Dept Joiner .. .. .	3,090.00	
Postages .. .. .	332.10	
	<hr/>	68,300.74

## Grants—

Australian Research Grants Committee—Director—	\$	
Refund Salaries to Dept Education .. .. .	1,671.35	
Hireage Labour .. .. .	95.00	
Stores and Equipment .. .. .	3,223.05	
Travel and Subsistence .. .. .	954.12	
	<hr/>	5,943.52
Australian Research Grants Committee—Ichthyology—		
Refund Salaries to Dept Education .. .. .	782.19	
	<hr/>	782.19
Australian Research Grants' Committee—Research Scientist		
Palaeontology—		
Travel and Subsistence .. .. .	584.90	
Miscellaneous Expenses .. .. .	50.00	
	<hr/>	634.90
Australian Institute of Aboriginal Studies—		
Stores and Equipment .. .. .	15.21	
Travel and Subsistence .. .. .	176.39	
	<hr/>	191.60
Rural Credits Development Fund—Director—		
Stores and Equipment .. .. .	75.82	
	<hr/>	75.82
Chief Secretary's Grant Lord Howe Island—		
Travel and Subsistence .. .. .	126.68	
Stores and Equipment .. .. .	365.76	
	<hr/>	492.44
National Photographic Index of Australian Birds—		
Subsistence and Travel .. .. .	8,089.25	
Photography and Equipment .. .. .	5,072.25	
Printing .. .. .	1,232.92	
Clerical Assistance and Postage .. .. .	963.91	
Miscellaneous Expenses .. .. .	150.05	
	<hr/>	15,508.38
		23,628.55

## Balance as at 30th June, 1971—

Cash at Bank and in Hand—		
Trustees' Funds .. .. .	9,815.73	
National Photographic Index Australian Birds .. .. .	4,146.46	
Investments .. .. .	8,000.00	
Grants—	\$	
Australian Research Grants Committee—Director	9,273.36	
Australian Research Grants Committee—		
Ichthyology .. .. .	3,192.99	
Australian Research Grants Committee—Research		
Scientist Palaeontology .. .. .	2,022.10	
Australian Institute of Aboriginal Studies Curator of		
Anthropology .. .. .	364.34	
Rural Credits Development Fund—Director .. .. .	4,997.01	
Chief Secretary's Dept Lord Howe Island Ecology .. .. .	7.56	
	<hr/>	19,857.36
Trustees Funds .. .. .	32,472.64	
	<hr/>	52,330.00
		74,292.19
		<hr/>
		\$739,259.68