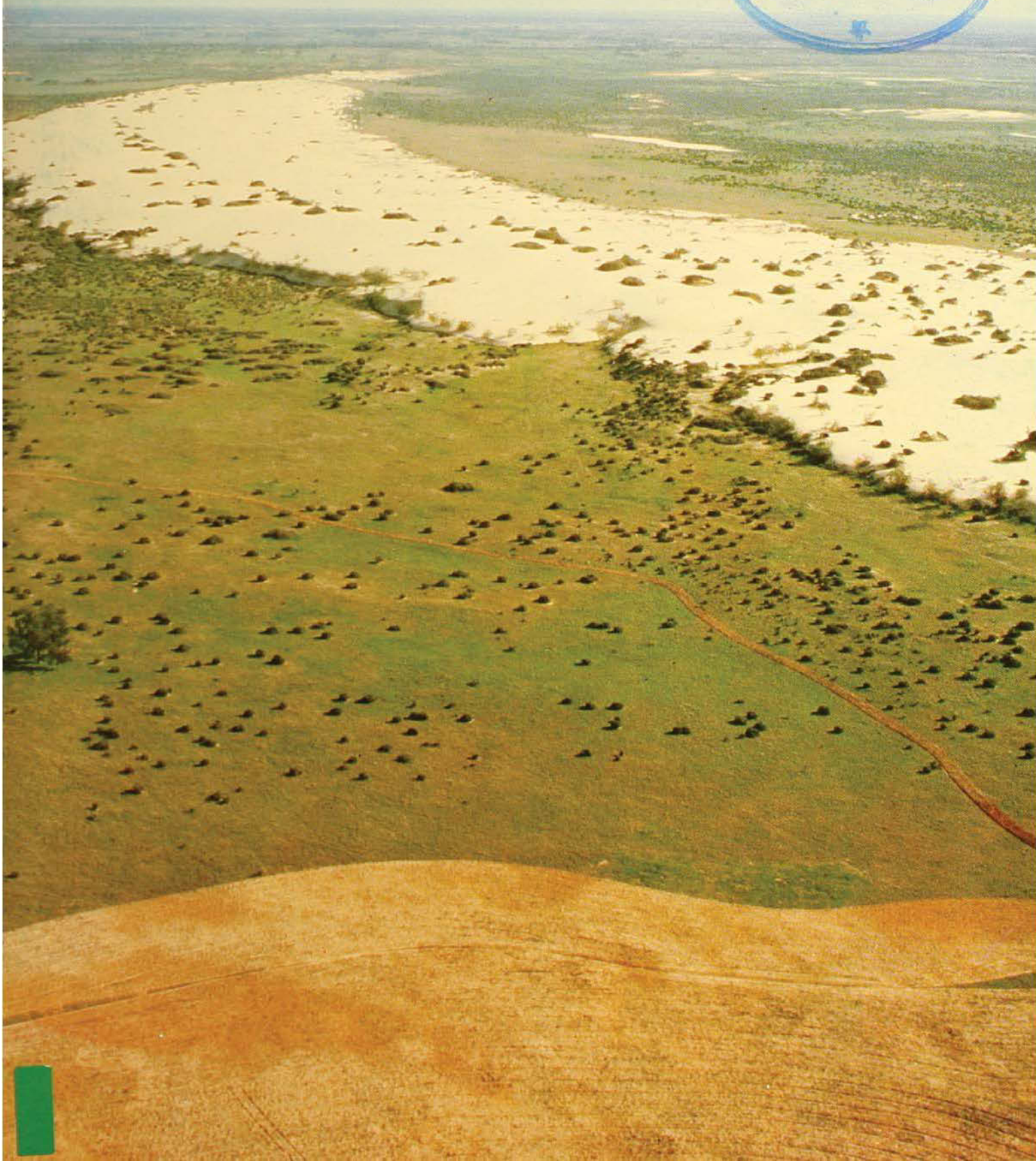




the australian museum
sydney

annual
report
1980-1981



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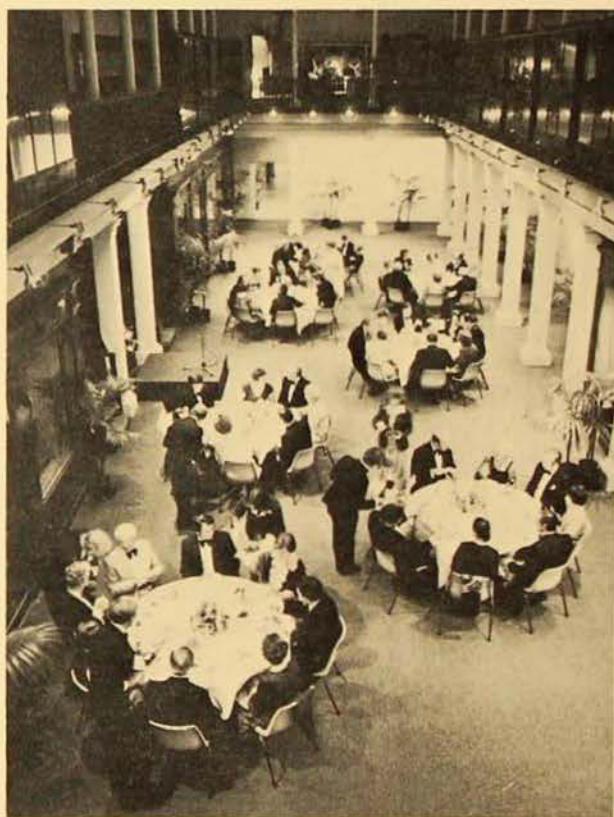
The Trust and staff of the Australian Museum have pleasure in thanking the following organisations and individuals who provided financial assistance by way of research grants or donations during the year.

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Mrs Jess Wise
Uncle Pete's Toys



Left: A banquet for benefactors! Appreciation of the generous support given the Museum by its benefactors. The Australian Museum Society (TAMS) arranged two banquets, one for the presentation of jade pieces by Unilever and the one pictured above, held in the Long Gallery at the Museum. Photo: John Fields/Australian Museum.

Cover: An eroding lunette bordering Lake Mungo in mid-west New South Wales. Here recent archaeological investigation discovered evidence of the oldest known Aboriginal occupation in Australia, some 40,000 years ago. Anthropologists and photographers from the Australian Museum have spent time in the area gathering information for the construction of a new Aboriginal Gallery at the Museum. Photo J. Fields/Australian Museum.

The Australian Museum Trust Annual Report for the Year ended 30 June, 1981.

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The Australian Museum Trust comprises ten persons. Eight are appointed by the Governor of N.S.W. on the recommendation of the Minister responsible for Cultural Activities. The remaining two members are elected by the eight appointed Trustees. Each Trustee is appointed for a term of four years, and five Trustees retire every two years. The President and Deputy President are elected by the Trust each year.

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National Photographic Index of Australian Wildlife

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C. Williams

The Australian Museum Trust appoints three members to the Council and the balance is elected by membership.

Two examples of the taxidermist's and preparator's art: a nocturnal marsupial called Cuscus (top) and a marsupial mouse (bottom), both subjects for the new gallery "Mammals in Australia". Sponsored by the State Bank of NSW



Museum's Mission

The mission of the Australian Museum is:

- to increase and disseminate knowledge about man's natural environment and cultural heritage;
- to increase man's understanding and appreciation of these things.

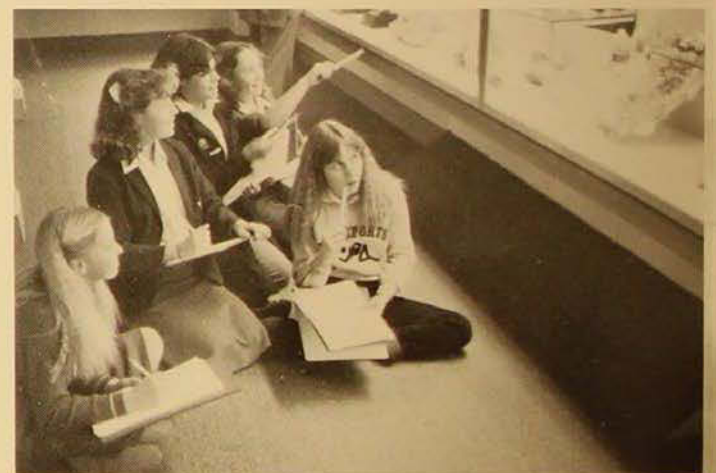
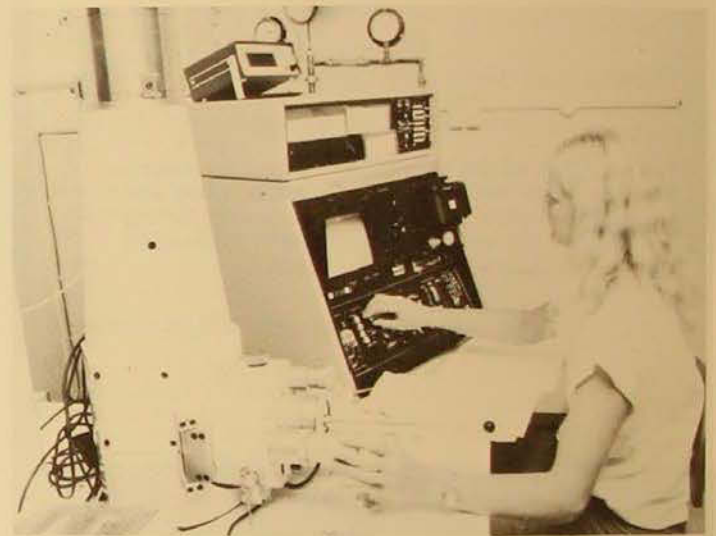
In carrying out its mission the Museum gives special emphasis to the Australian region.

Rich and extensive collections of animals, rocks, minerals and anthropological artefacts are held by the Museum. These constitute reference material which is used to identify, describe and classify the features of our natural environment and, through further research, to reach some understanding of the world around us . . . this is the Museum's scientific function.

On the basis of this understanding, the Museum creates exhibits and conducts educational programs through which people are encouraged to appreciate their natural environment and cultural heritage . . . this is the Museum's interpretive function.

As a centre of expertise the Museum provides information in response to requests from the public, industry and government . . . this is the Museum's service function.

The Museum seeks to be part of the community, and therefore, gives emphasis to good public relations and engages in promotional activities, including publishing, to provide information about what it is doing . . . this is a part of the Museum's public responsibility.





President's Report:

The Honourable, the Premier of New South Wales
Mr Neville Wran, QC, MP
Parliament House
Sydney

Dear Premier,

I have pleasure in presenting to you the Annual Report of the Australian Museum Trust for the year ended 30 June 1981.

The Trust met eleven times during the year, the meeting of 17 and 18 October 1980 being held at the Lizard Island Research Station. During the year no changes in the composition of the Trust occurred. We were pleased to congratulate Trustees Mr Peter Pigott AM and Mrs Carol Serventy OAM on the recognition they received for services to the community.

This past year was the fifth year in which Dr Des Griffin has served as Director of the Australian Museum. It was a year of review for those five years; of assessment of performance of the Trust and of the Museum; of commitment to the endorsed Corporate Plan of the Museum; of monitoring procedures for increasing efficiency through internal and external review of departments and programs and through economic utilisation of efforts and resources; of greater involvement of the Trust with the senior staff of the Museum.

A major feature of . . . museums is the functioning of Trustees or Boards . . . as interested persons from various sections of the community, Trustees have a fundamental role in determining the success of an organization . . . must constantly review agreed objectives and achievements within the plan; gain wide support for the objectives . . . and encourage appropriate discussions involving the Trust, the Museum staff and outside consultants. Corporate Plan—Policy 1, Formulation and Review of Policy.

The five years under review have seen the Trust respond favourably to the majority of the programs proposed by the Director and his senior staff. Through the joint Trust/staff committees the opportunity has been provided to allow detailed assessment of proposals and planning for their implementation. Such procedures have ensured that proposals before the Trust are well represented and carefully researched, taking into account internal priorities and the broader external appreciation of needs as represented by the Trust members' contribution.



A woman of Mornington Island demonstrates how rope for netting the dugong is made by rolling hibiscus bark on the thigh. Photo J. Fields/Australian Museum.

Joint Trust/staff membership is involved in (i) Finance and Staffing, (ii) Community Relations, (iii) Program Review, (iv) Buildings and Planning and (v) the special Museum Bicentenary Committee.

During the past year the Trust has observed an increased public awareness of the Museum and of its functions. This attitude manifests itself in several ways. Firstly the increased attendances at the Museum, at the Museum on the Road and the Museum Train. The significance of the external activities of the Museum should not be understated: these bring the Museum to people who would have very limited opportunity to visit the building which represents the major holdings and functions of the Museum. Their significance is widely applauded in other States of Australia and overseas, where such innovative and community-valuable programmes have not been introduced or are much less well-developed.



Another manifestation of this attitude is the increased membership of The Australian Museum Society (TAMS) and the increasing frequency of, and enlarged participation in, its group functions.

These important external and public recognitions of the Australian Museum's exhibitions and education programmes have a parallel in national and international recognition of the excellent curatorship and research performance of the Museum staff. The Trust has been pleased to observe the increased number of awards from granting agencies for essential Museum research.

Such external financing of research stimulates interaction with relevant institutions throughout Australia and in overseas countries. It has been of continued benefit to the Museum to have the many visits from distinguished national and international museum authorities and research workers.

In summary therefore the Trust believes that it has encouraged and guided the development of the Australian Museum in a manner thoroughly consistent with the objects of the Australian Museum Act of 1902 as amended in the Australian Museum Trust Act of 1975.

The Trust is responsible under the Act for the adoption of policies and programs consistent with the aims and objectives of the Australian Museum: "the propagation of knowledge about the natural environment of Australia and the increase of that knowledge. Particular emphasis is to be given to biology, anthropology and geology."

In the 1975 Act the New South Wales Government recorded the concern of the Trust as encompassing the whole of Australia, as we move towards the 1988 bicentenary of white settlement in Australia, this Trust firmly believes that the Australian Museum must be seen as a focal point in developments and celebrations, particularly as they relate to Australia's natural history. It is for this reason that we have established the Museum Bicentenary Committee.

Presentation of books to the Australian Museum by senior staff of the Peking Museum of Natural History. Left to right: Associate Professor Xu Weishu, Professor Zheng Zuoshin, Mr Zhang Wensong, Dr Desmond Griffin, Director, Australian Museum and Mr Ronald Strahan. The visitors from People's China were in Australia on a fraternal visit. Photo J. Fields/Australian Museum.

The Trust has also endorsed a nine year plan for the Exhibitions Department of the Museum, for the years 1980-1988. This plan ensures a growing public awareness towards the Bicentenary Year.

The Trust has also endorsed a staged Development Plan which aims to improve the building facilities of the Museum to allow more efficient public viewing of exhibits, and adequate space for staff and Museum holdings. This plan has been submitted to your Government and we seek your endorsement of the need for the staged development of the Australian Museum, and, arising from this, the central role of the Australian Museum in the Bicentennial programs.

In presenting this report, we aim accurately to record the principal activities of the Museum in the 1980-81 year.

The Trust is sincerely appreciative of the support that you and your Government have given to the Australian Museum. To potential donors, the subsidy on donations continues to be a most encouraging demonstration of Government interest. It is our objective to further develop the concept of major personal and company benefaction of the Museum, as we strive to maintain this Museum as the major natural history museum in Australia and as a museum of the highest international standing, with programs that will continue to involve an increasing number of citizens of the State of New South Wales and their visitors.

J. T. Baker
President

Director's Report

Next year the Australian Museum will complete its 155th year of existence. A little over one hundred years ago Gerhard Krefft, the director of the day, was thrown out of the Museum by bailiffs hired by Trustees, including some who had been busy enriching their own collections at the Museum's expense. The Museum then entered a period of relative inactivity. Today the Museum completes 25 years of improvement and expansion. In that time it has made great efforts to reach the public. The active administration of recent Directors—John Evans, 1954-65 and Frank Talbot, 1965-75—established a firm basis for the Museum's future development. It has been my task to build on that foundation. The Museum today benefits from support of the Trust, a dramatic contrast with the days of Krefft, one hundred years ago.

The 1980 decade already shows signs of being a time change, more rapid than has ever been seen. It will be a time of greater challenge, greater conflict and perhaps greater difficulty. More than ever before the Museum's management will need to resolutely gather the resources needed to fulfil its programs.

The Director as chief executive of the Museum encourages development of policies and programs consistent with the Australian Museum Trust Act and the Corporate Plan. He is responsible for regular review of the implementation of those policies and programs and for doing those things that are necessary to ensure that the highest feasible standards are met in scientific research, conservation, education, exhibitions, public activities, and administration. The Director acts as Secretary to the Trust, being responsible for the preparation of agendas for meetings and minutes of meetings.

Providing the public with meaningful, enjoyable and relevant opportunities to discover and understand more about the world around us will be of greater urgency than before. This will mean more than merely justifying the existence of the Museum to those who have supported it in the past. The Museum cannot simply be a temple for the scholarly exploration of the natural sciences. Harder work than ever is required to dispel the image in parts of the community that museums are "dusty, never-changing places to be visited once only in a lifetime". In maintaining and using its collections scholarship will be as essential as ever, but it is not sufficient to give emphasis to public activities in education and exhibitions and expect that alone to achieve a change, or to win new areas of support.

It is necessary to establish and regularly review clear objectives, and measure achievements in reaching those objectives. But, in some ways the need to

promote the Museum and to lobby for support will be more important than planning and controlling.

Having recognised the need to set objectives and review performance a corporate plan has been developed detailing priorities for the next ten years. Extracts from that plan are to be found in this report. This year has seen emphasis by senior management on closely defining, in quantitative terms, the most important objectives contained within the existing plan. In addition, the process of review of activities has continued.

Reviews of programs in the biological sciences were completed last year. This year reviews were undertaken of programs in Anthropology, Mineralogy and Petrology, and Palaeontology. Dr Betty Meehan, Research Fellow in the Department of Prehistory, Australian National University and Professor Tom Vallance, Geology Department, University of Sydney, assisted significantly in these reviews. The Museum holds important collections relevant to these disciplines and has unique opportunities to conduct important scholarly research. As in the case of the biological sciences, there is need for some significant changes; these will be implemented next year.

A review of all programs conducted by the Museum's Education Section was completed with the assistance of Dr Brian Low, Senior Lecturer in Education at Macquarie University. The report will be considered by the Trust in the new year and some major changes are anticipated to more efficiently use the Museum's resources.

In recognition of the need to obtain a perspective on the public view of the Museum, four projects were completed:

- A survey of visitors to the Museum to test some of the conclusions reached in the survey of 1976 was undertaken.
- A report on results of studies of audiences of museums, the performing arts in North America, England and Australia and of sports audiences in Australia was commissioned. The results point up major similarities between the audiences of museums regardless of the country in which the museum is situated: educational achievement of a person is the clearest indicator of tendency to visit.
- A survey throughout New South Wales was undertaken by a professional polling organisation to learn of awareness of the Museum and visiting patterns.
- A market research project was undertaken to provide information on how the Museum is perceived and what factors stimulate visits to the Museum.

In the next year the results of these four projects will be brought together to provide a clear basis for further programs to bring the Museum more effectively to the community.

During the year major input of funds from other than traditional State Government sources again occurred. Commonwealth Government agencies—Australian Re-



An unusual view of a Sunday concert in the Skeleton Gallery at the Museum. Jazz Concerts are becoming increasingly popular with adults and children. Photo J. Fields/Australian Museum.

search Grants Committee, Australian Marine Science and Technologies Advisory Committee Funding Advisory Panel, the Queen's Fellowship Scheme, the Bureau of Flora and Fauna through the Biological Resources Study Program—and other agencies together provided \$270,000 to scientific research.

Funds in the amount of \$110,000 from the Lizard Island Reef Research Foundation provided resources to expand the Lizard Island Station on the northern part of the Barrier Reef. A visit by the Trust to the Station in October and the commissioning of a Master Plan for development were significant associated activities. The announcement by Japan Foundation and the Suntory Ltd of their intention to provide Y62.5 million (approximately \$250,000) over three years to support the Lizard Island Research Station was an outstanding feature of the year. The first instalment was presented to the Premier, the Hon. Neville Wran, QC, MP, at a ceremony

at the Museum on August 16. The donation will support construction of a workboat, additional accommodation and expansion of laboratory facilities.

In the Education and Exhibitions programs funds from the Bank of New South Wales, State Bank of N.S.W., BHP and Unilever greatly assisted. Many of the projects in the public area would not have been possible without this support. I cannot emphasise too strongly the need for such support from corporations. Up to five major programs including the Drop-in-after School activities, Sunday at the Museum, the Wandervan and up-coming exhibitions are likely to be cancelled if additional funds are not found in 1981–82.

The upsurge in Exhibitions programs—three major exhibitions are to be opened before the end of next year—is reflected in the funds provided by the Trust—\$115,000 in 1980–81 and an anticipated \$200,000 in 1981–82 excluding costs of permanent staff. Reviews have commenced to establish a significantly improved planning process for exhibitions.

The Museum continued to benefit from donations especially under the Taxation Incentives for the Arts Scheme.

The Museum's own efforts in merchandising brought a net \$100,000 to the Trust without which much of the Museum's work would have gone unfunded.

Besides significant on-going work in science and education the Museum continued recently introduced programs including the Visiting Curator scheme program bringing distinguished scientists to the Museum to conduct special research projects—this year on molluscs, on frogs and on wildlife and forestry operations. Research grants to postgraduate students carrying out work in fields of interest to the Museum were continued, the first grants called for from the Peter Rankin Fund for studies on reptiles and a new award—the Keith Sutherland Award—was established in recognition of the late Dr K. L. Sutherland, former President of the Trust, to assist studies on molluscs.

. . . if success is to be achieved great care will need to be taken: . . .

in setting priorities, allocating and managing funds, and promoting the Museum where reliance is placed on traditional (government) income . . .

to actively seek a greater involvement with the corporate sector,

to continue to approach the State Government and granting agencies for a greater financial commitment and,

to promote organisations associated with the Museum so they become self-reliant. Corporate Plan—Policy 9, Financial Support.

Travelling exhibitions and extension programs continued to receive great emphasis. Four exhibitions forming the *Museum on the Road* program (formerly *Outer Urban Exhibitions*) continued tours of outer Sydney suburbs and country areas of NSW; the Museum Train continued tours of country areas where it was always enthusiastically received. A temporary exhibition *Awareness—are your senses making sense?* staged in the Museum in December to May, commenced a tour of Brisbane, Melbourne and Adelaide.

The importance of building relationships with indigenous peoples continued to be a high priority. Liaison continued between the Anthropology Department and Aboriginal groups in several areas of the

The Treasures of the Australian Museum can now be enjoyed by wheelchair users. As a contribution to the International Year of the Disabled an inclinator (pictured above right) and a ramp has been installed. These facilities will be extended with the completion of the entrance ramp (pictured below right) early in the financial year. Photos. J. Fields/Australian Museum.





Visiting Curator, Dr Richard Zweifel and another American Herpetologist, Dr Walter Brown, examine the stereographic x-ray system designed by Museum Photographic Head Howard Hughes. Radiography reduces the need for dissection when skeletal information is needed in scientific research. Photo J. Fields/Australian Museum.

State. A major decision of the Trust allowed the return to Vanuatu of a slit drum important to that new nation's heritage. In this International Year of the Disabled the Museum provided additional opportunities for the disabled. An inclinator was installed between the Long Gallery and the College Street entrance and people in wheelchairs now have access to all but the topmost gallery. Construction of a ramp at the William Street entrance was commenced and well advanced by mid-year. Extra staff resources were made available at the Museum which allowed a greater number of special groups to visit the city building; in turn, the Wandervan, the Bank of New South Wales sponsored project now in its fourth year, was able to concentrate on visiting less mobile disabled groups.

The Museum continued to benefit from the assistance of large numbers of volunteer workers; the appointment of a co-ordinator by the Museum Society (TAMS) was recognition of the importance of volunteers and the work they perform. In conjunction with this a new policy on the role of these valuable helpers was established.

The increased emphasis on and attention to the place of the Museum in the community was recognised by the enlargement of the former Publicity/Publications Section to form the Office of Community Relations; this matter of the Museum's community role is also a special concern of a Trust Committee, formed last year.

A number of other developments occurred. Many overseas museums, especially art museums, provide audioguided tours for visitors and such a tour was

prepared and made available for this Museum. The tour summarises the major features of the exhibitions and is designed to add to the visitor's enjoyment. The Trust adopted an expanded policy of purchasing outstanding films dealing with the natural environment and cultural heritage; these will be made available along with the Museum's own productions on video monitors in the Museum's galleries. The *Sunday at the Museum* concert program and educational activities for families continued. The quarterly brochure *What's Happening at the Museum* containing information on recent and future activities was expanded and its circulation considerably widened.

I have to say that the Museum continues to face great difficulties in the maintenance and utilisation of its space. Of particular concern is the slow rate of renovation of some areas to provide new laboratories and storage areas. Staff in many sections work in corridors or stair landings. Many collections are crammed together, making access difficult and leading to physical damage of valuable items. Airconditioning services to the area housing the anthropological collections from Melanesia and the Pacific continued to malfunction. Several galleries need more than minor repairs and, due partly to staff shortages, lighting in galleries sometimes was not maintained at proper levels.

The Museum has completed another active year. I have again appreciated the support of the Trust, especially the President, Dr J. T. Baker, and the members of the committees, The Australian Museum Society and my colleagues. The support of the NSW Government especially through the greatly enhanced subsidy scheme for special projects has also been encouraging.

Next year will require even more attention to planning and communicating to ensure the further success of the Museum.

D. J. G. Griffin
Director

Department of Anthropology

The primary concerns of this Department are the past and present indigenous peoples of Australia and the Pacific Islands, with a lesser emphasis on Indonesia and other parts of the world. The Department seeks to promote and improve knowledge and understanding of the non-western cultures of these regions, particularly through research in the field and on the reserve collections, and through exhibitions. It encourages the involvement of indigenous people in museum practice and matters of cultural heritage, particularly where these can contribute to the achievement of contemporary cultural aspirations.

Aboriginal Australia: The year witnessed a greatly increased level of interaction between the Department, mainly through Dr R. J. Lampert and Mr P. Gordon, and Aboriginal communities within the State. The recently completed reports of the Parliament of New South Wales: *Select Committee of the Legislative Assembly upon Aborigines in the State*, has contributed to increasing Aboriginal concern for matters relating to their cultural heritage. In response to this concern, the Department has promoted the loan of artefacts to Aboriginal communities for display in suitable community facilities.

The Department received requests for the return, for reburial, of certain Aboriginal skeletal remains, and the Museum Trust approved nine such requests. In the past museums as a whole have been frequently insensitive towards Aboriginal feelings and attitudes towards their cultural heritage. In addition to the loan of Aboriginal artefacts to cultural centres in Maclean and Redfern, the Department has loaned some significant items to the Australian Gallery Directors Council travelling exhibition *Aboriginal Australia*; this exhibition is scheduled to travel overseas.

The Department hopes that its current policies will lead to a situation in which the Museum works more closely with Aboriginal people. To this end Dr Lampert prepared a submission for the establishment of an Aboriginal Resource Unit within the Museum which was discussed with senior Aboriginal advisors to the NSW Government. Such a resource unit is seen as essential for the extension and improvement of the Museum's interactions with the Aboriginal people of New South Wales.

Mr Phillip Gordon's term as a trainee under the Commonwealth Government's National Employment Strategy for Aborigines was continued for a second year, and he began a degree course at the University of New South Wales.

A major problem facing the Department is the small size of the collections of artefacts from many parts of the State. To improve this situation, discussions have begun with an overseas museum for the possible return of New South Wales artefacts. Even if this is successful, there remain many major gaps in the Department's coverage for the State, in particular for

the Sydney region. Unless these gaps can be filled, the Department will be unable to meet adequately its obligations towards many Aboriginal communities within the State.

Pacific Islands: The main event for the year was the Museum's return to Vanuatu of an important ceremonial slit drum from Mele village, Efate Island. This drum, one of only five surviving in the world, was acquired in 1897. The drum was presented by Ms K. Klugman, on behalf of the Trust, to Ms G. Molisa, member of the Board of Management of the Vanuatu Cultural Centre and member of staff of the Prime Minister's Department, Vanuatu. Thanks to the co-operation of the P. & O. (Australia) shipping line, the drum was delivered promptly to Vanuatu, where its arrival was greeted by the President, Prime Minister and other senior government and village officials.

An increasing number of requests are being received from Pacific islands' bodies for information about holdings from their countries. These have stimulated a major photographic project of Fijian bark-cloth by J. Fields of the Museum's Photographic staff and the review of several sections of the artefact collections. The publication of Ms Lissant Bolton's report to the Australian National Commission for Unesco, *Cultural Property in Australia*, has created world-wide interest. The Australian Museum Trust is aware that increasing interest in restitution does not mean demands for wholesale return of collections. In considering proposals for restitution the Trust ensures that material, if returned, will be carefully curated; regard is given to the future demands of the Museum's collections.

Acquisitions: The main thrust of acquisitions was towards material suitable for inclusion in the Abelam Gallery.

Dr D. Losche led a team of Museum specialists on field work in Apangai village, East Sepik Province, Papua New Guinea from June to September co-ordinating conservation and photographic studies. She commissioned the making of many important artefacts and

Top right: Mrs Grace Molisa (centre) of the Prime Minister's office in Port Vila, Vanuatu, accepts on behalf of her Government, a ceremonial slit drum returned by the Australian Museum Trust. The drum was officially handed over by Trust member Ms K. Klugman (partly obscured). Mrs Molisa acknowledged the gift with a ceremonial slow walk several times around the drum, and a speech of thanks. Free passage to Vila was given to the drum on the P & O Cruiser liner 'Sea Princess'. Photo Howard Hughes/Australian Museum.

Bottom left: At the presentation of a Vanuatu ceremonial drum to Mrs Grace Molisa were (from left) Ms K. Klugman, Australian Museum Trustee, Mrs Molisa, Vanuatu Government, Dr D. J. G. Griffin, Director and Dr J. Specht, Curator of Anthropology. Photo Howard Hughes/Australian Museum.



made an extensive collection of plants for the Gallery. She also purchased 75 significant artefacts from private collections in Australia and the USA.

In the Australian sphere, emphasis was placed on acquisition of artefacts from south-eastern Australia, especially from NSW. The Department's holdings from the eastern seaboard of the State are particularly weak, and efforts are under way to fill the many gaps and to acquire material suitable for loan to Aboriginal cultural bodies within the State.

A most encouraging trend during the year was the federal Government's scheme to promote Tax Incentives for the Arts. Although the total value of artefacts received under this scheme was not large this year 80 items were received from five donors. Fourteen other donors presented artefacts outside this scheme.

Gallery Development: Dr D. Losche's primary activities for the year centred on the development of the new Abalam Gallery. This gallery is devoted to the study of a single group of people in Papua New Guinea, with pertinent cross-references to our own society. It seeks to portray the Abalam, mainly through the people of Apangai village, as a coherent society and not, as so often happens, simply as producers of one of the finest art-styles of the western Pacific. The exhibition is sponsored by Unilever Australia Ltd.

After an interlude caused by staff changes in the Exhibition Department, the detailed planning of the new Aboriginal Gallery proceeded. In this, Dr Lampert is seeking input from Aboriginal people, as well as specialist input from several university-based scholars.

Research: Dr Ron Lampert processed the material recovered from his exploratory survey of the Flinders Range, South Australia. This project is directed towards the clarification of the early Aboriginal pre-history of Australia, with special reference to materials relating to his previous project on Kangaroo Island. He obtained a grant from Australian Research Grants Committee to continue the fieldwork element, and visited the Flinders Range in May-June, 1981.

Dr J. R. Specht proceeded with the analysis of archaeological materials from West New Britain, Papua New Guinea, as part of his on-going study of the history of settlement and economy in that region. He obtained a radio-carbon age of 11 300 years before present (+1200, -100 years) for the basal occupation of Misisil cave, two days walk inland from Kandrian. This age is the oldest for human occupation on islands to the east of New Guinea, and the associated flakes of obsidian demonstrate a much longer period of human exploitation of that resource than had previously been known.

Ms L. M. Bolton began a study of an important collection of ethnographic artefacts and photographs made by the Rev. P. Money in the Northern Province of Papua New Guinea in the early years of the 20th century.

Membership of Outside Bodies: Dr Lampert continued to represent the Museum on the Aboriginal and Historic Resources Committee, National Parks and Wildlife Service of NSW; Mr P. Gordon served as alternate to Dr Lampert on the Aboriginal Resources Committee, NPWS. Dr Lampert was appointed to represent the Museum on the Council of the National Trust NSW. He served as Deputy-Chairman of the Prehistory Advisory Committee, Australian Institute of Aboriginal Studies; as a member of the Membership Committee, Australian Society of Consulting Archaeologists; and as Editor of *Australian Archaeology*. He is also a member of the Program Committee, Section 25A (Prehistory), for the 52nd ANZAAS Congress.

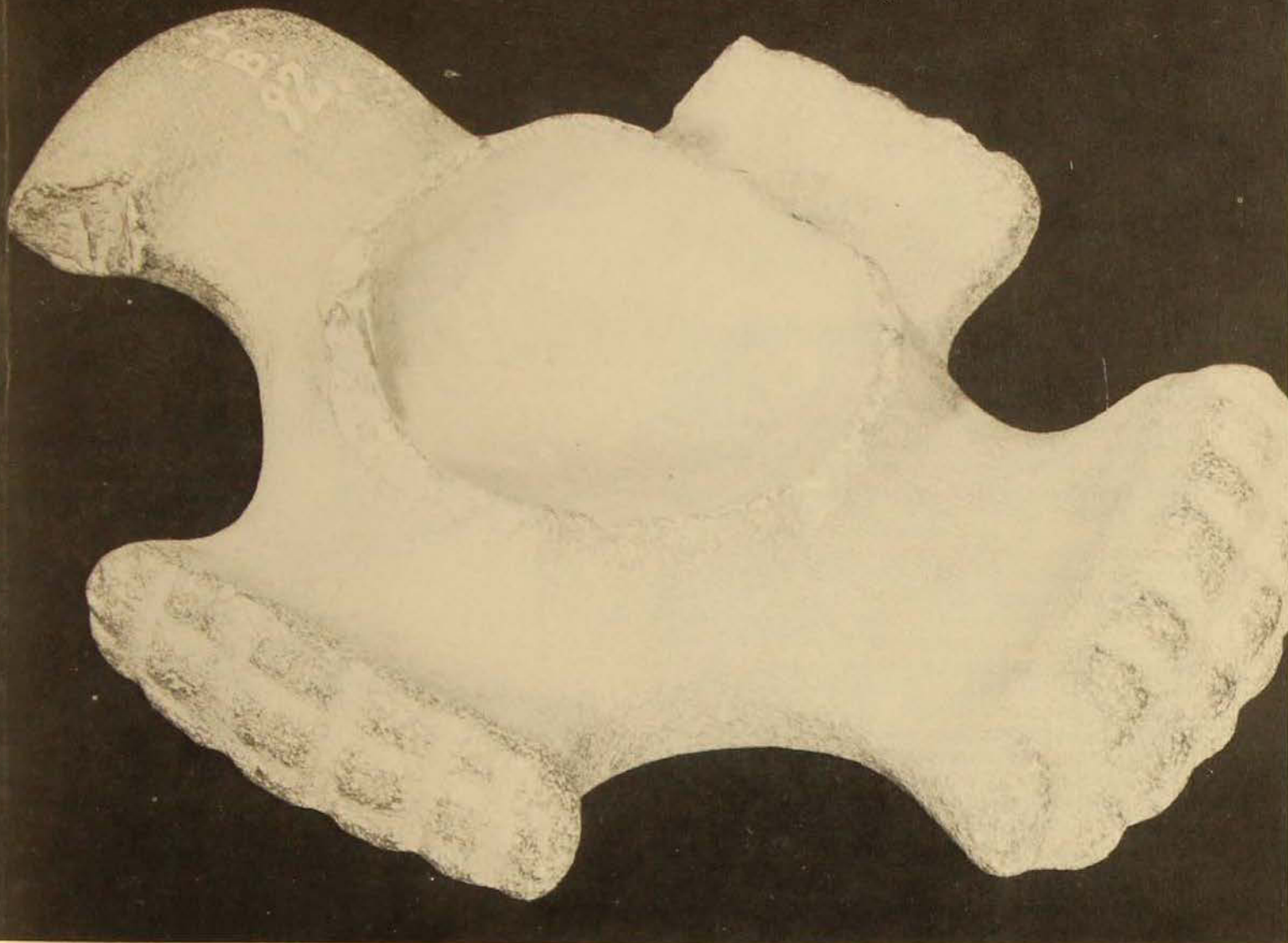
Dr J. Specht served as Vice-President of the Anthropological Society of NSW and was appointed to membership of the Australian National Commission for UNESCO. He was elected as National Co-ordinator of the Conference of Museum Anthropologists, and L. M. Bolton was elected as Secretary to the same body. Dr Specht also joined an organising committee for the First Australian Archaeometry Conference, to be held at The Australian Museum in 1982; he continued to serve on the Advisory Committee of the Fund for the Preservation and Development of Pacific Cultures of the Department of Foreign Affairs, Canberra, and was co-opted on to the Planning Committee for the 1988 Bicentenary of the Museums Association of Australia.

Conferences, Seminars: The third national meeting of the Conference of Museum Anthropologists was organised by Ms L. M. Bolton, and was held in November 1980 at the Aboriginal Keeping Place, Shepparton, Victoria. All members of the Department attended, and papers were presented by Ms Bolton, Ms Horning, Dr Lampert, Mr G. O'Donnell, Mr P. Gordon and Dr Specht. Following this conference, Lampert and Specht attended the national meeting of the Australian Archaeological Association in Valla, NSW.

In December, Dr Specht attended a meeting of specialists on The Ways and Means of Safeguarding the Cultural Heritage in the Pacific Region, organised by ICOM for UNESCO and held in Tahiti. He delivered a background paper relating to Australia's role in cultural heritage protection in the Pacific. In January, 1981, he participated, as a member of the organising committee, in a regional seminar organised by the Australian National Commission for Unesco, on the Impact of Technological Change on Pacific Islands' Cultures, held in Sydney. He also attended sessions of the Australian National Commission for UNESCO in Canberra in December and May. In May 1981, Dr Specht attended the ANZAAS Congress in Brisbane and served as a discussant at one of the sessions of the Archaeology Section.

Dr Losche presented a seminar in the Department of Anthropology, University of Sydney, on 'Complementary Oppositions: Male-Female Relations among the Abalam.'

Degrees, Lectures: In December 1980, Mr O'Donnell was awarded his B.A. (Hons.) at the University of



Prehistoric carved stone mortar in shape of a bird, from Papua New Guinea Highlands Wahgi Valley acquired in 1941. Photo J. Fields/Australian Museum.

Sydney. In January 1981, Ms Losche was awarded her doctorate from Columbia University, USA, for her dissertation *Complementary Opposition: Male and Female among the Abelam*.

Dr R. J. Lampert delivered two courses in Australian Prehistory in the Department of Anthropology, University of Sydney, and in the School of Earth Sciences, Macquarie University. Drs Lampert and Specht gave talks to The Australian Museum Society, and in October 1980, J. Specht delivered the Crosbie-Morrison Memorial Lecture at the National Museum of Victoria, Melbourne.

Acknowledgements: Assistance was received from many people during the year particularly in the form of donations and voluntary work. Without such people, the Department's performance would be greatly weakened. Our thanks are especially due to the following:

for donations: R. B. Seville, J. McCleary, A. Shelton-Smith, C. and R. Sadlier, V. Wallace-Brown, F. Salway, N. and T. Ireland, R. Waterhouse, A. Kalokerinos, P. Knight, E. Parer, M. Longhurst, M. White, R. Siede, G. Mort, J. Dobourdieu, E. Magner, V. Duffy.

for voluntary work: M. Wynn, J. Edwards, T. Corkill, J. Owen, V. O'Sullivan, C. Sadlier, R. Morrison, A. Viguier, A. H. Greenwood.

Overseas Visitors 1980-81: Among overseas visitors to the Department during the year were:

Mr J. Faumina, American Samoa; Dr D. Lubell, Mr B. Mack, Mr R. Vickers, Canada; Mr G. Cowan, Ms C. Kave, Cook Islands; Ms E. Kamikamica, Fiji; Mr R. Isar, France; Mr J. Drollet, French Polynesia; Dr D. Heintze, Dr G. Mackensen, Germany (FDR); Dr H. Rhodius, Holland; Dr G. Vargyas, Hungary; Dr P. Goldberg, Israel; Dr Kamei, Japan; Mr B. Eritaia, Kiribati; Professor A. Chowning, Professor S. M. Mead, New Zealand; Mr B. Craig, Mr G. Mosuwadoga, Mr R. Wari, Papua New Guinea; Dr P. Beck, Solomon Islands; Dr T. Hakensen, Sweden; Dr B. Hauser-Schaublin, Mr J. Hauser-Schaublin, Switzerland; Professor F. Helu, Tonga; Ms J. Bacharach, Ms K. Allen, Mr J. Roscoe, Professor D. Tuzin, Dr P. Lincoln, Professor A. Schutz, USA; Ms G. Molisa, Mr S. Molisa, Mr K. Huffman, Mr J. Keitadi, Vanuatu; Father P. Falelevaki, Wallis Island; Ms F. Mata-afa, Western Samoa.

General: In July 1980 H. Czuchnicka resigned after five years in the Department, to return to Canada. In March 1981, Z. Horning converted her full-time appointment as a Technical Officer to a half-time basis. She will now concentrate on South-east Asia, Africa and North America. The other half of her full-time position will be filled by a person to provide support in the Aboriginal field.

Renovations to the foyer of the Pacific store have provided some additional storage space for the Pacific Islands' collections, and an area for receiving and accessioning specimens. This will alleviate the poor working conditions previously experienced by support staff.

Department of Arachnology

The department aims to contribute to the knowledge of the systematics, zoogeography and biology of Australian spiders; to collect and maintain collections of arachnids, diplopods, chilopods and related minor groups; and to provide information about these animals to scientific and other educational groups and to the public.

Research: Increasing use of scanning electron microscope facilities at the University of Sydney is being made; major useage has involved a study of serrula (a process on the maxillae) and male palpal reproductive structure in the genus *Atrax* (funnel web spiders). Observations on feeding behaviour and a description of the male of *Progradungula carraiensis* have been prepared. Work on the Amaurobioidea (a superfamily of spiders) has progressed including completion of the *Badumna candida* species group and on a review of the Australian Metaltellinae. A revision of the Australian family of spiders Filistatidae is in progress. A revision of the genus *Missulena*, a widely distributed group of trapdoor spiders has commenced.

Field work: Carrai Bat Cave in northern NSW was revisited to make behavioural observations on the cribellate gradungulid spider *Progradungula carraiensis*. Funnel web and cave spider collections were made in the Tumut-Yarrangobilly region of southern NSW. General collecting for the Terrestrial Invertebrate Gallery was done in north coastal areas of NSW.

The Museum has recognised that its fields of interest extend far beyond the capacity of present staff scientists to undertake the research necessary to identify, describe and classify all the features of our natural and cultural environments. For this reason the Museum must assign priorities to research . . . maintain and develop programs of research to strengthen the Museum's role as a major source of knowledge, especially where it has developed, or wishes to develop, expertise. Corporate Plan—Policy 10, Conduct of Research.

Services/Education: Participation in seminar and lecture programs was undertaken on behalf of the following groups: The NSW College of Nursing, Australia-New Zealand Intensive Care Society, Westmead Hospital Intensive Care Group, Lane Cove Flora and Fauna Society, Pre-school teacher/parent groups (Lane Cove and Castlecrag). The department was involved in the following activities organised by the Education Section: Peer Group teaching; Work Experience programs and Drop-in Centre; a demonstration and talk was given to the latter.

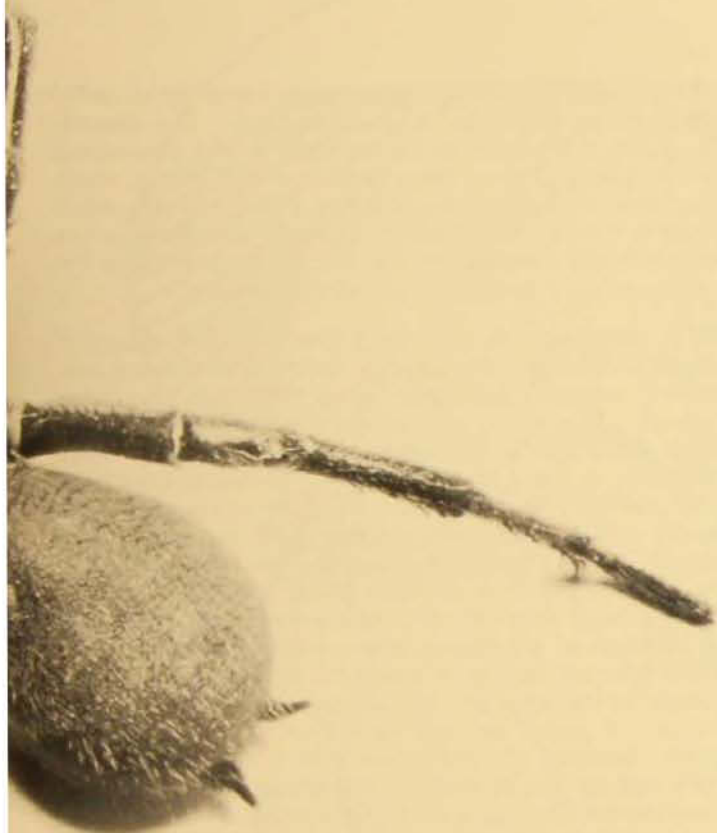
Numerous public enquiries were answered and identifications were made for the Department of Agriculture, Sydney Technical College, National Parks and Wildlife Service, University of New South Wales and University of Sydney.



The funnel web spider is subject to long and intensive research in the Department of Arachnology in the Australian Museum. Pictured is an *Atrax* Sp. Studies in the field and the laboratory reveal there are many more species of this arachnid than was thought until recently, and further that the venom in some may not be as deadly as in others. Photo H. Hughes/Australian Museum.

Collections: The pseudoscorpion collections have been examined by a postgraduate worker, Mr M. Harvey, and considerable re-allocation of specimens and species resulted. Type material has been donated by Professor V. V. Hickman (Araneae) and Dr G. S. Hunt (Opiliones). A valuable collection of Amaurobioid spiders from south western Tasmania has been donated by Professor Hickman. A large general collection of spiders from Papua New Guinea has also been donated by Bro. O. W. Borrell.

Additional trapdoor spider type material thought lost many years ago has been found in the South Australian Museum collections and returned to the Museum in Sydney.



Temporary Assistance: Particular acknowledgement is made of the contribution of Mark McGrouther whose assistance with scanning electron microscopy/microphotographic work was greatly appreciated.

Volunteers: Acknowledgement is also made of the work of the department's volunteers during the year. This has included recataloguing and re-spiriting of much of the type collection; bibliographic cataloguing of the reprint collection and accession of specimen data onto computer sheets. The volunteers are Ms E. Sheridan, Ms G. Copp, Mr L. Hopwood, Ms B. Balmer and Mr H. Fritz.

Associates: Mr R. Mascord has been made an Honorary Associate.

Visitors: Dr C. A. Jeekel of the Zoological Museum of the University of Amsterdam (Paradoxosomatid millipedes); Dr Y. Lubin of the Smithsonian Tropical Research Institute (Social and kleptoparasitic spiders); Mr R. Raven of the Queensland Museum (Diplurid spiders); Dr W. Humphries of the Western Australian Museum (spider egg sacs); Mr R. Faulder of the Yanco Agricultural Institute (trapdoor spiders), and Mr M. Harvey of Monash University (Pseudoscorpions).

Director's Research Laboratory

The laboratory is responsible for conducting research of special interest to the Director. Dr Griffin and Mrs Tranter are continuing taxonomic and zoogeographic studies particularly on the spider crabs occurring in the Indian Ocean and the western Pacific of which there are more than 300 species. Keys to these species have been prepared.

The relationships of the Australian species to other species within the Indo-west Pacific region are being examined as well as the relationships within the family on a world wide basis.

The laboratory continues to assist in projects within the Museum on Visitor Surveys.

Mrs Tranter attended the annual meetings of the Australian Marine Sciences Association in Brisbane (May 1981) and both she and Dr Griffin attended the ANZAAS congress in Brisbane (May 1981).

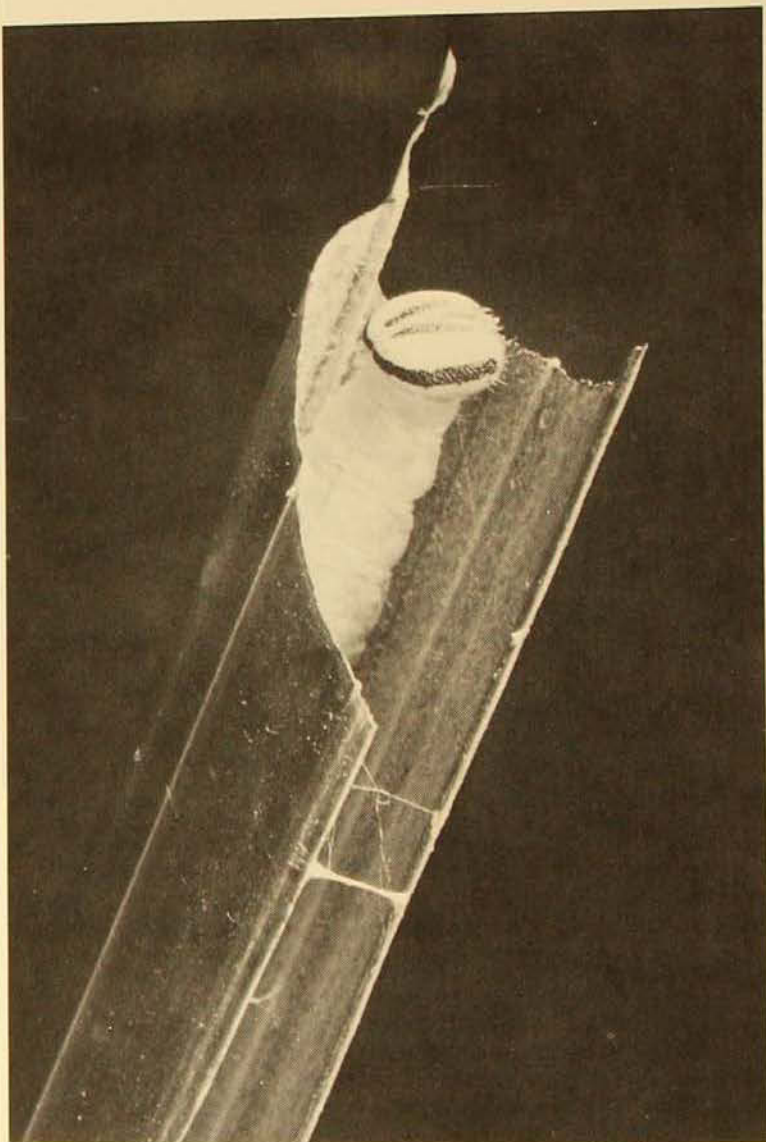
Department of Entomology

The prime objectives of the department are to add to the knowledge of the diversity, habits, and evolution of the insects of Australia and to make this knowledge available both to the public and to scientific research workers.

Research: Dr David McAlpine's research program on Australasian acalyptate flies has involved the sorting and identifying of large quantities of specimens; preparing and updating working keys for identification of many hundreds of species and scanning and abstracting current literature. Dipterous material relating to current research has been received on loan from CSIRO Division of Entomology, University of Queensland Entomology Department and the Canadian National Collection.

Projects carried out recently under the direction of Dr McAlpine have concerned some of the native Australian groups of flies which are as characteristic of this continent as many of our mammals and birds. Ms Deborah Kent and Dr McAlpine completed a revision of the genus *Tapeigaster*, a group of rather large flies of the family Heleomyzidae whose larvae feed in the fruiting bodies of fungi. Though not reported as mushroom pests the flies can be induced to lay eggs on commercial mushrooms, on which larvae can be raised in the laboratory. The eleven species of *Tapeigaster* are confined to temperate Australia and are not closely related to any group of flies from other parts of the world.

Dr McAlpine has studied two species of a previously unknown genus of seashore-inhabiting flies. These minute flies, which may be called 'surge flies' until a scientific name is available, have as yet been found inhabiting only intertidal rocks in the Sydney district.



Larva of the Orange Palm-dart *Cephrenes augides*, one of the Skipper butterflies, which pupates in a shelter made from leaflets of a palm on which it feeds. The specimen illustrated was reared in the Museum. It is a pest of ornamental palms. The Orange Palm-dart occurs from the Torres Strait islands to the Illawarra district of N.S.W. and usually feeds on native cabbage and Bangalow palms. Photo John Fields/Australian Museum.

Surge flies are of special interest because they combine the characters of two families, the Tethinidae and the Canacidae. They are provisionally placed as a new sub-family of the Canacidae.

Ms D. Kent has commenced a study of the curious and little-known fly family Teratomyzidae. At least ten Australian species of this family are presented in the Museum's collection but no Australian species has yet been named and described. The three already named species of the family are from New Zealand and Chile. The flies have mostly been found on ferns or low foliage in cool forests.

Most insects are still not specifically identifiable, some not even to family, in the larval stage. The department has a program of photographing and preserving larvae, particularly of flies, butterflies and moths, some examples of each species being reared to the adult stage to enable identification. Butterfly and moth larvae are generally freeze-dried, as this usually preserves the colour, and fly larvae are preserved in fluid.

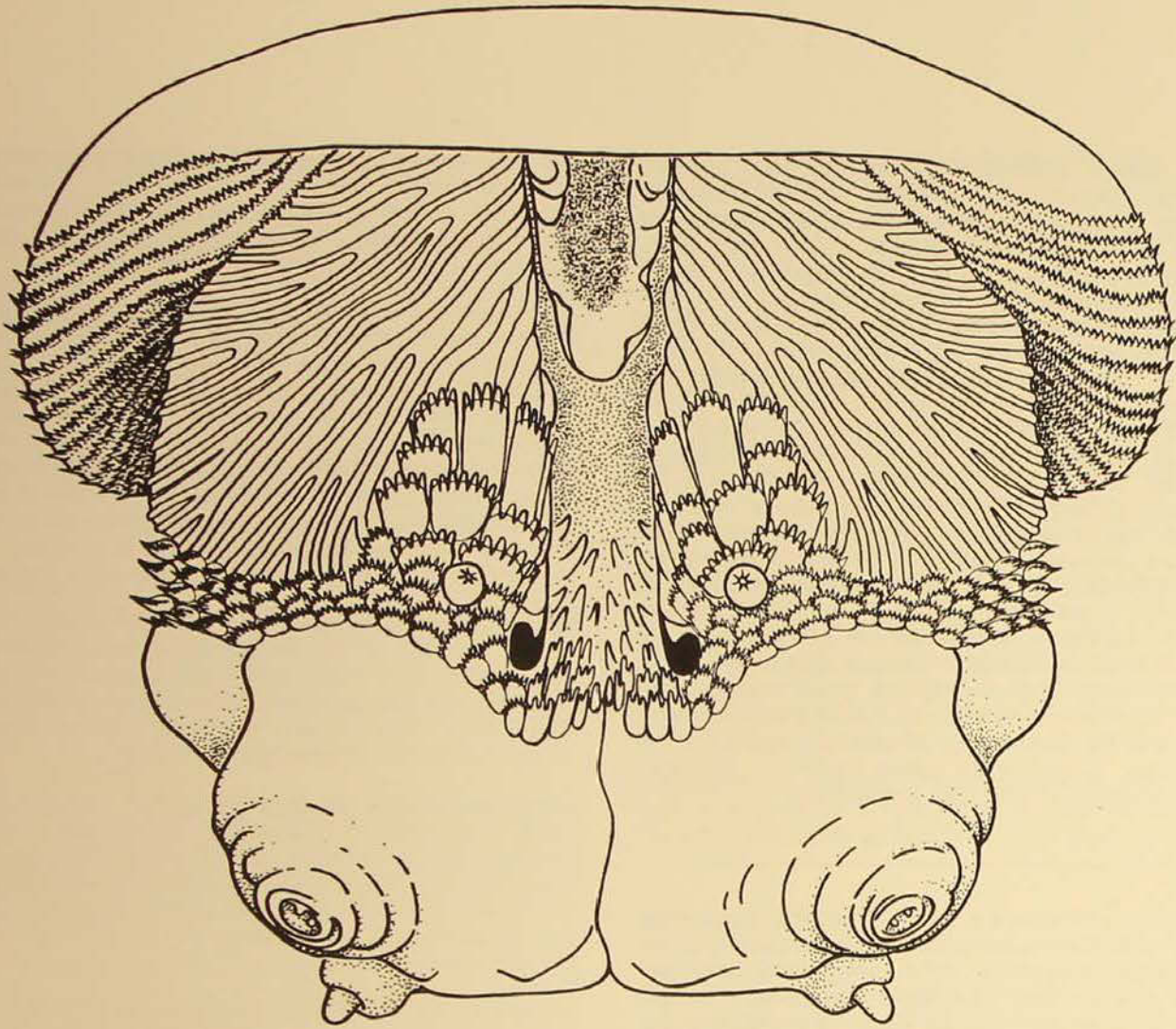
Dr C. Smithers has continued his extensive research on Melanesian arc Psocoptera and has completed systematic work on the large family Psocidae from New Guinea. This study was based on material collected some years ago by Dr Smithers and Professor I. W. B. Thornton in New Guinea and on material borrowed from the *Bernice P. Bishop Museum* in Hawaii. The family is very well represented and the study has shown the extensive speciation of this family in the area with some species being limited in range. Of particular interest is a beetle-like form found on Mt Wilhelm at elevations above 4 500 metres and another species having a structure on the back of the thorax which appears to act as a sound producing organ. A paper on this New Guinea material is in press. Material of Psocoptera from Lord Howe Island, collected by the Museum's Department of Terrestrial Invertebrate Ecology and the Queensland Museum, has been studied and will supplement previously studied collections already worked up. Additional Norfolk Island material collected by the Queensland Museum has been studied and a paper published. Work on Australian material has continued with the description of a remarkable new genus in which the immature stages carry a long spine which projects from the back of the abdomen. The spine is nearly as long as the abdomen and its function is unknown. Also, the young are unusual for Psocoptera in being entirely white. A large collection of South Australian Psocoptera, including material collected by Entomology Department staff as well as material borrowed from the South Australian Museum, has provided a record of a family not previously known in Australia and, on preliminary analysis, indicates some interesting relationships between the South Australian fauna with Western Australia on the one hand and Tasmania on the other. This work is not yet complete.

At the request of the National Museum of Ireland Dr Smithers studied material which proved to be a species taken on only a few earlier occasions in Britain.

Dr Smithers continued analyzing migration records; papers are in press or have been published.

Collection and rearing of live larvae of the Wanderer and Lesser Wanderer for hybridization experiments was carried out following the discovery some time ago of a possible hybrid specimen in the field in Victoria by Ms Willoughby, a co-operator in the Museum's migration study work.

Mr Geoff Holloway continued work on the distribution of the European wasp which indicates the species is still restricted. He is still engaged on his postgraduate project on the Ichneumonidae, an important family of



The face of the larva, *Tapeigaster annulipes* Macquart (Diptera: Heleomyzidae). The genus *Tapeigaster* is endemic to Australia, where it is widely distributed through temperate regions. The larvae of *Tapeigaster* (approximate length 10 mm) are known to live in various kinds of fungi. Illustration by Deborah S. Kent.

parasitic wasps which attack a wide variety of pest species.

Field work: Dr Smithers' field work has aimed at providing material which will contribute towards a monograph of the Australian Psocoptera, a project based on gradually accumulating data derived from many other projects. Areas involved were Gloucester and Barrington Tops, northern coastal New South Wales and southern Queensland.

Material for hybridization work on species of *Danaus*, a genus which includes the Wanderer and related species of butterflies was obtained on a special short trip to the Cessnock area. Mr Holloway undertook field work in the Blowering Dam area, northern New South Wales, southern Queensland and South Australia. The latter field work was partly in conjunction with the Mollusc Department and was particularly rewarding as it has yielded interesting Psocoptera material.

Associates and Volunteers: Setting, pinning, labelling and sorting of recently acquired material is a very time-consuming task and one in which Associates and volunteers have given considerable help. Such assistance is greatly appreciated and enables staff to maintain productivity in the more specialized spheres of activity. We have received help from Pamela Pettingell, D. Scambler, Elizabeth Smith, C. Chadwick, Helen Ponton, Candida Briggs, Max and Barbara Moulds and Janet Holloway.

Identifications: Inevitably there are calls on the staff to identify material. These may involve considerable time, and minor research. Dr Smithers has identified further Psocoptera for an ecological survey of South African species and has provided data for computer analysis which will be carried out at Oxford University. Collections from the Tasmanian Department of Agriculture, the Northern Territory Administration, the Department of Primary Industries, Queensland and the Queensland Museum have been identified.

Aid to Students: The Department has been active in assisting and encouraging students wherever possible. Mr Holloway has conducted the Entomology course in the School of Rural Studies at the Sydney Technical College and has conducted three practical entomology workshops for the students. Students of New South Wales University have visited the Museum to study

special groups selected by them and have worked under the direction of Dr Smithers and Mr Holloway. Over the past few years students of the Newcastle College of Advanced Education have visited the Museum to obtain practical experience in natural history illustration. Dr Smithers has lectured and arranged for relevant study material to be available to them. The College has now formalised a post-graduate course in Natural History Illustration and Dr Smithers was invited to join the Assessment Committee of the Higher Education Board to assess the desirability and nature of the course. Dr Smithers has continued to supervise and advise post-graduate students at Macquarie University and has examined a doctoral thesis for the University of Sydney. He has also been called upon to referee papers for several of Australia's leading scientific journals and has been involved in assessment of grant applications for the ARGC and the ABRS. Dr McAlpine advised on the preparation of a proposed issue of Australian postage stamps depicting Australian butterflies. During the year several high school students have carried out their Work Experience programs in the Entomology Department and we have been happy to encourage young people in the Peer Teacher scheme to use the Department.

The present collections exceed 10 000 000 specimens . . . To adequately house, curate and conserve these a substantial proportion of the Museum's total resources of space and manpower is required . . . the Museum's responsibility to the nation is to maintain the collections for use in research, education and exhibit programs, improve the collections in size, diversity and documentation consistent with availability of space. Corporate Plan—Policy 11, Improvement of Collections.

Conservation: Dr Smithers led a party from the Newcastle Fauna and Flora Society in a field trip to the Mount Royal area and lectured to the Society. He provided lists of fauna and flora to the Forestry Commission to assist in their management plans for forests in the Hunter Valley area and was invited by the National Parks Service to make a submission for the proposed management plan of the Mt Pitt Reserve on Norfolk Island. This is a result of his involvement in studies on the island over many years. Information was supplied to Warringah Shire, to assist in management planning of the natural environment in the Shire. The New South Wales National Parks and Wildlife Service has continued to consult with Dr McAlpine and Dr Smithers on the matter of legislation to protect endangered insect species in New South Wales.

Collections: Routine curation has continued with emphasis on beetles (Coleoptera), in which we have had the assistance of several volunteers and Associates.

Ms R. D. Brewer completed the rehousing and listing of the moths before her resignation in June. It has made this part of the collection very accessible to study. This was a major piece of work which Ms Brewer carried out with great care and enthusiasm.

With collections as large and varied as that of the Entomology Department much of the research and identification at species level must be carried out by specialists who work in other Australian and overseas institutions. Sending loans is, therefore, a very important aspect of the departmental activities. These are very time-consuming to prepare, record, despatch, receive and replace in the collections. Nevertheless, 123 loans were dealt with, involving more than 13 700 specimens. Approximately 14 000 specimens were added to the collections and 139 types were registered.

Other Activities: Dr Smithers has continued to serve on the Council of the Linnean Society of New South Wales and on its Publications and Exchange Committee. He was also appointed to the Society's Research Committee. Mr Holloway has continued as treasurer of the Australian Entomological Society.

Overseas Visitors: The collections have continued to be used extensively by Australian and overseas entomologists in their research work; this emphasises the value placed on our collections as a research resource. Most of the overseas visitors spend several days working in the Museum and select material which they subsequently request on loan.

Visitors to the Department have included: Dr D. Bickel, USA; Dr D. Vane-Wright, USA; Dr R. D. Pope, UK; Mr L. Robertson, New Zealand; Dr M. Fritz, DDR; Mr M. P. Sitter, USA; Dr K. Wise, New Zealand; Dr D. P. Annecke, South Africa; Prof. V. C. Moran, South Africa; Dr M. Mansell, South Africa; Dr D. Brick, USA; Dr R. Reichart, USA; Prof. D. Brothers, South Africa.

Donations: Continuing interest in insects by amateur naturalists and increasing realisation by teachers of the value of insects as teaching material is resulting in a greater number of collectors. This leads to an increase in the quantity of material available to the Museum. Small collections are welcome if accompanied by adequate collection data. The Department has received substantial collections from experienced collectors who regularly donate material to our research collections. These include N. W. Rodd, R. H. Mulder, D. A. Doolan, G. Daniels, M. S. and B. J. Moulds, V. Robinson, H. Roberts, K. Jacques, M. Nikitin and R. McLean.

Donated collections are most important; they are often made in areas which staff members are unlikely to visit or are derived from intensive collecting in a limited area over a period. The seasonal variation in species thus collected provides better coverage than would be possible from occasional visits by the staff.

Acknowledgements: We would like to thank the Associates and volunteers for their help in handling the ever-increasing workload in the Department.

Functional Anatomy Unit

This unit is at present primarily concerned with production of books on Australian mammals.

A *Dictionary of Australian Mammals* is due for publication by Angus and Robertson in July or August, 1981 and a small book for children, *Australian Mammals*, is due for publication by Methuen shortly afterwards. The text of a large multi-authored book, *The Mammals of Australia* is more than 90 per cent completed and the book is expected to be published by Angus and Robertson in 1983. Work on *Monotremes and Marsupials* (Collins Australian Naturalist Library) is proceeding more slowly than expected because of pressure of other work.

In collaboration with Mr P. M. Johnson of the Queensland National Parks and Wildlife Service, Mr Ronald Strahan has been involved in research on the functional anatomy and general biology of the little-known and unusual Musky Rat-Kangaroo, *Hypsiprymnodon moschatus*. This work has led into a comparison of the structure of the skulls of rat-kangaroos of the sub-family Potoroinae.

With the incorporation of the National Photographic Index of Australian Wildlife into the Museum at the beginning of 1981, Mr Strahan has been increasingly involved in its administration, particularly of the Mammal Section.

Staff Activities: Ms Virginia Richmond left the Unit on February 18, 1981 to take the position of Editorial Assistant in the Department of Community Relations.

Her position has been filled by temporary casual appointees. (See staff list)

Mr Strahan was re-elected Vice President of the Royal Zoological Society of NSW and continued as a Councillor of the Australian and New Zealand Association for the Advancement of Science and honorary editor of its monthly journal, *Search*. In 1980 he was made a Fellow of ANZAAS. He continues to serve on the NSW State Advisory Committee of CSIRO.

Mr Strahan attended the Congress of ANZAAS held in Brisbane in May 1981, contributing a paper, 'Museum zoology: what sort of research; what sort of scientists' to a symposium on museums.

Department of Herpetology

The purpose of the Department is two-fold: (1) to do research, to educate, advise and consult on the biology and systematics of the reptiles and amphibians of the Australian region, and (2) to maintain and increase the collections of specimens in these two groups.

Research: Dr Harold Cogger completed his survey of the herpetofauna of the Weipa District of Cape York Peninsula (funded by Comalco Ltd); he also continued

Part of the Museum's service function is to provide information in response to requests from the public, industry and government. Dr Allen Greer, left, helps to identify confiscated reptile specimens to assist the Bureau of Customs. Photo Howard Hughes/Australian Museum.



work on the zoogeography of the herpetofauna of northern Australia and in collaboration with Ms Elizabeth Cameron continued compilation of a checklist and a bibliography of reptiles and amphibians of Australia. Dr Allen Greer continued his studies on the systematics and evolution of scincid lizards and began two new studies: one on limb reduction in skinks and the other on the systematics of lizards. Mr Ross Sadlier continued his work on the skinks of New Caledonia and the taxonomy of the *Egernia cunninghami* (Cunningham skinks) complex and began a survey of the reptiles and amphibians of the Jabiru Project Area in the Northern Territory (in conjunction with the Office of the Supervising Scientist).

Dr Richard Zweifel, at the American Museum of Natural History, spent six months in the department as Visiting Curator. During this time he continued his long-term study of the systematics of microhylid frogs of the Australian region. These frogs, sometimes known as narrow-mouthed toads, are generally small frogs which lay their eggs on land and have no free-living tadpoles as such; their Australian brothers are usually confined to the rainforests of north east Queensland and their taxonomic relationships have long presented a major problem for Australian zoologists.

Education: The department participated in the Peer Group teaching project for primary school students and the Work-Study Scheme for secondary students organised by the Education Section. The department continued assistance to promising secondary and tertiary students. This is the only institutional outfit in the State for the development of students interested in systematic herpetology. Dr Cogger continued his supervision of a PhD thesis on dragon lizards.

Consultation: Dr Cogger continued to serve on the International Commission on Zoological Nomenclature (as a Commissioner); the International Union of Biological Sciences (as Secretary); the Survival Service Commission of the International Union for the Conservation of Nature (as an honorary consultant); the Advisory Committee for the CSIRO journal *Australian Wildlife Research*, and the Research Committee of the Zoological Parks Board of New South Wales.

Dr Greer continued to identify specimens for the Bureau of Customs, the Department of Agriculture (Animal Quarantine) and private enterprise.

Collection: The emphasis remained on the consolidation and standardisation of the collection. Over 4 000 specimens were registered during the year. The department is actively pursuing exchanges with overseas institutions, and many of the specimens obtained represent genera and families not held in any other Australian institution.

Overseas Visitors: Dr Richard G. Zweifel (Visiting Curator), Curator of Reptiles and Amphibians at the American Museum of Natural History; Dr Walter C. Brown, Emeritus Professor at Menlo College, Menlo, California, USA and Associate in the Herpetology Department at the California Academy of Sciences, spent six months in the department working on the

widespread Pacific Island skink genus *Emoia*. Other overseas visitors were: Dr J. Gibbons, Mr W. Haacke, Dr J. D. Lazell, Dr J. Legler and Dr R. Loomis.

Volunteers: Ms C. J. M. Cocks, Ms Milston and Ms M. Savage worked for the department during the year. Ms Cocks completed a long bibliographic project; Ms Milston worked on the department's registration tags, and Ms Savage processed the computer print-out of the entire register so that it could be filed as 15 mm x 30 mm cards in systematic order.

Staff: Ms Alana Thomas (nee Young), the department's Museum Assistant, left to become the Deputy Director's secretary. Ms Debra Stewart joined the staff at the level of Technical Officer, Scientific. Ms Stewart was previously employed by the Division of Animal Health, CSIRO.

Peter Rankin Trust Fund for Herpetology: The Fund reached its initial investment goal of \$10,000 and in June issued its first call for applications.

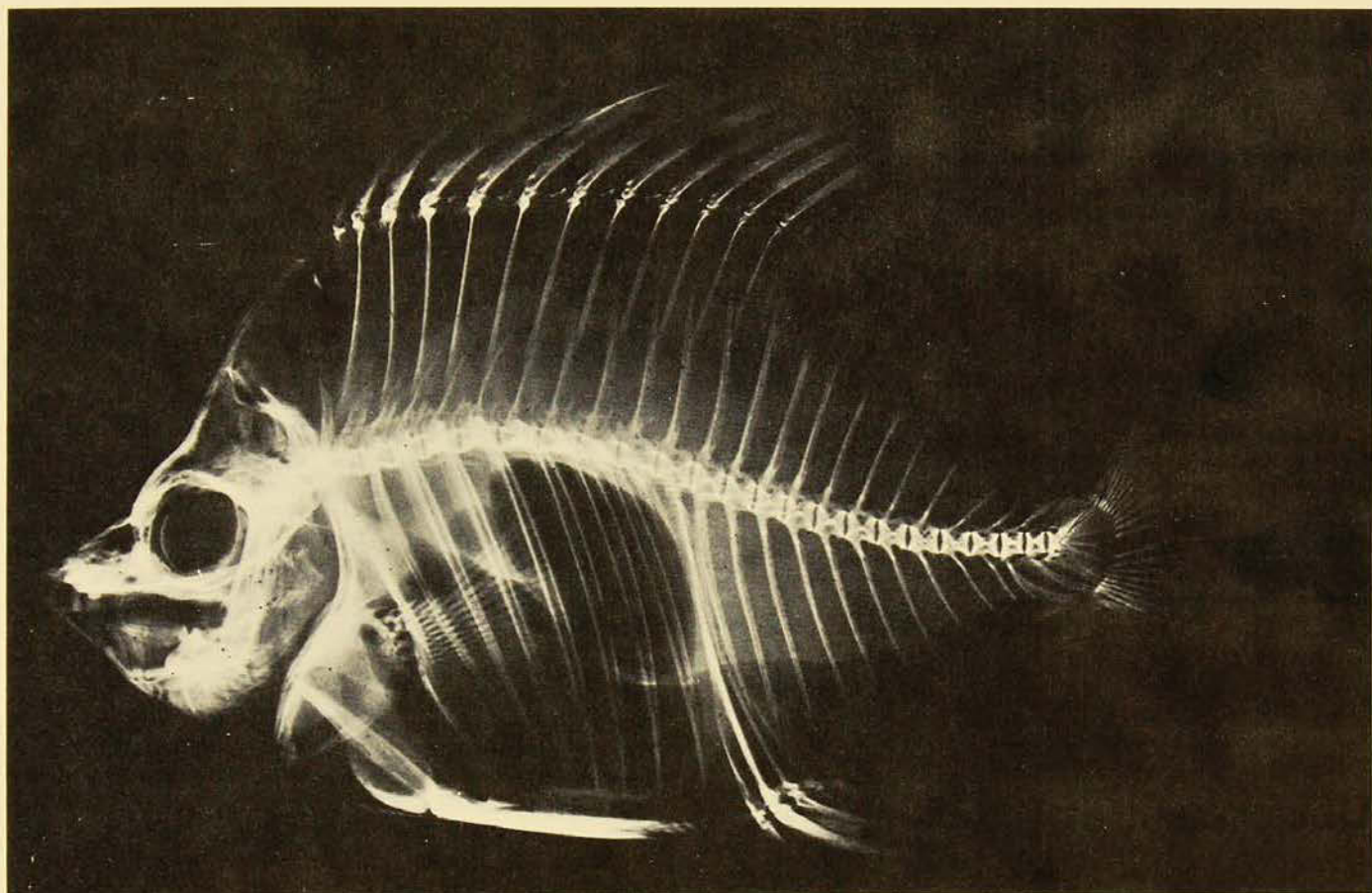
Department of Ichthyology

The aims of the department are to increase and disseminate knowledge about fishes by undertaking research and supporting the work of other scientists and students. Maintenance of a large research collection, advice to students and the answering of enquiries, both public and scientific, help meet these aims.

Research: During the year research work concentrated on the systematics of gobioid fishes by Dr D. Hoese and Ms H. Larson, the ecology of Sydney Harbour fishes by Dr John Paxton, the systematics of the Zeidae family of fishes (which includes the John Dory), by Ms D. Blake, the larval fishes of the northern Great Barrier Reef by D. J. Leis and the checklist of Australian fishes by Dr Hoese, Paxton and Ms J. Gates.

The Museum's collections represent a vast data bank which has been accumulated by successive generations of Museum staff and Trustee at considerable cost in time, money and personnel. We must develop and maintain policies and programs for optimum utilisation of collections in research, education and exhibit activities of the Museum and of other organisations. Corporate Plan—Policy 13, Use of Collections.

Completed Projects: A number of projects were completed during the year, including a checklist of fishes from the Capricorn section of the Great Barrier Reef by Dr B. C. Russell and a revision of the Australian species of coral trout by Dr Hoese and collaborators; both reports were for the Great Barrier Reef Marine Park Authority. The coral trout study, which recognises six different Australian species previously considered as one, will allow more effective management practices for this important group of edible fishes on the Great Barrier Reef.



Modern technique is an invaluable aid to scientific researchers in the Australian Museum. X-ray photos such as this enable scientists to readily establish knowledge of the anatomy of fishes gathered in for research work. Photo H. Hughes/Australian Museum.

Field Work: Dr Hoese and Ms Larson spent six weeks in northern Queensland collecting freshwater and estuarine fishes. A three-week collecting trip in the Northern Territory was undertaken by Dr Paxton and Ms Blake; much of the time was spent on the CSIRO FRV *Soela* in the Arafura Sea. The resulting specimens and those collected at Gove fill a significant gap in the distributions of fishes being compiled for an Australian checklist. Dr Leis made three trips to Lizard Island for seasonal samples of larval fishes. During one of these he was Acting Director of the Museum's Research Station during Dr Goldman's absence. Dr Leis also travelled to the Philippines, where he presented papers at the 4th International Coral Reef Symposium, and Japan where he worked at the Miyake Marine Station.

Collections: Computerisation of the collection continues. Some 3 200 lots of fishes were newly registered during the year. A total of 65 loans involving 825 lots and some 2 800 specimens were dispatched during the year. Exchanges included 20 shipments of 100

lots and more than 500 specimens. The reorganisation of shelved material, a project which has taken some years, should be completed early next year.

Difficulties: The presence of approximately one third of the working fish collection at Rushcutters Bay continues to cause problems of logistics; at least one trip per fortnight is required to put away newly registered material and returned loans and to gather new loan material. The computerising of the collection, which has been continuing for three years, is causing some problems when new specimens are registered and old names updated. When the system is operational and these problems are worked out, a considerable increase in efficiency will occur.

Staff Activities: Associations with students at the three universities in Sydney, the Australian Society for Fish Biology and the Los Angeles County Museum of Natural History continued during the year.

Volunteers and Temporary Workers: The department was greatly helped during the year by TAMS volunteers and part time workers, primarily on the computer work; these included J. Bowling, J. Campbell, H. Crossing, A. Daniel, L. Goggin, S. Ingelby, R. Jeffrey, R. Lawrence, H. Lew Ton, M. Male, A. Philpott and E. Smith.

Donations: Significant collections of fishes were received from New South Wales State Fisheries (deep water fishes from FRV *Kapala*), Western Australian

Museum (Northwest Shelf fishes from FRV *Courageous*), CSIRO Fisheries and Oceanography (mesopelagic fishes from FRV *Soela*), Crown Prince's household, Tokyo (Japanese fish).

Acknowledgements—Cooperation: New South Wales State Fisheries; CSIRO Division of Fisheries and Oceanography; University of Sydney Electron Microscope Unit, G. R. Allen, Western Australian Museum; His Imperial Highness Prince Akahito, Tokyo, Japan; Mr D. Grey, Northern Territory Fisheries; Mr D. McMann, Department of Mines, Nhululbuy, NT; Mr K. Meguro, Crown Prince's Laboratory; Dr W. A. Starck, Daintree, Queensland; Mr R. Steene, Cairns, Qld.

Overseas Visitors: Abikusno, Directorate General of Fishes, Jakarta, Indonesia; Professor J. Case, University of California at Santa Barbara, USA; Dr J. H. Choat, University of Auckland, New Zealand; Dr T. A. Clarke, University of Hawaii, USA; Dr L. W. Knapp, Smithsonian Institution, Washington DC, USA; Mr J. Moyer, Miyake Marine Station, Japan; Mr J. Paska, Department of Fisheries, Kanudi, Papua New Guinea; Dr D. Robertson, Fisheries Research, Wellington, New Zealand; Mr P. Ryan, University of the South Pacific, Suva, Fiji.

Department of Malacology

The department is responsible for building and maintaining research collections of Mollusca as well as pursuing research on molluscs (snails, slugs, bivalves, squid, etc.).

Research and curatorial programs continued to flourish. The assistance of volunteer helpers has been invaluable. Research projects continue to concentrate on micromolluscs and opisthobranchs or sea slugs. Dr Winston Ponder continues to be supported by an ARGC grant and Dr William Rudman now has an AMSTAC grant to support his work. Dr Rudman has taken over from Dr Ponder as Head of Department, and it is envisaged that this position will be rotated at two-yearly intervals.

Acquisitions: Mrs Mary Sutherland kindly presented to the Museum, the extensive collection of her late husband, Dr Keith Sutherland, formerly President of the Australian Museum Trust. Included was a valuable collection of books and papers on malacology.

Other important acquisitions were received including valuable material collected by Mr K. Graham of the NSW State Fisheries on FRV *Kapala*. Opisthobranch collections with accompanying colour photographs from Christmas Island, Indian Ocean are being received on a continuing basis from Mr J. Hicks, Conservator, Australian National Parks and Wildlife Service. A collection of shells, mainly from southern NSW was purchased from the wife of the late Mr G. J. Kitchin. A valuable collection of paratypes of Hawaiian

marine molluscs was donated by Professor E. A. Kay and other paratypes of Indo-Pacific molluscs were donated by Mr W. O. Cernohorsky and Mrs T. Bratcher.

Collections: Specialist collections of micro-molluscs and opisthobranch acquisitions are continuing to expand. With the co-operation of the Photographic Department and the recent purchase of photographic equipment almost all new opisthobranch acquisitions are photographed alive. These photographs and accompanying colour notes are essential in building a useful scientific collection of opisthobranchs. Important additions to the non-marine mollusc collections have been made by departmental field work.

Volunteers: The continuing acquisition of valuable material requires a large amount of man-hours to incorporate specimens into the general collections. Without the assistance of a large and growing number of volunteers the activities of the department would be seriously curtailed. It was with great pleasure that we learnt that two of our volunteers, Teddie and Norm Ireland, had been awarded 'The Volunteer of the Year Award' by the Volunteer Bureau of NSW.

Much of the future viability of the Museum rests with the effectiveness of the exhibitions it presents to the public. Support from Government, corporations and Museum revenue generation can only be maintained and expanded from a base of successful visitation . . . a variety of exhibits must be provided within and outside the Museum which, by their accuracy, presentation and currency, stimulate public understanding and appreciation of the natural sciences for which the Museum has responsibility. Corporate Plan—Policy 17, Exhibits.

Visiting Curator: Dr Emily Vokes, Tulare University, New Orleans, USA, a world authority on the Muricidae, was appointed the first Visiting Curator in Malacology and worked in the department for four months in 1980. She was accompanied by her husband Dr Harold Vokes, a palaeontologist, and worked on the taxonomy of the Muricidae, some research being done jointly with Dr Ponder. The muricids are one of the largest and most dominant gastropod families, with species occurring in all seas, from intertidal to abyssal zones. They include species of commercial importance and some of them are important predators in intertidal communities. Some groups of Muricidae are also prized by shell collectors and, consequently, the rare species often command high prices. Our first Visiting Curator showed how valuable this scheme is, enabling a world authority to utilise our collections for their research and at the same time giving the benefits of having our extensive collections sorted and identified by a recognised expert.

Curatorial: Major curatorial projects involved clearing up small areas still badly in need of curation and developing ways of saving space without rendering parts of the collection inaccessible. Mr Owen Griffiths was

employed under a Trust Short Term Grant to curate the *Sepia* or cuttlebone collection and in sorting micro-molluscs. He was also able to complete the curation of the fresh-water bivalve and terrestrial mollusc collection with ABRS funds. Mrs J. Kerslake continues to provide invaluable assistance with the curation of the marine bivalve collection.

In our continuing program of space-saving another section of wooden cabinets has been replaced with metal cabinets. Mr Owen Griffiths assisted in this work. In conjunction with the shift to metal cabinets parts of the collections are being removed from drawers and stored in large cardboard boxes. They remain accessible for intermittent research usage but can be stored more efficiently. The collections at Rushcutters Bay are now almost fully sorted and gradually those collections will be either incorporated into the research collection or form the basis of an exchange collection.

Research: Micro-molluscs and opisthobranchs continue to be the main areas of research in the department. Dr Ponder's work includes studies on the anatomy and higher classification of the lower mesogastropods and,

in particular, the Rissoacea. Other projects nearing completion include revisions of the genera of the Iravadiidae and Rissoidae, Eatoniellidae and Cingulopsidae. A considerable amount of time has been spent in the field, collecting hydrobiids towards a revision of the Australian species of these small, fresh-water snails. A separate project has been studied on the composition of the molluscan fauna of the NSW Continental Shelf based on collections from the NSW State Fisheries FRV *Kapala*. This project is in conjunction with Mr P. Colman and Mr B. Jenkins with a grant from the Australian Museum Trust. Dr Ponder's work is assisted by an ARGC grant under which he has two part-time research assistants, Miss J. Hall and Mr Jenkins.

This nudibranch mollusc *Cuthona kuiteri* was named in 1981, after Rudi and Alison Kuitert who have collected much valuable material for the Malacology Department. It feeds on small solitary hydroids and is unique in having evolved outgrowths on its back which exactly mimic the sea anemone-like animals on which it feeds. The picture is one of many specimens which are photographed live in the Museum studio. Photo John Fields/Australian Museum.



Dr Rudman completed a major study on nudibranch molluscs which have evolved a symbiotic relationship with zooxanthellae, plant-like dinoflagellates, which they obtain from the food they eat. He also described an interesting aeolid nudibranch which has evolved a mimicry with the hydroid polyps on which it feeds. He was awarded an AMSTAC research grant to revise the dorid nudibranchs of the Chromodoridae, a major Indo-West Pacific group of opisthobranchs and Mr G. Avern has been appointed to assist with this project, on which work is making good progress.

The research activities of both curators has been somewhat curtailed this year through heavy involvement in two Museum projects, the Outer Urban Exhibit on Marine Life, and the new Marine Invertebrate Gallery. Dr Rudman was also involved in the preparation and writing of the Museum's 1981 Calendar which features Australian opisthobranch molluscs.

Field Activities: Members undertook marine collecting in Northern Queensland (Ponder, Loch); Port Stephens, NSW (Rudman, Ponder, Loch, Hall); Heron Island, Qld (Avern); NSW Continental Slope (Colman, Jenkins, with NSW State Fisheries); Melbourne, Vic (Hall). Terrestrial and Freshwater collecting was undertaken in southern NSW (Ponder); NSW-Qld border region (Ponder, Griffiths, with Mr J. Stanisc of Queensland Museum); Flinders Ranges (Ponder, Jenkins); Kosciusko (Ponder, Hall); Central Australia (Colman, with Dr A. Solem, Field Museum, Chicago); Kimberley Ranges, NW Australia (Duckworth, with Dr A. Solem). Dr Rudman attended a workshop 'The Biology and Resource Potential of Cephalopods' in Melbourne and Dr Ponder attended the annual meeting of the Limnological Society of Australia, in Narooma, NSW.

Overseas Loans and Exchanges: The scientific value of our collections continues to be expressed in the loans made to scientists in Australia and overseas: 52 loans were sent out comprising 982 species and 6 580 specimens; 6 exchanges were received involving 193 specimens and 16 exchanges involving 245 specimens sent out.

Identifications and Inquiries: Shell-collecting is a major hobby and answering public inquiries is an important departmental activity. As well as telephone and personal visits from members of the public the department receives many requests from other scientists and students for identifications. In the last year over 2 000 such identifications were dealt with. There is still close cooperation with Commonwealth and State Animal and Plant Quarantine departments, particularly in the checking of freshwater fish imports for live snails which can be vectors of tropical diseases.

Acknowledgements: Cooperation was received from University of Sydney Electron Microscope Unit, New South Wales State Fisheries, Taronga Park Zoo, Western Australian Museum, South Australian Museum, British Museum (Natural History), National Museum of Victoria, Los Angeles Museum of Natural History, Australian National Parks and Wildlife Service, National

Parks and Wildlife Services of NSW, Queensland and Northern Territory, Queensland Museum, Queensland State Fisheries, Metropolitan Speleological Society and Australasian Marine Photographic Index. Help was received from J. Voorwinde, J. Kerslake, N. and T. Ireland, J. Wise, J. Hirschorn, H. and D. Steggles, H. Haneman, D. Pearson, T. A. Garrard, S. McGeachy, G. Boston, S. Bull, B. Jenkins, K. Graham, T. Gorman, E. Connell, G. Thornley, J. Dean, F. Mobbs, P. Howarth, G. Clark, A. Leroi, M. and M. Leroi, J. Cullen, P. Zylstra, K. Keck.

Donations: J. Hunter, H. Woodward, G. Avern, C. Finney, B. Brandley, J. Hirschorn, N. and T. Ireland, J. Kerslake, J. Wise, D. Pearson, V. Kessner, N. Coleman, M. Shea, C. Pregonzer, K. Graham, J. Hall, J. Wyche, J. Hicks, J. Orr, A. Waren, W. Cernohorsky, R. Baxter, C. Connolly, A. Healy, S. Mackay, H. Jaratz, H. and E. Vokes, T. Bratcher, E. A. Kay, E. M. Povall, A. Leroi, R. Lockyer, N. and N. Gardner.

Overseas Visitors: Dr Emily Vokes, Tulane University, New Orleans, USA, Visiting Curator for 1980; Dr Alan Solem, Field Museum, Chicago, visited twice as part of his long term study of Australian terrestrial snails and took part in two joint expeditions with members of staff. Other visitors included Mr G. Day, USA; Mr L. Price, NZ; Lt Cdr D. Fairfax, NZ; Mr and Mrs V. Cohen, South Africa, Mr W. Cernohorsky, Auckland Institute and Museum, NZ; Professor J. Burch, University of Michigan, USA; Dr C. Roper, Smithsonian Institution, USA; Professor J. Sherman-Bleakney, Arcadia University, Canada; Professor J. Grindly, University of Cape Town, SA; Dr K. Baba, Japan.

Department of Mammalogy

Education of the general public as to biology of mammals; initiation and implementation of research projects and publications of such research to increase the knowledge of mammals; acquisition and curation of a representative collection of mammals both from Australia and overseas are the vital functions and aims of the department. Answering public and scientific enquiries and assisting in displays and exhibits are among the important practical means by which the aims are achieved.

The new exhibition, *Mammals in Australia*, is nearing completion and Ms Linda Gibson, as a member of the project team, has been assisting the scientific advisor Dr Michael Archer with data for labels, text and the identification of specimens to be included in the gallery. The exhibition is sponsored by the Rural Bank.

Field Work: In August 1980 Ms Gibson again assisted the Whale Survey group by locating and observing Southern Right Whales off the NSW coast.

A collecting trip was made to south-eastern Victoria in March by Ms Gibson and Ms Sandra Ingleby. The aim of the trip was to collect mammals from a State that is relatively poorly represented in the collection,



Obie Hasler, an enthusiastic and skilful volunteer, puts finishing touches to a deer specimen for the new gallery 'Mammals in Australia'. Photo J. Fields/Australian Museum.

and to liaise with a group of workers from the National Museum in Melbourne who were carrying out a survey commissioned by the Land Conservation Council of Victoria. The locality, Gembrook State Forest, 70 km E. of Melbourne yielded an interesting collection of 60 small terrestrial mammals representing 16 species, including a significant extension of range for one species of carnivorous marsupial. The Australian Museum results (which included three species not recorded by the survey method) will be used in the final report of the Western Port Bay Survey group.

Collections: A valuable collection of mammals from Borneo was donated to the department by Dr John Weir of the University of New England. The collection was made in December as part of a survey conducted by Dr Weir on behalf of the Indonesian Government, in an area of north-eastern Borneo under consideration for a dam and logging project. The collection consists

of 260 specimens representing approximately 33 species of mammals. Some research is now being carried out at the University of New England as part of the collection.

The National Parks and Wildlife continued the policy of donating mammals to the department. This type of collecting from all over NSW provides a valuable guide to the status and distribution of this State's mammal fauna.

All recent acquisitions of the department have now been added to the computer system, and number about 11 000 specimens. Approximately 85 per cent of these specimens were registered in the collection in the last year. The process of checking the computer file and updating the nomenclature continues and the system is expected to be operational by the beginning of 1982.

Due to a number of circumstances mainly involving staff shortages, the department has been unable to take advantage of some of the large overseas mammal specimens offered to us each year by Taronga Zoo.

General: Ms Gibson and Ms Ingleby attended the Annual General Meeting of the Australian Mammal Society at LaTrobe University from 13-15 May.

There has been a marked increase (averaging 1 or 2 per week) in the number of requests by the Department of Customs for identification of articles confiscated by them. These articles are made from mammals or parts of mammals including elephant feet, deer antlers, leopard skins, carved ivory and guitars made from armadillos.

Visitors: Dr Kenneth Stayer, Natural History Museum, Los Angeles County Museum, California, USA; Dr Steve Leatherwood, Hubbs' Seaworld Research Institute, San Diego, California; Dr James Lazell, Associate Museum Comparative Zoology Officer, Harvard University; Professor Rosendo Pascual, University of La Plata, Buenos Aires, Argentina.

Staff: The Curator of Mammals, Basil Marlow retired from the Museum on 31 November, after 22 years service. Sandra Ingleby commenced work as a Technical Assistant on December 8, 1980. Her work involved assisting in the general running of the department with special emphasis on the back-log of registrations. On May 1, 1981, Mr John Hoey, who previously worked with Dr W. Dawbin on his whale survey, joined the department on a part-time basis for three months. His duties involved organising and registering the valuable cetacean specimens donated to the Museum by Dr Dawbin and the cataloguing of Dr Dawbin's scientific papers and journals on the whales of the world gathered over a period of 32 years work.

On November 26, 1980 Tim Ralph, the Museum's youngest employee (15 years old) commenced duties as a cadet preparator for the mammal and bird scientific collections. His position was updated to Assistant Preparator on May 22, 1981.

Department of Marine Ecology

This department aims to provide basic information which will assist in planning and management of the marine environment and to answer specific questions relating to human impact.

Studies of Bottom-Dwelling Animals: Research areas include the Hawkesbury River Estuary and selected Great Barrier Reef islands. Both estuaries and the Reef are environmentally sensitive and vulnerable. Both require major research efforts to provide the ecological framework for adequate management. Long-term information for instance is virtually absent. Research in this department has concentrated on the benthic (bottom-dwelling) animals which are considered to be the most reliable indicators of pollution and impact as they are relatively immobile and live in the sediments where toxins and nutrients are concentrated.

Current Research: Three research projects are currently under way. The first was initiated in 1976 and seeks to describe and analyse the benthic community of a relatively untouched estuary. Because estuarine communities vary so much in space (responding to salinity gradients and changing sediments) and in time (both seasonally and annually), an adequate baseline description and monitoring must encompass both aspects. Thus this study includes sampling sites from the junction with the Colo River to the mouth. It has been under way for over four years with four samplings per year and will continue at reduced intensity.

With the Great Barrier Reef an increasingly sensitive issue, and research in sedimentary areas on the Reef virtually absent, a sampling trip was made to Lizard Island in conjunction with the Department of Crustacea in October 1978. Ms Charlotte Short and Mr Jock Young conducted a small study of One Tree Island and Heron Island lagoons in October 1979. Both aim at describing the benthic communities and gaining some understanding of the effects of factors such as sediment type, fish predation and proximity of mangroves. New equipment was designed and built and new sampling techniques devised. Taxonomic difficulties have hindered completion of this project with many new species and even some new genera found. However, a section of the results has now been prepared for publication and was presented at the Port Moresby Symposium on Mangroves and Coral Reefs by Dr Alan Jones.

A third project located in the Hawkesbury estuary near Brooklyn aims at assessing the effects and recovery of the benthic community following maintenance dredging of the boat channel and disposal of spoil. This work is now virtually completed. It has been supported by State Pollution Control Commission grants as has the first project.

Staff Activities: During the year Dr Jones has devoted considerable time to preparing papers for publication. This has led to collaboration with staff of the CSIRO Division of Computing Research in developing and



Dr Alan Jones, head of the Marine Ecology Department, gathering samples of the bottom dwelling animals at Lizard Island Lagoon. The information compiled from these studies will add to the knowledge of Great Barrier Reef communities. Photo Charlotte Watson-Russell.

upgrading the *TAXON* library of computer programs. He has lectured to students from the Hawkesbury Agricultural College and directed their estuarine field projects. He continues to be involved in the preparation of Museum submissions, the assessment and refereeing of reports, proposals and articles, and the organisation of Museum seminars.

After four years with the department, Ms Charlotte Watson-Russell left in July 1980. She was replaced by Ms Anna Murray who has concentrated on the taxonomy of Hawkesbury invertebrates and has supervised all volunteers and work experience students.

The department is grateful to volunteers Elizabeth Bamber, Ian Fitzpatrick, Peter Flockart, Gael Ogilvie, Harry Scholer, Prue Adamson, Moreno Julli and Jill St John. Fabian Byers was employed temporarily under an SPCC grant and Helen Lew Ton worked as a summer vacation assistant. The taxonomic assistance of other Museum personnel, David Hain's computing assistance, the use of laboratory facilities for sediment analysis at the Universities of Sydney and Macquarie, and the seamanship and good cheer of boat skipper John Reed are all gratefully acknowledged.

Department of Marine Invertebrates (Crustaceans and Coelenterates)

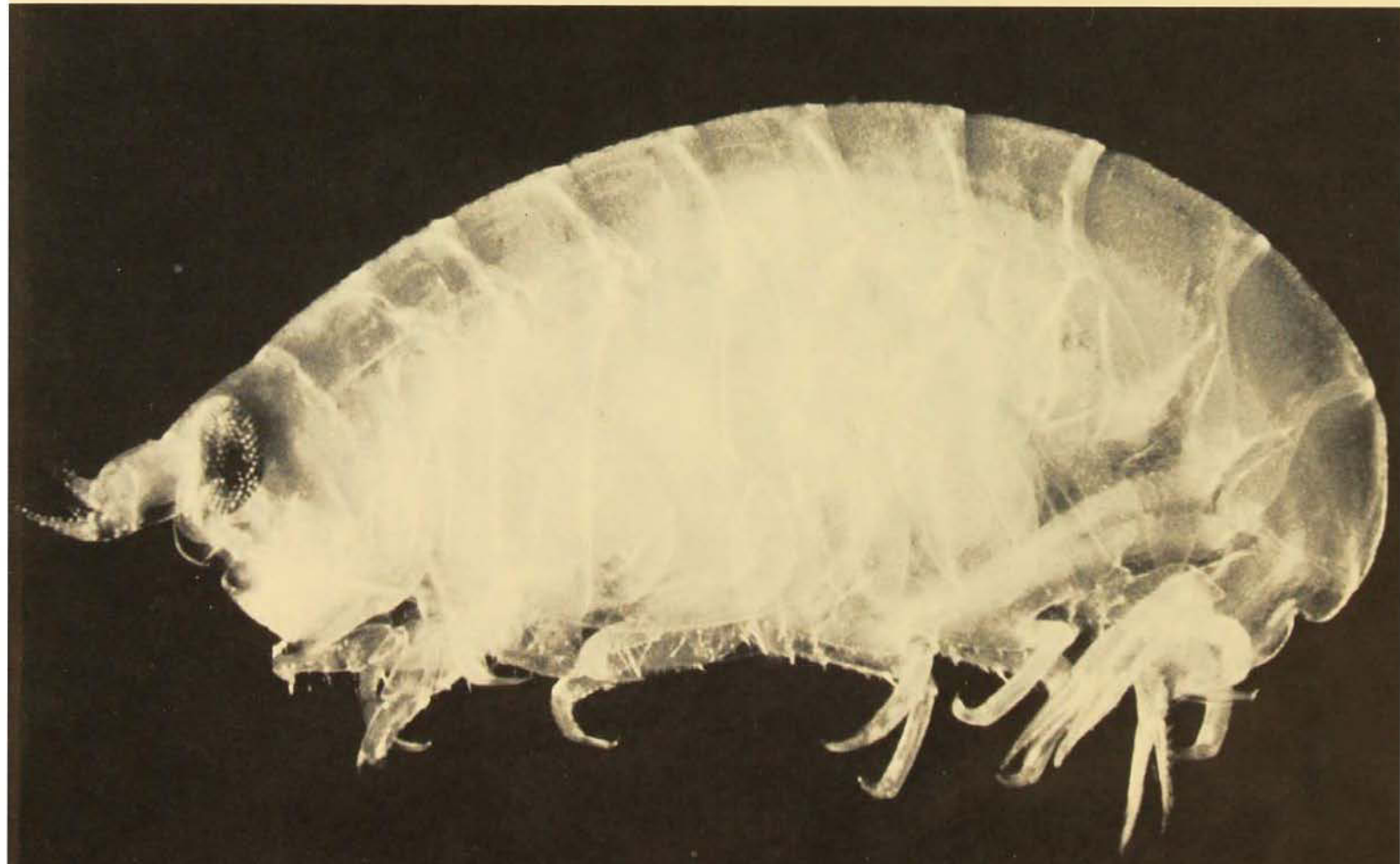
This department curates crustaceans, coelenterates and bryozoans. It is responsible for building and maintaining research collections of these animal groups. Research is mainly concerned with peracaridan crustaceans—amphipods, isopods, etc—and the research collection for this group is being expanded. The department is also involved in teaching students at Universities about crustaceans and in assisting other scientists studying crustaceans, coelenterates or bryozoans.

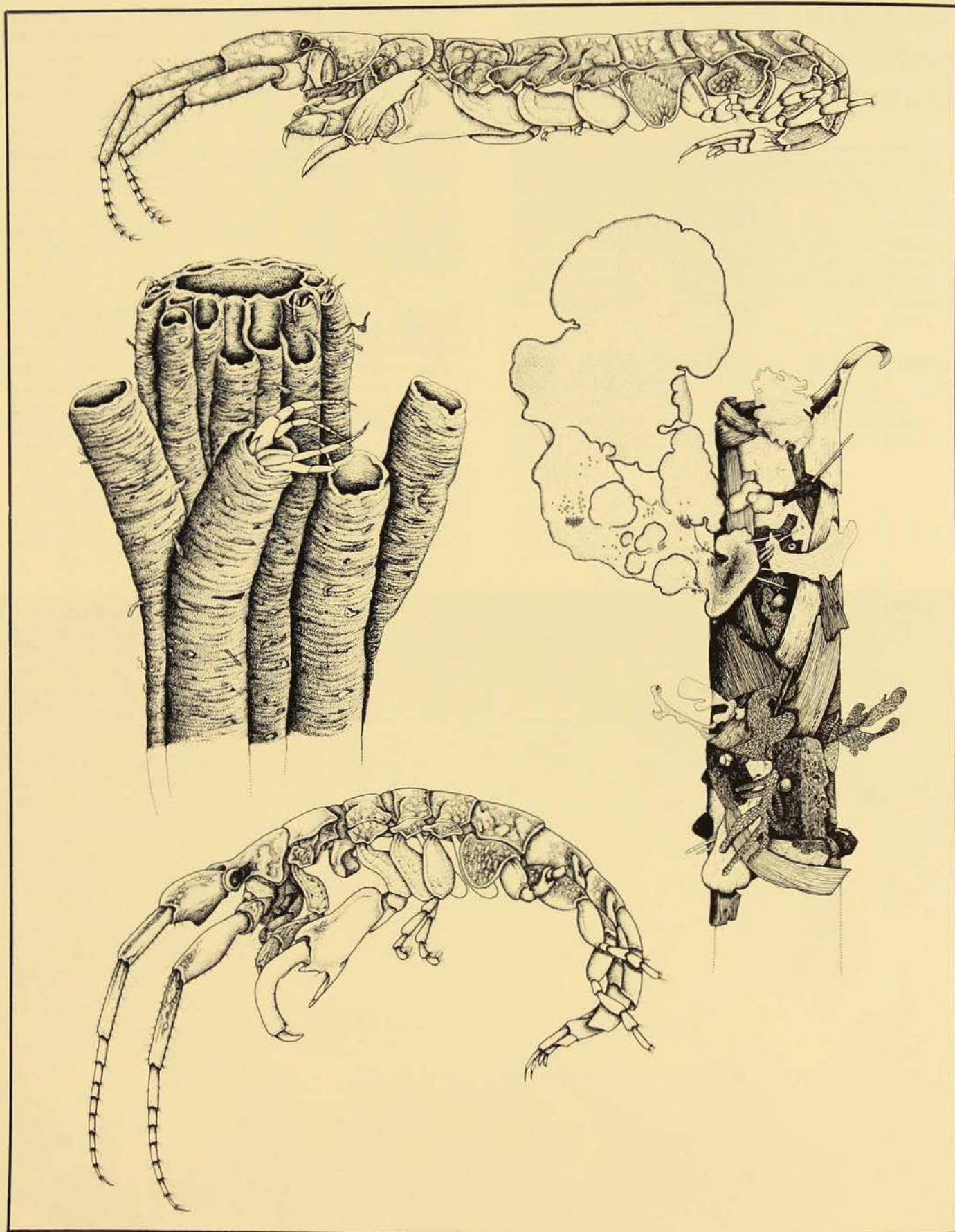
Curation: Mr Roger Springthorpe joined the department in June as Technical Officer replacing Mr Peter Terrill. In addition to his regular duties Mr Springthorpe is developing techniques for photographing small crustaceans. During this year 1 596 collection speci-

mens were registered. This included 37 primary types and 68 secondary types. The large collection of freshwater crustaceans from Campbell Island made in 1979–80 was sorted and catalogued through the volunteer work of Mr Mark McGrouther. Using funds provided by the Trust, Roger and Mark were able to move the dried soft coral and bryozoan collections from the wet collection area to a dry storage area at Rushcutters Bay. Dried hard corals will be moved next year to provide additional space. Large collections of unsorted small crustaceans from New South Wales were organised by Ms Helen Stoddart for sorting by volunteers and proceeded with the assistance of Stuart Hudson.

Research: During the past year research on subantarctic amphipods continued. Studies on the family Gammaridae and the description of a peculiar new genus in the family Corophiidae were completed. Dr J. Lowry and Ms Stoddart are now studying the diverse family Lysianassidae. In addition to taxonomic descriptions they are accumulating important information about reproductive strategies and habitat diversity in this interesting group of animals. Work also continued on a revision of the tube-dwelling amphipods in the genus *Cerapus*. This project was given a pleasant boost in March when volunteer Ms Sharne Dunlop began illustrating the Indo-West Pacific species in our collection.

Tiny amphipod crustaceans 5–8 mm length, are microphotographed for museum records. See also colour section.
Photo Roger Springthorpe.





Staff Activities: In July Dr Lowry gave a series of lectures at Sydney University on amphipod crustaceans. Several students, including one from Long Island University, USA, were associated in various ways with the department during the year.

In October Dr Lowry travelled to New Guinea with Dr A. J. Bruce (then Director of the Heron Island Research Station) to collect crustaceans from a tropical reef system in the Port Moresby area. During this work a specialized commensal amphipod was found living on gorgonian corals. Previous to this discovery it was not known with what animal these peculiar amphipods were associated, but since then we have found similar animals on gorgonians in several areas including the temperate waters of New South Wales. In January Dr Lowry joined Dr G. Poore (National Museum of Victoria) and Dr D. Dexter (San Diego State University) to collect inter-tidal rocky shore and beach dwelling crustaceans along the northern New South Wales coast. Shortly after that Dr Lowry, Mr Springthorpe and Ms P. Berents (Australian National University) made subtidal crustacean collections along the southern New South Wales coast. Dr Lowry spent two weeks at the Western Australian Museum studying the crustacea collections and searching for crustacean material collected by the Australasian Antarctic Expedition 1911–1914.

Loans: More than 40 loans involving 13 major groups of crustaceans and coelenterates were sent to workers in nine countries during the year. Most of the freshwater crayfish collection of the genus *Euastacus* was loaned to the National Museum of Victoria for a revisionary study of this endemic Australian genus. The entire *nebalicean* collection was loaned to Professor Erik Dahl, University of Lund, Sweden, for his revisionary work on that group.

Donations: Type specimens were donated to the Museum by: I. Arimot, D. and A. Banner, I. Bayly, C. Bentley, R. Bourdon, A. J. Bruce, N. Bruce, P. De-Deckker, B. A. Foster, J. A. Friend, M. A. Grygier, K. I. Hayashi, K. McKenzie, G. C. B. Poore, I. Perez Farfante, F. Roubal, N. Smirnov and B. Timms.

Other important crustacean material was donated by: A. J. Bruce, E. L. Bousfield, R. Cressey, D. Dexter, D. A. Everitt, J. A. Friend, K. Graham, K. Lewis, R. J. Lincoln, J. Markham and G. C. B. Poore.

Left: Two species of crustaceans new to science which are currently being described in the Department of Crustacea belong in the amphipod genus *Cerapus*. These animals live in tubes which they build from various materials. The species at the top of the plate lives on a brown alga *Lobophora*. It takes small pieces of the plant to build its algal tube illustrated right centre. The species at the bottom of the plate lives on muddy sea bottoms and builds its tube from fine sediment (centre left). Newly hatched young build their tubes on the parental tube. Illustrations Sharne Dunlop.

Department of Marine Invertebrates (Echinoderms)

The fundamental aim of the department continues to be the study of the systematics and zoogeography of the echinoderms inhabiting the Continental Shelf of the Indo West Pacific, especially that of the Australian coastline.

New Grant: Dr Rowe successfully applied for a grant from the Australian Research Grants Committee to study the systematics and zoogeography of the echinoderm fauna of the coast of New South Wales, Lord Howe Island and Norfolk Island. This project is planned to be carried out over three years, subject to continued support from ARGC, and Ms Vicki Harriot has been appointed as Research Assistant. Collections of echinoderms have been made along the southern coast between Jervis Bay and Malacoota (Victoria) in March and May 1981. Preliminary examination of the collections has revealed a new species of sea-cucumber (*Stichopus* sp.), the southward extension of several tropical species, northward extension of some temperate species, and has enabled clarification of the identity of species in the brittle-star genus *Clarkcoma*.

Tasmanian Faunal Study: This project is a joint study with Mr Lyle Vail, and is well advanced; completion is expected by mid-1982.

Foot-ball Star: Dr Rowe's paper with Professor David Nichols (Exeter University, UK) describing a new species of *Podosphaeraster* was published in December 1980 and a second manuscript, with Professor Nichols and Dr Michael Jangoux (Universite Libre de Bruxelles, Belgium), describing the morphology of the animal is well advanced.

Other Staff Activities: Dr Rowe took three weeks in January 1981 to visit the National Museum of Victoria, Queen Victoria Museum, Launceston, Tasmania and the Tasmanian Museum in Hobart to complete examination of the echinoderm collections relevant to his Tasmanian project. Dr Rowe was external supervisor to Ms Jan Marshall who successfully completed a Masters thesis at the University of NSW on ascidian biology in March 1981. Dr Rowe is also external supervisor to two PhD students: Lyle Vail, who has commenced a part-time PhD project at Macquarie University studying crinoid (feather-star) biology, and Mr Ahmed Thander, University of Durban, Westville, South Africa, who is studying the holothurian (sea-cucumber) fauna of South Africa. Dr Rowe was also invited by the University of Queensland to examine a Master's thesis on holothurian biology. Dr Rowe was President of the Linnean Society of New South Wales during 1980–1981, and presented his Presidential address, entitled *Echinoderms of Australia since H. L. Clark, 1946*. He was invited to join an international panel organising the International Conference of Echinoderm Biology to be held in Tampa, Florida in September 1981, and has been invited to deliver two papers at the Conference on his Indo-Pacific and Australian research.



Putting the finishing touches to the 'Invertebrates in the Sea' gallery which was opened in June. Photo J. Fields/Australian Museum.

Lyle Vail organised and supervised the work of the temporary assistant and volunteers in the department, and dealt with routine identifications and queries from the general public. He wrote three sections of text for the new Marine Invertebrate Gallery. Dr Rowe was scientific coordinator of the gallery which was opened in June by Professor Don Anderson, FRS, of Sydney University.

Project Delayed: Continued heavy involvement of Dr Rowe in gallery production and administration has caused some delay in the completion of studies of various groups of sea-stars (*Nectria* and some ophiasterids). Completion of gallery commitments should ease this problem.

Viva les volontaires: Ms Mary Boow, Ms Berry Marshall and Jim Hartmann, have continued to help out in the department. This help, and their ever-pleasant company is a great asset, much appreciated by the department staff.

Collections: The echinoderm collection continues to grow. This year large collections were received from the northern coasts of Australia (CSIRO Division of

Fisheries) and through departmental collections in southern New South Wales. Exchanges of echinoderms were effected with the British Museum (Natural History); Phuket Biological Station, Thailand and Doshisha Marine Station, Japan. A large collection of sponges was received from Roche Research Institute of Marine Pharmacology, Dee Why, NSW upon the closing down of that Institute.

Visitors: Dr P. Mather, Queensland Museum; Professor Pat Bergquist, University of Auckland, NZ; Dr Dai Roberts, Queens University, Belfast, Ireland; Dr John Dart, Cambridge University, UK; Dr R. Chesher, Florida, USA; Mr H. Silver, University of Queensland; Dr A. N. Baker, National Museum, Wellington, NZ.

Acknowledgements: Ms A. M. Clark, British Museum (Natural History), UK; Dr D. Devaney, Bernice P. Bishop Museum, Honolulu, Hawaii; Professor Dr W. Hartmann, Universität, Hamburg; Zoologisches Institut und Zoologisches Museum, Hamburg, Germany (DDR); Mr W. Zeidler, South Australian Museum, Adelaide; Ms A. Green, Tasmanian Museum, Hobart; Mr R. Green, Queen Victoria Museum, Launceston, Tasmania; Ms S. Boyd, National Museum of Victoria, Melbourne; Dr A. Guille, Museum National d'Histoire Naturelle, Laboratoire de Biologie des Invertébrés Marins et Malacologie, Paris; Dr R. Wollacott, Museum of Comparative Zoology, Harvard University, Cambridge, USA; Dr C. B. Goodhart, University Museum of Zoology, Cambridge, England; Dr J. C. Hartog, Curator of Marine Invertebrates, Rijk museum van natuurlijke Historie Leiden, Netherlands; Dr F. J. Madsen, Universitets Zoologiske Museum, Copenhagen, Denmark.

Department of Marine Invertebrates (Worms)

The Department has three main objectives:

- To gradually describe the polychaete fauna of Australia by (a) revising individual families and (b) describing the polychaete fauna of restricted geographical areas or habitats as they become available.
- To study the recruitment and establishment of polychaete communities and their roles in coral reef ecosystems.
- To identify the major causal organisms of bioerosion of coral substrates, to calculate rates of bioerosion, and attempt to apportion these to the major causal organisms.

ABRS Fund For Taxonomic Study: Dr Pat Hutchings has received funding from ABRS, to undertake a taxonomic study of the polychaetes of South Australia. It is already apparent that many new species and new records are present in the extensive collections which were made in 1979 by Dr Hutchings. Currently the family Nereidae is being worked up and several genera

will have to be revised. It is anticipated that the study will be published as a series of papers dealing with individual families.

Coral Reef Studies: Dr Hutchings received support from ARGC to complete the final year of the study of polychaete communities of coral substrates. A paper describing the recruitment patterns of the dominant species was presented at the Fourth International Coral Reef meeting in Manila in May 1981. Taxonomic studies on the polychaete communities are progressing and the first paper should be completed by the end of 1981.

With Dr Harry Recher (Department of Terrestrial Ecology) a review paper on the fauna of Australian mangroves was presented at an international meeting on the biology and management of mangroves and tropical shallow water communities held at Port Moresby in July 1980. The mangrove bibliography prepared in conjunction with Terrestrial Ecology has been updated and will be printed by the NSW Government Printer.

AMSTAC Support: Dr Hutchings with Dr E. Frankel, Geology Department, University of Sydney, continued to receive support from AMSTAC to study rates of bioerosion of coral substrates. The experiments were set up at Lizard Island in June 1980, at several localities. Preliminary data reinforces the view already reached by Dr Hutchings and Dr Davies, Bureau of Mineral Resources, Canberra, that polychaetes are initially the major agents of bioerosion. In addition it seems apparent that new substrates become available by the activities of bryozoans, calcareous worm tubes and coralline algae. Thus in reality, the studies will attempt to determine the balance between bioaccretion and bioerosion.

Polychaete Discovery: An interesting small polychaete was discovered in dry salty sediment around shores of Lake Coorong, South Australia. When freshwater was added to the sediment, live worms appeared, the resultant salinity of the water settling at 86 per cent of normal seawater. The worms are a type of sabellid fan worm, many of which are tolerant of low salinity, but no other species in this group has previously been found in such salinities. These lakes are ephemeral and presumably the ability to survive in dry sediment ensures the long term viability of the worms.

In an attempt to build up the polychaete collections from estuarine areas in NSW, all university students undertaking studies of estuaries are being encouraged to deposit reference collections in the Department. NSW State Fisheries continues to provide extensive estuarine collections to the Department.

Dr Hutchings continued as a Councillor of the Great Barrier Reef Committee.

Visitors to the Department: Dr Yossi Loya, a Senior Queen's Fellow from Tel Aviv University, and plans for joint work in the Red Sea during August 1981 were made; Dr Fred Grassle of the Woods Hole Oceanographic Institute, who discussed the analysis of Dr Hutchings' polychaete recruitment data from Lizard

Island; Dr Mike Risk, a visiting fellow at the Australian Institute of Marine Science from McMaster University, Canada, with whom a week was spent at Lizard Island searching for boring sponges, an important agent of bioerosion.

Donations: Valuable collections of estuarine polychaetes have been received from Queensland Electricity Generating Board (Calliope River); Ken Robinson, University of NSW (Lake Macquarie); NSW Institute of Technology (Narrabeen); Maritime Services Board (Botany Bay); NSW State Fisheries (Jervis Bay, Port Hacking). Other material has been donated by Tony Healy and John Hicks (Christmas Island). Types have been provided by Dr Ray Gibson, Liverpool, UK; Dr Geoff Dyne, Queensland Institute of Technology; Dr Roubal, University of New England; Dr Hartmann-Schröder, University of Hamburg; Ms R. Brown, Macquarie University; Professor K. Rohde, University of New England; Dr S. Edmonds, South Australian Museum and Mr J. Hooper, University of New England.

Department of Mineralogy and Petrology

The Department aims to progressively upgrade the collections for use in educational displays, for research by other scientific institutions and as a record for the general public. An underlying responsibility is to obtain a complete representation of Australian minerals and to enlarge this by collection and research. Efforts are being made with the help of the Taxation Incentives for the Arts Scheme to improve relations with companies in order to preserve important Australian geological material. The Department encourages interaction between the scientific world and the public by making staff and facilities available for amateur societies.

Major Developments: A number of significant donations were received and major mineral purchases and exchanges conducted. Papers were given at local and overseas conferences. Field trips were made to Tasmania, Victoria and Queensland to collect research material. The Curator, Mr Lin Sutherland, submitted his PhD thesis on his research on eastern Australian volcanism.

Most of the mineral collection has been reorganised and is currently being valued for insurance purposes. Organization of material for the displays of Australian minerals in the Mineral Gallery has been completed and is ready for implementation. The Department helped to host a combined NSW and Victorian Mineralogical Society Seminar at The Australian Museum.

Gallery: Plans have been made to display the best of the Museum's Australian minerals in context with their formation and resource development. Initial designs are completed and ready for implementation. The next step will be updating the gemstones display.

Sales: The Mineral Sales have proved increasingly popular and the program has expanded accordingly. The sales promote an awareness of mineralogy, fulfil a need in the community and assist the department to acquire new material for the collections. Ms Joan Hingley was interviewed by the media about the purpose of the sales. During an overseas trip Ms Hingley met with dealers to place orders for minerals and fossils for both the sales and the bookshop.

Donations: The Mineralogical Society of NSW presented the Museum with a superb 35 carat brilliant cut topaz from Killiecrankie Bay, Flinders Island, as a token of their appreciation for the use of Museum facilities. The topaz will be incorporated into the new Australian Minerals displays. A significant donation of a personal collection of boulder opal has been received through the Taxation Incentives for the Arts Scheme. The collection features varieties of opal from the Quilpie area in Queensland.

An anonymous friend of the Department donated three large gemstones, and a suite of polished and faceted sapphires was presented by Mr T. Coldham.

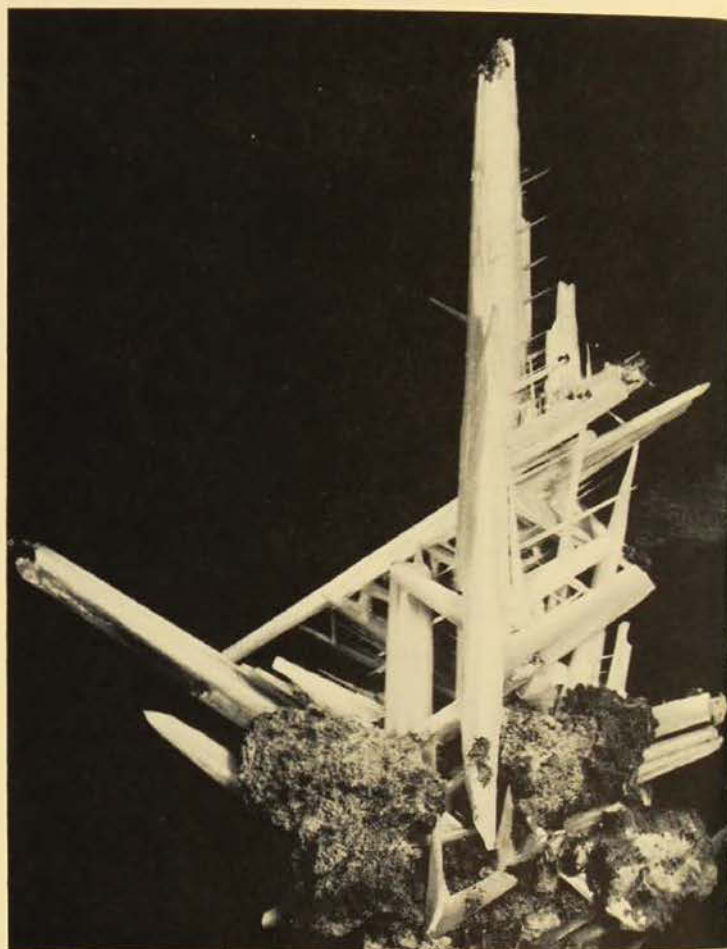
Research Projects: Mr Sutherland completed his PhD thesis from his research on volcanism in eastern Australia and its relationship to the migration of the continent and other tectonic events. Related research on rocks from the mantle and lower crust, brought up in the volcanic rocks, continues and has resulted in several publications. Assistance was received from the Bureau of Mineral Resources to date the Tasmanian basalts in this work.

Dr Julian Hollis is continuing his work on structures of the deep crust and upper mantle based on the study of inclusions in basalts from SE Australia and has commenced a project on the origins and ages of zircons in central Victoria.

Mr Ross Pogson is continuing X-ray diffraction studies of secondary uranium minerals from Pine Creek, NT. He is examining a suite of minerals from the Range 1 Jabiru and Coronation Hill ore bodies adding to the list of species identified from a previous X-ray study of specimens from El Sherana, Saddle Ridge and Palette mines.

Collections: A large range of overseas minerals and gemstones were purchased. They include a group of superb azurite crystals from Tsumeb, Africa, a suite of Irish minerals and several rare and exceptional mineral specimens. Amongst the gemstones is an unusual trapiche emerald and a Queensland opalised 'Yowah Nut' split into halves. The reorganisation of the collection to increase storage space and improve the accessibility of material is almost complete. The designs for the new laboratory and mineral storage space were completed ready for renovation.

Valuation of the entire collection for insurance purposes has been undertaken with the assistance of Messrs A. Chapman, G. Tombs and T. Coldham. Historical information about the specimens and their donors has been recorded during the work.



This magnificent Cerussite specimen is on display in the Museum's Mineral Gallery and is regarded by many as the best of its kind in the world. Outstanding mineral specimens in the Museum's collection from Broken Hill are being photographed for a book to celebrate the centenary of Broken Hill 1983. Australian Mining and Smelting Ltd. are sponsoring production of the book. Photo J. Fields/Australian Museum.

Loans and Exchanges: Meteorites and a display on impact craters were loaned to the Sutherland Astronomical Society for a public star night. Other meteorites were loaned for research to the Naturhistorisches Museum, Vienna and Monash University. Clay minerals were loaned to the Art and Technology of Make-up exhibition held at the Sydney Opera House. Gold specimens and ores were loaned to the University of Queensland for investigations into the formation of gold nuggets and a collection of Australian shales were donated to Kobe University, Japan for the determination of rare-earth elements. Exchanges were conducted with the Musée de Mineralogie, Paris and Nanking University, China.

A small gold nugget from Araluen, NSW was made available on indefinite loan to the Queanbeyan Historical Museum. It was presented at the opening by the Premier, the Hon. Neville Wran.

Staff Activities: In July, Mr Sutherland and Mr R. O. Chalmers attended the 26th International Mineralogical Congress and the 12th International Mineralogical Association meetings held in Paris and Orleans respectively. They participated in the IMA excursion to the Massif Central in France. Mr Sutherland was the Australian delegate to the IMA Commission for Museums. He presented a paper jointly prepared with Dr Hollis at the IGC and attended the IGC excursion to the Hebridean Volcanic Province. Several suites of rocks and minerals were collected by him for the Museum. He inspected collections and facilities at the University of Paris, School of Mines, Paris; BRGM Museum, Orleans; Royal Scottish Museum, Edinburgh; Geological Museum and British Museum (Natural History), London. Mr Sutherland also helped to lead a Museum Society tour of Flinders Island during April. He has given talks to The Discoverers Club, Northside Gem Club, Sutherland Rotary Club and the Mineralogical Society of NSW.

In November, Mr Sutherland and Dr Hollis delivered a paper at the conference on Cainozoic Evolution of Continental SE Australia held in Canberra. Mr Sutherland attended the Expanding Earth Symposium at Sydney University in February.

Dr Julian Hollis has given talks to the Gemmological Association of Australia, the Fossil Club and the Mineralogical Society of Victoria and has delivered a seminar to the Geology Department of Melbourne University.

In February, Ms Hingley spent three days visiting the International Gem and Mineral Show in Tucson, Arizona, where she purchased display minerals for the collections and material for the Mineral Sale in October. She also completed the Gemmology Diploma Course and is now a Fellow of the Gemmological Association of Australia.

Mr R. Pogson gave a talk to the Hornsby Amateur Radio Club on prospecting with radio waves, thunderstorms and earth currents.

The Department is involved in the production of a book on Minerals of Broken Hill being sponsored by Australian Mining and Smelting Ltd. for the Broken Hill centenary in 1983. Mr J. Fields is photographing the best of the Museum's minerals and Mr Chalmers is an editor.

Mr J. Pixley and Mrs B. Clark, volunteers, are preparing a list of Australian minerals.

The Mineralogical Society of NSW: The department helped the society to host a combined NSW and Victorian Mineralogical Society Seminar held in the Museum in June, in the Hallstrom Theatre. Over 100 people attended the talks. Mr Sutherland and Mr Chalmers, as patrons, each chaired sessions.

During the year Ms Hingley organised field trips to Tolwong Mines, Lue, Dunedoo and New England localities in her capacity as Field Trip Officer. Mr Pogson as Society Education Officer conducted dis-

cussions and arranged for academics and amateurs to give talks.

Overseas Visitors: Dr G. Henkel, Baden-Baden, Germany; Dr N. Tuzcu, Geneva University; Mr J. Ferdyn, Dr R. Gains, USA; Dr T. Tiba, Japan; Dr I. Nottes, Germany; Mr A. Krumbacker, Hungary; Mr E. Bruton and gemmological party, Great Britain; Dr Watters, New Zealand Geological Survey; Captain William Wentworth Stewart-Fitzroy, Scotland.

Department of Ornithology

The Department aims to promote and encourage knowledge of birds in the Australian region. This is achieved through research and discussion, and by offering to other researchers the broad spectrum of scientific resources and materials of the department through a program of short term loans.

Collection: 1 882 specimens were registered during the year; this primarily included study skins, spirit specimens and eggs, the last being from old collections held by the Museum. Unregistered spirit specimens were incorporated into the collection and several hundred new specimens were prepared. A hundred specimens were prepared as skeletons.

Major Additions: Four major overseas acquisitions were obtained, which contributed to the overall building and expansion program: the Borneo environmental impact study through Dr J. S. Weir, University of New England, provided 111 specimens in fluid, including several taxa not previously held in the collection. (This valuable collection has been maintained as a wet collection); The National Museums and Monuments, Zimbabwe, 29 specimens; the Hungarian Natural History Museum, Hungary, 49 specimens; the University of Akron, United States of America, 7 specimens. These last three institutions provided specimens through a series of exchange programs resulting in the acquisition of taxa not previously represented, foreign representatives of families, and superspecies and species occurring in Australia. A large number of specimens also came from the NSW National Parks and Wildlife Service.

Computer Program: The Current (O) Ornithological register of 55 000 specimens has been placed on computer sheets, and most (35 000) of these records have been encoded onto magnetic tape. A large sample (12 000) has been entered into the computer and a printout provided for editing. Placement of additional records onto tape and the A, B and Palmer registers onto data sheets is continuing. Information from this program is being sought by the Royal Australian Ornithologists' Union for inclusion in their program of plotting past and present distributions of Australia's avifauna.

Curatorial Programs: The wet collection has been worked on: the acquisition of the Bornean material has been a significant addition to the ever growing

collection. The department's old alcohol collection, including some Mawson and ANARE materials, has been registered and rehoused with the wet collection with the aid of volunteers R. Guss and A. Medness. Increased storage space was obtained through rearrangement of present collections. This entailed a continuation of work to rehouse the egg collection and an inventory of mounts (completed), skeletons, nests and study skins stored at Rushcutters Bay and in gallery drawers. This program was carried out by Mr D. W. Eades, Mr T. R. Lindsey and Mr N. W. Longmore and has provided easy location and reference to the collections used for scientific study. Several new curatorial techniques learned by Mr Walter Boles while in North America were implemented.

Loans: A total of 65 loans were sent or received by the department.

Reference and Tape Libraries: Through a program of volunteer work, the rearranged reference library is being completely indexed; a large increase in the library makes indexing essential. The library of bird calls on tape was extended, additional material becoming available through visits to South Australia and western New South Wales.

Staff Activities: Until his departure overseas, Mr Boles continued as scientific advisor for the new Bird Gallery. He was also the scientific member of the adjudication panel of the National Photographic Index of Australian Wildlife (Birds). He served as Chairman of the Ornithological Section, NSW Royal Zoological Society and on the committee of the Australian Bird Study Association and helped in co-ordination of the RAOU Wader Conference held in the Museum. He gave talks and attended field programs with several ornithological groups. Mr Longmore addressed several local groups on ornithological matters. He was also the Treasurer of the Australian Bird Study Association. In the absence of Mr Boles, he dealt with departmental matters and served as scientific advisor for the Bird Gallery.

Mr Boles began work on the electrophoresis of feather keratins in relation to the study of inter-familial relationships of Australo-Papuan songbirds. His project on genera of Australo-Papuan robins was pursued overseas. Mr Boles and Mr Longmore concluded several aspects of their study of the avian biogeography of Clarke Range, Queensland. Mr Boles attended the Royal Australian Ornithologists' Union Congress in Hobart, Tasmania in December. He presented a paper on the 'Avian Biogeography of Clarke Range, Queensland'.

Mr Longmore continued his studies on the Meliphagidae (honeyeaters) including work on systematics and natural history. He prepared a detailed report on the Museum holdings of the avifauna of the Malagasy region, for incorporation in an important work being compiled by staff of the American Museum of Natural History. Catalogues of holdings for both the skeletal and spirit collections were commenced, a request for this information being received from the



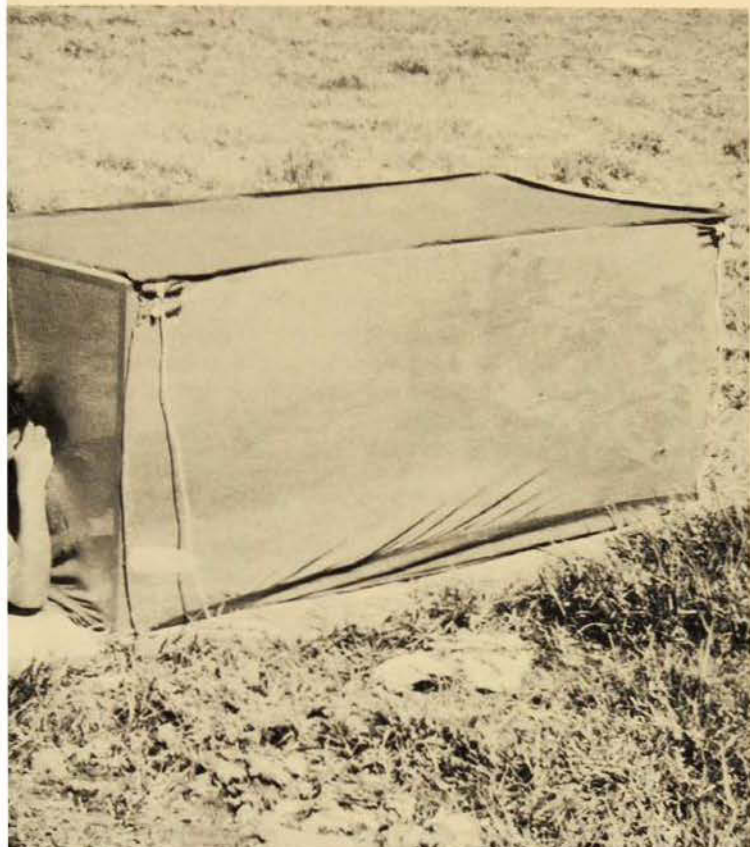
In the field, portable studios enable ornithologists to photograph wild birds. Wayne Longmore of the Department of Ornithology is shown using a field studio to photograph rainforest honeyeaters. Photo Steve Larrson.

American Museum of Natural History. The description of the new species of honeyeater discovered at Clarke Range, Queensland was submitted for publication.

Mr Eades collected data on the family Laridae (gulls and terns). This information will be utilised in a planned report on that group.

Field Trips: Collecting trips concentrated on specific needs of departmental research, the collection, and, the gallery. Mr Boles and Mr Longmore spent two weeks in September in the mallee country of southwest New South Wales and southeast South Australia. Two specimens each of two previously unrepresented taxa were collected from South Australia—the Red-lored Whistler *Pachycephala rufogularis* and the Mallee Emu-wren *Stipiturus ruficeps mallee*.

Overseas Leave: Mr Boles went on leave without pay in mid December and spent three months in the United States visiting various museums, studying relationships on the Australo-Papuan robins (*Pachycephalinae*) and different curatorial and preparatory methods. He visited the American Museum of Natural History, New



York; Smithsonian Institution, Washington, DC; Museum of Comparative Zoology, Harvard University, Cambridge; Royal Ontario Museum, Toronto; Dyche Museum of Natural History, University of Kansas, Lawrence; Los Angeles County Museum of Natural History, Los Angeles; Bernice P. Bishop Museum, Honolulu and the Fiji Museum, Suva.

Mr Boles received a Frank M. Chapman Memorial Grant from the American Museum of Natural History to support his research at that Museum.

In June, he spent two weeks at the CSIRO Division of Protein Chemistry, Melbourne working with Dr R. C. Marshall. There he learned techniques of electrophoresis, radioactive tagging and fluorography. These techniques will be applied in his research project on biochemical systematics of birds. While in Melbourne, he also worked on the collections of the National Museum of Victoria.

Consultations: During the year consultations were held with the following departments, organisations and groups: Department of Business and Consumer Affairs (Customs); Animal Quarantine Service (NSW Division); National Parks and Wildlife Service NSW; State Pollution Control Commission; students of the University of NSW, University of Sydney, Macquarie University and University of New England. Students from the three Sydney universities; University of New England, University of Queensland and La Trobe University continued to make use of facilities and collections in the department. The department continued its role in

assisting the Peer Teaching and Work Experience projects organised by the Education Section.

Volunteer Help and Assistance: Several volunteers were active within the Department during the year. Ms M. Hirst labelled specimens, extracted information from the registers on New Guinea collections and assisted in sorting the egg collection. Mr E. L. Carthew assisted with the skeleton collection and extraction of information from the Library stacks. Mr M. Gallin also assisted by working on eggs, skins and some literature surveys. Ms R. Guss registered the Bornean material and prepared the specimens for storage. Ms B. Crawford continued renewing naphthalene in the collection and some typing work. Ms M. Leeder commenced typing the index for the reference library. Ms. H. M. King extracted information from the library stacks. Ms M. de Jose prepared skeletal material. Mr E. Myers undertook a project on New Guinea birds collected last century. Ms L. Albertson worked on preparing information in the Palmer register for computerisation. Ms A. Medness assisted with both spirit collections and mounted material. Mr L. Courtney-Haines prepared, at home, several excellent skins for the collection.

Through Trustee's Short Term Assistance Mr I. J. Mason prepared 153 specimens for the collection; Ms K. Bardsley analysed the stomach contents of specimens collected from mid-east Queensland; Mr T. R. Lindsey continued his work on rehousing the egg collection.

Overseas Visitors: Dr A. J. Baker, Royal Ontario Museum, Canada; Mr B. W. Finch, Papua New Guinea; Mr J. Jenkins, New Zealand; Mr R. Veitch, Department of Internal Affairs (Wildlife) New Zealand; Dr J. Warham, University of Canterbury, New Zealand; Chinese delegation including Professor Xu Wei-Shu, Professor Zheng Zuo-Xin and Dr Zhang Wen Song.

Difficulties: Specimens prepared to be skeletonised have been delayed until facilities are available, resulting in a large back-log of material. Little space is now available for spirit specimens, the large amount of material registered having utilised existing space. Many study skins are now inadequately stored at Rushcutters Bay, the original storage area having been renovated for other purposes and no suitable alternative is currently available. Computerisation of collection data depends upon continued funding for the current program. Contribution to the new Bird Gallery has placed a heavy load on staff time.

Donations: Mr E. L. Carthew donated several books on ornithology to the collection.

Acknowledgements: Several Australian institutions and overseas museums provided information and specimens for study. These include: National Parks and Wildlife Service of New South Wales; National Museum of Victoria, Melbourne; South Australian Museum, Adelaide; Queensland Museum, Brisbane; CSIRO Division of Wildlife Research, Canberra; Queen Victoria Museum and Art Gallery, Launceston; American Museum of Natural History, New York; and British Museum (Natural History), Tring.

Department of Palaeontology

The Palaeontology Department is responsible for all fossil remains of plants and animals (invertebrate and vertebrate) and tries to maintain representative collections, especially of Australian fossils, from all geological periods. Departmental research work, however, is concentrated on two main fields—the origins and evolution of vertebrates and the distribution of their fossil remains in Ordovician, Silurian and Devonian rocks of Australia and other continents, and on palaeobotanical studies on Palaeozoic and Mesozoic floras of Eastern Australia.

The present collection exceeds 66 000 specimens including a wide range of type and figured materials.

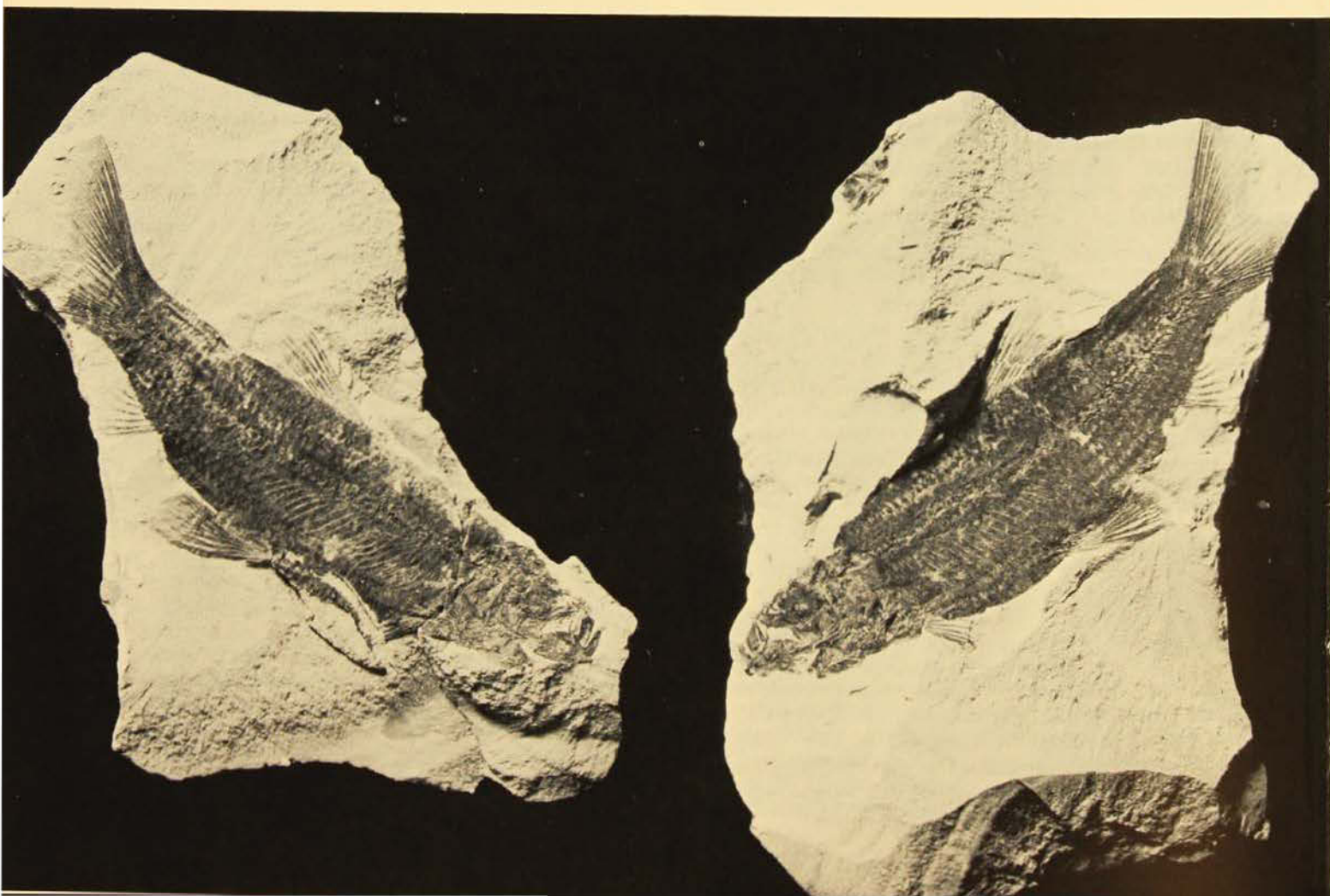
During the year 1 254 specimens were registered of which 805 were donated. They included Permo-Triassic fossil plants from Mr Keith Holmes, Wellington; Carboniferous gastropods from the Hunter Valley from Mr E. K. Yoo; Cretaceous marine faunas from Tibooburra from Mr John Morton, University of NSW, Broken Hill; Devonian plant remains from Wilcannia from Dr G. Neef, University of NSW, Broken Hill; type specimens

of *Bungoniberychia*, Ordovician ostracods from NSW from Dr A. J. Wright, University of Wollongong, Tertiary fish and reptile remains from Rundle Oil Shales from Mr H. Henley, Southern Pacific Petroleum; Triassic plants from the Narrabeen of Long Reef, Sydney, from Professor John Talent, Macquarie University.

Research and Field Work: Dr Alex Ritchie continued work on his major research project, the study of the Late Devonian armoured fish *Groenlandaspis* and its relatives.

Assisted by Mr Robert Jones, Dr Ritchie carried out a search of various sites in central and eastern Victoria in March 1981. Quarries which had last been worked by Monash University Zoology Department in the early 1970's were reopened. The sites, east of Mt

A 130 million year old fossil fish! An early representative of the teleost bony fishes, the dominant bony fish group to which salmon, herring and trout belong. This perfect fossil (*Leotolepis koonwarri* Waldman 1971), collected this year by Dr Alex Ritchie came from the Lower Cretaceous, Koonwarra fish-bed in Victoria.



Howitt in the Dividing Range, yielded many well-preserved fossil fish specimens (dipnoans), palaeoniscids, acanthodians, *Bothriolepis*, *Phyllolepis*) in addition to some superb *Groenlandaspis* material which provided evidence of the scale-covered trunk, tail and fins, and the structure of the jaws. These supplement earlier finds from the same site made available for study by Professor Warren of Monash University. The Mt Howitt *Groenlandaspis* finds, the best preserved of the more than 20 known occurrences from five continents, will form the basis for a definitive account of this fish in the monograph under preparation.

Two other sites were visited on the same trip. Dr Ritchie and Mr Jones joined forces with Mr John Long, Monash University in a successful attempt to relocate the 1930's Devonian fish site near Taggerty, Victoria. With Mr Long's assistance another Devonian site, 100 km to the southeast on Freestone Creek, near Briarolong, Victoria, was excavated and produced many bony plates of yet another species of *Groenlandaspis*.

New Excavations: In April 1981 Dr Ritchie returned to Victoria to participate in new excavations of the famous early Cretaceous Koonwarra site in South Gippsland. In the 1960's this site had produced many superbly preserved specimens of fossil fish, plants, insects and even several bird feathers—the second oldest known bird remains in the world. The new excavations were carried out by the Department of Botany, University of Melbourne in conjunction with Monash University Zoology Department. The Australian Museum team, including Mr Tim Flannery, Ms Paula Kendall and Dr Julian Hollis as volunteer helpers, recovered many fine specimens including a completely new type of actinopterygian fish which may be an early ancestor or relative of the living eels.

Fossil Fish, New Genus Discovery: Another important fossil discovery was brought to the attention of the Department in October 1980 by Dr George Gibbons and Dr Rick Rogerson of the New South Wales Institute of Technology. During the course of a student mapping exercise east of Braidwood, on the western flank of the Budawang Range, they discovered a richly fossiliferous fish-bearing horizon in late Devonian rocks. A subsequent excavation of the site by Dr Ritchie, Mr Jones, Mr Michael Leu and Dr Rogerson resulted in the recovery of a large quantity of specimens, mainly consisting of the armoured plates of the well-known antiarch *Bothriolepis* and another unusual armoured fish similar to *Phyllolepis* (known from Greenland, Europe, Australia and Antarctica). The latter material, when prepared by Mr Jones, proved to belong not to *Phyllolepis* itself but to a distinctive new genus, only the second now known to belong to the family Phyllolepididae. A paper on these new finds is being completed.

Horned Turtles, Lord Howe Island: Dr E. S. Gaffney, American Museum of Natural History, returned to the United States in July 1980 carrying by hand a representative selection of the fossilised bones of *Meiolania*

platyceps, the strange, extinct horned turtle found in the rocks of Lord Howe Island. These specimens have since been moulded and cast in the AMNH. The larger, more fragile sections of the *Meiolania* shell were cast in The Australian Museum by Robert Jones and these portions, sent to New York, have been used as the basis for the first complete reconstruction of the *Meiolania* carapace. Three complete, composite replicas of the *Meiolania* skeleton are currently being prepared for display in the American Museum of Natural History, the Australian Museum and the Lord Howe Island Museum.

A Mammal-like Reptile: The Palaeontology Department has received a beautiful, complete cast of the skeleton of a late Permian mammal-like reptile, *Lycaenops*, from the Karroo Formation of South Africa. This specimen, which will eventually go on display in the Hall of Fossils, was presented to the Museum by the American Museum of Natural History at the request of Dr E. S. Gaffney and is a major addition to the collection.

Diprotodon Skeleton Relocated: The fine *Diprotodon* skeleton, collected in late 1979, has been removed to the foyer outside the Hall of Fossils where it will eventually be reunited with the skull and accompanied by a showcase illustrating various stages of their excavation from a creek bank in northern NSW.

Storage Space Renovations: For much of the past year large parts of the fossil collections have been virtually inaccessible during the renovation of the main fossil storerooms. The new annexe in the lane between the Museum and the Grammar School was opened in August 1980 and has been named the Fletcher Wing after the previous Curator, Mr H. O. Fletcher. The floor of the adjacent smaller room, now the Krefft Room, was torn up and replaced by a concrete floor in November 1980. All remaining cabinets and contents in the main storeroom were moved into the newly converted areas to allow Public Works to demolish the old wooden mezzanine and rackwork and the wooden floor. Following the laying of a new concrete floor in April 1981 a completely new mezzanine floor was constructed in this room, the Etheridge Store.

It is intended that this new mezzanine area, access to which will be controlled by a lockable gate, will house the type and fossil collections in much more secure storage than hitherto. One consequence of this new type storage area will be to house important type collections which may be transferred to the Australian Museum by university geology departments. Dr Bruce Runnegar, Head of Department of Geology in University of New England, Armidale, has confirmed a decision to transfer such type collections when the new facilities are completed and it is hoped that other New South Wales universities will follow suit.

Overseas Visitors: Ms Claire Clark, National Museum, Wellington; Dr Chow Minchen, Director, Institute of Vertebrate Palaeontology, Peking; Dr B. D. Erdtman, Göttingen University, Germany; Ms Mildred Fenton, New Jersey, USA; Professor H. Whittington, Cambridge University, England.

Assistance Received: Ms Maree Dacks, Manly; Mr T. Flannery, University of NSW; Dr J. Hollis, Mosman; Mr K. Holmes, Wellington, NSW; Ms Paula Kendall, Randwick; Ms Tempe Lees, University of Sydney; Mr M. Leu, Pymble; Mr J. Long, Monash University; Ms Betty Price, West Pymble; Dr B. Runnegar, University of New England; Mr N. Southgate, Davidson, NSW; Professor J. Warren, Monash University; Mr and Mrs C. Williams, Koonwarra, Victoria.

Terrestrial Invertebrate Ecology*

The Department of Terrestrial Invertebrate Ecology is primarily a research-oriented department, priority being given to studies of the impact of man upon his natural environment.

Study of Control Burning: During the past year the majority of our effort has been directed towards a new research project—an investigation of the effect of prescribed burning on leaf litter invertebrates. In many parts of New South Wales the forests have been burned as frequently as every two to three years for the past century or more. The forests are burned by land management authorities in order to reduce the amount of combustible material on the ground. In this way the danger of fierce forest fire can be greatly reduced. There is, however, next to no information available on the effect this process may be having on the animals living in the leaf litter, many of which play a vital part in decomposition of the litter and hence in nutrient recycling.

Sampling Plots: The forest selected for study is the Kiwarra State Forest, a mixed hardwood forest, 15 kilometres south of Taree in the mid-north coast. Ten study plots situated in an area of the forest that has not been burned for at least twenty years were sampled for invertebrates in August and October 1980 and in January, March and April, 1981. Three of these plots were burned at the end of April and sampled again two days' later. The invertebrates are extracted from the samples, sorted to broad taxonomic groups and counted. The numbers of animals in the litter immediately after the fire will be compared with the numbers present before. Sampling of the plots will continue during the coming year to monitor any recovery of the animal populations that might occur. An additional aim of the study is to assess the cumulative effect of several fires lit at two or three year intervals in the manner of land management authorities.

Acknowledgements: The Department wishes to record its appreciation of co-operation in these projects received from the Forestry Commission of New South Wales.

Department of Vertebrate Ecology

The Department conducts basic research on the ecology and behaviour of Australian vertebrates and seeks to have the principles of ecology applied to the management of natural and disturbed ecosystems. The results of the work are made available to all sections of the community through publications and lectures.

Australia's forests are being subjected to increasing impact as various sectors of the community seek to utilise the forest resource. As a result, forest managers have come under increasing and often conflicting pressures from the community to manage this resource responsibly. Recently public emphasis on aspects of management other than timber production has caused forest managers to consider wildlife in developing management policies. Such management is hampered by a lack of basic information on forest ecology and on how various management policies affect this ecology.

Research: This Department's research has concentrated on forest ecology within the Eden woodchip area and is aimed at providing management guidelines for forest ecosystems.

Two research projects suspended last year to allow concentration on the Eden project have been re-established with the aid of two new members of the staff.

For some years the department has been involved with studies of Australian honeyeaters (Aves: Meliphagidae). The appointment of Dr Graham Pyke and arrival of Dr David Paton as a Queen Elizabeth II Fellow has meant that research in this area could be significantly expanded. Dr Pyke and Dr Paton are particularly interested in the relation between the numbers of honeyeaters and the abundance of their food resources. Their research therefore entails the accurate estimation of bird numbers and the amount of nectar and insects being produced on their study areas. Dr Pyke's work is concentrated in the national parks near Sydney but Dr Paton works in the arid shrublands of western NSW and northeastern SA. Their studies are especially important as honeyeaters comprise fifty per cent of the Australian avifauna and commonly are the most abundant birds in shrub and forest habitats. The results of their research, when completed, will permit the development of management strategies for natural areas which recognize the close dependence of plants and animals. Dr Pyke's work will have particular value in managing the use of fire in sandstone habitats.

Forest Ecology in Eden: Research aims to answer basic questions of relevance to forest managers: What resources do wildlife use? How do resources vary in time and space? How are both wildlife and resources influenced by current management strategies? This research involves close liaison and co-operation with the Forestry Commission of New South Wales and the National Parks and Wildlife Service, and is an integral part of similar research projects being conducted by both these Government agencies.

* This department and that of Vertebrate Ecology have now been combined into a single department.



Time out for fun! Members of the Museum's Vertebrate Ecology staff and officers of the Forestry Department Wildlife Research team pause for a rest during their field studies of the impact of the woodchip industry on wildlife. Weapons and sporting equipment are part of a satirical tableau. Photo Wyn Rohan-Jones.

Because much of the research conducted by the Department has not before been attempted in Australia many new methods must be evolved and advantage taken of overseas expertise. As a consequence of the former the Department presented five papers on bird census methods at the 1980 RAOU Congress in Hobart. These papers were prepared and presented in collaboration with the Department of Ornithology of the Australian Museum, the Forestry Commission and the NPWS. New methods have been designed for resource sampling and these methods are now being incorporated into research by other workers within the Museum, universities and other Government bodies. Overseas experience was provided by Visiting Curator, Professor R. T. Holmes, Dartmouth College, USA, who collaborated in bird foraging research, enabling much new work on foraging ecology to be undertaken. Lec-

tures by Professor Holmes and Dr Harry Recher have made the results of the Department's research available to different land management authorities and members of the community at large.

Projects Re-established: The November 1980 wildfires in the Eden district burnt the small mammal study plot in Nadgee Nature Reserve, but sampling of small mammals was re-established with assistance from National Parks and Wildlife Service. The fires have provided an opportunity to study the effects of both fire and logging practices on forest ecology.

Acknowledgements: Research in southeastern NSW was supported by a grant from Harris-Daishowa Pty. Ltd. The Forestry Commission of NSW made available its facilities in the Bondi State Forest. Work on honey-eaters in the Brisbane Water National Park was made possible by a grant from ARGC. The National Parks and Wildlife Service permitted us to carry out research in the National Park and in the Nadgee Nature Reserve. Rob Wheeler, David Allen, Chris Glasby, Kristen Bardsley and Mary Byrne volunteered to help with fieldwork and enabled much more to be done than could otherwise have been possible.

Administration and Services Division

The Division is responsible for the staffing, finance, administration—including security, attendants and cleaning—and building development policies for non-public areas.

Accounts Branch: A major expansion for the Division during the year was the taking over of the accounting, including the development of a monthly and quarterly financial reporting system, and staffing responsibilities for the National Photographic Index of Australian Wildlife, following the transfer of the Index to the Museum. In addition, a system was developed and implemented to provide the Exhibitions Department with a weekly costing of gallery development/redevelopment for which that Department is responsible.

A review was also undertaken of internal control procedures in respect of cash and collections, etc, and, where appropriate, improvements were implemented.

The prime function of the Administration Division is to provide support services to the Museum . . . it is essential that storage and retrieval systems for correspondence and related files are regularly reviewed, that goods are acquired and recorded in an orderly fashion and that security procedures and fire precautions are sound and well understood throughout the organisation. Corporate Plan—Policy 6, Administration.

Staff Branch: A summary of the Museum's objectives as set out in its Corporate Plan, in respect of staffing is to continue to develop policies which lead to maximum job satisfaction, provide appropriate training, develop skills and acknowledge and reward achievement. Within the staffing and monetary constraints to which the Museum is subject these objectives continued to receive priority from the Staff Branch. In this regard a review was completed of all statements of duties to ensure that they adequately reflect the responsibilities and duties of each position.

. . . the aim is to develop policies which lead to maximum job satisfaction, provide appropriate training, develop skills and acknowledge and reward achievement. Corporate Plan—Policy 4, Staffing.

Records Section: The records system was reviewed and advice sought from the Records Management Division of the Premier's Department concerning suggestions for the improvement of the Museum's records storage and retrieval procedures. These suggestions are being, and will continue to be, progressively introduced as and when staff are available to carry out the work involved.

Building Works: Building construction and maintenance works are undertaken and funded by the Public Works Department. Major works included the continuation of the redevelopment works (Stage 1) in the former Stone Store basement area (North Wing), completion of facilities for the disabled and redevelopment, including provision of a mezzanine floor, in the Palaeontology Store (South Wing).

Documentation was undertaken in connection with the redevelopment of Stage 2 of the former Stone Store and the former Benthic Building (part of the old Child Welfare buildings).

Office of Community Relations

It is the aim of the Office of Community Relations to forge enduring links between the public and the Museum by disseminating information about the Museum's purpose and activities, and to win increasing support in visitation and sponsorship. To this end links with every means of communication—press, television, radio, advertising and publications—must be fostered and strengthened, and good public relations must be the subject of constant vigilance. One of the most significant events for the section during the year was its complete restructuring and up-grading, expressed in a change of name from Publicity/Publications Section to Office of Community Relations. The change involved far more than the name: it entailed an addition to staff and the up-grading of some positions. The full impact of these improvements is expected to be felt in the coming financial year, with better service to the public the hoped-for achievement.

Publications: The new design for *Australian Natural History* magazine was utilised with the production of the first issue of Volume 20, which was published in August 1980; by the end of the financial year another three numbers had been produced. The increased use of colour and more general appeal of the new design has been well received. Despite some changes in personnel in the section, and difficulties arising from this, the publication of *Records of the Australian Museum* proceeded and Volume 33, Nos. 1–3, 4–5, and 6–9 reached the printer. Four issues of the quarterly brochure *What's Happening* were produced and with each issue a new design was tried until the final format was achieved by March. The final design has been well received. The 1981 Calendar featured the very colourful opisthobranchs but although it was highly attractive and unusual it did not sell as expected. Better marketing and promotion may be the answer for future calendars. A *Venue Museum* brochure was produced as a joint effort with TAMS and Exhibitions. The brochure advertises various rooms and galleries within the Museum as function rooms for hire and is being distributed widely by the Society.



Volume 20 introduced a new design for Australian Natural History. The addition of more colour, a centrefold and a number of new regular features is hoped to widen the magazine's appeal. Photo J. Fields/Australian Museum.

Other publications of note were the 1979–80 Annual Report in new format; the press kit for the reception of Japan Foundation Suntory Ltd donation; *Camden Haven Wildlife Refuge Report*, and *Sunday at the Museum* handbills.

Publicity: A great proportion of the Museum's publicity effort is waged through advertisements and this was enhanced by a considerable increase in the allocation of funds for this purpose from the Premier's Department. This was obvious to many as advertisement frequency increased and, for the first time, the controversial *Stuffed with Life* slogan was accepted by the Transport Commission to appear on Government buses. The 'Awareness' Exhibition, opened in January 1981, was particularly successful in attracting media interest and for the first time a media preview was held before the official opening. The exhibition was more interesting than usual to the media because it was not entirely static and provided opportunity for viewer-participation in many sections. For similar reasons the mineral sale in September 1980 gained excellent response from the media: day-time photography and interviews of this

event took place throughout the course of the five-day sale and the event was a scene of constant activity. A new *Treasures of the Museum* exhibit was opened in March 1981 by the Honourable Eric L. Bedford, Minister for Planning and Environment. This function also covered the presentation of the first of the Museum of the Year Awards, initiated by the Museums Association of Australia (N.S.W.). However, because it was impossible to organise a media preview in daylight and the

Good public relations are the heart of success of any organization involved in the community . . . A museum must be pleasant to visit and the people working in it capable and polite in their dealings with the public, clients and related organizations. An effective public relations effort concerns everyone . . . performance by staff groups and individuals must aim for continued improvement of the Museum's public standing. Corporate Plan—Policy 21, Public Relations.

finished exhibit was difficult to later photograph through glass, very little media coverage was obtained. Another particularly disappointing event in terms of media coverage was the presentation by the Japan Foundation of \$250,000 for Lizard Island from Suntory Limited. Although for the first time the Australian Information Service was invited for a Museum event



Media preview for the 'Awareness' exhibition. This is the first exhibition for which such a preview has been held. Photo J. Fields/Australian Museum.

and gave good overseas coverage to the matter, this significant donation received practically no mention by the local media, despite the fact that a large, well established outside public relations company had been briefed by the principals to handle the publicity. Particular effort is needed in future to encourage the reporting of such generous gifts. The marine Invertebrate Gallery, an extension of the Marine Hall, received quite diverse and satisfactory attention from the media, due mainly to the efforts of the newly appointed publicity officer.

Other items covered by the media were: the preparators' exhibition; features on visiting Curator Eugene Gaffney and the hunt for horned turtles; the Camden Haven Wildlife Study sponsored by Pete Smith; the 1981 Calendar; the Jade presentation to the Museum by Unilever Australia Pty Ltd; Museum curiosities, a Women's Weekly feature by Keith Smith and various media interviews of science department members, especially on the ABC Science programmes.

Museum Shop: The Museum shop had a particularly successful year with a total takings of \$202,000. Direct counter sales accounted for \$172,919, an increase of over 50 per cent. An increase in staff in this area combined with improved management and shop layout undoubtedly contributed to this. There was some reduction in mail order and distribution sales.

The publication program of any museum is one of the most important activities. The Records and Memoirs of the Australian Museum and the Australian Natural History magazine, are of significance in the interpretation of exhibitions and in providing an ongoing source of knowledge. It is necessary to increase the range of publications to cater for diverse community demands and to enhance public understanding and appreciation. Corporate Plan—Policy 23, Publications.

Staff: There were many changes to the staff during the year, some as a result of new positions and others due to resignations. Barbara Purse continued as acting head of the section until Susan Quirk returned on a part-time basis in November; they then shared the position for the rest of the year. Dr Dennis Campbell and Ms Leah Ryan resigned and were replaced by Mr Roland Hughes as editor and Ms Virginia Richmond as

editorial assistant. Mr Tony Bishop was employed on a casual basis to edit *Records*, a task he has executed particularly well. The newly created position of publicity officer was filled by Stewart White.

Overcrowding remains a grave problem and militates against full and efficient work performance. Nevertheless, staff members have applied themselves to the work with enthusiasm and, despite the difficulties, have given very creditable performance during the year.

The section once again is particularly grateful for the efforts of Mrs Erica Hepburn and Mrs Elizabeth Parer, volunteers who sacrifice their own time to assist with essential, often tedious tasks. Work experience students and young people from the State Youth Employment Training Program have all given valuable aid to the work of this section during the year.

Education Section

The main aims of the Education Section are to provide educational programs which create interest in the subject matter; communicate knowledge and develop attitudes consistent with the Museum's fundamental purpose.

A major review of the work of the Education Section was undertaken by a group comprising Dr Brian Low, Education Department, Macquarie University; Mrs Kristine Klugman, Museum Trust; and the Museum Director, Dr D. J. G. Griffin. Recommendations resulting from this review are still being finalised. During the year, we joined with other organisations in giving special attention to Heritage Week, Senior Citizens Week, International Year of the Child and International Year of Disabled Persons, providing activities related to the particular needs of each group.

School Groups: The total number of school groups attending lesson programs organised by the Education staff was 806, comprising some 36 000 pupils, while approximately 1 440 classes (43 200 pupils) visited the Museum without appointment. For the latter, some were supplied with background information and sample worksheets to assist their studies.

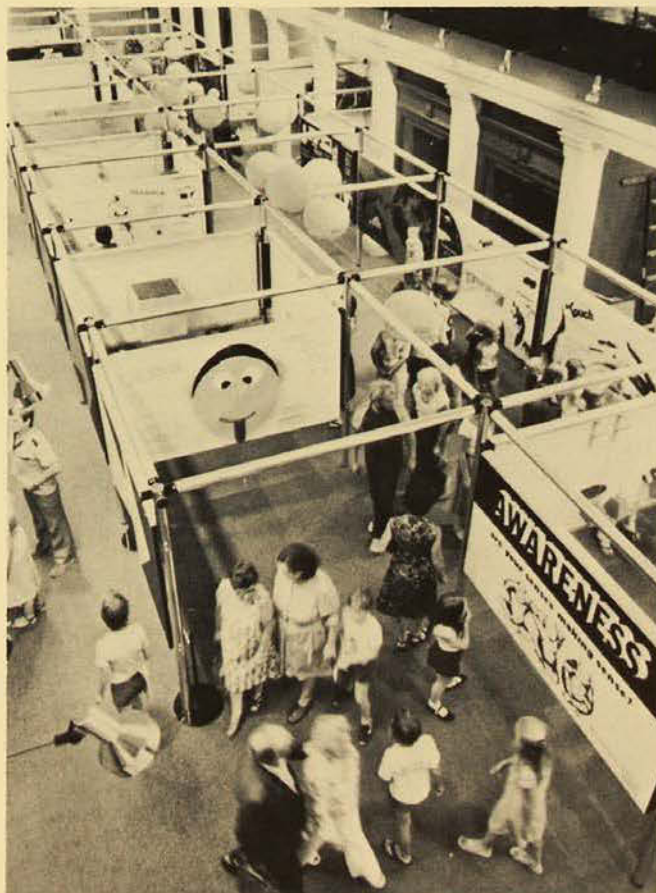
Peer teaching (children teaching each other) has continued to develop and is seen as particularly valuable for talented children who are frequently disadvantaged by lack of enrichment in their classrooms. Four sessions were conducted over the year involving a total of 165 children as peer teachers from 17 primary schools. Children use gallery displays, speak with scientific staff and borrow specimens from the Museum's teaching collection to use as the focus for their lessons in school. An important aspect is follow-up work, including a visit by the whole class to the Museum. Peer teachers have presented their material to other classes, to Parents and Citizens meetings and to groups of senior citizens. Development of the program by Dr Glenn Hunt has benefited from close

liaison with Ms Robyn Lilienthal, Consultant in Education for Talented Children, NSW Department of Education. With her help an audio-visual guide is being prepared to assist both class teachers and peer teachers.

Some 64 High School students participated in the Work Experience program. Selection procedures have been made more rigorous to ensure positions are available for those most keen on pursuing a later career in museum-related fields. A brochure prepared to guide school Careers Advisors is being used by the NSW Department of Education as a model for other employers.

Teacher Trainees and Inservice Courses: Demonstration lessons and lectures on the Museum's educational facilities were given to groups of trainee teachers from Colleges of Advanced Education as well as assistance to individual trainee teachers. A pilot program was conducted with two groups of students from Sydney College of Advanced Education. Each

A Tastorama, Snifforama, Hearama, Feelorama and a Peeporama, were some of the 'fun' experiences visitors were invited to try at the 'Awareness' exhibition which precisely described the five human senses. This exhibit represented a complete break from formal museum exhibits and allowed full visitor participation. Photo John Fields/Australian Museum.



group of students made four visits to the Museum, to prepare and give a lesson, with follow-up activities. This proved most useful to the students, the Museum Education staff and the children involved. Ms Anne Saunders conducted an Inservice course for teachers on the use of the Wandervan as a resource in schools for the handicapped.

Adult Education: Various groups of adult students—migrant classes, engineers, museum studies—were given specific lectures on various topics and one student, Ms Vanessa Mack, from the Museum Studies course at the University of Sydney, spent one day a week for two terms doing evaluation studies on work sheets. Mr Phillip Gordon, Aboriginal trainee, spent a further four weeks studying our programs. Lectures were given to many community organisations.

With the Workers' Educational Association, a very well attended course on *Arid Australia* was organised by Ms Patricia McDonald, involving both Museum staff and outside lecturers and a field trip to Round Hill Nature Reserve. *Geology of the Sydney Region* was organised by Mr Miller, with lectures by Dr Hunt and Mr John McDougall. This popular course was followed by a Springboard course *Basic Steps in Natural Science*, which has just commenced.

The Education Centre continues to be the meeting place for a variety of local scientific and other societies and was the venue for the Sydney International Photographic Exhibition.

Extension Services continued to be a primary activity of the Department.

School Loan Travel Cases: During the year, 576 loans of travel cases, prepared and organised by Mr Roger Inder, were made for both metropolitan and country schools. The new cases on *Reptiles* were put into service and well received; specimens are needed to complete two of them. Plans are in hand for new cases on *The Maoris of New Zealand*. Stage I of the proposal to increase production of Travel Cases commenced with the appointment of Ms Angela Burrows as Education Officer and Mr Huw White as Preparator to design and construct six new cases to serve as prototypes. Stage II will begin next financial year with the production of five copies of each prototype. The topics for the new cases are Bats, Introduced Birds, Spiders, Aborigines of Arnhem Land, Seashore Life, and, Papua New Guinea—the Abelam people.

Museum on the Road: Two exhibitions—*Arid Australia* and *Man—a Peculiar Primate*—were taken initially to the Upper Hunter Region in the latter half of 1980 and in early 1981 to Tamworth, Armidale and the mid-north coast. In most areas, their reception was good although response from local teachers was variable. *Life in the Sea* continued to circulate through the outer urban areas of Sydney and *Story of the Earth* was placed in a number of new venues closer to the city because this exhibition does not, for the most part, duplicate material on display in the Museum. Modifications to the program included changes to the moving crew, more reliance on assistance from the venue and

changes in the times of Museum Talks to teachers, in an effort to elicit a better response. Total attendance at the four exhibitions is estimated at 69 300, to which must be added a possible 40 000 at each of two shopping centres—Arndale and Warriewood—a figure based on the management estimate numbers of shoppers during exhibitions periods. Following the resignation of Mr Wilson in August, 1980, the organisation of Museum on the Road was taken by Mr McDougall, with the able assistance of the efficient moving crew Messrs Wayne Rixon and James Rusten. The arduous task of preparing for publication the visitor survey results obtained by Mr Wilson in 1979 was undertaken by Ms McDonald; this work is nearing completion.

Australian Museum Train: The Train has now completed nearly all of its country rail tours of the State. Train Education Officers, Messrs Quinn and Weeks, who joined the staff in September, 1980, are making preparations to cover the remaining country areas and some urban areas and planning is underway for a new exhibition to replace the existing displays. On tour for 226 days and travelling over 6 000 km to 22 centres, the Train was visited by some 67 000 people, of whom 32 600 were children in classes for 307 schools. Experience supports a lesson time of one hour's duration; this was maintained with a slight subsequent reduction in the overall numbers compared with last year's figures. As always, special thanks are due to the State Rail Authority who maintain the carriages and cover haulage costs and to the NSW Department of Education who co-ordinate the school visits at each stop.

Wandervan: This year has again been very busy for the Wandervan, a specially equipped van sponsored by the Bank of New South Wales for the education of the handicapped. A total of 5 750 handicapped children and adults were visited from 130 schools and institutions. This number includes 470 country children visited during three successful field trips—two to the South Coast and one to the Central Tablelands. Bearing in mind the theme of 1981's International Year of Disabled Persons *Full Participation and Equality*, many groups of disabled people have been encouraged to pay visits to the Museum, both to participate in school lessons and to visit the galleries. This has had a pleasing result with a total of 120 handicapped school children receiving lessons in the Education Section since February 1981. As a consequence, greater emphasis on a series of visits by the Wandervan for more severely handicapped people has been possible.

Drop in After School: This activity program for children in Sydney's inner city area has continued to operate on three afternoons per week at the Museum and two afternoons per week in the out-reach program in schools and activity centres. The Museum Trust took over the funding of Drop In from July 1980 when the Bernard van Leer Foundation ceased its sponsorship after three years' support. Drop In was run by Ms Pamela Batters (Head Tutor) with Mr Ross O'Donoghue assisting. Ms Faulkner-Dick took over responsibility for overall organisation from Dr Hunt in August, 1980.



Above: Detail of the exterior of Haus Tambaran which will be a feature of the new Abelam gallery now in preparation. Photo: Howard Hughes/Australian Museum.



Right: Field work in Papua New Guinea for the Abelam Gallery enabled Museum photographers to capture many intimate studies of the Abelam people, such as this mother and child photo in Apangai village. Photo: Howard Hughes/Australian Museum.



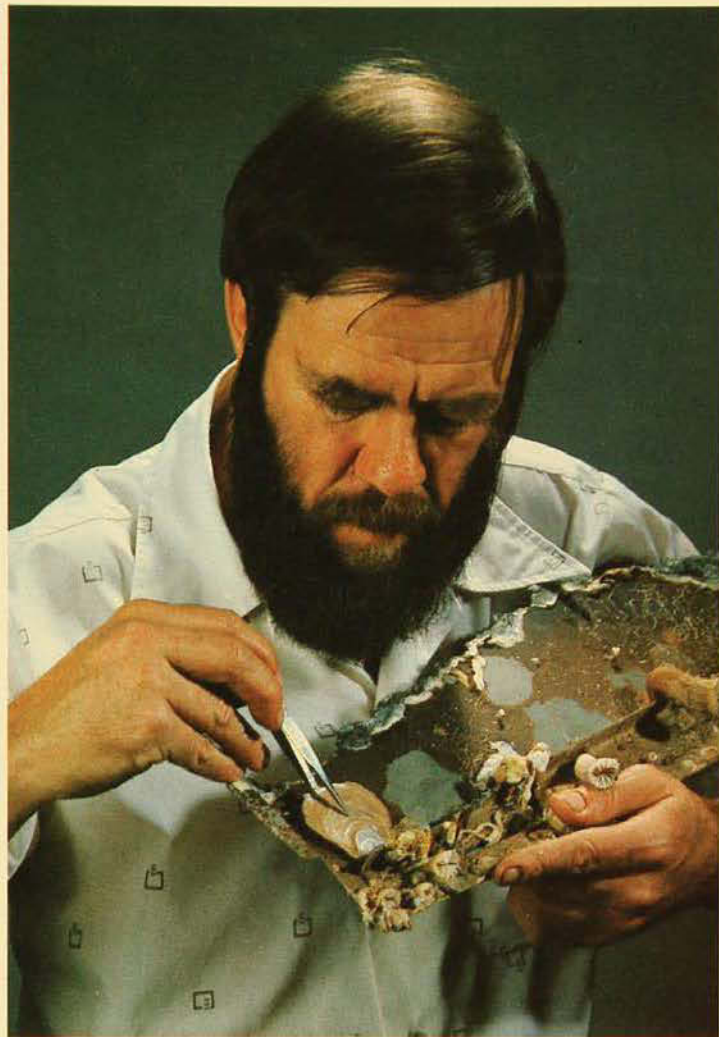
Bottom Right: Abelam men weaving the paraphernalia for a spirit cult carving in Apangai Village, East Sepik Province, Papua New Guinea. The Australian Museum commissioned a spirit cult scene and Haus Tambaran from this village. Photo: H. Hughes/Australian Museum.

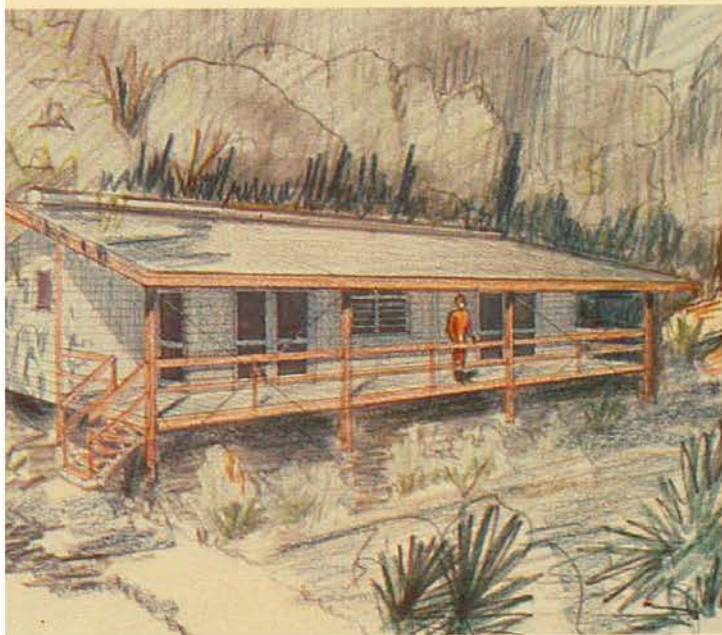


Facing: Ecologists of the Australian Museum have been studying the effect of 'prescribed burning' on insects which live in forest leaf litter. These animals play a vital part in breaking down the litter and providing nutrients for the plants. Here, one of twelve plots selected for study in a State Forest, is burned after the animals in the area had been counted. Further counts will be made for comparison and to determine what population recovery may occur. Photo: T. Kingston/Australian Museum.

Right: Unexpected and exciting discoveries sometimes come the Museum's way by accident. Phil Colman, Technical Assistant, is shown examining a living representative of a group of molluscs which were thought to have died out about 65 million years ago. This specimen, one of about fifteen known as *Foramolina exempla*, was found on a World War II junked plane accidentally trawled up off Sydney. Photo: J. Fields/Australian Museum.

Below: Photo-micrographs of small (5-8 mm length) amphipod crustaceans using techniques developed in the Department of Crustacea to provide an accurate colour record of the small crustaceans of eastern Australian waters. *Leucothoe commonsalis*, (top) and *Parawaldeckia* sp. Photos: Roger Springthorpe.





Above: Sir Edmund Hillary's address entitled 'From the Ocean to the Sky' proved one of the most popular of TAMS functions during the year. He described his trip up the Ganges. Dr Jim Hazel, President of the Society (left) introduced Sir Edmund to a capacity crowd at the Hilton. Photo: Courtesy TAMS.

Top Left: An architect's perspective of one of the new buildings planned for Lizard Island Research Station on the Great Barrier Reef. Several generous donations including \$250,000 from the Japan Foundation/Suntory Pty Ltd has made it possible to plan for up-grading the Station. Photo: J. Fields/Australian Museum.

Centre Left: On location at Mornington Island. Howard Hughes (second from left) discusses the making of the film *Dugong! Dugong!* with some of the Aboriginal members of the cast. The film, sponsored by the Aboriginal Arts Board of the Australia Council, is a documentary on hunting the dugong. Photo: J. Fields/Australian Museum.

Lower Left: On tour for 226 days, the Museum Train this year stopped at 22 centres in the State. Some 67,000 children and adults visited the Train. Special thanks are due to the State Rail Authority which provides maintenance and haulage, and to the NSW Department of Education who co-ordinate school visits at each stop. Photo: Terry Quinn, Education Department.

Specimen Preparation: A total of 47 vertebrates, 70 invertebrates and six artefacts were prepared for teaching purposes. Approximately 60 specimens required repair, mainly due to the intense usage and travel fatigue on the Museum Train and Wandervan. Two features of the year were the acquisition and subsequent preparation of a large collection of invertebrate specimens previously used in the galleries and the preparation of six Tasmanian Devils obtained through the Tasmanian National Parks and Wildlife Service. Three school holiday programs and an Education Week display were mounted. The former involved making 40 Aboriginal message sticks, boiling and cleaning thousands of bones, making flavoured paper test squares, constructing heated shapes behind a board and making wooden 'sound boxes' each containing a different solid shape. This work was carried out by Mr Miller.

School Vacations: Special exhibitions and activities were held in each of the three school vacations: *Bones* in August–September, 1980, *Awareness: are your senses making sense?* in January, 1981, and *Making Music* in May 1981. These activities attracted a total of some 9 500 people.

The Museum's education policy aims to communicate knowledge, create interest and develop attitudes in the field of natural history and prepare programs for various sections of the community. These must provide for children and all other age groups and sections of the community programs which actively communicate knowledge, help to create interest and develop attitudes consistent with the Museum's aim . . . Corporate Plan—Policy 18, Education.

Museum Walkabout question booklets were completed by 328 young people; 13 students completed the Walkabout series, received their LIFE Nature Book—donated by TIME-LIFE International (Australia) Pty—and joined the Discoverers' Club. Six Club meetings and one field trip were held during the school holidays. Discoverers worked in various Museum departments in the January and May school vacations. The Discoverers' Society, the senior group, met nine times. Discoverers helped the Committee in charge of the Royal Botanic Gardens Pyramid Appeal to launch their fund-raising by building and sailing a papyrus reed boat in Sydney Harbour. In May, 1981, members went on a field trip to Carrai Bat Cave and New England National Park to assist Dr Hunt in collecting harvestmen and other spiders.

A course for Senior Secondary students on *Classification* was run by Ms McLeod in conjunction with Taronga Zoo and the Royal Botanic Gardens. This week-long course included a field trip to Field of Mars Reserve, Ryde, as well as practical sessions and visits behind the scenes of each institution.

Three Family Field Trips to *Discover Water Birds* were organised by Mr McDougall during the May, 1981, vacation. The response to these one-day trips, led by

ornithologist Terry Lindsay, was overwhelming and a number of families could not be accommodated.

Sunday at the Museum: As part of the Sunday at the Museum program, various Museum related activities have been provided for families to enjoy. These included digging "fossils" out of rock strata (cement), painting Easter eggs in traditional style, constructing Eskimo igloos and making seaweed prints. Activities were co-ordinated by Ms Faulkner-Dick and run by Ms Batters with three casual helpers.

Special Activities and Displays: In August, Education Week was marked by a display of models, dioramas, posters and charts made by children from Summer Hill Public School. These were shown in the Education Centre and left on exhibition through the ensuing school holidays.

In October, Children's Week was celebrated with a variety of activities including peer teachers from Chatswood and Strathfield South Public Schools talking to visitors in the Long Gallery, demonstration lessons with pre-school children from Canterbury Day Care Centre, the Brass Band from Engadine Public School and film sessions arranged by the Australian Council for Children's Films and Television. Both weeks were organised by Ms Maguire.

In September, a two-day course for high-ability children was provided for members of the Society for Gifted and Talented Children. The course comprised specific activities and field work on the study of Aboriginal Life.

An exhibition of winning entries in the UN Association of Australia Junior Media Peace Prize were shown in the Education Centre during January. The presentation of the prizes was made at this exhibition. These special activities were organised by Ms McDonald.

The final script for the Museum's Audioguide was completed by Ms McDonald in October and the system was put into operation in December 1980.

On 18 May, International Museum Day, children were invited to special *Making Music* sessions, where they learned to play *anlung* and *gemelan* instruments under the guidance of Indonesian musicians. This was organised by Ms Faulkner-Dick.

Van Leer Scholars: Ms Jacqueline MacIntosh is the last of the six scholars to be supported by a grant to the Museum from the Bernard van Leer Foundation. Ms MacIntosh obtained a BA in Psychology and a Diploma in Education. She intends to study for a Master of Education and follow a career in teaching.

Exhibitions: Education Officers have been associated with the production of the following exhibitions: Marine Invertebrate Gallery, Treasures of the Museum (Ms McDonald); Mammals in Australia (Dr Hunt); Insect Gallery, *Awareness: are your senses making sense?* exhibition (Ms McLeod, Ms Saunders); Bird Gallery (Mr McDougall); Australian Aboriginal Gallery, Abellam Gallery (Ms Faulkner-Dick); Genesis of Australian Flora (to coincide with the International Botanical Congress) (Mr Wilson).



Conferences: Ms McDonald attended the 12th General Conference of the International Council of Museums in Mexico City in October/November, 1980, and the Hunter Valley Historical Society Conference at Gosford, March 1981. Papers were given at both conferences. All Education Officers attended the Annual Conference of the Museums Association of Australia in Sydney in October, 1980, and the meetings of the Sydney Museum Education Group held in Sydney at various Museums every two months. Dr Hunt attended meetings in Moruya and Port Macquarie convened to establish regional chapters of the Museums Association of Australia (NSW Branch). Ms Faulkner-Dick attended the Conference of Museum Anthropologists at Shepparton, Victoria in November, 1980. Mr P. R. Miller attended a Forestry Conference in Melbourne in November, 1980. Mr D. M. Millar and Mr Inder attended the Conference of Museum Preparators at the Museum in October, 1980, and contributed to a display of preparators' work.

Staff Activities: Ms McDonald attended the meetings of the following professional committees or councils of which she is a member: Board of Studies for the Museum Studies Course, The University of Sydney; Museums and Galleries Committee of the NSW Cultural

Lin Sutherland Curator of Mineralogy, explores the world of volcanoes with children attending the Museum's after school program 'Drop-In'. Photo John Fields/Australian Museum.

Grants Advisory Council; Education Committee of The National Trust of Australia (NSW); Museum of the Year Awards; Women's Liaison Officer; Vice-President Australian National Committee for ICOM; Museum Education Association of Australia; Don Bank Museum Trust. Dr Hunt served as Vice-President on both the Council of the Museums Association of Australia and the Committee of its NSW Branch. Dr Hunt and Ms McLeod organised the Annual Conference of the Museums Association of Australia held in Sydney, October 1980. Ms McLeod is a Committee Member of the NSW Branch of MAA and Branch representative on MAA Council. She represented the Museum on a Forum called by the Premier to investigate and recommend action on Environmental Education in NSW. Ms McLeod is a member of Museum committees on Staff Induction, Museum Seminars, and Australian Natural History magazine management. Mr McDougall is on the Council of The Australian Museum Society. Ms



Participants in the Peer Teaching program, Sarah Roberts and Kathy Hope of Neutral Bay Public School, teach their class mates, using a spiny ant-eater specimen borrowed from the Museum. Photo John Fields/Australian Museum.

Faulkner-Dick is the Honorary Secretary of the Don Bank Museum Trust. Ms Maguire represents the Museum on the Children's Week Committee.

Staff Changes: The sudden death of Ms Maude Tyler on 15 December was a great sorrow to us all; Ms Tyler had resigned as a part-time Education Officer in May after 12 years service. Mr E. J. Wilson, Education Officer, resigned after nine years at the Museum; Ms Carolyn Faulkner-Dick joined the staff in August, 1980. Both the Train Education Officers, Mr P. R. Miller and Mr J. E. Dengate, resigned and were replaced by Mr T. G. Quinn and Mr K. S. Weeks. Mrs Angela Burrows and Mr H. White joined the staff for six months to produce new school loan travel cases. Ms Ann Brown, Typist, resigned on 29 May and has not been replaced at 30 June.

Overseas Study Tour: Ms McDonald visited museums in south-west USA to study their volunteer training programs, organisation of extension services and museum education activities in general. This tour, from 18 October to 17 November, 1980, included attendance at the 12th General Conference of the International Council of Museums in Mexico City.

Acknowledgements of co-operation: New South Wales Department of Education; National Parks and Wildlife Service; SCEGGS, Darlinghurst; Ms Robyn Lilienthal, NSW Department of Education and, Mr Martin Mather, Paddington Public School.

Donations: TIME-LIFE International (Australia) Pty Ltd, Sydney.

Overseas Visitors: Dr Eustace Mendis, Ontario Science Centre, Toronto, Canada; Ms Cecilia Kave, Cook Islands Museum; Mr Anthony Ogg, Commonwealth Institute, London; Mr Sawat Chongkole, Department of Education, Bangkok, Thailand; Professor Zheng Zuoxin, Institute of Zoology, China; Dr Zhang Wensong, Chinese Museums Association, China; Dr Xu Weishu, Beijing Museum of Natural History, China; Dr Yu Jiahuang, Shanghai Museum of Natural History, China; Dr Liu Shengli, Tianjim Museum of Natural History, China.

Exhibitions Department

A regular program of gallery renewal remains the major priority of the Exhibitions Department. A new gallery *Invertebrates of the Sea* and substantial progress with the *Mammals in Australia* gallery are among the main achievements of the year. A varied program of interesting temporary exhibitions was shown and progress made on improving the standard of facilities for the public, particularly the disabled.

Mammals in Australia—Gallery Renewal: By the end of the financial year an exciting new gallery was nearing completion and an official opening in early September 1981 was being planned. Collection of specimens and diorama material was completed during a major two-week field trip by preparators through southern NSW during February 1981.

In April 1981 the project's initiating designer Ms Elizabeth Juska resigned to take another position and Mr Bob Ross-Wilson took over the task of guiding this project. It is significant that many of the exhibition staff involved in the Mammal gallery are comparatively new while the quality and verve of the presentation promotes exciting possibilities for future projects. The production of this outstanding new exhibit and a subsequent Museum on the Road exhibit has received the generous support of the State Bank of NSW.

The Abelam Gallery: Field work in conjunction with the Anthropology, Conservation and Photography departments was successfully completed at the beginning of the year. Artefacts, decoration and house building materials were collected in readiness for the exhibition. In July another field trip by preparators was undertaken to New Guinea to collect animals for part of the display. This exhibition is sponsored by Unilever Australia Ltd.

The Aboriginal Gallery: Some development of outline proposals was made during the year. The project awaits appointment of an Exhibitions Officer and Artist. The exhibition is sponsored by BHP.

Mineral Gallery: A new locking system was installed for the centre cases. The Broken Hill display was completed and work is continuing on exhibits showing minerals from Australia's states and territories.

Invertebrates of the Sea: Stage II of the Marine Hall was opened by Professor Donald Anderson, FRS, on 2 June, 1981. The exhibition is a boldly coloured presentation of marine invertebrates represented in models, photography, embeddings and wet-box mountings. Preparation work was principally undertaken by Mr Michael Dingley and Mr James Hood, whose creative skills are so very evident in the exhibit. Live specimens are shown in an aquarium and the design assistance from Taronga Zoo is greatly appreciated. The imaginative graphics used in the exhibit were the work of artist Ms Sally Robinson assisted by Mr Glen Ferguson. Ms Robinson also took over management of the project in its final stages releasing Mr Ross-Wilson for the Mammal Gallery.



Preparing an exhibit entails attention to a multitude of detail. Preparator Jim Hood uses an industrial vacuum cleaner to remove dust particles from newly moulded areas of a setting for the new *Mammals in Australia* gallery. Photo J. Fields/Australian Museum.

Birds in Australia: Introductory cases were installed under the direction of Mrs Margaret Stewart who resigned in March 1981. Ms Robin Sim joined the department as an Exhibitions Officer and assisted by Ms Louise Calcutt, developed designs for the taxonomic display, due for completion next year. Extensive mock-ups were prepared to prove all aspects of the design before contract specifications were released.

Invertebrates of Land and Freshwater: Specifications were completed and a contract let for the manufacture of balustrade cases overhead and above the Long Gallery. Collection of specimens was hampered by drought conditions experienced throughout NSW.

Temporary Exhibitions—Awareness—Are your senses making sense? Are your ears on straight? Can you believe your nose? Do your eyes deceive you? How do you feel? Is life rather tasteless? The answer to these intriguing questions was found in the Long Gallery from January to the end of May. Visitors were able to try out the five human senses at a Tastorama, a Sniff-

orama, Hearama, Feelorama and a Peeporama. This popular display was a striking departure for the Australian Museum as it consists of a series of demonstration sections in which each of the five senses was tested by mechanical and other means, including a small live animal exhibit. Awareness was designed by Exhibitions Officer Mr Jeffrey Freeman and Artist Ms Mary Socratous. Consistent with Museum policy the exhibit was offered to other Museums and will be shown in Brisbane, Adelaide and Melbourne returning to Sydney in 1982. The excellent exhibition structure was generously loaned by the Federal Department of Administrative Services.

Treasures of the Museum—Continued as a changing display in the College Street foyer showing exotic items from the collections. The first was a fascinating selection of North American Indian artefacts from four

major collections. Masks, basketry, pottery and clothing were exhibited. Some pieces were more than 150 years old.

Heritage week in March saw the opening of another Treasures Exhibit; the centrepiece was a rare and brilliantly hued feather cape, presented to Captain Cook when he visited Hawaii in 1779. Other Cook treasures were shown as well as nineteenth century artefacts of Australian origin.

This exhibit was augmented by a display of winning entrants in the 1981 Museum of the Year Award, organised by the Museums Association of Australia (NSW).

Tangata—Presented in the Long Gallery during June, Tangata (Mankind) was a travelling exhibition of coloured photographic studies of Maori artefacts. Photographer Brian Brake was commissioned by the New Zealand Ministry of Foreign Affairs to produce the works for a world-wide tour. The 33 works illustrated tools, weapons, domestic articles, musical instruments, burial chests and nephrite pendants. Some Maori artefacts from the Museum's collection were also shown as part of the exhibition.

Tangata (Mankind)—a travelling exhibition of coloured photographic studies of Maori artefacts—was presented in the Long Gallery in June, during its world-wide tour. Photo John Fields/Australian Museum.



Areas for the Disabled: As a contribution to the International Year of the Disabled facilities were installed for the convenience of disabled visitors. An inclinator platform and special toilet facilities were completed. Construction of an access ramp along the William Street frontage should be completed during 1981.

Visitor Seating: Gallery and foyer seating throughout the Museum was upgraded by the installation of new fully upholstered bench units. New seating was also installed in the Arid Zone Gallery theatre.

Preparators Conference: Sydney hosted the 1980 Museums Association of Australia Annual Conference. A mini-conference was arranged for preparators by their colleagues at the Australian Museum and was held for two days before the main event. Seventy people took part, fourteen papers were delivered, preparation and conservation facilities at the Museum were inspected and a lively interchange of techniques was achieved.

Skill, artistry and innovation are part of a preparator's stock-in-trade. An exhibit of the preparator's techniques and achievements captured the attention of visitors to the Museum. The exhibit was held in conjunction with a first-ever nation-wide conference of preparators. Photo J. Fields/Australian Museum.



Orest Keywan, preparator, at work on a giant crab specimen for the Marine Gallery. Photo J. Fields Australian Museum.

A public exhibition called 'An Exhibition in the Making' was staged in the Long Gallery showing many different examples of the preparator's art. A small trade fair was also held to acquaint participants with materials and services available commercially.

Barrier Reef Display: Ms Sally Robinson and Mr Glenn Ferguson lent their skills to the Great Barrier Reef Marine Park Authority to produce an exhibition for the windows of Queensland House in London. The exhibit was completed in February 1981 and flown to the United Kingdom.

... space is urgently required for laboratories and storage of collections, and must be developed for activities of staff and visiting scholars, and for storage of collections ... consistent with the overall development of the Museum ... Corporate Plan—Policy 7, Space for Non-Public Activities.

Staff Activities: Mr Michael Dingley, Mr David Beeman and Mr George Hangay formed the organising committee for the MAA Preparators Conference. Mr Bob Ross-Wilson was appointed a Councillor to The Australian Museum Society and was a member of the Revenue Generation Committee. Ms Elizabeth Juska was appointed to the committee of the NSW Branch of the Museums Association of Australia Ms Mary Socratous was a member of the Equal Opportunity Committee. Ms Jan Powell gave special assistance to the Museum's Shop.

Mr Rob Joyner acted as a judge for the Museums Association of Australia (NSW) Museum of the Year Awards and participated in the Trust's building Committee.

Mr Glenn Ferguson was a committee member of the Museum Staff Social Club.

Library

The monographs, periodicals and archival material held in the Museum's Library constitute a major source of specialised reference material, not only for research undertaken within the Museum, but also for the scientific and educational activities of many other organisations. It is our aim to maintain the collection in good order, to acquire new material consistent with established priorities an availability of funds, and to ensure that documentation and conservation procedures result in the optimum use of all library facilities.

This was not a year of major new projects and systems, but one in which we developed and consolidated systems and projects previously started.

Of prime importance was the appointment of a full-time cataloguer, whose major task was to reduce as quickly as possible the backlog of current cataloguing. It was decided that the most effective way of reducing the backlog and efficiently cataloguing incoming items was through the use of MARC computerised cards. Preliminary plans and systems have been detailed and the system should be in practice in the next financial year.

In an effort to correct deficiencies in our old records, work has been started on bringing the Periodicals Shelf List up to date. This is a time-consuming task and involves the amalgamation and checking of three sets of records. We are also in the process of rationalising all catalogue subject headings. As the headings appear to have been added indiscriminately without cross references, for decades, the process is not expected to be completed for some time.

Valuable Monographs Acquired: This year we purchased 364 monographs and received 336 monographic items by donation. Several of the items purchased were extremely rare and not held in any Australian Library. However, once again, the value of orders requested far outweighed the amount of money available. A priority system has been of help in ascertaining which items need to be obtained urgently, however it has been impossible to acquire even all those items urgently requested. Reviews of the need for all periodical subscriptions have been carried out and all subscriptions are continually reviewed. The periodicals subscriptions to which we are committed take up the major portion of our budget, and increasingly so due largely to high price rises rather than to any growth in the number of subscriptions.

Loans Demand Growth: As usual, our Interlibrary loans system was strained to the limit. Museum staff have been requesting more and more items and we have had to reduce our service to external institutions, i.e. internal requests take priority over external requests. During the year, 2050 external requests were received, and of these 1288 were for external clients. These figures are a 10 per cent increase on those for last year. With regard to internal Interlibrary Loan requests,

The Australian Museum of Natural History is the oldest Museum in Australia and is conveniently placed in the heart of Sydney. Modern additions are seen at the left. Space for its increasing and manifold activities is a major matter of concern.



761 items were requested—a 50 per cent increase on last year's figures. It is hoped that with the ever-increasing load in this area, the same high standard of service can be maintained with constant staff resources. At the same time, the irony of the situation is recognised, i.e. the high standard and efficiency of servicing requests leads to more and more requests.

Advances in Binding: Our binding programme shows a substantial increase over last year's figures, in the number of volumes bound—500 this year. Discussions have been held with the Government Printing Office's Binding Section, and it now appears that our backlog will be considerably reduced during the next year.

Hygiene Action: A concentrated effort to improve conditions in the Stack was made this year. These conditions relate to dust, dirt and insects. As there is no air-conditioning and little ventilation, the area is a prime breeding ground for fungi and insects. Regular programs of thorough cleaning and fumigation have been instituted, and almost all of the whole collection of books and periodicals have been meticulously vacuum cleaned.

Volunteers: This year we have had invaluable help from a number of volunteers, in the production of the weekly Periodicals Bulletin and also with interlibrary loans. This help in day to day tasks has allowed permanent staff time to devote to other projects of a long term nature.

Staff Activities: Various members of the Library attended a Library Association Conference on Interlibrary Lending, Seminars on Copyright, Staff Selection Techniques, Co-operative Networks, Equal Employment Opportunity and a 16 mm Film Projectors Course. These courses have been of great assistance in keeping us up to date in various fields of relevance.

Work on Visitor Profile: For some months the Library assisted in the compilation of a report on the Profile of Audiences of museums, performing arts and sports prepared by Ms Liz Laslett. All source material for the report was identified, located and obtained by the Library and the report mainly typed by the Library staff. The report consolidated and compared many surveys carried out in the USA, Great Britain, Canada and Australia and involved considerable effort on the part of all concerned in bringing it to successful completion.

Corporate Plan: In partial fulfilment of one of the aims of the Corporate Plan—to develop effective working relationships—the Library has co-operated with the Staff Section of the Museum in organising at regular intervals, the showing of short films pertaining to work related topics, and to the changing community social values, the arts and technology.

While consolidation and development of existing systems are most necessary, it is hoped that in the next year we will have the funds to attack with verve some of our outstanding problems.

Donations: Mrs Mary Sutnerland; E. L. Carthew.

Materials Conservation Section

The improvement of environmental conditions for the storage of ethnographic collections as consistently stated in the Corporate Plan is a major priority of the Materials Conservation Section.

Climatic Problems for Abelam Carvings: The treatment of artefacts for the new Abelam Gallery has been the laboratory's major project during the last year. Ms Sue Walston, who is supervising the project, spent five weeks at Apangai in the Abelam area of Papua New Guinea with other members of the Museum team, documenting the materials and technology used in the manufacture of objects. Where possible the artefacts were preserved before shipment back to Sydney.

Problems both in the field and after the objects had reached the Museum mostly concerned the very large painted wood carvings made from green timber. The anticipated problems of insect attack were successfully controlled by the use of insecticides during all stages of manufacture and shipping. However, no use could be made in the field of the drying and sterilising properties of sunlight owing to the viewing restrictions placed on secret and ceremonial material: the extraordinarily wet and humid conditions thus preventing any natural drying of the wet timber.

Once back in Sydney the green timber objects were placed in a plastic humidity tent to prevent any sudden loss of moisture from the timber which would cause severe cracking and warping. An accelerated seasoning schedule has been worked out to gradually dry the artefacts and bring them into equilibrium with the Sydney climate in time for the opening of the Gallery in early 1982. Considerable advice and assistance has been given by members of the Division of Wood Technology and the Forest Research Division of the Forestry Commission who also carry out measurements of moisture content required for monitoring the seasoning schedule.

In attempting to solve the cracking another problem was created: the high humidity caused repeated outbreaks of mould. The initial use of toxic fungicides to control this problem has now been replaced by irradiating the tent with germicidal ultra-violet light which is proving very effective.

Identification and monitoring of fungal problems and environmental conditions has been carried out by Paula Casey and Madeleine Say, while conservation treatments for the very wide range of artefacts, body ornaments and building components required for the display have been worked on by David Horton-James and Sue Phillips.

Mould Research: Paula Casey has undertaken detailed interpretation of the first stages of a mould research program. Isolation and identification of mould growing on the artefacts indicated that most of the species isolated belong to the xerophilic group of fungi, i.e. species specially adapted to growing in dry conditions.



Sue Frost with two volunteers from the Embroidery Guild, Heather Joynes and Nardine Turner, repairs the border of a Balinese painting using a lamination technique (project supported by Uncle Pete's Toys). Photo J. Fields/Australian Museum.

Furthermore, a relationship was observed between the species isolated, the material composition and the use of the artefacts. For example, *Asperigillus repens* and *Wallemia sebi* are the predominant species on wooden artefacts which have a greasy appearance. Additional experiments are being planned for 1981–82 to investigate this relationship.

An experimental system in which the relative humidity is controlled with saturated salt solutions is being developed, to evaluate the effect of equilibrium, relative humidity, and nutrients, on fungal growth. Pig fat and/or Pandanus oil are the nutrients being studied. These nutrients are an important part of the culture of the people of the Papua New Guinea highlands and it is evident on the surface of many artefacts.

An understanding of this relationship will improve the recommendation for the temperature and relative humidity most suitable for the long-term preservation of these artefacts.

Air-Treatment Plant: "While . . . many museums have installed air-conditioning, maintenance is, in general, bad to appalling to the extent of endangering the collections." (Thomson, G. *Climate Control Policy*, ICOM Committee for Conservation, Report 5th Triennial Meeting Zagreb 78/18/1/1/6).

Although the problem of storage conditions has received and continues to receive an excessively high proportion of staff, time and effort, very little has been achieved. The most urgent problem is the air-treatment plant associated with the Pacific Store collection.

The air-treatment plant for the Pacific Store collection was installed to provide stable conditions (57–62 per cent Relative Humidity, 19–21° C). However, the plant proved unreliable from the outset, giving a high proportion of conditions outside the specified requirements.

A detailed study was jointly undertaken by Paula Casey and Peter Rey to monitor conditions in three locations in the Upper Pacific Store for an extended period of time. The study showed that:

- there were periods of large fluctuations in temperature and relative humidity which were associated with malfunctions in the plant.
- the temperature and relative humidity varied throughout the store due to the inability of the plant to overcome the influence of external conditions on the building.
- microenvironments developed in areas where densely stored artefacts prevented exchange of air.

The results of this study coincided with the decision made by the Public Works Department that the existing plant could not supply satisfactory conditions. Recommendations were made that a back-up unit should be provided, together with modifications to the existing ducting. The implementation of this recommendation was scheduled for early 1981 but funds have not been provided and repairs are instead being made to the existing unit.

The collections represent . . . a resource, often irreplaceable, held in trust for present and future generations of Australians . . . To ensure the long term safety of the collections it is necessary to conduct a variety of research programs on . . . processes leading to deterioration of cultural items . . . especially its ethnographic collections, and to strengthen the Museum's position as a major source of knowledge . . . in materials preservation. Corporate Plan—Policy 12, Conservation of Collections.

This was a major setback and the cause of much concern to staff. There is no question that the conditions resulting from the malfunctioning plant are endangering collections. The persistent problem of mould growth on many artefacts is the most telling evidence.

Balinese Paintings: In 1976 and 1979 the Australian Museum acquired two major collections of traditional Balinese paintings from Professor Anthony Forge, and in 1980 Sue Frost was employed for 12 months to carry out work on the most damaged and actively deteriorating paintings. Conservation treatments ranged from surface cleaning, patching and repairing holes and torn edges and the chemical removal of iron stains, to more complex processes involving the removal of previous repairs and backings and complete remounting of paintings using adhesive lamination techniques. Many of the sewing repairs and backing work was carried out with the help of volunteers, chiefly Mrs H. Joynes and Mrs N. Turner. Assistance was also received from Mr R Kerthyasa.

A further objective of the project was to devise methods for the permanent storage of the collection. It has been recommended that the majority of paintings should be stored flat and wrapped in acid-free tissue. Some of the paintings due to their exceptional length such as the 'ider iders' should be rolled in acid-free tissue paper and wadding, and placed in wide cardboard tubes. Work on the most complex paintings has been completed, although there is an ongoing volunteer program of sewing repair work on the less severely damaged paintings. The project was assisted by the generous grant from Uncle Pete's Toys.

Bark Cloth Survey: The pilot survey of the Museum's Pacific bark cloth (tapa) collections, started in 1980 by Geza Marton, has now been completed and is under final review.

The aim is to establish accurate methods of obtaining quantitative information on the condition and composition of the collection, together with details of provenance and other cultural information. Where possible, measuring techniques have been adapted from the Australian Standards and include measurements of acidity, colour, flexibility, texture and thickness as well as all aspects of physical damage such as staining, abrasion, tears, etc.

It is hoped that an analysis of the data will provide a clearer indication of the nature of bark cloth deterioration and the possible association of materials and methods of manufacture with origin, age and storage conditions. The survey methods have been specifically designed to ensure that other museums housing bark cloth collections are able to carry out similar surveys, irrespective of budget restrictions of technical expertise, to obtain directly comparable information. It is anticipated that the full survey of the Museum's collection will begin in late 1981 or early 1982.

Help for Aboriginal Craft Communities: An urgent enquiry was received from Elcho Island seeking help on ways to prevent insect damage to Aboriginal carvings manufactured for sale. This is a common problem amongst the Aboriginal craft-producing communities of the Northern Territory and accounts for a very high proportion of stock loss. Experiments are now underway to identify the chemical and physical effects of "Pest Strips" on Aboriginal painted artefacts under humid conditions. Samples of binding media, wood, pigment mixtures and an Elcho Island didgeridoo are being exposed to different insecticide concentrations over progressive time periods. The results are being evaluated using pH measurements, subjective physical testing and scanning electron microscopy. Sue Phillips and Geza Marton have been carrying out most of the experimental work.

Malanggan Carvings: Mike Gunn completed a search of the anthropology literature for the purpose of identifying the traditional ways that the Museum's collection of Malanggan carvings from New Ireland and adjacent islands, had been used and stored and the methods and materials used for their manufacture. A full photographic record of each item in the collection

was made, together with a detailed description where possible, of the material composition and cultural significance of each item. This information will form the basis for preparing a detailed conservation program.

Although this project is high on the Section's priority list, a specialised conservation project of this material can only be carried out by a skilled conservator; recruitment of conservators is proving extraordinarily difficult.

Short Projects: David Horton-James has been responsible for a large number of short projects mainly associated with the treatment of objects for temporary exhibitions such as the Treasures Display Case and from the anthropological collection. These have included the damaged Hohan nephrite jade object, objects to accompany the New Zealand Tangata Photographic exhibition, and parts of the Easter Island and South American Collection.

Environmental monitoring has consumed a great proportion of time, especially in areas of the air-treatment plant problems and gallery lighting levels and design. David Horton-James has been responsible for the scanning electron microscopy for the Section's research work as well as an on-going investigation of ultra-violet absorbing films.

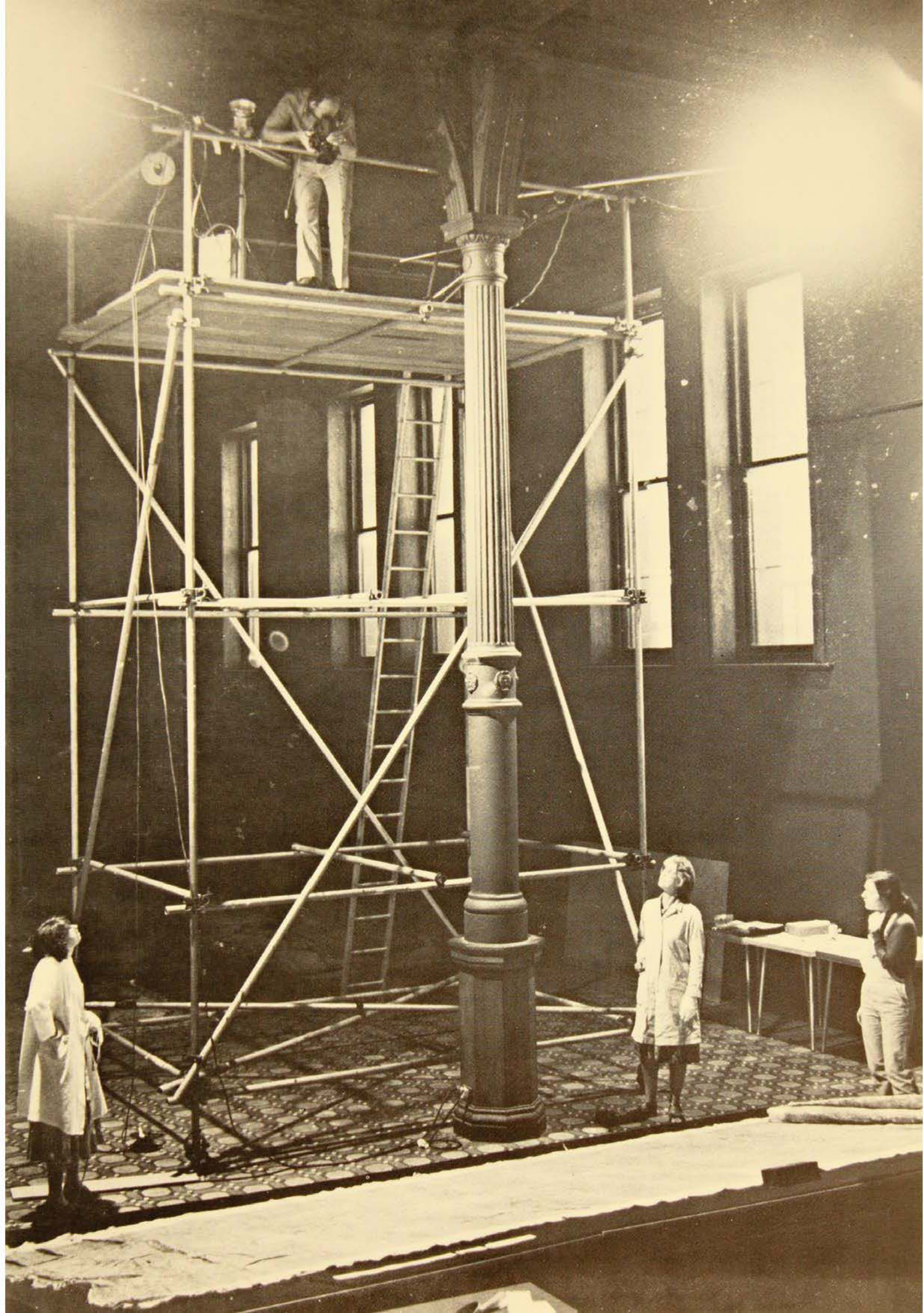
Students: A number of postgraduate, undergraduate and prospective students of the Canberra College Materials Conservation course and a student from the Sydney University Museum Studies Unit undertook short conservation projects in the laboratory as part of their course requirements. Projects included a literature review of the causes of deterioration, treatment and storage of film materials, examination and documentation of the history and condition of the Solomon Islands war canoe, and treatment of a decorated wood carving from Irian Jaya.

The students also provided assistance with various ongoing conservation work, particularly with environmental monitoring.

Staff Activities: Sue Walston has resigned as Senior Vice Chairman of the Institute for the Conservation of Cultural Material; she and Dr Paula Casey have been elected as Council Members; Miss Walston was appointed to chair the committee responsible for national conservation policy. She also represented the Institute for the Conservation of Cultural Material on the Council of Heritage Organisations, and sat on the New South Wales Government Materials Conservation Scholarship Committee.

Sue Walston and Paula Casey attended the Council Meeting of ICCM held in Canberra during May 1981. Dr Casey remained in Canberra to attend the Annual Conference of the Australian Society for Microbiology.

Right: From a high scaffolding John Fields photographs the Anthropology Department's collection of Pacific Bark cloths (the largest of which measures 6½ m x 8 m) before work on them by Materials Conservation. Photo H. Hughes/Australian Museum.



A number of staff attended the National Conference of the Institute for the Conservation of Cultural Material in Adelaide during October, 1980. Geza Marton, Sue Frost and Paula Casey presented papers at this conference. Dr Casey's papers on the mould research program and the study of the Museum micro-environment were also presented at the Conference of the Museums Association of Australia in September, 1980.

Sue Walston and Mike Gunn attended the Conference of Museum Anthropologists at Shepparton, Victoria in November, 1980, where Mr Gunn presented a paper entitled *The Social Anthropologist versus the Museum Artefact Collections*.

As well, Miss Walston presented lectures to the Sydney University Museum Studies Course and the Anthropology Society, and is supervising the Master's program of a student from the Canberra College of Advanced Education Conservation course. The program involves the conservation of items recovered from the Mint and Barracks buildings.

Sue Frost resigned as Treasurer of the newly formed ICCM Sydney Division and was replaced by Geza Marton. David Horton-James was elected to the Committee.

Assistance Received: The help given to the Section by the following persons is gratefully acknowledged: Mr D. Edwards, Mr J. Hartley and Mr B. Eldridge of the Biology Group at the Wood Technology and Forest Research Division of the NSW Forestry Commission. Dr J. M. Powell, Royal Botanic Gardens, Sydney. Dr J. Pitt, Division of Food Research, CSIRO, Sydney. Dr J. Walker, Biological and Chemical Research Institute, Rydalmere.

Photography and Visual Aids

The Department has two major roles of equal importance. One is primarily a service function supplying areas of publication education, display and science with routine photographic facilities; the other is a creative one and includes the exploration of uses of photography and cinematography in all Museum projects. Photography has an important role in communication. With limited staff the department provides photographic material for illustration of Museum publications as well as material for universities and other outside organisations, and, maintains a photographic collection of more than one hundred thousand black and white negatives and several thousand colour photographs.

Film Production: "Apangai Village Film". Production plans to film in Papua New Guinea during July 1980 went ahead as planned. Mr Howard Hughes went to Apangai village to join Dr Diane Losche (anthropologist) and Jeff Freeman (exhibitions officer) who were already on location arranging material for the new Abelam Gallery. Mr Hughes commenced filming, sound

recording, planning a film script and finalising arrangements for a cinecameraman, Mr Malcolm Hunt, and sound recordist Mr Ian McDonald to arrive for the filming of an initiation ceremony. The mission was successful and the crew arrived back in Sydney with about three hours of film and sound tapes. Editing this material has commenced, and the final film promises to be a sensitive, documentary account of the everyday life in an Abelam village. Much of the film and sound not used in the film itself will be used in the new Abelam Gallery sponsored by Unilever Australia Ltd.

"Dugong! Dugong!" A documentary film of Aborigines hunting dugong for food at Mornington Island in the Gulf of Carpentaria, was sponsored by the Aboriginal Arts Board of the Australia Council; this is the third film we have made with the help of the Board. This project was aided by anthropologist Dr Paul Memmott, Queensland University. The crew comprised cinecameraman Mal Hunt and freelance sound recordist Steve Alcoate, with Mr John Fields, Museum staff, as still photographer and back up man. The film is now completed and will be released next year. The sponsor has expressed full satisfaction with the film and the Tasmanian Film Corporation is currently testing television sale potential.

Book Publication: "Broken Hill Minerals". As part of the forthcoming Broken Hill Centenary celebrations in 1983 Australian Mining and Smelting Limited are producing a book illustrating outstanding minerals from that area. These specimens are among the finest available and the publication is planned to be of high standard. John Fields has photographed in colour some fifty specimens from the Museum collection and from a famous private collection owned by Mr Albert Chapman of Sydney.

Field Work: In addition to Mr Hughes' film work in Papua New Guinea and Mornington Island other field work included trips by John Fields to Lake Mungo, Lake Victoria, Burril Lakes and the Snowy Mountains with Dr Ron Lampert, anthropology and Mr Ross-Wilson, exhibitions, to obtain photographic material for the Mammal Gallery and the Anthropology Gallery. Some of this material will be used in mural size as backgrounds to exhibits, some as detail photographs for construction and other display detail. Several excursions of a one day nature were undertaken, including coverage of oil spill damage in Botany Bay.

Top right: Darby Price (left) discusses methods of preserving the Frank Hurley photographic collection with volunteer worker Bob Pulsford. Some prints from this rare and valuable collection are shown elsewhere. Photo J. Fields/Australian Museum.

Bottom right: Captain Frank Hurley bartering with natives of Kinomere for skulls. In the left background is a skull rack similar to that constructed by the natives of Urama for the Australian Museum. Circa 1922. Photo from the Hurley Collection/Australian Museum.







Above: Native of Wonar, wearing Gibi-Gibi 'terrifying' mask and displaying a disc stone club. Circa 1922. Photo from the Hurley Collection/Australian Museum.

Left: Girl from Komabun Village, Wanilgil area. Circa 1922. Photo from the Hurley Collection/Australian Museum.

Photographic Index: From time to time assistance has been given to the Photographic Index in adjudicating panels and other ways.

Collections and Archival Storage: "The Hurley Collection". For some time we have been expressing concern over the photographic collections particularly the rare and valuable collections like the G. Brown, R. Dick, and F. Hurley collections. Most of these are on glass negative plates easily damaged and subject to mould growths. The Museum's Conservation Section researched methods of conserving these negatives, and in June this year work began on the collection. The provision of funds for temporary part-time staff for this purpose was of considerable assistance. The Hurley collection includes photographs made by Frank Hurley in New Guinea in the 1920's when many specimens were collected by him for the Australian Museum. Mr Darby Price, long time company representative for Kodak (Australasia) Pty Ltd and one time photographic

printer of Hurley's photographs has commenced work cleaning and printing the negatives. These will be copied on to new negative material with a film base and stored in archival quality paper folders.

Volunteers: We now have three volunteers, Mrs Betty Lawson has joined Mrs Ann Brown and Mr Bob Pulsford in helping the Department with its filing and cataloguing work and some photographic printings. Each comes in at least one day per week and their help is invaluable.

Filing and Cataloguing: During the year our filing and cataloguing system came under review and was found quite satisfactory, and despite difficulties in covering such a wide range of subject matter from every Museum Department our system was considered adequate for present purposes. Future expansion and improvement of the system to cope with development requires more staff and more space.

X-ray Stereo: An interesting aspect of our work is of great value to the scientific research is radiography. Over three hundred X-rays were made of lizards and fish this year. These have saved the time-consuming and destructive need to dissect specimens for skeletal information. Following experiments last year with stereo-graphic X-rays we now have a system where large radiographs can be viewed with a simple device of mirrors and optical lenses. The methods can be modified and used in gallery displays for ordinary stereophotographs as well as X-rays.

Special Programs

Lizard Island Research Station

The Lizard Island Research Station provides optional logistic support for visiting research scientists from anywhere in the world engaged in studying the Great Barrier Reef.

Some outstanding events of the year were: a presentation by the Japan Foundation of a major donation from Suntory Limited of \$250,000; an international award to Mr Roger Steene for photography of a planktonic crustacean; and a visit of the Prime Minister, the Right Honourable Mr Malcolm Fraser, and Mrs Fraser. Some notable achievements in research have been recorded for 1980-81.

Director's Research: The Director, Dr Barry Goldman, has two research programs underway concerning the ecology and taxonomy of coral reef fish larvae. These projects are supported by AMSTAC funds and involve Dr Jeff Leis of the Australian Museum and Dr Greg Stroud of Macquarie University; both are working with Dr Goldman. Coral reef fish eggs are collected by towing plankton nets around Lizard Island, in the lagoon, and around the outer barrier reefs. The larvae are identified and aged and provide information on breeding behaviour, seasonality, and dispersal abilities of tropical reef fishes.

Corals Spawn in Aquaria: Ms Vicki Harriot, a PhD student from James Cook University, is studying reproduction in corals on the Barrier Reef. She has succeeded in having her specimens of *Pocillopora* corals spawn in the aquaria and the larvae settle on the glass. This indicates the aquarium system is providing excellent conditions for research.

Amino Acid Discovery: Dr Roger Summons, of the Australian National University, has discovered an amino acid new to science. The chemical was isolated from the unique *Prochloran* algae living symbiotically with certain compound ascidians which grow in abundance on the reef.

New Crown of Thorns Population: Mr Warwick Nash, a postgraduate student of James Cook University, has recently discovered a substantial population of Crown of Thorns starfish on the outer edge of the ribbon reefs near Lizard Island. This is the first time populations have been reported from outer Barrier Reef habitats; samples of the starfish have been taken for electrophoretic analyses of isozyme patterns to determine their relationship to populations on other parts of the reef.

Monitoring Programs: CSIRO Division of Fisheries and Oceanography, Cronulla, NSW, have contracted with the Station for two ongoing monitoring programs: a fortnightly water sample in the Barrier Reef lagoon, taken from three different depths and analysed for oxygen, salinity, temperature and dissolved nutrients, and a monthly collection of lobster larvae for Dr Bruce Phillips.



The laboratory block at Lizard Island Research Station on the Great Barrier Reef. Plans are in hand for extensions to the facilities during 1981-82. Photo B. Goldman.

Donations: The Japan Foundation has donated \$250,000. The Central Research Institute of Suntory Ltd has a strong interest in the study of biologically active compounds from the sea and already a contingent from the Institute has visited the Station. Other donations, totalling \$53,000, have been received by the Research Foundation from American Express, Comalco Ltd, C. H. Warman, CRA Ltd, the James N. Kirby Foundation, and anonymous donors.

Laboratory Facilities: As a result of the foregoing successes in fund-raising activities, significant additions have been made to the laboratory equipment to the value of \$50,000. These were a scintillation counter; spectrophotometer; freeze dryer; and a beam balance donated by CSIRO Fisheries, Cleveland, from surplus stock.

Workshop Additions: Machinery and tools valued at \$60,000 have been added to the workshop which is now almost fully functional. Additions are: an Aston



216 TIG welder; a Demco 1136B bench lathe with 3 ft bed and 9in swing; a drill press and a high pressure diesel injector testers.

Fleet Increase: Another aluminium outboard-powered boat has been acquired which brings the Station's fleet to eight.

Development Plans: Following recent successes in fund-raising and a growing demand for upgrading the Station, the Trust has commissioned development of a Master Plan. Valuable assistance has been provided by Mr Ted Dews of James Cook University, Mr David Mountseer of the Commonwealth Housing and Construction Authority, Mr David Hartley, a design consultant in Cairns and Mr Ed Power, Queensland National Parks and Wildlife Service, Cairns. The Master Plan provides more accommodation for visiting scientists and extension to the laboratory block, which is designed to harmonise with the natural environment and will be both a rewarding and productive place in which to live and work.

Meetings: During the year the Executive of the Lizard Island Trust met four times to discuss the Station's progress and functioning, and to plan for developments. The Australian Museum Trust met on the Island

in October, giving Trust members an opportunity to see the Station's operation. In July 1980 the Director of the Research Station, Dr Barry Goldman, attended the second International Symposium on Biology and Management of Some Tropical Shallow Water Communities, in Port Moresby.

Overseas Trip: For six weeks in June/July 1980, the Director, Dr Goldman and his wife travelled overseas on a familiarisation tour of marine research stations around the Pacific basin.

Visitors: During the year, some 101 visiting scientists and assistants worked at the Station on a diversity of projects. Overseas visitors again constituted roughly one-third.

The table below shows visitor statistics for the year.

	Australian Overseas	
Scientists and Assistants	54	23
Postgraduate Students	18	6
Spouses and Children	6	12

The average daily occupancy by scientific workers for the year was 6.2; while the average occupancy of all visitors was 7.7.



Dr John Lucas, James Cook University, extracting tissue samples of crown of thorns starfish for studies on population genetics. Lizard Island Research Station. Photo B. Goldman.

Australian Postgraduate Students: Lyle Vail, Macquarie University: Ecology of comatulid crinoids—feather stars; Vicki Harriot, James Cook University: Reproduction in Pocilloporid corals. Hugh Sweatman, Macquarie University: Studies on population dynamics and ecology of the trigger fish *Sufflamen capistratus*. Gordon Bull, James Cook University: Growth and reproduction in gorgonians (soft corals, sea whips, etc.). Judy Hart, James Cook University: Algal zonation and seasonality around Lizard Island. Bill Gladstone, Macquarie University: Population dynamics and social structure in the puffer fish *Canthigaster valentini*, with studies on the role of toxins in predator avoidance. Brian Lassig, Macquarie University: The role of top-level carnivorous fishes in controlling coral reef community structure. Jan Aldenhoven, Macquarie University: Social behaviour, harem structure and ecological value of hermaphroditism in the angel fish *Centropyge*

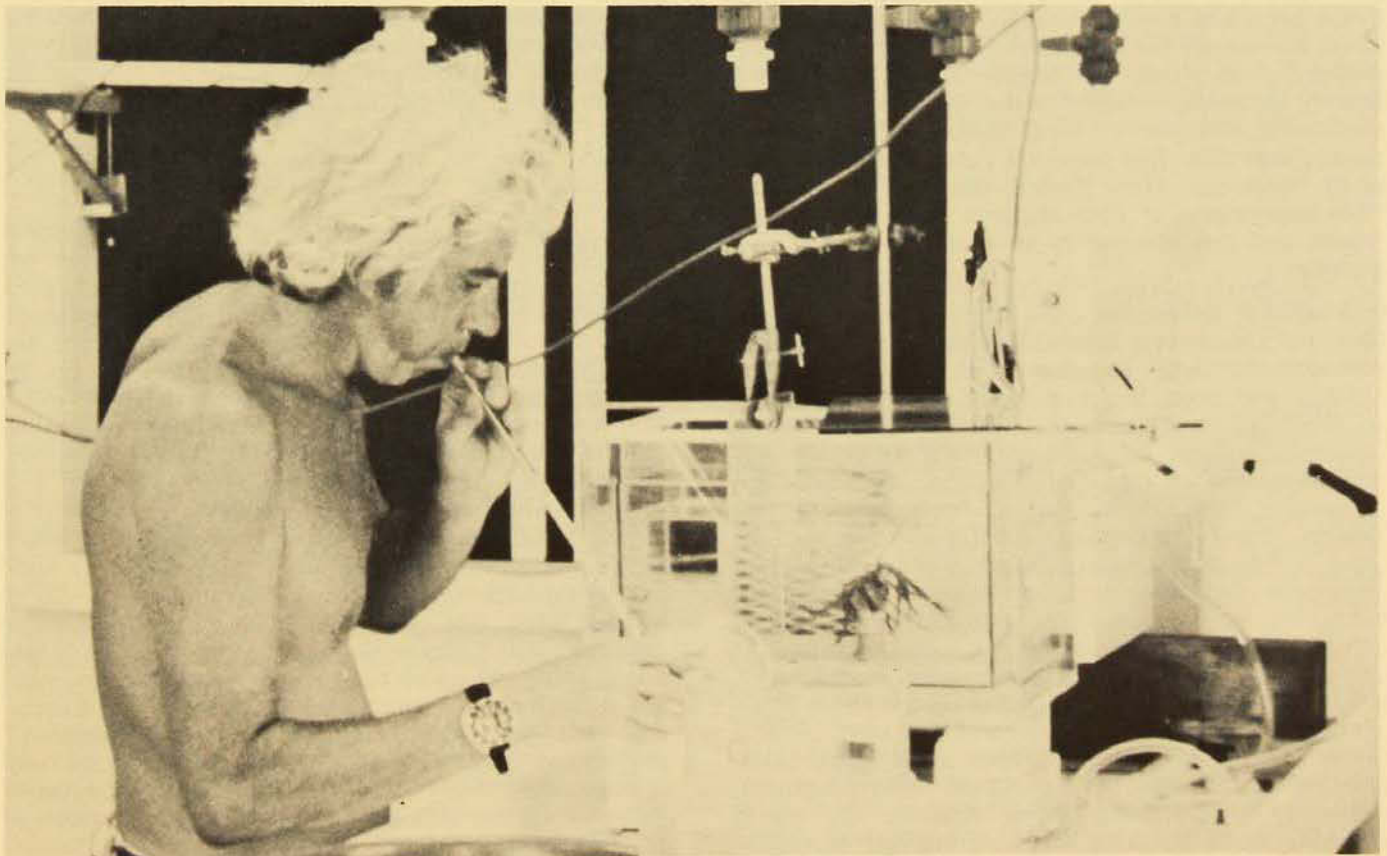
bicolor. Warwick Nash, James Cook University: Population genetics of the crown of thorns starfish, *Acanthaster planci*. Jane Hall, Macquarie University: Taxonomy of Myodicipod ostracods (small crustaceans). Ann Thresher, Sydney University: Populations dynamics of coral reef pipe fishes of the genus *Corythoichthys*. Neil Bruce, University of Queensland: Taxonomy of marine isopods. Ko Fujiwhara, James Cook University: Studies on the interaction of calcareous algae and scleractinian corals. Gordon Anderson, Australian National Parks and Wildlife Service: Recruitment in coral reef fishes—long term monitoring of fish communities on artificial reefs in Lizard Island Lagoon. Bette Willis, James Cook University: Growth studies on the coral *Pavona cactus*, effects of grazing and interactions with other corals. David Klump, Melbourne University: Lipid analyses of coral reef bacteria. Jan Carey, Macquarie University: The origin and dynamics of beach sediments at Lizard Island. Sue Meek, James Cook University: Mechanisms of growth in the terminal polyps of *Acropora* corals—Investigation of the rate of uptake of tritiated thymidine over diurnal cycle in natural light and darkness.

International Postgraduate Students: Peter Wainwright, Duke University: Evolution and structure of the jaw mechanisms in the predatory wrasse *Epibulis insidiator*. Elizabeth Gladfelter, University of California, Los Angeles: Skeleton formation in acroporid corals. Deborah Zmarzly, Scripps Institute of Oceanography, La Jolla: Feeding in crinoids. Marti Ellen-Cowan, Centre for Marine Science, University of the Philippines: Ecology, growth and development in compound ascidians (sea squirts). Mike Ross and Gregor Hodgson, Centre for Marine Science, University of the Philippines: Ecology and taxonomy of hermatypic corals.

Australian Scientists: Robin Wass, Sydney University: Ecology and taxonomy of bryozoans. Chris Crossland, CSIRO Division of Fisheries and Oceanography, Perth: Further studies on nutrient cycling in coral reef waters, in connection with LIMER II expedition and carbon assimilation/symbiosis in coral eating opisthobranch molluscs and their ingested zooxanthellae. Terry Frazer and Peter Cook, Queensland Fisheries Service, Cairns: Tagging mackerel for project by Geoff McPherson on the fisheries biology of mackerel in barrier reef waters.

Dr Dave Smith, CSIRO, adding radio-actively labelled plankton to study the feeding behaviour of crinoids or featherstars on the Great Barrier Reef, at Lizard Island Research Station.
Photo B. Goldman.

Don Page, CSIRO Division of Fisheries and Oceanography Cronulla: Erection of wind speed and direction recording apparatus on the platform on Carter Reef. Ian Price, James Cook University: Systematics and biology of marine benthic algae. Ron Thresher, Sydney University: Reproductive behaviour of coral reef fishes, with special reference to the relation between social structure, harem dominance and male spawning success in protogynous damselfishes. Dilwyn Griffiths and Jim Luong-Van, James Cook University: Carbon fixation and primary production of *Prochloron* from compound ascidians using C14 tracers and light/dark technique. Roger Steene, private, Cairns: Photomicrographic studies on coral reef zooplankton. Margaret Streamer, James Cook University: Survey of the presence of the enzyme arginine decarboxylase in hard corals. Dave Moriarty, CSIRO Division of Fisheries and Oceanography, Cleveland: Biomass and productivity of bacteria in coral reef environments, and role of micro-organisms in the food of holothurians. Basil Johns, Melbourne University: Lipid analyses in bacteris and sediments of coral reefs—Project in collaboration with D. Moriarty. Howard Silver, Queensland University: Taxonomy of Holothuria (sea cucumber, beche-de-mer) and preparation of a field guide to the Holothuria of Queensland. Terry Done, Australian Institute of Marine Science: Time-series studies on coral communities on the barrier reef based on sterer-photographic transects. Jeff Leis, the Australian Museum, Sydney, in association with Dr Goldman, ecology and taxonomy of ichthyoplankton (fish eggs and larvae) in



coral reef waters around Lizard Island and factors affecting the dispersal of coral reef fish larvae: behaviour, development times and ocean current systems. Colin Field, NSW Institute of Technology: Studies of the giant marine alga *Valonia ventricosa*, and preliminary survey of mangrove vegetation on Lizard Island. Gary Denton, James Cook University: Survey for presence of heavy metals in coral reef biota. Ian Poiner, CSIRO Division of Fisheries and Oceanography, Cleveland: Life history strategies and productivity of tropical sea grasses. Carla Catterall, University of Queensland: Dynamics of grazing molluscs in sea grass beds. Eric Wolanski, Australian Institute of Marine Science: Installation of recording tide gauge at base of the platform on the outer barrier reef: as part of a barrier reef tidal monitoring program, and, installation of recording current meters around Lizard Island, a joint study program with Dr Goldman and Dr Leis on circulation and water mass movements in the northern Barrier Reef. Ian Smith, NSW State Fisheries Laboratory, Port Stevens: Preliminary aquaculture trials at rearing *Chlorella* and *Brachionis* in collaboration with Dr Goldman and Greg Stroud. Greg Stroud, Macquarie University: Behaviour, development and taxonomy of coral reef fish larvae, and ecology of coral reef fish larvae at spawning and settlement, projects with Dr Goldman which are complementary to those of Dr Leis. Mike Coats, Griffith University: Determination of background levels of hydrocarbons in Great Barrier Reef organisms and sediments. Guy Cox, Sydney University: Ultrastructure of *Prochloron* algae from the ascidian *Didemnum molle*. Pat Hutchings, Australian Museum: Continuing long-term studies on endocryptolithic invertebrates (animals which bore into corals): seasonal patterns in recruitment; community progressions etc., and taxonomy and ecology of coral reef polychaete worms. Ed Frankel, Sydney University: Effects of boring animals in coral-monitoring changes in coral skeletal structure and density with time. This project in collaboration with that of Dr Hutchings. Frank Talbot, Macquarie University: Field supervision of PhD students working at Lizard Island, and fish community structure on natural reef isolates.

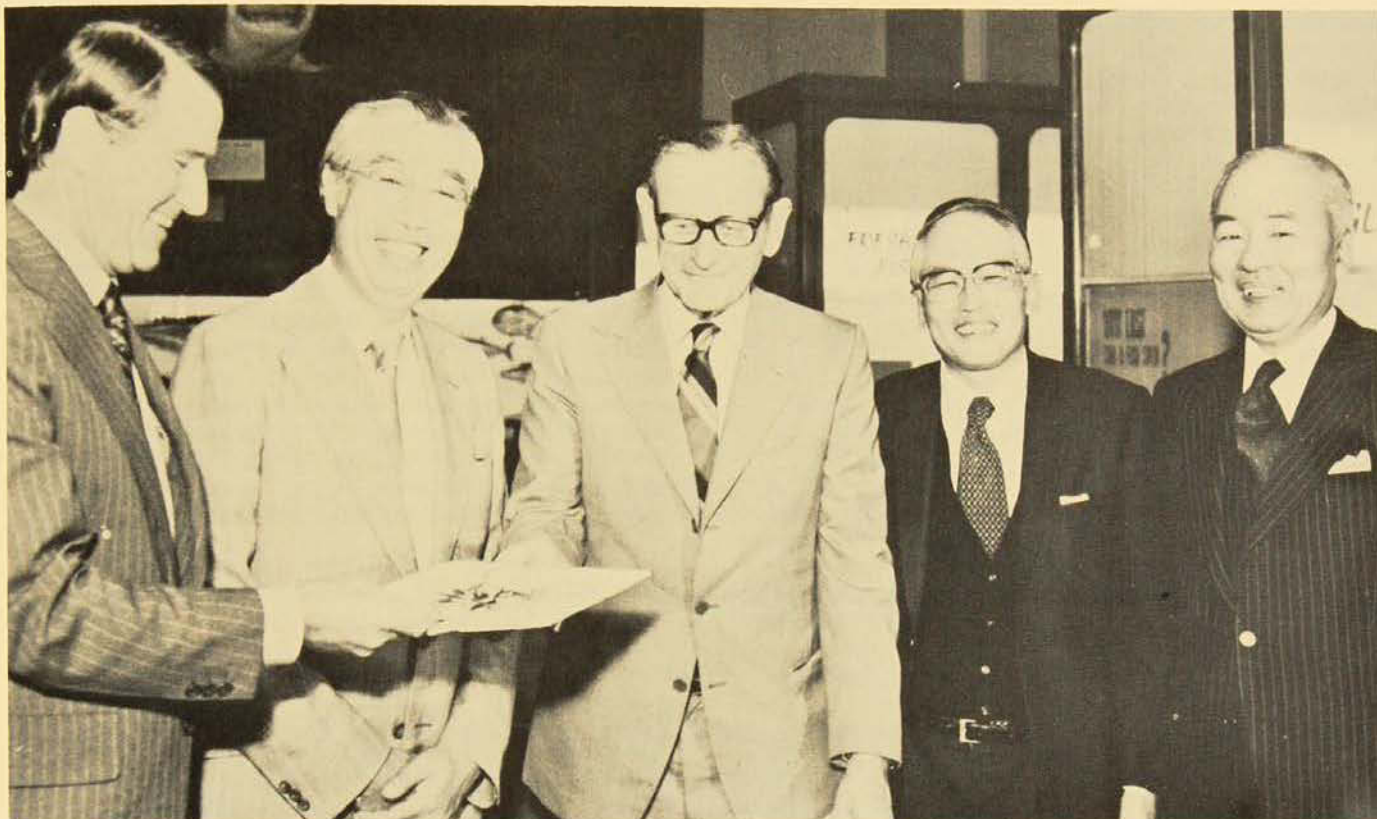
International Scientists: Jack Moyer, Tatsuo Tanaka Memorial Laboratory, Tokyo: The social structure and behaviour of large angelfishes of the genus *Holocanthus*, and, study in collaboration with Ron Thresher on reproduction in coral reef fishes. John Grindley, University of Cape Town, South Africa: Vertical migration behaviour of lagoonal plankton, especially the copepods. Yoko Naya, Kazuo Tachibana, Takashi Kusumi, Masahi Makagawa, Suntory Institute for Bio-organic Research Osaka, Japan: Collection of reef organisms (sponges, soft corals etc.) for chemical extraction for investigations into biologically active compounds. Bill Gladfelter, West Indies Laboratory, St Croix, Virgin Islands: Role of competition in structuring guilds of (non-territorial) reef fishes—competitive interactions in squirrel fishes. Sherman Bleakney, Acadia University, Nova Scotia, Canada: Biology of sacoglossan opisthobranchs. Jim Case, Marine Institute, University of California, Santa Barbara: Bioluminescence—identification of local marine and terrestrial

bioluminescent organisms and characterisations of their excitation mechanisms. Joe and Sally Bauer, Ohio State University: Reproductive behaviour in angel fishes. Mike Risk, McMaster University, Ontario (Visiting Fellow at AIMS): Boring sponges and their effects on corals, and, sedimentation processes on coral reefs. Nick Hollan, University of California, San Diego (Scripps): Studies on feeding and habitat requirements of crinoids.

Non-Research Visitors: The Prime Minister, The Right Honourable Mr Malcolm Fraser and Mrs Fraser. Sir Geoffrey and Lady Badger, Dr Roy Green and Dr Lang of the Australian Science and Technology Advisory Committee (ASTEC). The Australian Museum Trustees. The Australian Museum Society (party of 10). Zolly Florian, microscopist from James Cook University. Mr Joe Winterton, Head of Marine Parks Section of the Queensland Fisheries Service, together with John Hicks and John Cornelius. Sandy and Gee Reid of the Lizard Island Reef Research Foundation. Mr Phil Gower of Lindbrook International, Brisbane. Mr Ted Dews, controller of Buildings, James Cook University, David Mountseer, Department of Housing and Construction, Canberra, Dave Hartley, Design Consultant, Cairns and Ed Power, Queensland National Parks and Wildlife Service, Cairns, Charlie and Julie O'Neill, consultant surveyors from Cairns, Mr Sid Curtis and Mr Stewart Tait with Mr Ed Power of the Queensland National Parks Service. Committee members of the Australian Heritage Commission. Mr Ian Wilson, Federal Minister for the Environment, and Mrs Wilson, accompanied by Graeme Kelleher and Richard Kenchington, both of the Great Barrier Reef Marine Park Authority. The former Minister for Environment in NSW, The Honourable Mr Justice Ellicot and Mrs Ellicot.

Donation to the Great Barrier Reef

At a special ceremony held at the Museum on 29 August, 1980, a major donation from the Japan Foundation was made to the Premier of NSW, the Honourable Neville Wran, MP—a cheque for Yen 25 million (\$A100,000). This represents the first instalment of a donation which will total approximately a quarter of a million dollars, the largest single donation ever received by the Australian Museum. The money is for the support of the Lizard Island Research Station on the Great Barrier Reef. The grant was initiated in discussions between Dr J. T. Baker, President of the Museum Trust, and Suntory Ltd which has recently developed an interest in the marine environment. Mr Michio Torii, Executive Vice President of Suntory Ltd, drew attention to the strong bond between Australia and Japan and spoke of the Suntory aims to promote cultural exchange between nations and to contribute to the preservation of our vast fragile environment.



The Premier of New South Wales, the Honourable Neville Wran, is handed the cheque for \$A100,000 by Sir John Proud, Chairman of the Lizard Island Research Station. The cheque is the first instalment of a \$250,000 donation from the Japan Foundation in support of the Lizard Island Research Station on the Great Barrier Reef. Representatives of the Foundation and Suntory Ltd attended the function. Photo courtesy Community Relations Office.

and society by increasing our knowledge and our understanding of how the huge, complex ecosystem of the Reef worked.

Sir John Proud presented Mr Torii with a scroll commemorating the donation ceremony and with a model of the research vessel. He asked that these be carried back to Japan to the President of Suntory Ltd, Mr K. Saji.

Accepting the cheque, the Premier emphasised that the Great Barrier Reef is an international resource which "belonged to the world". He said: "Every person interested in the future and the heritage of mankind will appreciate this gesture."

The Deputy President of the Australian Museum Trust, Mr Keith Cousins, welcomed the Premier and other distinguished guests to the Museum. He spoke of the generosity and foresight of Suntory and pointed to the historic nature of the donation. He expressed the Museum's gratitude for and pleasure at the significant way this important research enterprise is now being supported.

The financial help is being used to upgrade the Lizard Island Research Station to world standard and provide for construction of a 40 ft research boat.

The importance of the work at Lizard Island was the keynote of the address of thanks given by Sir John Proud, Chairman of the Research Station's Foundation. He spoke of the urgent need to respond now to the accelerating rate of change in the natural environment

National Photographic Index of Australian Wildlife

When the Index was founded in 1969, the Australian Museum undertook to provide accommodation and basic services for it: operating funds came from grants and donations from government, charitable trusts and industry. Aiming at a collection of colour prints of all species of Australian birds, the Index was originally conceived as a finite, terminating project but its nature changed when it was expanded to include mammals and, eventually, other groups of Australian animals. It then became a continuing operation which is expected to develop into the most comprehensive possible photographic archive of Australian wildlife.

Incorporation into Museum Structure: Whereas it may have been possible to obtain sufficient grants and donations to bring a representative collection of bird photographs to completion, the Trustees of the

Museum and of the Index realised that an ongoing activity required a firmer financial base. The Australian Museum therefore undertook to incorporate the Index into its administrative structure as of 1 January 1981 and to assume financial responsibility from 1 July 1981. When the Committee of Trustees of the Index was dissolved on 31 December 1980, the President of the Museum Trust expressed his gratitude to the Chairman of the Committee, Sir Percy Spender and his fellow Trustees for their long and valuable service. Sincere thanks were also conveyed to Mr R. W. Turner, Chairman of the Executive, to Mr E. L. Carthew, Executive Trustee, and to the members of the several committees of the Index. On 1 January 1981 a new Committee of Management was appointed and at its first meeting on 17 March 1981, Mr K. H. Cousins, Deputy President of the Museum Trust was elected Chairman.

Although the Museum has undertaken to underwrite the operations of the Index, it looks forward to greater revenue generation on the part of the Index itself. This is expected to come from expansion of the activities of the Index as an agency and as a producer of books and other printed material. Reduction of costs will be sought by encouraging photographers to permit the use of their work at no cost or reduced fees, in publication of the Index itself. As an incentive to photographers to donate photographs outright to the Index, tax deductibility of such donations is being sought.

Staff: Mr Trounson retired from the position of Executive Officer on 30 June 1981. The concept of a national collection of photographs of Australian birds originated with him and it was as a result of his enthusiastic advocacy that the Australian Museum agreed in 1968 to support the project. Over the subsequent thirteen years, as the only full-time staff member he remained the driving force behind the Index, as organiser, fundraiser and, not least, photographer. In collaboration with Ms M. Clampett he pioneered the photography of parrots in flight and developed many new techniques for photographing some birds.

The incorporation of the Index into the Museum on the eve of his departure is a particularly apt tribute to his dedicated work: what began as his dream has now achieved permanent form.

Books: The complete text and photographs of *The Wrens and Warblers of Australia* (Editor-in-Chief Mr V. Serventy, Scientific Editor Mr A. McGill) was delivered to the publisher, Angus and Robertson in December 1980.

The text of the *Mammals of Australia* (Editor-in-Chief Mr R. Strahan) is nearing completion. It covers all known species of native and introduced terrestrial mammals in Australia and those seals which live on, or visit the coast. Seven Section Editors and almost one hundred authors have contributed to this major work, which promises to be a landmark in the literature of Australian Natural History. It is no coincidence that it has the same title as John Gould's magnificent illustrated volumes published in the mid-nineteenth century.

Badge Sponsorship: Problems associated with the production of *The Wrens and Warblers of Australia* led to the prospect of its cost being considerably greater than royalties from its sale. To offset this, a campaign was mounted to obtain individual sponsors for each illustration. This was extremely successful, realising over \$23,000.

Collections: The main section of the Bird Index consists of 175 x 120 mm prints and contact internegatives which are stored separately. A duplicate of each print is lodged in the National Library, Canberra. The main section is supplemented by a collection of 35 mm transparencies of equal quality to the photographs in the main section, but which are surplus to the requirements of that section: this is referred to as the "XT" section. A third section, designated "T", consists of 35 mm transparencies which, irrespective of their quality, are retained for their scientific interest.

The main section of the Mammal Index consists of pairs of 125 x 105 mm transparencies one of each being designated for low-temperature storage. This is supplemented by "SX" and "S" sections, equivalent respectively to the "XT" and "T" sections of the Bird Index.

Four calls were made during the year for bird photographs, resulting in the inclusion of nine additional species. Five calls were made for mammal photographs, resulting in the inclusion of 36 additional species. Details of the growth of the collections are given in the following table.

BIRD INDEX
As at end of Stage XXXVIII

	1979-80	1980-81	Totals
Submissions	1 028	1 454	20 931
Acceptances:			
Main Section (prints)	192	282	4 904
"XT" (35 mm transparencies)	180	377	1 016
"T" 35 mm transparencies)	108	137	2 290
Additional species represented:			
Main Section	(8)	(9)	753
Other sections			26

MAMMAL INDEX
As at end of Stage VIII

	1979-80	1980-81	Totals
Submissions	427	2 103	3 625
Acceptances:			
Main Section (Large transparencies)	151	256	662
"SX" (35 mm transparencies)	42	489	612
"S" (35 mm transparencies)	67	84	300
Additional species represented:			
Main Section	(41)	(36)	207
Other Sections	(4)	(2)	11

Donations: A donation of \$16,000 was made by the Bushell Trust and one of \$5,000 by the Sydney Myer Trust. Donations of \$1,000 or less were received from Amatil Ltd, The Sunshine Foundation, The Shell Company of Australia, Kodak (Aust.) Ltd, and S. Crowe.

The Australian Museum Society

The Museum Society has had an extremely rewarding year in carrying forward its aims which are to: publicise the work of the Museum; encourage people to visit the Museum and take part in its activities; take the work of the Museum to the people, and assist where possible in special projects of the Museum.

The Society is continuing to experience unprecedented growth in activity, membership, and the regard with which it is held within the Museum and by the people of Sydney in general.

Organisation of Volunteers: One of the most valuable functions of the Society has been the work of the volunteers who continued to play an important role within the various departments of the Museum. Their

work has become so involved that the Society has found it necessary to give employment to a Volunteers' Co-ordinator, Mrs Herti Verge, herself a volunteer. This department has been a great success and it is sincerely hoped that the position will continue during the forthcoming years.

The Society has benefited enormously from the support of the Museum Trust and in particular of the Director, Dr Des Griffin, whose visible support at our functions is matched by his continued strong support in an administrative capacity. Particular mention should also be made of the continued support of the Museum Society's Benefactors: Readers Digest Services Pty Ltd, Mr W. S. Tatlow, Unilever Australia Ltd, Esso Australia Pty Ltd, Sydney Myer Ltd, CRA Ltd, Amatil Ltd, Ampol Petroleum Ltd, and Sponsors: Dr Jim Hazel, The National Bank of Australasia, Brambles Industries Ltd, Repco Ltd, Comalco Ltd, Australia and New Zealand Banking Group Ltd, Mrs Jess Wise.

Mr William Bowmore (centre), Museum Benefactor, with friend, shares a pre-dinner drink with Mr Vincent Serventy at the benefactors banquet. Photo J. Fields/Australian Museum.

Functions, Lectures, Trips: Museum Society functions have reached an all time high both in quality and number: a total of 42 functions was held during the year.





Some of the more outstanding presentations included a field trip to the Lizard Island Research Station, a lecture on *The Mystery of the Extinct Giant Horned Turtle* by Dr Eugene Gaffney and a public lecture by Sir Edmund Hillary entitled *From the Ocean to the Sky* about a remarkable trip that he and several others made up the Ganges in jet boats.

In addition to the functions that have catered to the educational needs of our members, the Society has given direct assistance to the Museum, e.g. we have organised catering for five seminars this year and also for smaller lunches and dinners held in the Director's Board Room. Two large banquets have been organised—one for the presentation of jade pieces by Unilever, and another for our benefactors. These were remarkably successful and further enhanced the standing of the Society.

Perhaps contingent on the success of these functions has been the raising of funds or of corporate communication such as in the case of Unilever. Most of these have flowed directly to the Museum and there

At the banquet for benefactors, from left, Mr Keith Cousins, Vice President of the Museum Trust; Mr John Landels, Caltex; Mrs K. Dennewald; Mr Peter Turner, Rural Bank; Mrs Turner; Mr Dennewald, Rural Bank. Photo John Fields/Australian Museum.

has been, *pari passu*, a rise in the fortune of TAMS with regard to benefactors.

The Museum Coffee Shop has been a great success. Its operation is undertaken by the Society and we are most grateful to our staff, Mrs Maree Lowe, Mrs Jan Gregg and also volunteer worker Mrs Dorothy Chandler.

Venue Museum Promotion. One of the most interesting developments of the year has been the promotion of the Museum as a venue for functions. Activities such as these serve greatly to place the Museum squarely before the public, not only as a repository of learning,



Mr R. White, Bank of N.S.W. (left); Mr Steele, BHP and Mr Michael Little, Unilever, share a pre-dinner joke with the Museum Director Dr Des Griffin on the occasion of the banquet for Benefactors, arranged by the Australian Museum Society. Photo John Fields/Australian Museum.

but also as a place of lively interest, and even of entertainment. This we see as our principal function, i.e. to promote the service of the Museum to the community to make people more aware of the dynamic aspects of their Museum and to bring both closer together.

In many ways we continued to expand our value to the Museum during the year. Our mailing list is of use for public contact and volunteers are currently compiling a survey of visitors to the Museum, which is a long-term project. More directly, we have, on several occasions in the past year, been able to mail Museum

notices and book offers. These have been a most successful marketing service to the Museum.

Valuable Role of Council: The continued services of an energetic and experienced council have been efficiently served by the expertise of the Executive Secretary, Susan Bridie, and Secretary, Peta Moeller. We were unfortunate to lose the services of Peta Moeller in the beginning of 1981 and wish her every success in her continued career. Membership of the Society now stands at approximately 2 300.

Mrs Carol Serventy attended a council meeting and Triennial Congress of the World Federation of Friends of Museums in Birmingham: the visit was financed by The Australian Museum Society, the Museum Trust and Mrs Serventy.

Future Plans: Many exciting events have been planned for the coming year. The most ambitious project so far undertaken is a trip by 16 members to the Galapagos Islands, to take place in October 1981. A trip to Flinders Island and a tour of Wildlife Sanctuaries of India are among outstanding events planned for next year.

Financial Statement

Summary of Accumulated Funds for the Year Ended June 30, 1981

THE TRUST'S GENERAL, GRANT AND RESERVE FUNDS FOR THE FIVE YEAR PERIOD ENDED 30 JUNE, 1981

Trust General Funds: These funds are the separate income of the Trust of which the major items are statutory endowment, State subsidy for special projects, Shop sales and Magazine subscriptions. The growth in these funds over the last five years has been + 234 per cent in revenue and + 195 per cent in payments.

The Trust General Funds accumulated surplus as at 30 June, 1981, showed an increase of \$7,039 (17.5 per cent) over the

figure for the previous year. This is an improvement of \$72,484 over the five year period 1975-76 to 1980-81.

Grant Funds: These funds are received from granting agencies and the private sector for specific projects in the fields of scientific research, exhibitions and educational programs. The growth in these funds over the five year period has been + 218 per cent in revenue and + 147 per cent in payments.

As at 30 June, 1981, the accumulated Grant Funds Surplus was \$274,701, an increase of \$148,215 (117 per cent) over the figure as at the end of the previous financial year.

Reserves (Trust General and Grants): At 30 June 1981 the combined reserves (Trust General and Grant Funds) stood at \$322,027 the highest total for over five years. The substantial growth of 86 per cent which occurred in the Trust's total reserves during the period 1979-80 continued with a further increase of 93 per cent during 1980-81.

Summary of Trust Funds for Five Years Ending 30 June, 1981

Year	Bal. B/F \$	Receipts \$	Payments \$	Closing Balance \$
76-77	220	212,232	237,610	- 25,158
77-78	- 25,158	277,633	271,740	- 19,265
78-79	- 19,265	308,455	248,775	40,415
79-80	40,415	482,765	482,893	40,287
80-81	40,288	708,267	701,229	47,326

GRANT ACCOUNT

76-77	93,229	181,257	173,198	101,288
77-78	101,288	251,108	250,986	101,410
78-79	101,410	258,783	312,015	48,178
79-80	48,178	394,157	315,849	126,486
80-81	126,486	576,679	428,464	274,701

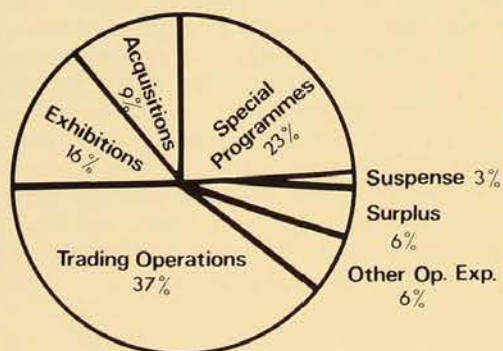
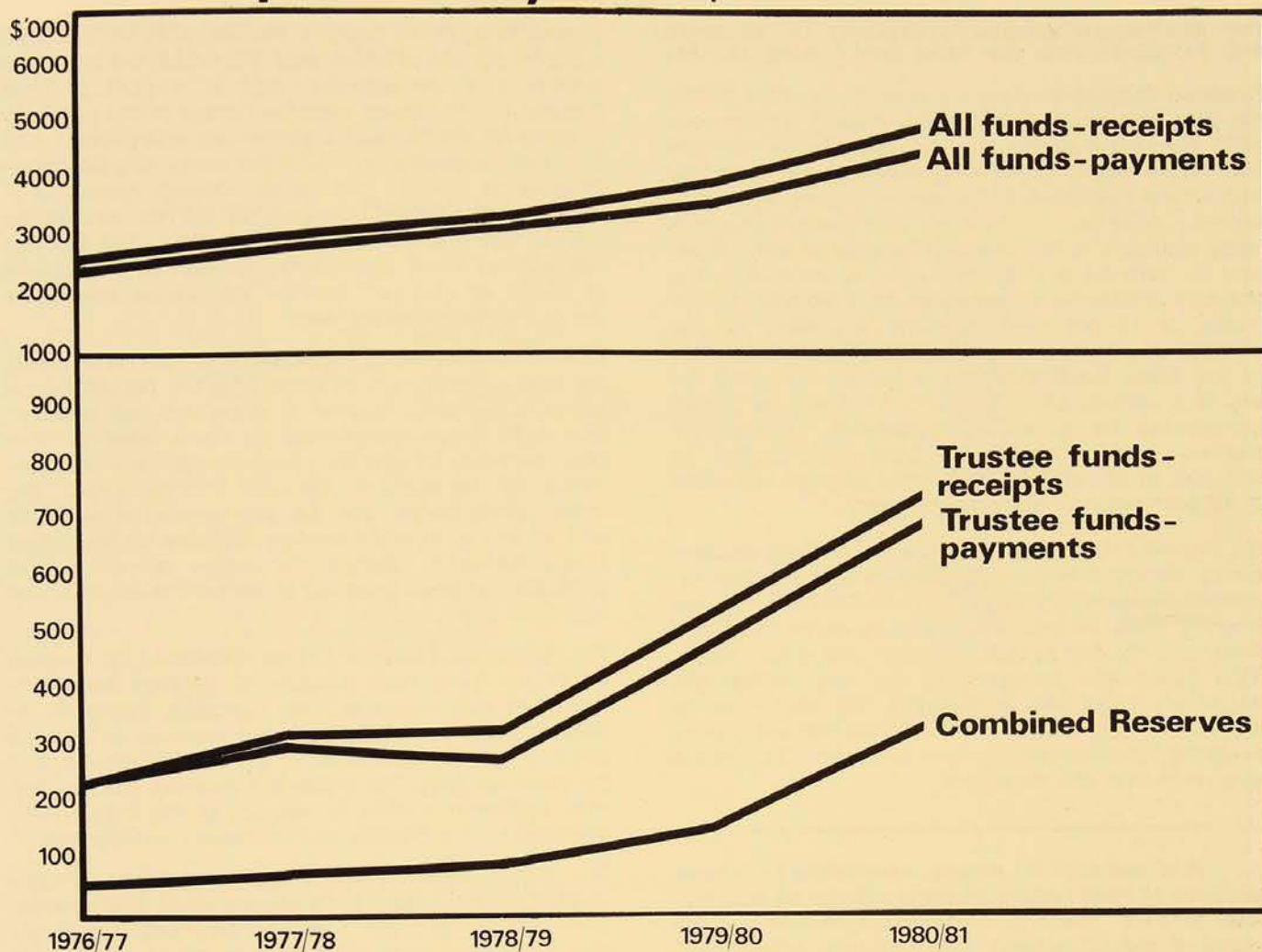
COMBINED

76-77	.....	393,489	410,808	76,130
77-78	.....	528,741	522,726	82,145
78-79	.....	567,238	560,790	89,593
79-80	.....	876,922	798,742	166,773
80-81	.....	1,284,946	1,129,693	322,026

Subject to audit.

AUSTRALIAN MUSEUM

Receipts and Payments / Combined Reserves



**Trustee Funds -
Payments 1980/81**



**Trustee Funds -
Receipts 1980/81**

THE AUSTRALIAN MUSEUM STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDED JUNE 30, 1981

Financial Statement: Revenue from all sources during the year amounted to 4.9 million dollars, an increase of 25 per cent over the previous year. Funds from the State Government for working expenses and statutory endowment amounted to 3.6 million dollars and represented a contribution of 72 per cent towards the total funds available to the Museum, compared with 76 per cent in 1979-80 and 82 per cent in 1978-79. The statutory endowment amounted to \$130,000, an increase of 18 per cent over the allocation for the previous year, whilst a further \$200,000 was provided by the State Government as a special incentive, by way of a subsidy of \$1 for every \$1 raised, to attract sponsorship for museum programmes from private sources, with a maximum State contribution of \$200,000. In all, support from State sources increased by 19 per cent over the previous year.

The income of the Trust (exclusive of the State Government's contribution towards salaries and working expenses) increased by 47 per cent or \$226,360 over the previous year. Without the statutory endowment and State subsidy for special projects and grant funds, Trust Funds still increased by the very satisfactory margin of 38 per cent or \$103,418. The main sources of revenue were Shop sales, Australian Natural History magazine subscriptions, mineral sale proceeds, interest on investments and donations.

... It is essential for people responsible for money decisions to have regular financial reports on which to base forward planning (and management) ... by means of regular reviews and forecasts, annual budgeting and three-year planning; data presentation should provide better understanding and necessary support of the essential responsibilities of the Museum. Corporate Plan—Policy 5, Finance.

During the year Grant Funds increased by 46 per cent over the previous year and the main sources of income were from the Australian Research Grants Committee, the Australian Biological Resources Study, the Australian Marine Sciences and Technologies Advisory Council—Funding Advisory Panel, the Bank of New South Wales and funds for the Lizard Island Research Station.

Payments from all sources increased by 22 per cent compared to the previous year. This reflected increased activity over the previous year in respect of Trust General Funds in such important areas as the purchase of items for the Museum's permanent collections (+ 19 per cent), Exhibitions (+ 224 per cent), and Education Programme (+ 447 per cent). Overall payments in Trust General Funds increased by 4.5 per cent. At the end of the financial year a balance of \$47,326 was available as Trust General Funds reserve, an increase of \$7,038 or 17.5 per cent on the reserve held as at the end of the previous year.

Grant Fund payments increased by 31 per cent during the year and reserves increased by 117 per cent compared to the previous year. It is pointed out, however, that some funds represented by these reserves have been provided for specific commitments for which payments will be made in the next financial year. The major commitments are the provision of a workboat and additional accommodation facilities for the Lizard Island Research Station, for which an amount of \$168,000 had been provided in 1980-81 of which \$7,000 had been spent.

The Australian Museum Society increased its revenue by 21 per cent. Main sources of revenue were subscriptions and proceeds from functions. Payments increased by 5 per cent; and cash reserves at 30 June stood at \$27,007 compared to \$13,298 at balance date the previous year. The increased reserves has resulted from improved trading in respect of the coffee shop operated by the Society and increased Society fees.

The consolidated accounts of the National Photographic Index of Australian Wildlife show that revenue increased by 10.5 per cent and payments by 22 per cent compared with 1979-80. The effect of this was that cash reserves increased by \$13,678 or 54 per cent over the previous year.

Growth in funds in 1980-81 again exceeded the average rate of inflation through substantial increases in funds provided by way of corporate sponsorship and governmental assistance for scientific research and gallery development, and running expenses. This has improved the spending capacity of the Trust and allowed for the implementation of new programmes and the expansion of some of the existing activities which carry a high priority. In addition, the Trust's total reserves increased by the very satisfactory rate of 88 per cent over the previous year.

Consolidated Revenue—

Statement of Receipts and Payments for Year Ended 30 June, 1981

Receipts

1980 \$						1981 \$
2,832,348		Treasury Appropriation	..	..	..	3,293,176

Payments

1980 \$						1981 \$
2,302,886		Salaries	..	..	..	2,647,866
92,778		Travel	..	..	..	111,911
	31,438	Motor Vehicle Running Costs	..	..	37,950	
	61,340	Travelling and Subsistence Expenses	..	..	73,961	
168,865		Stores	..	..	..	199,741
71,818		Building	..	..	..	82,383
	1,291	Maintenance	..	..	2,498	
	70,527	Rent, Rates, Fire Insurance	..	..	79,885	
126,040		Other Working Expenses	..	..	..	175,736
	25,000	Books, etc.	..	..	33,862	
	7,595	Fees	..	..	21,062	
	12,096	Freight, Cartage and Packing	..	..	22,059	
	882	Laundry	..	..	666	
	1,559	Meal Allowances	..	..	1,976	
	299	Minor Expenses	..	..	394	
	13,000	Other Insurance	..	..	14,923	
	5,924	Postal	..	..	6,245	
	59,685	Printing	..	..	74,549	
69,961		Special Appropriations	..	..	..	75,539
		Major Equipment and Storage for Museum	..	..	..
	49,815	Specimens	..	..	59,947	
	20,146	Overseas Visits	..	..	15,592	
<u>\$2,832,348</u>						<u>\$3,293,176</u>

Subject to audit.



Trustee Funds

Statement of Receipts and Payments
for the Year Ended 30 June, 1981

Receipts				Payments			
1980	\$		1981	1980	\$		1981
207,058		Government Funds	330,000	55,358		Acquisitions	68,882
	110,000	Endowment	130,000	35,790		Exhibitions	115,952
	97,058	Special Projects	200,000		12,879	Abelam	10,978
227,448		Trading Operations	324,107		106	Aboriginal	454
	33,974	ANH Sales	75,438		660	Arid Zone	
		Audio Guides	231		2,119	Bird/Insects	33,078
	1,500	Coffee Shop (half share of profit)	4,500		88	Fossils	
	5,837	Film Sales	4,136		57	Hall of Life	40
	23,505	Mineral Sales	38,052		6,167	Mammals	18,762
	453	Red Phone	443		6,854	Marine Hall	29,862
	162,179	Shop Sales	201,307		1,373	Mineral Gallery	1,852
3,001		Special Programmes	7,171		5,407	Temporary Exhibitions	18,914
		Minor Grants	4,500		80	Treasures of the Museum	2,012
	3,001	Sunday at the Museum	2,671			Trading Operations	271,389
44,400		Other Income	46,989	180,444		Audio Guides	1,881
		Conferences	1,185		52,877	Australian Natural History Magazine Production	84,296
	2,448	Contracts	2,327			Australian Natural History Magazine Promotion	2,547
	13,560	Donations	14,290		1,340	Film Production Cost	2,579
	358	Exhibitions Receipts			4,773	Mineral Purchases for re-sale	25,361
	13,980	Interest	18,164		17,702	Red Phone	504
	12,363	Miscellaneous	10,046		642	Shop Purchases	154,221
	1,666	Photocopy Receipts	908		103,110	Special Programmes	174,535
	25	Royalties and Copyrights	69	161,773		Anniversary	
					25,137	Conference and Symposium	1,777
					1,943	Education Programme	20,457
					3,741	Honoraria	7,838
					12,273	Minor Grants	7,940
					2,692	Museum's Contribution to Lizard Island	10,000
					10,000	Scientific Assistance	18,177
					8,929	Sunday at the Museum	13,717
					10,595	Research Grants	3,527
					6,508	Visiting Curator	7,236
					5,235	Special Project Distribution	83,866
				40,855	74,720	Other Operating Costs	48,490
					1,303	Computer Fees	2,416
					9,089	Entertainment	14,692
					6,278	Miscellaneous	6,498
					1,490	Photocopy Payments	911
					14,629	Printing	7,168
					586	Reprints	
					1,950	Publicity/Publications Section	
					5,530	Travelling Expenses	12,430
						Visitor Survey	4,375
						Suspense	21,981
40,416		Opening Balance as at 1st July	40,288	7,815		Closing Balance as at 30 June	47,326
\$522,323			\$748,555	40,288			\$748,555
				\$522,323			

Subject to audit.

Left: Total attendance at the four exhibitions which now comprise Museum on the Road is estimated at 109 300 for the year including attendance during a stopover at Arndale and Warriewood shopping centres. "Life in the Sea" is the most recent addition to the four exhibits and this picture shows a brief staff preview before this popular show hit the road. Photo John Fields/Australian Museum.

Grants Accounts

Statement of Receipts and Payments
for Year Ended 30 June, 1981

SCIENTIFIC GRANTS	Receipts		Payments		Balance	
	1980 \$	1981 \$	1980 \$	1981 \$	1980 \$	1981 \$
<i>Australian Government</i>						
<i>Australian Biological Resources Study—</i>						
Dr H. Cogger	19,737	35,404	24,034	15,581	2,731	22,554
Dr P. Hutchings .. .. .	..	6,817	..	7,225	..	408 Dr.
Dr J. Leis .. .. .	..	7,315	..	9,740	..	2,425 Dr.
Dr J. Paxton .. .. .	..	5,486	..	4,168	..	1,318
Dr W. Ponder .. .. .	..	10,506	..	10,697	..	191 Dr.
<i>Australia Council—Aboriginal Arts Board—</i>						
Dr F. McCarthy .. .. .	..	..	189	485	2,211	1,726
Visiting Curator of Tribal Art	15,000	5,000	18,085	18,888	14,722	834
<i>Australian Institute of Aboriginal Studies</i>						
<i>Australian Marine Sciences and Technologies Advisory</i>						
<i>Council (Funding Advisory Panel)</i>						
Dr B. Goldman and Dr F. Talbot	5,622	21,950	..	16,597	5,622	10,975
Dr B. Goldman .. .. .	..	30,625	..	19,085	..	11,540
Dr D. Griffin .. .. .	..	11,000	..	11,000	..	nil
Dr P. Hutchings	15,968	15,012	..	16,199	15,968	14,781
Dr W. Rudman .. .. .	..	13,420	..	5,889	..	7,531
<i>Australian National Parks and Wildlife Service</i>						
<i>Australian Research Grants Committee</i>						
Pre 1979	1,020 Dr.	..	..	..	nil	..
<i>1979—</i>						
Dr P. Hutchings	3,144	827	..	..	827 Dr.	nil
Dr J. Lowry	3,666	207	2,670	..	207 Dr.	nil
Dr D. McAlpine	7,771	..	5,209	48	48	nil
Dr W. Ponder	6,522	2,291	9,320	..	2,291 Dr.	nil
Dr J. Specht	5,822	2	8,004	..	2 Dr.	nil
Dr G. Webb and Dr H. Cogger	5,474	..	5,396	299	299	..
<i>1980—</i>						
Dr P. Hutchings	3,100	3,100	5,640	325	2,540 Dr.	235
Dr J. Lowry	2,250	2,722	4,312	386	2,062 Dr.	274
Dr D. McAlpine	3,500	3,500	..	7,022	3,500	22 Dr.
Dr W. Ponder	8,232	8,232	6,462	7,312	1,770	2,690
Dr J. Specht	7,728	8,138	4,590	5,654	3,137	5,621
<i>1981—</i>						
Dr P. Hutchings .. .. .	..	3,075	..	613	..	2,462
Dr R. Lampert .. .. .	..	2,325	..	2,206	..	119
Dr D. McAlpine .. .. .	..	6,400	..	5,770	..	630
Dr H. Recher .. .. .	..	13,935	..	10,450	..	3,485
Dr W. Ponder .. .. .	..	7,878	..	6,957	..	921
Dr F. Rowe .. .. .	..	4,930	..	3,863	..	1,067
Dr J. Specht .. .. .	..	7,963	..	1,505	..	6,458
<i>Department of Science and Environment—</i>						
<i>Queen's Fellowship Grant—</i>						
Dr J. Leis	25,080	16,888	21,173	19,443	3,799	1,244
Dr D. Paton .. .. .	..	14,139	..	10,176	..	3,963
Dr S. Oldfield .. .. .	..	..	6,984	..	nil	..
<i>National Employment Strategy for Aborigines—</i>						
Phillip Gordon .. .. .	..	6,451	3,329	9,873	3,329 Dr.	6,751 Dr.
<i>Other Scientific Grants—</i>						
<i>Australian Garbage Project</i>						
<i>Camden Haven Project—</i>						
Dick Smith .. .. .	..	..	2,233	..	nil	..
Forestry Commission Grant—Travel .. .. .	..	..	39	..	nil	..
Forestry Commission Grant—Salary	3,789	..	3,789	..	nil	..
Cape York Study—Grant from Comalco (Aust.) Ltd. .. .. .	..	2,068	1,528	2,087	33	14

Right: The story of the Earth continues to be a popular Museum on the Road exhibit. Dr Alex Ritchie, Curator of Paleontology here is giving a talk to teachers about the Australian Museum.

SCIENTIFIC GRANTS

	Receipts		Payments		Balance	
	1980 \$	1981 \$	1980 \$	1981 \$	1980 \$	1981 \$
Conzinc Riotinto of Australia Ltd—Grants for Malanggan Restoration .. .. .	..	..	..	..	500	500
Electricity Commission—Colo River Project .. .. .	..	..	1,394	..	190	190
Great Barrier Reef Marine Park Authority— Dr J. Leis .. .. .	..	600	..	44	..	556
Dr B. Russell .. .. .	..	13,581	..	14,248	..	667 Dr.
Harris Daishowa—Grant for Wood Chipping Survey	8,960	..	2,310	13,568	10,732	2,836 Dr.
Ian Potter Foundation—Upper Mantle Project	3,750	875	4,625	..	875 Dr.	nil
Lizard Island Research Station	170,236	201,043	89,661	101,339	44,989	144,693
Forestry Commission of NSW—Dr Holmes .. .. .	..	750	..	226	..	524
Larval Fish Survey—Dr J. Leis .. .. .	..	500	..	..	..	500
National Parks and Wildlife Service—Dr Holmes .. .. .	..	2,700	..	272	..	2,428
Sperm Whale Survey— Australian Conservation Foundation .. .. .	..	4,000	..	4,640	..	640 Dr.
Greenpeace	4,500	..	3,985	..	515	515
State Pollution Control Commission—Dr A. Jones .. .. .	..	5,544	..	3,187	..	2,357
UNESCO—Oceanic—Culture Survey	2,057	..	6,836	4 Cr.	374	378
Other Grants— Australia Council—Aboriginal Arts Board— Aboriginal Conference .. .. .	..	..	158	..	112	112
Dugong Film Production .. .. .	..	26,526	..	13,300	..	13,226
Minor Grants	1,520	..	..	..	500	500
Grant for the purpose of producing Rock Art Book .. .. .	..	..	5,000	..	nil	..
Grant towards the purchase of Tiwi Carvings .. .. .	..	..	1,822	..	178	178
Broken Hill Proprietary—Aboriginal Gallery .. .. .	..	10,000	..	1,820	..	8,180
Bank of NSW Grant for "Wandervan"	18,975	17,080	14,382	16,822	10,894	11,152
Guide Books—Grant from The Australia-Japan Foundation	3,627	..	3,627	..	nil	..
Bushell Trust—Outer Urban Exhibitions	10,000	5,000	13,319	4,034	708	1,674
Rural Bank—Mammal Gallery and OUE Grant .. .. .	..	..	6,683	4,280	4,717	437
Unilever Australia Ltd—Abelam Gallery	5,000	10,000	..	19,292	5,000	4,292 Dr.
Van Leer Foundation Australia Ltd—Sponsorship of— Drop-in	19,397	475	18,056	595	120	nil
Scholarship .. .. .	..	..	2,550	450	5,009	4,559
Department of Youth and Community Services— School Holiday Drop-in Programme .. .. .	..	746	..	532	..	214
	\$ 394,157	577,026	315,847	428,811	126,486	274,701

Subject to audit.



The Australian Museum Society

Statement of Receipts and Payments for Year Ended 30th June, 1981

Receipts				1981	
1980					
\$	\$			\$	\$
4,001		Australian Natural History Magazine			4,038
213		Badges and International Passes			32
1,650		Benefactor and Sponsor Membership			500
1,092		Donations			1,862
94		Interest			141
16,373		Member's Subscriptions			20,782
1,255		Miscellaneous Income			2,889
		N.S.W. Government Special Project—Jade			
1,800		Carvings purchase			
9,834		Society Expeditions			16,158
	12	Central Australia			
		Flinders Island	10,000		
	9,822	Lord Howe Island			
		Lizard Island	6,158		
33,190		Society Fund Raising—			31,298
	1,500	Coffee Shop	4,500		
	28,439	Functions	26,049		
	2,407	Sale of Specimen jars			
	844	Wine sale	749		
		Unilever Australia Ltd—Jade Carvings purchase			
		(grant)			
3,600		Balance as at 1st July			13,298
962					
<u>\$74,064</u>					<u>\$90,998</u>
Payments				1981	
1980					
\$	\$			\$	\$
3,472		Australian Natural History Magazine (Sub-			23
7,273		scriptions)			13,528
705		Honoria			280
2,385		Lecture Fees			5,578
2,626		Miscellaneous Expenses			4,568
2,109		Postage			1,014
		Printing and Stationary			
5,400		Purchase of Jade Carvings (Donated to Australian			
7,015		Museum)			
12,159		Salaries			2,928
	1,740	Society Expeditions			8,694
	10,419	Flinders Island	7,644		
		Lord Howe Island			
		Lizard Island	1,050		
17,622		Society Fund Raising—			27,378
	15,276	Functions	25,471		
	2,346	Book Purchases (for resale)	1,907		
13,298		Balance as at 30th June			27,007
<u>\$74,064</u>					<u>\$90,998</u>

Subject to audit.

National Photographic Index of Australian Wildlife

Statement of Receipts and Payments for
Year Ended 30th June, 1981

MAIN ACCOUNT

Receipts 1980 \$	Item	1981 \$
	Donations—	
12,000	Federal Government .. .. .	..
18,000	NSW Government .. .. .	..
..	Australian Museum	14,000.00
30,000	Other	24,010.00
141	Interest	196.11
..	Sale of Equipment	1,786.69
2,959	Reimbursement of expenses paid for Sales A/c .. .. .	..
63,100		39,992.80
3,945	Balance as at 1st July	14,073.28
<u>\$67,045</u>		<u>\$54,066.08</u>

Payments 1980 \$	Item	1981 \$
29,491	Salaries	34,840.50
6,150	Photography	5,693.20
1,166	Travel	890.51
222	Postage	265.57
2,285	Printing and Stationery	1,851.81
207	Entertainment	44.07
162	Stores and Equipment	990.69
107	Telephone	18.00
33	Freight	21.25
330	Insurance	175.00
..	Expeditions	2,500.00
1,000	Loan to Sales Account .. .. .	..
10,000	Repayment of loan from Australian Museum .. .. .	..
..	Transfer to Page Sponsorship Scheme	900.00
1,819	Miscellaneous	14.50
\$52,972		\$48,205.10
14,073	Balance as at 30th June	5,860.98
<u>\$67,045</u>		<u>\$54,066.08</u>

Subject to audit.

National Photographic Index of Australian Wildlife

Statement of Receipts and Payments for
Year Ended 30th June, 1981

SALES ACCOUNT

Receipts 1980 \$	Item	1981 \$
728.69	Balance as at 1st July	8,301.41
	Advances—Angus & Robertson—	
7,500.00	Wren/Warbler Book	7,500.00
13,000.00	Mammal Book	23,000.00
824.50	Sales (Agency transactions)	4,556.70
8.15	Bank Interest	300.43
	Donations—	
	Wren/Warbler Book	125.00
1,000.00	Loan from Main A/c	
	Cancelled cheque	10.00
	Refund postage	1.00
<u>\$23,061.34</u>		<u>\$43,794.54</u>

Payments

1980 \$	Item	1981 \$
12,499.37	Salaries and fees (including fees paid re Books)	28,713.75
44.41	Travelling	913.68
950.30	Page Sponsorship Scheme expenses	1,001.50
439.95	Duplicating and Stationery	530.16
458.40	Reproduction fees	78.50
	Agency transactions (fees to photographers)	2,641.50
367.50	Miscellaneous	
	Hire of equipment	259.20
	T. Lindsey—	
	fee for plan for future publications	300.00
	other	21.50
8,301.41	Balance as at 30th June	9,334.75
<u>\$23,061.34</u>		<u>\$43,794.54</u>

Subject to audit.

National Photographic Index of Australian Wildlife

Statement of Receipts and Payments for Year Ended 30th June, 1981

PAGE SPONSORSHIP SCHEME

Receipts 1980 \$	Item	1981 \$
1,200.00	Balance as at 1st July	3,000.00
1,800.00	Donations to Page Sponsorship Scheme	19,150.00
..	Bank Interest	1,706.68
<u>\$3,000.00</u>		<u>\$23,856.68</u>
Payments 1980 \$		1981 \$
0.10	Bank charges	0.80
2,999.90	Balance as at 30th June	23,855.88
<u>\$3,000.00</u>		<u>\$23,856.68</u>

Subject to audit.

Peter Rankin Memorial Fund

Statement of Receipts and Payments for Year Ended 30th June, 1981

Receipts 1980 \$	Item	1981 \$
7,158	Donations	3,337
13	Interest	649
..	Balance as at 1st July	7,170
<u>\$7,171</u>		<u>\$11,156</u>
Payments 1980 \$		1981 \$
1	Miscellaneous	11,156
7,170	Balance as at 30th June
<u>\$7,171</u>		<u>\$11,156</u>

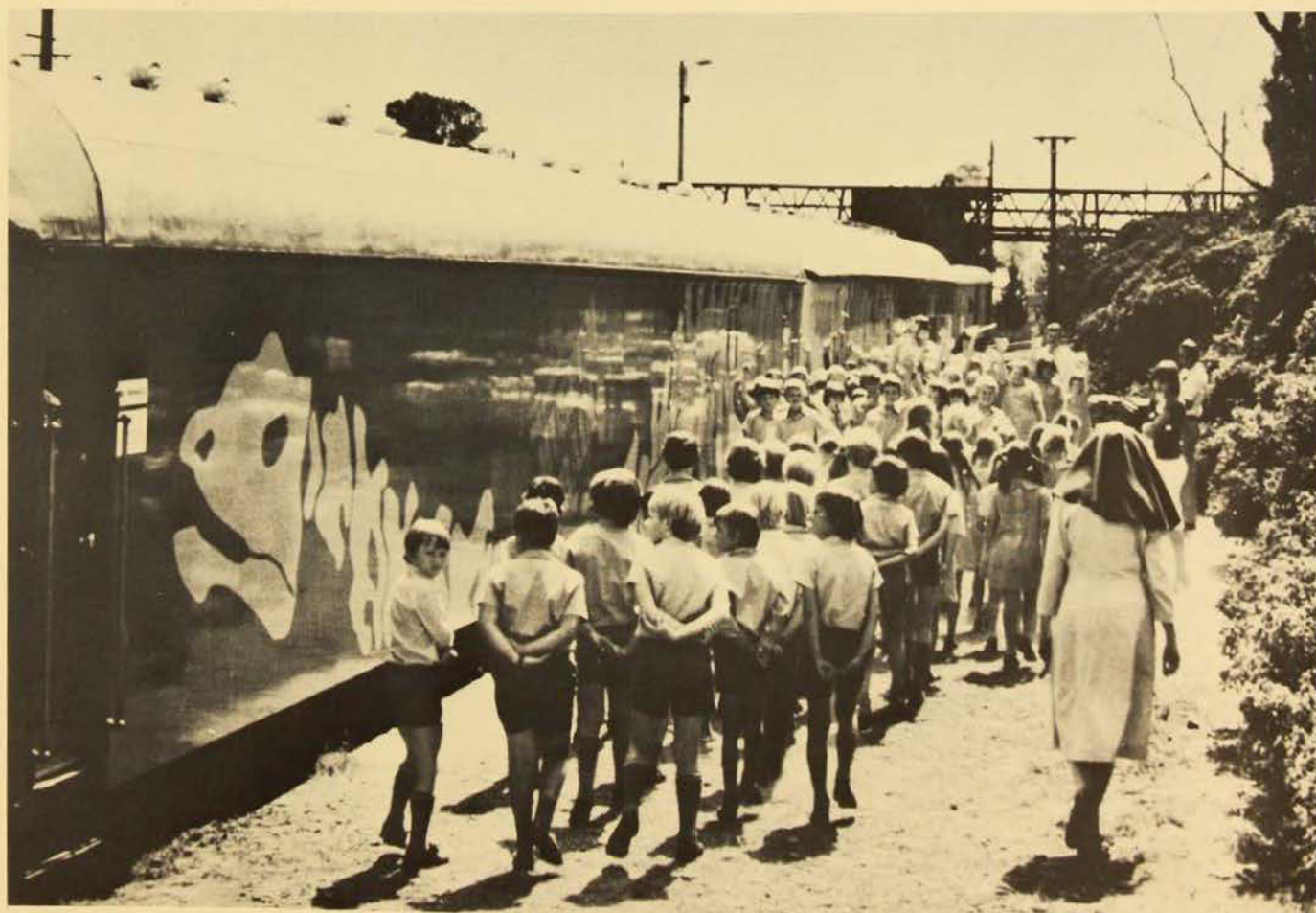
Subject to audit.

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Left: Australian Museum Train, another extension service, was visited by 67 000 people of whom 32 600 were children in classes from 307 schools. Photo Howard Hughes/Australian Museum.

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Popular with Museum visitors is The Museum Shop, one of the main sources of revenue for the Trust. A wide range of stock is sold to suit all tastes and pockets. Photo John Fields/Australian Museum.

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DEPUTY DIRECTOR—H. G. Cogger, MSc, PhD

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ASSISTANT CURATOR—D. Losche, MA, MPhil, PhD
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TECHNICAL ASSISTANTS—C. Sadlier (from 2-3-81); P. Gordon

ARACHNOLOGY

ASSISTANT CURATOR—M. R. Gray, MSc (Head of Department)
TECHNICAL ASSISTANT—C. A. Horseman

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CURATORS—C. N. Smithers, MSc, PhD, (Principal Curator and Head of Department); D. K. McAlpine, MSc, PhD, DIC
RESEARCH ASSISTANTS—D. Kent, BSc, DipAgrEnt; M. Robinson, BAppSci-Biol
TECHNICAL OFFICER—G. A. Holloway, BSc;
ASSISTANTS—R. D. Brewer (to 5-6-81); B. J. Day

FUNCTIONAL ANATOMY UNIT

RESEARCH FELLOW—R. Strahan, MSc, MIBiol, FLS, FSIH, FRZS
RESEARCH ASSISTANT—V. C. Richmond, BSc (to 18-2-81); F. Haas (to 16-6-81); M. Phillips (from 25-5-81)

HERPETOLOGY

CURATORS—H. G. Cogger, MSc, PhD; A. E. Greer, BA, PhD (Head of Department)
VISITING CURATOR—R. G. Zweifel, PhD (to 30-4-81)
TECHNICAL OFFICER—D. Stewart (from 6-4-81)
TECHNICAL ASSISTANT—R. Sadlier
ASSISTANT—A. Thomas

ICHTHYOLOGY

CURATORS—D. F. Hoese BA, PhD; J. R. Paxton, MSc, PhD (Head of Department)
TECHNICAL OFFICERS—D. J. Blake, BA, DipEd; H. K. Larson, MSc; G. Serkowski (to 5-6-81)
QUEENS FELLOW IN MARINE SCIENCE—J. Leis, BA, PhD (to 30-4-81)
RESEARCH FELLOWS—J. Leis, BA, PhD (from 1-5-81); B. C. Russel, MSc, PhD (to 1-2-81)
RESEARCH ASSISTANTS—D. Finney, MSc; J. Gates, BA (from 9-2-81)

MALACOLOGY

CURATORS—W. F. Ponder, MSc, PhD; W. B. Rudman, MSc, PhD (Head of Department)
VISITING CURATOR—E. H. Vokes, PhD (to 14-11-80)
TECHNICAL OFFICER—I. W. Loch; O. Griffiths, BSc (Hons)
TECHNICAL ASSISTANT—P. H. Colman
ASSISTANT—B. Duckworth
RESEARCH ASSISTANTS—G. Avern, BSc, DipEd. (from 1-1-81); J. Hall, BA; B. Jenkins (from 1-2-81)

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TECHNICAL OFFICER—L. M. Gibson
ASSISTANTS—S. Ingleby (from 8-12-80 to 30-6-81); J. Hoey (part-time from 1-5-81)

MARINE ECOLOGY

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TECHNICAL ASSISTANT—C. J. Short, DipFine Arts (to 2-7-80)
TECHNICAL OFFICER—A. Murray, BSc (from 24-7-80)

MARINE INVERTEBRATES (Crustacea and Coelenterates)

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VISITING CURATOR—J. A. Friend, BSc, PhD
RESEARCH ASSISTANT—H. Stoddart, BSc (Hons)
TECHNICAL OFFICER—R. Springthorpe, BSc
ASSISTANT—M. McGrouther, BSc (Hons) (12-1-81 to 20-2-81)

MARINE INVERTEBRATES (Worms)

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ASSISTANT—K. Handley
RESEARCH ASSISTANTS—P. Guilhaus, BSc (from 18-11-80)
P. Turvey, BSc, MSc (from 10-2-81)
A. Hogget, BSc (part-time from 4-2-81)

MARINE INVERTEBRATES (Echinoderms)

CURATOR—F. W. E. Rowe, BSc, PhD, MIBiol, FLS (Head of Department)
TECHNICAL OFFICER—J. Marshall, BSc (to 10-10-80); L. Vail, MSc (from 10-10-80)
RESEARCH ASSISTANT—V. Harriot, MSc (from 5-1-81)
TEMPORARY ASSISTANT—H. Ponton, BSc (1-3-81 to 31-5-81)

Right: Travel cases are one of the popular means of reaching out to the population. 576 were loaned to country and metropolitan schools this year. Pictured is a prototype of the travel case on bats which is one of the six new topics proposed to expand the travel case service next financial year. Photo John Fields/Australian Museum.



MINERALOGY AND PETROLOGY

CURATOR—F. L. Sutherland, MSc
 TECHNICAL OFFICER—J. E. Hingley, BAppSc, FGAA
 TECHNICAL ASSISTANTS—G. A. Brady, MA(Hons) (to 1-8-80); R. E. Pogson, BAppSc(Hons) (2-8-80 to 7-12-80); C. Beattie (to 22-5-81).

ORNITHOLOGY

CURATOR—Vacant
 TECHNICAL OFFICER—W. E. Boles, BSE (on leave from 15-12-80)
 TECHNICAL ASSISTANTS—N. W. Longmore; D. W. Eades (from 13-2-81).

PALAEONTOLOGY

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 ASSISTANT CURATOR—M. White, MSc (part-time)
 TECHNICAL OFFICER—R. K. Jones, BSc
 ASSISTANT—D. Jones

VERTEBRATE ECOLOGY

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 VISITING CURATOR—R. T. Holmes, PhD (to 11-4-81)
 ASSISTANT—G. Gowing, BSc
 RESEARCH FELLOW—G. Pyke, BSc(Hons), PhD
 QUEEN ELIZABETH FELLOW—D. Paton, BSc(Hons), PhD
 ASSISTANT—H. Ponton, BSc (to 29-2-81)

TERRESTRIAL INVERTEBRATE ECOLOGY

ASSISTANT CURATOR—T. J. Kingston, MA, DPhil (Head of Department)
 TECHNICAL OFFICERS—D. Fletcher, BA; D. Giltrap, BSc; M. Robinson, BAppSc-Biol

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RESEARCH ASSISTANT—H. Tranter, BSc

DEPUTY DIRECTOR'S RESEARCH LABORATORY

RESEARCH ASSISTANT—E. Cameron, MSc

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SECRETARY—B. Krywulycz (to 27-2-81); G. McKenzie (from 22-4-81)

SENIOR CLERK/ACCOUNTANT—K. Todd

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CLERKS—B. M. James; G. P. Kondilios (to 27-11-80); I. Lucas; S. Smith; L. Rix (8-12-80 to 21-1-81); E. Hart (from 19-1-81); A. Crane (from 27-4-81); M. Que (from 12-5-81).

STENOGRAPHERS/TYPISTS—P. T. Clark (to 2-1-81) J. Williams (to 6-3-81); J. Dally, V. Jenkins; C. Sinclair, M. Sindel; D. ter Wisscha; K. Brady (from 23-2-81); S. Young (from 2-3-81)

RECEPTIONIST/TYPIST—C. Maloney

TELEPHONIST—A. Sommer

STOREMEN/DRIVERS—J. Rusten, W. Rixon

STAFF BRANCH—PERSONNEL OFFICER—J. Garbutt

CLERK—G. Wargren

TEMPORARY EMPLOYEES—During the year the Museum was able to participate in the State Youth Employment Training Plan. The following persons were employed under that scheme:

K. Bardos (14-7-80 to 7-11-80); S. Clarke (2-12-80 to 27-3-81); D. Smith (2-12-80 to 27-3-81)



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 ASSOCIATE HEAD (relieving)—Barbara Purse, JP
 EDITOR—Roland Hughes, BSc (from 14-4-81)
 PUBLICITY OFFICER—S. White (from 22-5-81)
 ASSISTANT EDITOR—G. D. Campbell, MS, PhD (to 26-2-81);
 A. D. Bishop, BSc(Hons) (from 20-2-81)
 EDITORIAL ASSISTANT—V. Richmond, BSc (from 1-4-81)
 DESIGN/PRODUCTION ASSISTANT—L. Ryan (to 25-2-81)
 MUSEUM SHOP—
 MANAGER—B. Colbey
 CLERICAL ASSISTANTS—J. Van der Kooi; P. Russell (to
 19-9-80); J. McIntosh (from 21-7-80)

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EDUCATION OFFICER-IN-CHARGE—P. M. McDonald, BEM,
 BSc, MEd, FMAA
 EDUCATION OFFICERS—A. C. Burrows, BSc(Hons), DipEd
 (from 5-1-81); C. S. Faulkner-Dick, BA, DipEd (from 5-8-80);
 Z. M. Harkness (part-time); G. S. Hunt, BSc, DipEd, PhD;
 J. G. McDougall, BSc, DipEd; J. McLeod, BA, DipEd,
 DipSpecEd; S. B. H. Maguire, BA (part-time); P. R. Miller,
 BScAg, DipEd (to 12-3-81); N. Pallin, BA(Hons), DipEd
 (part-time); E. J. Wilson, BSc (to 1-8-80).
 EDUCATION OFFICER (Special Project)—A. Saunders, BA,
 DipEd.
 EDUCATION OFFICERS (Museum Train)—J. E. Dengate,
 BSc(Hons) (to 25-8-80); P. R. Miller, BScAg, DipEd (to
 4-9-80); T. G. Quinn, BSc, DipEd (from 11-9-80); K. S.
 Weeks, BSc, MA (from 8-9-80)
 PREPARATORS—R. C. Inder; D. B. Millar; H. White,
 DipIndDes (from 15-12-80).
 TYPISTS—A. Brown (to 29-5-81); A. Karayan; E. McPhee.

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CHIEF—R. Joyner, AIDIA.
 EXHIBITIONS OFFICERS—J. Freeman, BSc (Arch), AIDIA;
 E. Juska, Dip Design (Industrial), AIDIA (to 27-3-81); R.
 Ross-Wilson; R. Sim, Dip Fine Art (Industrial Design) (from
 18-2-81).
 SENIOR ARTIST—K. Gregg
 ARTISTS—B. Matzick, Dip Design (Display)
 S. Robinson, ASTC, Dip Design (Painting)
 M. Socratous, ASTC, Dip Design (Graphics)
 M. Stewart, Dip Arts (Interior) (to 12-3-81).
 ASSISTANTS—D. Beeman (to 25-11-80); L. Calcutt; M.
 Deklerk (from 1-12-80); G. Dixon (to 26-6-81); G. Ferguson,
 Dip Arts (Fine Arts); J. Powell, Dip Arts (Interior); V. Sackar,
 STA, Dip Art Ed (to 29-5-81); L. Sattler.
 TYPIST/ASSISTANT—L. Brown

Left: A quiet moment in the late afternoon in the Museum
 foyer. Each year the Museum reaches a million people. This
 includes at least 550 000 people who visit the Museum in
 the city. The extension programs attract over 400 000 visitors
 from outer suburban and country areas. Photo John Fields/
 Australian Museum.

PREPARATION SECTION

CHIEF PREPARATOR—G. Hangay (acting from 1-8-80)
 PREPARATORS—W. Bell; S. Clark (to 1-8-80); M. Dingley;
 J. Hood (from 11-8-80); O. Kewan (from 5-9-80); S. Larsson
 (to 16-5-80); R. Lossin; E. McLeod (from 6-4-81); T. Ralph
 (from 26-11-80); R. Scott-Child; R. Witchard.

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 ARTIFICERS—K. Forster; T. Lang; H. Magor.

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 TYPIST—H. Spitzer
 CLERICAL ASSISTANT—C. M. Pyne

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 ASSISTANT CURATOR—P. Casey, BScAg(Hons), PhD
 TECHNICAL OFFICERS—S. Frost, AssDipAppSci (to
 16-4-81); M. Gunn, MA (to 12-12-80); D. Horton-James,
 BSc; G. Marton, ChemDip; S. Phillips, BSc (from 23-2-81);
 P. Rey, BSc (to 26-9-80); M. Say, BScAg (from 15-12-80).

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 FRPS, AIAP
 PHOTOGRAPHER—J. Fields
 PHOTOGRAPHIC OPERATOR—H. McLennan

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 SENIOR ATTENDANT—W. Claessen
 ATTENDANTS—E. Adcock, C. Baldwin, H. Burrows (from
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 A. Denman (from 22-1-81); J. Finney, S. Folkes, B. Griffiths
 (from 22-2-81); T. Lambert (to 9-10-80); J. Laughton, A.
 Lomas, E. Mair, J. McGrath (from 14-4-81); W. Payne, P.
 Power, K. Randall, R. Roseworn (to 12-1-81); R. Scott (from
 16-1-81); R. Stevenson (to 18-6-81); R. Stubbington (from
 10-10-80); D. Walden, W. Walsh, S. Zimeris (to 31-10-80).
 SECURITY OFFICERS—W. Jones (from 19-1-81); S. Landy,
 E. Martin (from 25-2-81); D. Patterson, H. Pierson, R. Souter
 (to 29-11-80); J. Ward, H. Watt (to 2-12-80).
 CLEANERS—J. Casey, E. Drakoulaki, J. Elias, J. Fernandez,
 J. Gerzina (from 30-10-80); T. Kovar (to 19-12-80).

D. West Government Printer, New South Wales—1982

A still from the film "Dugong! Dugong!" made by the Museum, sponsored by the Aboriginal Arts Board of the Australia Council. The film deals with the Aborigines of Mornington Island, hunting the dugong for food. Photo J. Fields/Australian Museum.

