

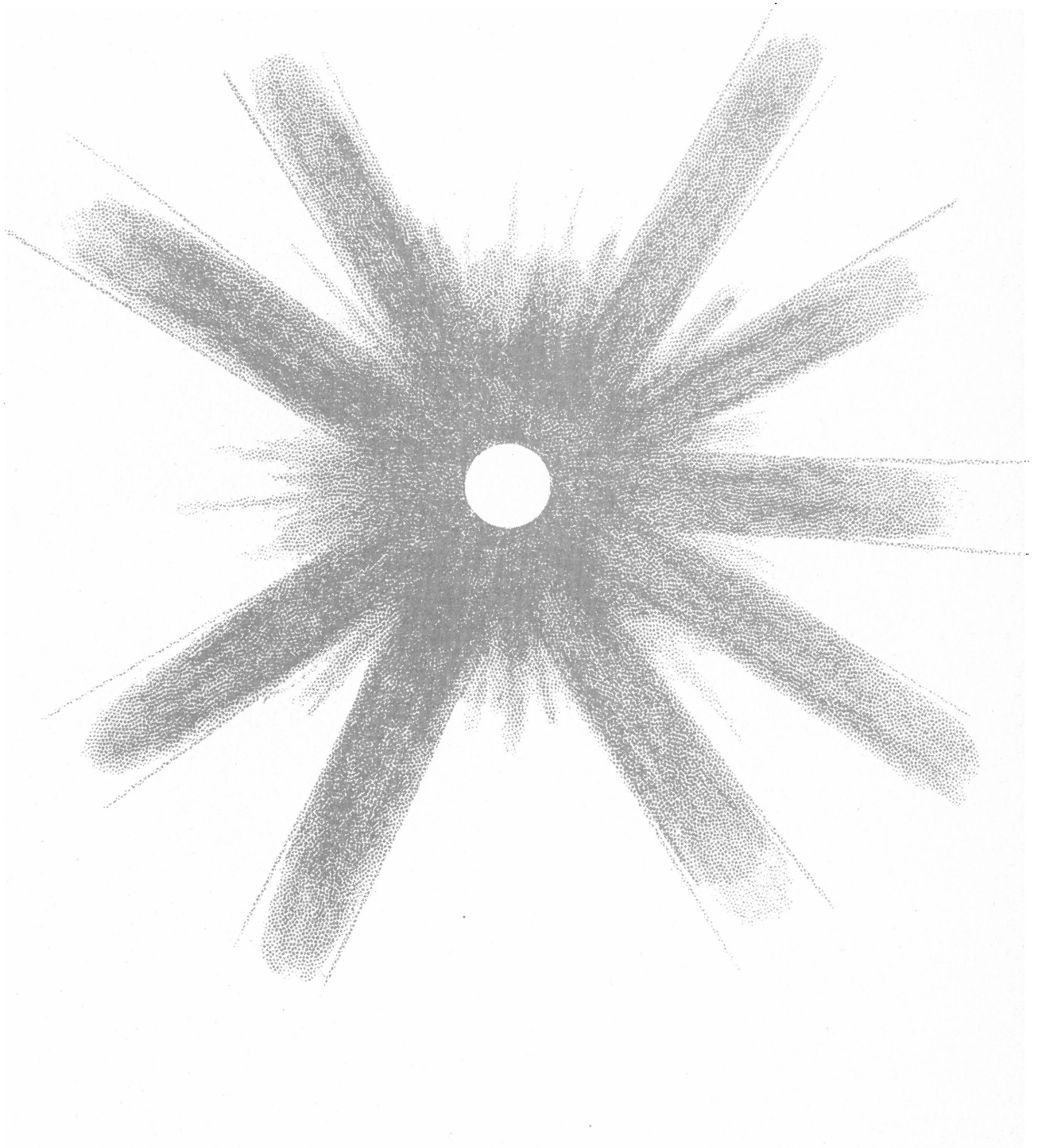




The first major exhibition anywhere in the world devoted entirely to the sun opened at the American Museum-Hayden Planetarium this year. The new Hall of the Sun, which was funded by the Billy Rose Foundation, looks at the crucial role of the sun in our everyday lives and in relation to other stars. This magnificent rendering of the sun behind the Brooklyn Bridge illustrates the intensity of heat and light that make life here on earth possible.

*Photograph by Bill Carter*





108th ANNUAL REPORT / JULY 1976 THROUGH JUNE 1977



American  
Museum of  
Natural  
History







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**ONE-HUNDRED-AND-EIGHTH ANNUAL REPORT OF THE PRESIDENT  
To the Trustees of the American Museum of Natural History  
and to the Municipal Authorities of the City of New York**

The month of June saw the end of my first full fiscal year as President of the American Museum of Natural History. I am glad to say that the institution still seems to be in good shape and that I have learned a great deal about its broad and intricate operations.

Gallery and exhibition openings, as well as educational and fund raising events, were highlights of these months which witnessed as well scientific work and its attendant increase in knowledge. One frustration, however, was the great expenditure of time and resources in defending the Museum repeatedly against totally unjustified attacks by groups of well-meaning "animal lovers." With respect to the small though vocal minority of critics, I fear that the Museum's educational success has been distinctly limited. Nevertheless, I believe more firmly than ever that the Museum is one of the greatest sources of science education in our city, country and the world.

The long-awaited Hall of the Sun in the American Museum-Hayden Planetarium's Perkin Wing opened in November and has been extremely well-received. Its construction was made possible by a grant from the Billy Rose Foundation. Equally welcome was the complete renovation of the Museum's 77-year-old Auditorium, which was distinctly showing its age. Through the generosity of Lila Acheson Wallace it was possible to install new seating and lighting and other modern facilities for presenting both live and film programs while maintaining the integrity of the graceful turn-of-the-century architectural design.

Substantial progress has been made in exhibit preparation for the Hall of Amphibians and Reptiles and the Hall of Peoples of Asia. The former will be completed in November, 1977; the latter, in 1979. Meanwhile, the Museum continues to present significant and attractive displays in its special exhibition program. This year, "Treasures of Cyprus" and "Maps: Their Science and Their Art," both brought new audiences into the Museum.

One small, but very popular, addition has been the new Discovery Room. Designed by the Department of Education for children and staffed on weekends by volunteers, it provides an introduction to the wonders of our "everyday" natural world.

Despite careful management and budgeting, one never-ending activity of any cultural institution is the struggle to obtain funds to help maintain the institution's responsibilities and leadership in its field. Many different approaches, such as the travel-tour program, the corporate campaign, the participating membership drive, fund raising benefits sponsored by the Men's and Women's Committees and the newly-launched Margaret Mead Fund for the Advancement of Anthropology, are used most effectively by the Museum.

Study-tour participants cruised up the Nile, investigated Maya ruins in Yucatán and Central America, visited myriad islands and ancient cities in the Black

Sea area and circumnavigated England, Scotland and Wales. These specially-arranged and scientifically rich tours realized substantial revenues for Museum support, in addition to enhancing its prestige as a scientific and educational institution.

William F. May, Chairman of American Can Company, led his 38 Vice-Chairmen in another fine corporate fund raising campaign for the Museum, exceeding the targeted goal in contributions from the corporate community. The Women's Committee, co-chaired by Mrs. Carl C. Ulstrup, Mrs. Frederic G. Cammann and Mrs. John V. Lindsay, and the Men's Committee, co-chaired by Daniel Ward Seitz and William W. Reese, sponsored a smashing "South Pacific Evening" in March; Margaret Mead was the guest of honor on this occasion. Proceeds from the November benefit opening for the Hall of the Sun, sponsored by the Planetarium Council under the leadership of Jeanette McElvenny, went directly to Planetarium support.

By now everyone knows that Dr. Mead, Curator Emeritus in the Museum's Department of Anthropology, last December celebrated her 75th birthday and her fiftieth year of association with this institution. To honor this remarkable colleague, the Museum has launched a three-year fund raising campaign with a goal of five million dollars. The Margaret Mead Fund for the Advancement of Anthropology will help restore and better house the Museum's outstanding collections of ethnological and archeological material, will renovate the Hall of the Peoples of the Pacific and will support the new Margaret Mead Chair in Anthropology. Substantial assistance in realizing some of the goals of this program was obtained from a five-year grant awarded by The Andrew W. Mellon Foundation, to assist in making the Museum's collections in anthropology more useful to the educational and scientific communities.

The American Museum has been awarded a challenge grant from the National Endowment for the Humanities to assist in interpreting its exhibits, collections and sciences for existing and new audiences. The Museum successfully met, with new or increased support from private sources, the matching requirements of this Federal support program.

The Museum was pleased to receive a substantial grant from the Kingdom of Saudi Arabia as part of a program of mutual cooperation being developed between the Museum and the Ministry of Education in Saudi Arabia.

On May 25, the Museum initiated its opening to the public on Wednesday evenings. Many factors went into the decision to remain open one night a week: increased Museum attendance, upcoming exhibitions of exceptional merit and viewer interest, and the renaissance of Columbus Avenue, an area which now attracts substantial numbers of people in the evening.



*President Robert G. Goelet helps Curator Emeritus Margaret Mead cut her 75th birthday cake at a reception held in her honor last December. To commemorate Dr. Mead's birthday as well as her fifty-year association*

*with the Museum, the Margaret Mead Fund for the Advancement of Anthropology was established this year. Dr. Mead, who has authored dozens of books on the subject of anthropology, continues in the vanguard of her profession.*



We were saddened to learn during the year of Willi Hennig's death. Dr. Hennig, a respected zoologist at the Staatliches Museum für Naturkunde in Stuttgart, West Germany, was a close associate of our scientific staff and for many years a Corresponding Member of the Museum. He was the recipient in 1975 of the American Museum of Natural History Gold Medal for Distinguished Achievement in Science.

In February, four new Trustees were elected. They are Alfred W. Crompton, Director of the Museum of Comparative Zoology at Harvard University; Earl G. Graves, President of Earl G. Graves Publishing Co.; Edwin H. Morgens, Chairman of the Board of Morgens, Waterfall and Company, Inc., and Albert C. Stewart, Director of Sales, Union Carbide Corporation.

The Museum is fortunate in having a dedicated Director and staff who make the most of its outstanding scientific collections. The Trustees and other volunteers also play an integral part in making the Museum a lively, imaginative, forward-looking and publicly responsive institution. To all of them we owe a great debt of gratitude.

*Robert G Goelet*

Robert G. Goelet, *President*

## REPORT OF THE DIRECTOR

The role of basic research in relation to the other activities of an institution is an issue that many administrators and boards of directors or trustees must confront. It is a question faced by universities, medical centers, industrial and government laboratories and, of course, by museums.

Universities in particular cannot function properly unless they perform research. They must acquire knowledge; their claim to teaching authoritatively rests on the continual studying and testing of the information they are dispensing.

The issue is a highly individual one in museums. Many perform no research whatsoever. Others view research as a subsidiary activity and pursue it only when a curator has the time or interest to study a particular problem. The American Museum of Natural History, however, has long regarded scientific inquiry as a primary responsibility. Communicating knowledge through exhibitions, education and publications and acquiring knowledge through scientific research are equally important among our priorities. We cannot exhibit and teach and publish effectively, and with the authority expected of us, however, unless we maintain a strong, vigorous and competently staffed research program. In addition, the effective management and the intelligent use of our vast collections, recognized as a national resource, require that they be cared for and used by, or be under the direction of, competent scientists. For these reasons, considerably more money and staff effort are directed to scientific research than to any other effort.

The material for this research is in the 23,000,000 specimens and artifacts that comprise the collections and in living forms found throughout the world. The research takes place either in Museum laboratories or in natural habitats in the field the world over. It is conducted by the curators and research associates who serve on the scientific staff, together with scientific assistants, students and others.

Because it performs research for exactly the same reasons universities do, this Museum has much in common with universities. Our curators and research associates are recruited from the same sources that universities use to recruit their professors. Undergraduate and graduate students continually use our facilities, our library, our staff, our collections in their work. Many of our curators teach at local colleges and universities; some hold adjunct appointments. Some graduate students are here under informal arrangements. But hundreds of Ph.D. degrees have been awarded to students whose work has been under the direction of Museum scientists in formal, contractual programs with local universities.

Also in common with universities, the American Museum frequently reviews the focus and direction of its programs, research as well as others. An occasion for review arose during the past year, when an anti-vivisectionist attack on research with living cats brought the question of scientific studies to the atten-

tion of a large segment of the Museum's constituents. Lester R. Aronson, Chairman and Curator of the Department of Animal Behavior, was accused by anti-vivisectionists of performing research that had no demonstrable value, was cruel and inhumane to the animals involved, and was inappropriate within a museum. The specific target was his study of the physiological basis for sexual behavior in cats, one of several research interests he has pursued during his long career at the Museum. Because it has relevance to an understanding of sexual behavior in humans, it has been supported in part by grants from several Federal agencies.

A broad segment of the public—by no means limited to anti-vivisectionists—became involved in questioning the research. More than 8000 letters were received and an uncounted number of telephone calls were taken. While we provided answers and information that were satisfactory to many who inquired, the core of anti-vivisectionists who initiated the issue in the spring of 1976 kept it alive throughout the year through a well-executed campaign. Advertisements were taken out in the media, attacks were written in humane society publications, letters and telephone calls of harassment (some threatening) were directed at employees and Trustees, demonstrators picketed the Museum on most weekends, inflammatory handbills were distributed, the granting agencies that supported the research were attacked, political intervention was sought and contributors to the Museum (particularly corporations and private foundations) were pressured in various ways.

Dr. Aronson's work and productivity in this study have been respected and admired by colleagues everywhere, and his reputation as a scientist in this and other work is excellent. Inspections of his facilities, methods and purposes by responsible government representatives have invariably produced favorable reports. The anti-vivisectionist campaign stimulated new inquiries, investigations and inspections by a wide range of government and private agencies. The results did not substantiate any of the charges; they did reinforce the favorable reports that had been made earlier.

Some three years ago, we recognized in Dr. Aronson's forthcoming retirement an opportunity for reflection and consideration of change. A group of respected and experienced scholars in animal behavior were invited to review the program and activities in the Museum's department, and to make recommendations with respect to its future. Among other things, the committee recommended that we seek in our next curator someone whose work would place greater emphasis on natural populations of animals and on field research, as opposed to physiologically-oriented laboratory research with domesticated or laboratory-bred animals. The recommendation recognized the unique and distinct opportunity that the Museum offers to someone interested in such

work, whereas opportunities for working on the physiology of behavior are more commonly available in university and other laboratories. The report of the committee, including this recommendation, was approved by the Trustees and curators on the Museum's Science Policy Committee and by the Management Board of Trustees. Our plans with respect to Dr. Aronson's retirement and the work of his successor were made in accordance with the recommendations of that report, and we hope that recruitment of the successor will be completed in the coming year.

A good deal of time, expense and effort were directed by the Museum this year in replying to the inquiries we received from, and describing our work to, the press, our members, legislators and other government officials, and the public. We received inquiries from some members, and a number (less than 2/10 of one percent, however) either cancelled their membership or refused to renew it because of this issue. While the anti-vivisectionists aimed their criticism specifically at Dr. Aronson's research with cats, many persons saw the issue in terms of the Museum's responsibility to perform basic research. A positive result of the episode was that it brought to the attention of the Museum's constituency the importance of basic scientific research in our work.

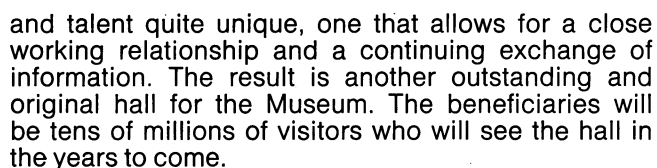
The questions have sometimes been asked: "Why conduct research? Why not concentrate on the marvellous exhibitions, which give people so much pleasure?" The answer, of course, is that the exhibitions are made stunning because the Museum has the knowledge and collections to support them. It would be inconceivable—to us—to mount an exhibition of any size without the authoritative scientific supervision of a Museum curator.

Furthermore, most of the exhibition halls contain information gained through original research in laboratories and in the field, aimed directly at describing and explaining the principles, phenomena and specimens that are the subjects of the display. An example is the Hall of Reptiles and Amphibians, which will open shortly; it contains much new information about the animals represented, their behavior and physiology, based on field work and original studies conducted by the Department of Herpetology. The presence of three curators of herpetology and their technical assistants here under the same roof with scientific authorities in many other fields of biology and behavior, together with the skilled and experienced educators, exhibition designers and preparators in the Departments of Education and Exhibition and Graphics, represents a combination of knowledge

*A special ceremony inaugurating the Museum's new Wednesday evening visitors' hours was held on May 25, with, left to right, Museum President Robert G. Goelet, New York City Commissioner for Cultural Affairs H. Claude Shostal, New York City Commission for Cultural Affairs Chairman Martin E. Segal and Museum Director Thomas D. Nicholson all taking part in the twilight festivities in front of the handsome new kiosks on Central Park West.*







The Department of Animal Behavior is represented more subtly than other Museum departments in exhibitions, but at the same time more broadly. There have been numerous temporary exhibits dealing with behavior, but there is no "Hall of Behavior" in the Museum. The principles of behavior, as studied here and elsewhere, are reflected in many exhibitions, perhaps most prominently in the Halls of Invertebrates, Ocean Life and the Biology of Fishes, Biology of Birds, Biology of Man, and Reptiles and Amphibians.

Personnel, activities and contributions from scientific research, education and exhibition are jointly involved in a great deal of the Museum's work, ac-

complishments and plans. A good recent example is the program that developed out of our planning and constructing the Section on Meteorites, Minerals and Gems, completed last year. During the current year, growing out of the major success represented by that exhibition, we have seen the realization of a long-standing ambition to organize, equip and support a respected research department and program in the mineral sciences, and through it to develop new programs of teaching and of related educational efforts in geology and mineralogy. Another excellent example of a current and important program that includes and relies closely on the collaboration of research, education and exhibition is our ambitious plan for the Margaret Mead Fund for the Advancement of Anthropology. Over a period of five years, funds will be raised for projects in all these areas; the projects themselves and the personnel involved are intertwined. Improved management and care of the anthropological collec-



*Museum Trustee Frank Larkin and his wife attend an opening day reception.*

tions will lead to their increasing use in research and exhibition and to broadened educational activities here and elsewhere.

In our view, this is what the idea of this Museum is all about, this collaboration of scientist, educator and exhibitor around a core represented by collections. We recognize that it is not a university, not a research laboratory, not a warehouse, not a science fair. It has some things in common with all, but it is much more than any of them. It is a place where biological and geological material is collected, organized, preserved, managed, documented, studied, interpreted and exhibited. And the responsibility to do these things carries with it other responsibilities: to go into the field to do the collecting; to study the characteristics of the environment and circumstances that produced the material; to understand how they came into being, how they work, and how they relate to nature and us, their significance to the world around us; to explain

the forces and principles that shaped them; to communicate to others what we have learned about them; to transfer them and our knowledge and understanding of them to future generations; to show them and to make them available to others to do the same.

It is in the tradition of this and other great museums to serve scholarship and mankind in these ways, summed up as research, education and exhibition. There is no other institution of society that does this.

*T. D. Nicholson*

Thomas D. Nicholson, *Director*



*During his three-year expedition to Central Sulawesi, Indonesia, Guy Musser, Archbold Curator in the Department of Mammalogy, discovered over five new species of rodents, one of which is pictured above. Dr. Musser is currently writing up his findings and plans to return to Central Sulawesi to continue his study of the island's unique populations of small mammals.*

*Farida A. Wiley, held in great esteem by friends and colleagues during her nearly sixty years at the Museum, turned ninety in May. Although she officially retired in 1955, Miss Wiley maintains an office in the Department of Education as Honorary Associate in Natural Science Education and continues to lead renowned field trips for laymen.*

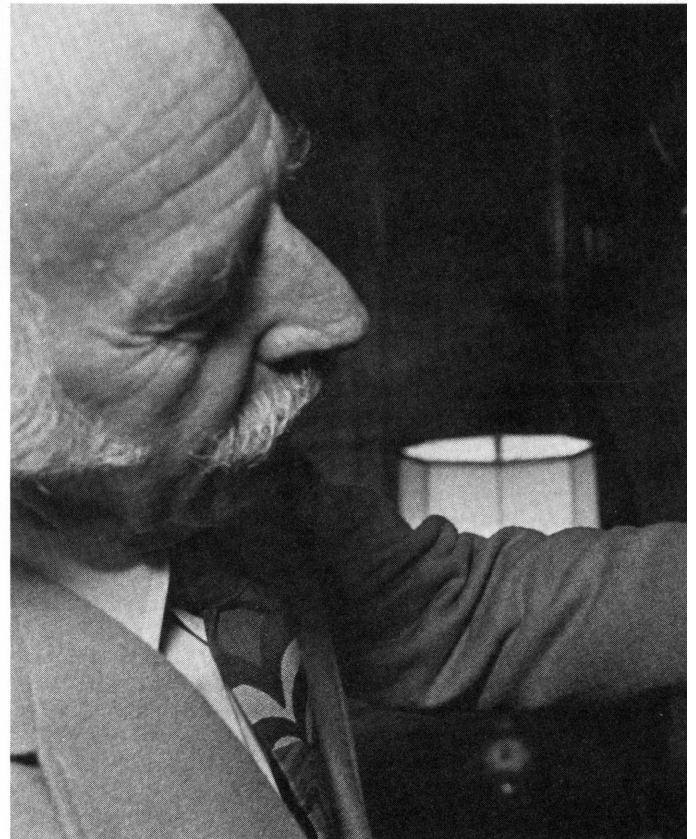
## REVIEW OF THE YEAR 1976-1977

During the year, the following distinctions and honors were given to members of the staff:

**Department of Animal Behavior:** Ethel Tobach was elected a Trustee of the Association for the Advancement of Psychology, representing the Research-Academic Constituency, and was also elected to the Executive Board of the Eastern Psychological Association. The American Orthopsychiatric Association appointed Dr. Tobach its representative to the American Association for the Advancement of Science. H. Philip Zeigler was elected a Fellow of the New York Academy of Sciences. Betty L. Faber was elected a Trustee of the New York Entomological Society. Carol Ann Simon was elected a member of Sigma Xi. Catherine R. Cox was given the Animal Behavior Society's W. C. Allee Award.

**Department of Anthropology:** Margaret Mead was elected to the Women's Hall of Fame and to the American Philosophical Society.

**Department of Entomology:** William E. Old was elected Vice-President of the American Malacological Union.





**Department of Ichthyology:** James W. Atz was appointed a Trustee of the Sea Research Foundation of Cleveland, Ohio.

**Department of Ornithology:** Wesley E. Lanyon was elected President of the American Ornithologists' Union. Dean Amadon was appointed Research Associate of the Buffalo Museum of Science. The West German government awarded Ernst Mayr the Alexander V. Humboldt Preis. Dr. Mayr was also awarded the Linnean Medal of 1977 for Zoology by the Linnean Society of London. He was elected a corresponding member of the Bavarian Academy of Sciences. Jean Delacour was re-elected President of the International Wild Waterfowl Association (U.S.A.) and World Pheasant Association (England). Robert W. Dickerman was President of the Linnean Society of New York.

Staff appointments and promotions are listed below, including those effective July 1, 1977:

**Department of Anthropology:** David Hurst Thomas was promoted to Associate Curator and Frederica de Laguna was appointed Research Associate.

**Department of Astronomy:** Jeffrey I. Mennin was promoted to Business Manager and Deborah A.

Simon was promoted to Assistant Box Office Manager. Roberto Martinez was appointed Assistant Box Office Manager.

**Department of Entomology:** Lee H. Herman, Jr., was promoted to Curator and Norman I. Platnick was promoted to Associate Curator. Raymond R. Forster was appointed Research Associate.

**Department of Ichthyology:** James C. Tyler was appointed Research Associate, Donald L. Erdman was appointed Field Associate and Carol L. Hutchings was appointed Scientific Assistant.

**Department of Invertebrates:** Norman D. Newell was appointed Curator Emeritus, Leslie F. Marcus was appointed Research Associate and Bruce N. Haugh was appointed Assistant Curator.

**Department of Mammalogy:** David J. Klingener was appointed Research Associate.

**Department of Mineral Sciences:** Joseph Rothstein was appointed Associate, Roger Hewins was appointed Research Associate, Robert Klimentides was appointed Technical Specialist and Joseph J. Peters was appointed Scientific Assistant.

**Department of Ornithology:** Wesley E. Lanyon was named Lamont Curator of Birds and Dean Amadon named Lamont Curator Emeritus.

**Archbold Biological Station:** Warren Abrahamson was appointed Research Associate.

**Library:** Miriam Tam was promoted to Assistant Librarian for Technical Services.

**Department of Development and Public Affairs:** Erin V. Galatti was appointed Assistant Manager, Miriam Pineo was appointed Coordinator of Volunteer and Information Desk Services, Nancy H. Glaser was appointed Public Affairs Correspondent and Juanita Lawson was appointed Development Assistant.

**Natural History Magazine:** Ann Marie Cunningham was appointed Senior Editor, Arthur G. Sachs was appointed Business Manager, Carolyn E. Robinson was appointed Marketing Manager, José M. Sola was appointed Production Manager and Rebecca Finnell was appointed Membership Secretary.

**Administrative and Scientific Research Services:** Diane Menditto was appointed Assistant to the Deputy Director for Research.

**Building Services:** Douglas Bonham and Albert Pontecorvo were appointed Supervising Museum Attendant/Guards.

**Museum Shop:** Charles L. Hopkins was appointed Assistant Manager.

**Office of the Controller:** Jason S. Lau was appointed Accounting Manager.



## SCIENCE, EDUCATION AND EXHIBITION

Jerome G. Rozen, Jr., *Deputy Director for Research*

What is the measure of a museum? Or to be more specific, how can we be sure that the American Museum of Natural History is succeeding in maintaining its excellence in education, exhibition, care and use of collections and research? This is a question that we must ask ourselves not once, but continually. The answers for this year are numerous and diverse:

- A total of 2,490,598 visitors were attracted to the Museum and the Planetarium in 1976-1977, over 95,000 more than the previous fiscal year. This increase is due, in part, to a major new Planetarium exhibition, the Hall of the Sun, to an array of more than ten short-term exhibits which held great fascination and scientific merit and to increased promotion of these exhibits and other Museum programs.
- The prestigious scientific staff of this institution published 177 scholarly papers in a broad spectrum of disciplines within the areas of zoology, ecology, geology, meteoritics and anthropology. This number is 30 more than the previous year and 90 more than the year before that.
- The Museum initiated another granting program, the Lerner Fund for Marine Research. This program is designed for young scientists, particularly graduate students and post-doctoral researchers, carrying out investigations in marine biology anywhere in the world. This is the Museum's third program providing small grants to researchers establishing themselves in the scientific community. The Theodore Roosevelt Fund offers support to scientists working with the non-marine fauna and ecology of

North America, and the Chapman Fund provides support for ornithologists.

- The sole function that is unique to a natural history museum as an institution in modern society is the responsibility to preserve, restore and catalog samples of the animate and inanimate world for mankind's use. Our scientific collections of animals, artifacts, meteorites and minerals have increased during the year, making them even more valuable to scientists and other scholars. A total of 656 loans from the Museum's study collections were sent to universities, museums and other research institutions around the world. In addition, the storage, care and potential usefulness of the collections in anthropology, mineral sciences and systematic zoology have been vastly improved over the last five years, owing to substantial financial support from the National Science Foundation, private foundations and individuals as well as to a cadre of highly trained and motivated staff.
- The Department of Education is one of the largest in any museum of its kind in North America. This year's opening of the Discovery Room for young children is one of a series of new interpretive facilities that have been installed during the last five years to broaden and strengthen the Museum's communication with its visitors.

These are some of the indicators that we point to with pride as measures of our stature. Others follow on the next pages.

*Senior citizens participate in a weaving workshop under the guidance of Education Department Senior Instructor Karen Bennett-Mendez. The workshop was one of many educational programs funded by the Museums Collaborative Cultural Voucher Program, whose objective is to make museum staffs and resources more available to community groups. The success of the program at the American Museum has been overwhelming.*



*Young children discover how exciting and rich the world can be in the Museum's recently-opened Discovery Room, the only one of its kind in New York City. An innovative concept in learning, the Discovery Room features "please touch" specimens, a stereoviewer which projects three-dimensional images and individualized kits which allow youngsters to explore natural science concepts that are new to them.*





## DEPARTMENT OF ANIMAL BEHAVIOR

Lester R. Aronson, *Chairman*

Research and education continue to be the dominant activities of the department. Ethel Tobach is continuing her investigation of the behavior and ecology of two competing species of spiny mice living in Israel. In a series of field and laboratory studies, she has found major differences in the aggressive behavior of the two species.

Peter Moller has found that the continuous electric discharges given off by certain fishes help maintain the cohesiveness of their schools even in extremely murky water. These discharges also enable individual fish to locate objects and find shelter.

Howard R. Topoff has made the discovery that when army ants emigrate to new sites, the queen is "protected" by the largest worker in the colony and that as she moves along, her entourage steadily increases to several hundred large workers. The basis for this attraction to the queen is the workers' sensitivity to chemicals she secretes when she leaves the nest.

When pigeons feed on grain they appear to open their beaks to the correct size of each grain before actually touching it. H. Philip Zeigler is studying this phenomenon using high speed photography.

Studying hypersexuality in male cats, Lester R. Aronson and Madeline L. Cooper have found that lesions in a small structure in the brain known as the amygdala cause the animals to become less selective in their choice of mates. However, interference with the function of this structure does not appear to affect sexual arousal.

In her work on the social organization of lizards, Carol Ann Simon has demonstrated that chemoreception, involving the licking of certain substrates, may be an important factor in communication. Previously, visual signals were thought to be the prime source.

Cathleen R. Cox, a postdoctoral trainee studying aggressive behavior in the grey seals of Sable Island off the coast of Nova Scotia, has found that female aggression contributes to mate selection by inciting male-male encounters.

*It takes more than just beautiful exhibits to make a museum a special place. It takes the hard work and dedication of many people doing a variety of vital jobs. Here are some of the many people that keep the American Museum of Natural History one of the finest institutions of its kind anywhere in the world.*



Under the sponsorship of staff members, two students from The City University of New York and one from New York University received their Ph.D. degrees. Fifteen other students are at work on their doctorates; an additional three are M.A. candidates. Twelve undergraduate students (six of whom received support from the City of New York Urban Corps Program) and seven high school students also received research and laboratory experience by working with members of the department. One student, Ivette Gutarra of Brandeis High School, won first place in the Manhattan Science Fair with a research project on cockroach behavior supervised by Betty L. Faber.

### DEPARTMENT OF ANTHROPOLOGY

David Hurst Thomas, *Chairman*

The department was pleased to celebrate the 75th birthdays of two of its most outstanding curators: Margaret Mead and Harry L. Shapiro. Both are pioneers in their fields, Dr. Mead in the realm of cultural

anthropology, Dr. Shapiro in physical anthropology. It is no exaggeration to say that without them, the study of anthropology as a whole would not be what it is today.

Both continue to carry out active research programs. Dr. Mead is pursuing her study of the changing forms of imagery during maturation and aging, as well as her examination of the problems of animistic thinking. (For details on the establishment of the Margaret Mead Fund for Anthropology, see p. 28.) Dr. Shapiro is working on his craniological study of the Ipiutak population from Point Hope, Alaska, and on a biography of Earnest Hooton.

David Hurst Thomas continued his archeological exploration of early Indian sites in Nevada and of an ancient burial mound complex on St. Catherine's Island, Georgia. Robert L. Carneiro continued his study of the Kuikuru Indians of central Brazil. Stanley A. Freed completed a substantial monograph on the effects of urbanization on traditional village life in India. Craig Morris analyzed and coded archeological collections from the important Inca city of Huánuco



Pampa in Peru. Enid Schildkrout continued her field work on the economic roles of children in the Hausa-speaking region of northern Nigeria. Ian Tattersall finished analyzing the data on lemurs he collected on a major field trip to Madagascar in 1974-1975 and made preparations for an expedition to the Comoro Islands during the summer of 1977.

Junius B. Bird returned to Panama to search for archeological sites occupied by early Indians. Gordon F. Ekholm continued his study of trans-Pacific cultural contacts during the seventh century A.D. Walter A. Fairservis, Jr., pursued his study of the Harappan civilization with a fourth season of excavations at Allahdino, Pakistan. Barbara Bode, Ogden Mills Fellow, worked on her study of the Peruvian earthquake of 1975.

In addition to their extensive research commitments, Drs. Morris and Fairservis devoted considerable time to preparing "Peru's Golden Treasures," a major temporary exhibition, and the Hall of Peoples of Asia respectively. The Peruvian exhibition, which will also feature some of the magnificent Paracas tex-

tiles from the department's collections, is scheduled to run from October through December. The Asian hall will open in 1979.

#### **DEPARTMENT OF ASTRONOMY AND THE AMERICAN MUSEUM—HAYDEN PLANETARIUM**

Mark R. Chartrand, III, *Chairman*

The most important event of the year was the opening of the Hall of the Sun. It is the first major exhibition anywhere in the world devoted entirely to this vital celestial body. Two large sections of the new hall deal with its role in the universe and in the lives of earth's inhabitants; a third section is devoted to a mini-theater where visitors can see a film about the sun.

The new hall, funded by a \$400,000 grant from the Billy Rose Foundation, opened in November with a gala benefit arranged by the Planetarium Council under the leadership of Jeanette McElvenny. Proceeds are being applied to improving the Planetarium's projection system.





Attendance at the three Sky Shows offered this year—"Yankee Stargazers" (a Bicentennial special), "Star of Wonder" (the Christmas show), and "It's About Time"—totalled 404,756. Almost 274,000 people attended the Laserium shows.

Starting in April, attendance figures began to pull considerably ahead of the previous year's, marking the success of increased advertising efforts. School attendance during the entire year showed significant increases, reflecting the improved financial situation of some local schools.

Improvements were made in the Guggenheim Space Theater with a grant from the Daniel and Florence Guggenheim Foundation. The Planetarium's new darkroom was completed with a gift from the Alfred R. Stern Fund; the darkroom will provide the staff with better control of photographic operations for the Sky Shows and with the opportunity to experiment with new techniques.

During the year, the Planetarium featured several excellent temporary exhibits on astronomical art, in-

cluding works by Helmut K. Wimmer, Rick Sternbach and Steve Bronson, as well as "Space Art from the Soviet Union," a collection that is being circulated by the Smithsonian Institution Traveling Exhibition Service (SITES) and which made its second appearance in the United States at the Planetarium.

## DEPARTMENT OF ENTOMOLOGY

Lee H. Herman, Jr., *Chairman*

The collections, already the largest in the Museum, reached the 15,000,000 specimen mark during the course of the year.

Lee H. Herman, Jr., revised the rove beetles *Zalobius* and *Asemobius* and proposed that these two seemingly dissimilar genera are closely-related. He also described the third known species of *Zalobius*, the first to be discovered in over 100 years, began revisions of several groups of the rove beetle sub-family Paederinae, and continued his work on *Bledius*.



Curatorial Assistant

Controller

Engineer

Scientific Assistant

Frederick H. Rindge completed his revision of the New World geometrid genus *Sabulodes*, whose 36 species occur from British Columbia to southern South Africa. Two are economically-important pests. Dr. Rindge also began a study of the genus *Xanthotype*, which occurs in North America.

Jerome G. Rozen, Jr., and his co-workers completed five research projects on the evolutionary relationships, ecology, immature stages and behavior of the South African fideiine *Parafidelia*, the South African melittid *Meganomia*, and two groups of nomadine parasitic bees, *Protepeolus* and *Nomadini*. Dr. Rozen also collected immature bees and data on their life histories in Namibia and the Southwestern Research Station, Arizona.

Pedro Wygodzinsky continued to work intensively on his survey of triatomine bugs (kissing bugs), the vectors of Chagas' disease. He also initiated a study of the poorly-known Nicoletiidae, or subterranean silverfish, of Europe in preparation for similar work on the New World fauna.

Norman I. Platnick continued his studies on spider interrelationships, reclassifying the most primitive true spiders, the hypochiloids. With H. Don Cameron of the University of Michigan, he analyzed similarities between the methods used by biologists to study the relationships among organisms and those employed by linguists and scholars of ancient manuscripts.

Randall T. Schuh became the Managing Editor of *Systematic Zoology* this year. He attended the 15th International Congress of Entomology in Washington, D.C., and spent three weeks collecting in Hawaii. At the Bishop Museum in Honolulu, he studied specimens for his research on the plant bug fauna of Southeast Asia, New Guinea and the Southwest Pacific.

#### DEPARTMENT OF HERPETOLOGY

Richard G. Zweifel, *Chairman*

The new Hall of Reptiles and Amphibians dominated the department's activities again this year, with Rich-



Educator



Photographer



Graduate Student

ard G. Zweifel, Charles J. Cole and Charles W. Myers spending considerable time supervising the scientific aspects of exhibit preparation and installation. Research and curatorial projects necessarily were somewhat less actively pursued. Dr. Zweifel continued his long-term work on the population ecology of turtles and snakes inhabiting the Kalbfleisch Field Research Station on Long Island; he and Dr. Cole pursued a similar study involving the herpetofauna of St. Catherine's Island, Georgia.

Meanwhile, Dr. Cole continued his research on evolutionary relationships of reptiles and amphibians, emphasizing chromosome analyses of such species as the fence lizard, *Sceloporus undulatus*. With Carol R. Townsend, he published a detailed account of the techniques they developed at the Museum to rear parthenogenetic (all-female) lizards in self-perpetuating laboratory colonies. No other laboratory has been able to raise these animals generation after generation, but with the techniques established, the rearing of such colonies here and elsewhere is expected to

provide valuable specimens for a variety of scientific studies. As a result, the exploitation of natural populations for these purposes may eventually be reduced.

Dr. Myers and John Daly, his collaborator at the National Institutes of Health, continued their field and laboratory studies of Central and South American poison-dart frogs. The fieldwork resulted in significant new taxonomic data and provided numerous samples of skin toxins which the two scientists are studying from both an evolutionary and pharmacological point of view.

## DEPARTMENT OF ICHTHYOLOGY

C. Lavett Smith, *Chairman*

The primary mission of the scientific departments is to carry out basic research, but there are times when their specialized knowledge is of immediate and direct benefit to the public. For example, members of this department are frequently consulted by importers





seeking English common names for fish that have never been commercially marketed before. Similarly, misidentifications by foreign dealers have been corrected, in some cases preventing the importation of poisonous forms. And some years ago, James W. Atz, in cooperation with rabbinical scholars, compiled a definitive list of fishes that are acceptable under Jewish dietary laws. More than 100,000 copies of the list have been distributed and the demand is still high.

Late in March the department was host to a week-long international workshop of fishery experts concerned with methods of determining the age of bluefin tunas. Age determination is essential to fishery management, but there is disagreement about interpreting a tuna's age, a process which involves the examination of marks on the ear bones and vertebrae. The conference was successful in defining, if not resolving, major differences of opinion.

With federal aid administered through the New York State Department of Environmental Conservation, C. Lavett Smith has been engaged in a study of the distri-

bution of New York fishes. The old taxonomic literature has been reviewed by Dr. Smith, an identification key is nearing completion, and distribution maps for more than 210 species are in preparation. These materials will update the thorough studies made 40 years ago and aid administrators in protecting the aquatic resources of the state.

Donn E. Rosen has been actively pursuing his revisionary and biogeographic studies of fishes from the uplands and intermontane basins of Guatemala. So far, he has prepared about 200 manuscript pages and the major part of a biogeographic review. It is expected that this work will lead to a critical reevaluation of taxonomic, biogeographic and species concepts, the very foundations of systematic studies.

Gareth Nelson has continued his studies on certain theoretical aspects of systematics and biogeography and submitted a large manuscript for publication. He has also continued his work with parrot fishes and, with M. Norma Feinberg has made progress on their joint investigation of the venomous catfishes.



Malacologist



Cafeteria Aide



Preparator



Supervisor

Dr. Atz continued to make progress on his reviews of viviparity, oral brooding and other reproductive specializations in fishes. In an unusual application of phylogenetic analysis to a problem in comparative physiology, he contributed to a paper on the evolution of vertebrate hormones.

## DEPARTMENT OF INVERTEBRATES

Dorothy E. Bliss, *Chairwoman*

Physically and structurally the fusion of two formerly separate departments—Invertebrate Paleontology and Living Invertebrates—was essentially completed during the year; administratively, this new department is now in its third year of existence. By general agreement, it will henceforth be known as, simply, the Department of Invertebrates.

In the realm of research, Roger Lyman Batten, working with planktonic gastropod mollusks, formulated a unifying hypothesis on the origin of their wall struc-

ture. William K. Emerson and co-author William J. Zinmeister completed a major manuscript on the role of passive dispersal of larvae in the paleogeography of marine benthic invertebrates. Norman D. Newell, who became Curator Emeritus in February but will remain active in the department, continued his study of the puzzling, revolutionary change in animal life marking the boundary between the Paleozoic and Mesozoic Eras. Massive extinctions depleted about 50 percent of the families of animals living there.

Niles Eldredge completed two manuscripts on trilobites and collaborated with staff members of other departments on a scientific paper concerning phylogenetic reconstruction as well as on a book on phylogenetic theory. He also continued to supervise the National Science Foundation—supported program to curate and re-catalog the type collection of fossil invertebrates; 90 percent of the work is now complete. An important assist came from the installation of a computer terminal in the department, permitting convenient access to data.



Carpenter



Librarian



Ornithologist



Guard

Ernst Kirsteuer continued his studies of the nemertean and priapulid worms. One examination of the latter involved the use of the Museum's scanning electron microscope. Dr. Kirsteuer also began work on a chapter on nemerteans for a book on the marine fauna and flora of Bermuda.

Dorothy E. Bliss and Linda Habas Mantel made progress in their extensive study of the morphological, physiological, ecological and behavioral adaptations of semi-terrestrial and terrestrial crabs. With several co-authors, Dr. Bliss submitted a manuscript describing the ecology and behavior of land crabs in southern Florida; Dr. Mantel completed an extensive review of the literature on salt and water balance in terrestrial invertebrates other than insects.

George A. Schultz continued his long-term work on marine and terrestrial isopods, and Horace W. Stunkard pursued his study of digenetic trematode parasites of fishes and birds.

This year the department received a large donation of marine shells from the estate of the late Mrs. John Bogart and several gifts of rare and unusual shells from Edward Swoboda. In recognition of the generosity of Nathan L. Halpern, the department has established the Halpern Fund to support research, education and collecting in the field of malacology.

A noteworthy new exhibition that opened in May, "Maps: Their Science and Their Art," drew extensively on the geographical knowledge of Sidney S. Horenstein, who conceived and planned it with Margaret Cooper of the Department of Exhibition and Graphics.

Micropaleontology Press, which is headed by Tsunemasa Saito, published more than 2000 pages of text and illustrations in *Micropaleontology*, the *Bibliography and Index of Micropaleontology*, and supplements to the "Catalogue of Ostracoda" and the "Catalogue of Foraminifera." The press also issued a third volume in its series of special publications: "Radiolarian zonation and stratigraphy of the Upper Cretaceous portion of the Great Valley Sequence, California Coast Ranges," by Emile A. Pessagno, Jr.

## DEPARTMENT OF MAMMALOGY

Sydney Anderson, *Chairman*

Guy G. Musser finished three years of fieldwork on the natural history of rodents inhabiting the island of Sulawesi (formerly Celebes) in Indonesia. He has been determining how many species occur, their morphological and geographic limits, their behavior and life histories and their relationships with rodent species living elsewhere. His extensive data are expected to shed important light on how these animals evolved.

Sydney Anderson continued his studies of raccoon ecology on St. Catherine's Island and his analysis of the sizes of geographical areas or ranges occupied by North American mammals. Richard G. Van Gelder initiated a study in Botswana of the life history and

behavior of the tsessebe, an antelope, and prepared scientific reports on hybridization and the concept of a genus. Karl F. Koopman continued his work on the zoogeography of Peruvian bats.

The generosity of a donor enabled the department to initiate a new intern program. Selected graduate students from various institutions spend four to ten weeks working part-time on their own research, using the department's collections, and part-time on curatorial reorganization of the collections.

The final part of a five-year grant from the National Science Foundation enabled the department to serve more than 150 outside investigators, who either borrowed specimens or did research in the department. A new proposal has been made to NSF for funds to continue this service, as well as to remodel various areas. Plans are also being made to rehouse such collections as the 1000 tanned antelope and buffalo skins, many other artiodactyl skins and skeletons, and 6000 liquid-preserved specimens.

## DEPARTMENT OF MINERAL SCIENCES

Martin Prinz, *Chairman*

The department continued to make major changes by developing its staff and research capabilities, constructing laboratories, organizing its collections, and carrying out research programs.

George E. Harlow was appointed Assistant Curator of minerals and gems and Robert Klimentidis was appointed Technical Specialist. Joseph J. Peters was promoted to Scientific Assistant for the mineral collection. Meanwhile, NASA funds supported the appointments of Robert J. Floran as Postdoctoral Fellow for meteoritic research and Stephen D. Connors as Curatorial Assistant for the meteorite collection. Four research associates and one associate were also appointed.

In the first phase of new construction for the department, laboratories were completed for the electron microprobe, X-ray diffraction and single crystal equipment, microscopes, computer, sample preparation, equipment and chemical facilities. The installation of the electron microprobe, in particular, represents a major advance; it is the only facility of its kind in this area.

Extensive research was carried out by all staff members on a variety of meteoritic projects that are being supported by NASA. These projects include work on such unique meteorites as Chassigny, Serra de Magé, Johnstown, Chervony Kut, and Emery. Mineralogic and petrologic research on terrestrial samples included studies of alkali feldspars, sulfides and sulfosalts from Binnenthal, Switzerland, pyroxene and kyanite inclusions in diamonds, spinels in ultramafic nodules and ironstone formations.

The new Section of Meteorites, Minerals and Gems continued to attract crowds and the attention of pro-



fessional colleagues and associates. A number of improvements and revisions were carried out to enhance the Section even further. Partly because of its great success, a considerable number of gifts and loans were received by the department, which also made some important exchanges and purchases. Next year all the collections will be moved into new storage facilities, while the staff moves into new offices; these changes are part of the overall development of the department.

### DEPARTMENT OF ORNITHOLOGY

Wesley E. Lanyon, *Chairman*

A major event this year was a symposium and dinner held in December to honor Dean Amadon on the occasion of his retirement. Participants in the symposium spoke on avian biology topics of particular interest to Dr. Amadon; nearly 150 guests attended the reception and dinner.

Dr. Amadon became a member of the staff in 1942 and served as Chairman from 1957 to 1973. He is largely responsible for establishing a tradition for which the department has become widely-known: that of quiet scholarship [amid a friendly atmosphere] which maximizes the research productivity of staff and visitors alike. A scholar whose work on birds of prey, in particular, is respected around the world, Dr. Amadon will continue his close ties with the department and the Museum.

In other staff changes, William H. Phelps, Jr., was reappointed a Research Associate, having served in that capacity from 1951 through 1960. Mr. Phelps is known for his ornithological exploration of Venezuela and recently donated a splendid collection of birds to the Venezuelan government. He has made an extended loan of the type specimens from the Phelps Collection to the department, thus contributing to its reputation as the center for systematic research in neotropical ornithology.

Although a five-year grant from the National Science Foundation permitting substantial improvements and renovations in the collections expired this year, a new two-year grant has been received. It will enable the department to continue, at least in part, some of the major curatorial activities launched five years ago.

Crawford H. Greenewalt donated a limited edition of the collection of hummingbird prints produced as a sequel to his book, "Hummingbirds," now out of print. One set each was retained by the Museum Library and the departmental library; the remaining 42 were distributed to the world's major natural history museums. Eighteen drawings by Louis Agassiz Fuertes were also donated to the Museum, by Charles Scribner, Jr. They were originally prepared for "Song Birds and Waterfowl," published in 1897.

The curators visited many other museums in connection with their research this year and also spent

extensive periods of time in the field. Wesley E. Lanyon was on St. Catherine's Island, Georgia. Dr. Amadon went to Africa and to various U.S. locations. Lester L. Short worked in Mauritius, the Seychelles, and Mississippi; François Vuilleumier in Iran and Kashmir; Jared Diamond in the Solomon Islands and New Guinea, and Robert W. Dickerman along the Venezuelan-Brazilian border.

### DEPARTMENT OF VERTEBRATE PALEONTOLOGY

Richard H. Tedford, *Chairman*

Bobb Schaeffer stepped down as Chairman on June 30, 1976, after ten years of service during a demanding time of transition for the department. His tenure saw the successful launching of the new Childs Frick Wing and the building of Childs Frick's former staff and their activities into the department. On July 1, Richard H. Tedford, Curator, assumed the chair under the Museum's recently-inaugurated practice of rotating chairmanships.

The job of installing the Frick collections in the new wing has been nearly completed. In the course of this extensive curation project, 300,000 specimens were processed. They constitute the finest and most comprehensive collection of fossil mammals in the world, and are already being put to active use. This past year, for example, nearly 1000 specimens were sent out on loan and 85 colleagues studied the collection on site. A total of 100 research projects based on the collection are in progress in this country and abroad.

The department continued to carry out research on a wide range of topics both at the Museum and in varied parts of the world. Dr. Tedford continued his work on the phylogeny and classification of the carnivores and the Australian marsupials, as well as on the biochronology of late Tertiary mammals in North America. He also identified an upper molar found in Pliocene deposits in the state of Washington as being that of the fossil panda, *Parailurus*. This ancient animal was thought to have been exclusively an Old World inhabitant.

Dr. Schaeffer continued his work on Mesozoic fishes and on the morphogenesis of fossil fish skeletal tissues. Malcolm C. McKenna continued his extensive, long-range revision of the Mammalia, aided by members of various related departments. With D. Dashzeveg of the Mongolian Academy of Sciences, he described what appears to be the earliest known Asiatic primate, dating from the early Eocene of Mongolia. On a field trip in June and July, he searched for warm-temperate vertebrate faunal remains in what is now Ellesmere Island above the Arctic Circle.

Beryl E. Taylor continued his work on the systematics of camels and ruminants, and, with Dr. Tedford, the history of the dogs. Eugene S. Gaffney began an analysis of the relationships of the Australian fossil

horned turtles, a study for which he spent two months in Australia. Morris F. Skinner and Theodore Galusha continued their geological research in the Great Plains and Great Basin of the United States.

### **ARCHBOLD BIOLOGICAL STATION, LAKE PLACID, FLORIDA**

James N. Layne, *Resident Director*

Last fall, the station accepted a contract from the U.S. Fish and Wildlife Service to conduct an inventory of seven central Florida counties where phosphate is mined. The objectives of the inventory are to compile data on the distribution, habitats and population levels of both vertebrates and selected invertebrates to assess the potential impact of mining and reclamation practices. The inventory is part of a larger study being conducted by the U.S. Environmental Protection Agency. Station staff, research associates and research affiliates have all contributed to the inventory.

Warren G. Abrahamson, appointed a Research Associate this year, began study of the effects of fire on the Lake Wales Ridge vegetation at the station by conducting a carefully-controlled burn of about 230 acres in January. Since fire plays a significant ecological role in the pine-dominated forests of the southeastern U.S., this study is of basic scientific importance.

Thomas Eisner and his colleagues focused their research on the chemical relationships between the arctiid moth, *Utetheisa bella*, and its host plant, *Crotalaria mucronata*. Their studies are designed to explain the manner in which this insect utilizes the plant's chemistry for its own chemical defenses and sex pheromones, and to show how the insect is able to detoxify or otherwise circumvent the normally toxic alkaloids of the plant.

Glen E. Woolfenden and several students continued their long-term, detailed investigation of the biology of the Florida Scrub Jay. Fred E. Lohrer and Chester E. Winegarner continued their research on the breeding biology of the Screech Owl and Great-crested Flycatcher, respectively.

Twenty-three visiting investigators and seven assistants worked at the station during the year. James Carrel, University of Missouri, investigated thermoregulatory behavior in the golden orb weaver spider, *Nephila clavipes*, a tropical species that is near the northern limits of its range in Florida. Earl L. Werner and Donald J. Hall, Michigan State University, studied shallow water fish faunas in two lakes near the station for comparisons with Michigan lakes.

Among the research projects of graduate and undergraduate students were a study of the distribution of the Florida panther, an analysis of seed populations in soils of different types at the station and an investigation of the winter ranges of American Kestrels.

In addition to visiting investigators, 891 other visitors, including 34 groups totaling 801 individuals, were recorded. Eleven of the groups were college or university classes. The station was also co-host to the meeting of the Florida Ornithological Society.

### **GREAT GULL ISLAND LONG ISLAND SOUND, NEW YORK**

Helen Hays, *Chairwoman*

Volunteers trapped 2000 adult Common Terns on the island. Data showed that 78 percent had been banded earlier and 387 were three to seven years old. Helen Hays presented data on productivity in these three-to-seven-year-olds at a conference on changing seabird populations of the North Atlantic in Aberdeen, Scotland, in March.



*Fieldwork plays an important role in the research projects of many Museum scientists. Here Cathleen R. Cox, a postdoctoral fellow in the Department of Animal Behavior, observes elephant seals on Anno Nuevo Island, California.*

Timothy Schmidt, a researcher at the Bodega Bay Marine Laboratory in California, analyzed samples of the water around the island for signs of pollutants; Robert W. Risebrough of the laboratory examined young Common Terns for the same purpose. The two plan to compare the level of any contaminants found this year with those discovered in 1970.

Michael Male, a senior at the University of Connecticut, completed a 28-minute film documentary, "Tern-watch," on the Great Gull Island project.

David Duffy, a graduate student at Princeton University, continued his study of feeding in Common and Roseate Terns. Joseph DiCostanzo, assistant on the project, completed a summary of ten years of adult banding records.

#### **KALBFLEISCH FIELD RESEARCH STATION HUNTINGTON, LONG ISLAND, NEW YORK**

Wesley E. Lanyon, *Resident Director*

In accordance with guidelines established three years ago, when the station was placed on a caretaker basis, maintenance and operating expenses were kept to a minimum and research was confined principally to existing, long-term studies.

Wesley E. Lanyon completed his observations of breeding potential and behavior in the station's unique, captive-breeding stock of Eastern and Western Meadowlarks. He also finished his eighteen-year study of breeding bird populations as they reflect plant succession in study areas that are managed through burning and mowing.

For his part, Andrew M. Greller, Department of Biology, Queens College, has been monitoring the vegetation of the grounds for the past two years. His findings are expected to be critical to Dr. Lanyon's interpretation of the data on breeding bird population.

Richard G. Zweifel continued his research on the biology and behavior of the station's painted turtles, as well as on garter and milk snakes.

James Mansky, who completed his first full year as Resident Superintendent, assumed primary responsibility for the physical plant and security, and also assisted the work of Drs. Lanyon, Zweifel and Greller.

#### **SOUTHWESTERN RESEARCH STATION PORTAL, ARIZONA**

Vincent D. Roth, *Resident Director*

A total of 960 guests visited the station this year. The figure is somewhat lower than last year's, but it includes an increase in the number of researchers.

Research was conducted at the station by individuals representing 56 different institutions around the country. Their work resulted in 24 published papers and included a continuing study of tadpole dimor-

phism in spadefoot toads by Laurence V. Pomeroy, a graduate student at the University of California at Riverside; an examination of territoriality in spiders by Susan E. Riechert of the University of Tennessee, Knoxville; and an assessment of the role of habitat selection in increased feeding efficiency in the wolf spider by Ann Kronk, a graduate student at the University of Tennessee, Knoxville.

Vincent D. Roth studied the cave fauna of the Arizona-Sonora desert in response to requests for information from the Arizona-Sonora Desert Museum of Tucson. He also made a major collecting trip to Hawaii to look for intertidal insects and arachnids, as well as terrestrial arachnids. He made more limited collecting trips to Big Bend National Park and to the region of Yuma, Arizona.

Events of general scientific interest occurring this past year included the appearance of a White-eared Hummingbird and the nesting of a Berylline Hummingbird on station grounds. In addition, Mr. Roth discovered a new species of *Erigeron*, a cliff daisy.

#### **DEPARTMENT OF EDUCATION**

Malcolm Arth, *Chairman*

The highlight of the year was the opening in January of the Discovery Room, a new interpretive facility available to weekend visitors along with its companion areas, the Alexander M. White Natural Science Center and the People Center. The Discovery Room gives youngsters the opportunity to explore artifacts and specimens first-hand, using the five senses. The items are contained in a series of Discovery Kits developed by the department; each is a form of learning game. Not surprisingly, the Discovery Room is providing an excellent work space for groups of the visually handicapped. For example, a pilot program for the blind will be expanded this year with volunteers acting as facilitators during each discovery session.

The department's specialized programs for New York City school classes attracted over 30,000 children this year. The programs include "Exploring Man and Nature," "The World We Live In," and classes in the Natural Science Center. Weekend science courses for individual youngsters, offered each semester, continued, and next year a new program for gifted children will offer an even more intensive experience for a group of city youngsters. They will study several afternoons each week throughout the year with Museum staff.

The important adult programs—teacher-training workshops, in-service courses for teachers, evening lecture series, weekly gallery and slide talks and film programs—continued successfully, as did the activities of the Environmental Education Center, the Cultural Voucher Program, and African-American and Caribbean community programs. The department's



field/study tour program was augmented by the addition of a trip to Morocco.

A number of special events drew capacity audiences to the Auditorium and to the People Center. These included performances by the Alvin Ailey Repertory Ensemble, the Philippine Dance Company and a group that played Chinese instrumental music. Six special weekends in the People Center focusing on Jamaica, Haiti, Puerto Rico, Senegal, Ghana and Nigeria played an important part in the department's many community programming efforts.

For the seventh consecutive year, the Teaching Assistant Program placed parttime interpreters in several permanent anthropology halls. They provided information and orientation for hundreds of classes as well as individual visitors. The program was somewhat smaller this year, but it is conservatively estimated that the assistants still worked with some 70,000 youngsters between October and April. Teaching volunteers reached an estimated 50,000 additional youngsters.

## DEPARTMENT OF EXHIBITION AND GRAPHICS

George S. Gardner, *Chairman*

The program to redesign the Museum's entire graphic image, launched under the direction of the Graphics Division three years ago, has resulted in dozens of new directional and informational signs that have been installed throughout the Museum complex. In addition, the main entrance to the Museum on Central Park West is now graced with two large information kiosks of attractive, contemporary design. These are helping passersby to identify the Museum and visitors to learn about current events and exhibitions. The redesign program has been responsible for creating a new Museum letterhead incorporating a new "logo," as well as for numerous printed materials.

The major opening this year was that of the Sun in the Perkin Wing of the Planetarium. Utilizing many new exhibition techniques such as fiber-optics and laser beams, the firm of Chermayeff and Geismar Associates planned a series of colorful and dynamic displays that explain the role of the sun on earth and in the universe as a whole.

Extensive staff time also continued to be devoted to two other major, permanent halls: Reptiles and Amphibians, opening in November, 1977, and Peoples of Asia, opening early in 1979. Design and planning for a major traveling exhibition organized by the Museum, "Peru's Golden Treasures," was begun by Henry Gardiner. This extraordinary collection of gold objects and ornaments from the Museo Oro del Peru in Lima opens in October, 1977, in Gallery 77. The exhibition will then move on for showings at the Field Museum of Natural History in Chicago, the California Academy of Sciences, San Francisco, and the Detroit Institute of Art.

A wide variety of temporary exhibits was also executed during the year. Both of the shows installed in Gallery 77, "Treasures of Cyprus," and "Maps: Their Science and Their Art," were esthetic and popular successes. Education Gallery was the home of "Is It Real?," an exhibit designed by Joseph M. Sedacca, which explained how the Museum creates its exhibits from both real and man-made materials. The Exhibit of the Month program, funded in part by the Arthur Ross Foundation, featured a variety of subjects ranging from "Mongolian Ornaments" and "Cones and Cowries" to "Margaret Mead at 75," a photographic retrospective of the great anthropologist's life and work. A demonstration of fossil rubbings by a Museum artist was mounted at the New York World Trade Center for a period of three weeks.

The Reproductions Division, under the direction of Martin W. Cassidy, continued to produce exact fiber-glass replicas of a variety of fossil remains at the Museum. Copies of the large *Stegosaurus* skeleton on the fourth floor, for example, were made for distribution to other museums in the U.S. and Canada.

## LIBRARY

Nina J. Root, *Chief Librarian*

A highlight of the year was the completion of the refurbishing, photographing and publication of the thirteen-volume Author Catalog by G. K. Hall & Co. Plans are being completed to publish the Classed Catalog in the coming year. A royalty income will be realized from these publications.

Further steps were taken to reorganize the Library, which now consists of two major sections: Technical Services and Readers' Services. Supervision and maintenance of the stacks were transferred to Readers' Services.

The Review Project was productive this year. Several major sections were reviewed, as well as thousands of pamphlets, of which 3000 were selected for reclassification; some 200 rare items were selected for transfer to the Rare Book Room; a large gift was sorted and evaluated; and approximately 9000 uncataloged items were sorted and reviewed, of which over 3000 were added to the collection. A total of 1154 titles were withdrawn from the collection, 429 items were sent to Swann Galleries for auction; 100 volumes were referred to the Restoration Project and 429 volumes were transferred on indefinite loan to the Dean Library. A total of \$53,272 was netted from the sale of duplicate materials.

Similarly, the Restoration Project had a busy year. With the aid of several volunteers, the project repaired and restored 3250 items.

Among the many important gifts received were the Morden Collection from Mrs. Charles Sweet, which includes African artifacts, film and record tapes, maps, manuscripts and diaries; and a gift of fifty natural

history books from Mrs. Nathan Sheinman.

The Library was chosen to be the recipient of the proceeds from the Antiquarian Book Fair held in New York City. This honor is a direct result of the exhibits in the Rare Book and Manuscript Collection, loans of materials to several important exhibits and the Library's Review Project.

In addition to lending rare books and paintings from Memorabilia to several institutions both here and abroad, the Library and the New York Botanical Garden prepared and mounted an exhibit of rare books at the Grolier Club illustrating rare and endangered species. A new Rare Book Room exhibit, "Natural History Illustrated," opened in April.

The cutback in hours of public and college libraries increased the use of Library users by twelve percent, to 10,054. Readers' Services retrieved 9382 volumes for readers, received 3694 requests for inter-library loans, answered 4031 reference questions and 2268 informational requests, circulated 49,500 items, answered 2637 telephone requests, borrowed 298 items for the scientific staff from other libraries and photocopied 24,120 pages for Library users.

The Library added 567 monographs, 83 serial titles, 15,121 serial issues and 87 map series; filed 6174 cards into the public catalog; distributed 27,972 scientific publications and bound 1139 volumes.

## PUBLICATIONS

### *Curator*

Thomas D. Nicholson, *Editor*

Five issues of *Curator*, the Museum's quarterly journal written for and by museum professionals, were published during the year. For the first time, three members of the Editorial Board, the group that sets policy, reviews articles, and helps solicit material, were appointed from other institutions: the Metropolitan Museum of Art, the New York Botanical Garden and the New York Zoological Society. More Board members from outside the Museum will be added in the future, thus broadening the publication's scope and appeal. To the same purpose, an application has been made for funding to support various promotional efforts to raise circulation, to increase the quantity of article submissions and perhaps to publish collections of articles from past issues of *Curator* in book form.

### *Scientific Publications*

Florence Brauner, *Editor*

During the past year the office brought to press 27 articles in *American Museum Novitates*, totaling 544 pages; ten articles in the *Bulletin of the American Museum Natural History*, 710 pages; two *Anthro-*



*Two weather-proof kiosks, installed this year at the Central Park West entrance, clearly identify the Museum to passersby. The glass-covered interior surfaces provide space for the calendar of events or for posters heralding special exhibitions or programs.*

*pological Papers*, 210 pages; and a paper for the James Arthur Lectures on the Evolution of the Human Brain entitled "What Squids and Octopuses Tell Us About Brains and Memories," 27 pages in length. At present, there are sixteen articles for the three scientific serials of the Museum in press.

The majority of articles were written and illustrated by Museum scientists, and subject matter for them range from anthropology to vertebrate paleontology; a few of the articles, however, were the products of researchers from other institutions.

## DEVELOPMENT AND COMMUNICATIONS

David D. Ryus, Vice-President

*A spectacular temporary exhibition of over one hundred maps, focusing on their variety, history, use and importance, debuted in Gallery 77 this spring. The unique selection of maps on display ranged from rare seventeenth-century atlases to maps of the New York City subway system.*

This has been a year of continued, and successful, emphasis on new approaches to traditional funding sources and on the development of programs to attract new constituencies. The Museum's need for additional operating income was underscored, as expected, by further erosion of City and State assistance, reduced endowment income and the inexorable pressure of inflation on costs and expenses.

When the original cutbacks occurred, it was clear that the loss of primary source income could not be replaced by capital contributions and special purpose gifts—however generous—from individuals and foundations. Since then, development efforts have been largely directed to the pressing need for unrestricted annual operating income.

This year, both old and new constituencies responded to the combined efforts of the Development and *Natural History*-Membership Offices by contributing a record high of \$1,700,000, a thirteen percent gain over last year.

### **Natural History—Membership**

Flourishing, despite increased paper, postage and printing costs, *Natural History* currently reaches 425,000 members and other subscribers, a seven percent increase over the previous year. This success can be attributed to sustained editorial excitement and new approaches to create a more vital, participatory medium for its readers.

While continuing broad monthly coverage of the scientific world, *Natural History* published several special issues this year. The August/September issue focused on the oceans and several of their countless aspects: plate tectonics, sea birds, newly-developing oceans, the enigmatic lobster, seldom-seen deep-sea fishes and the "red tide." The November issue was devoted to the sun to celebrate the opening of the Hall of the Sun, and featured a magnificent selection of solar photographs and specialized documentation. The consultant for the supplement, John A. Eddy, was also an advisor for the new hall. And, in October, a 32-page supplement documented the history, *raison d'être* and future of "America's National Parks"; the supplement gained Congressional attention and was sent by the National Parks Service to all its regional offices and libraries.

To provide contributions, as well as leads to authors and accuracy of articles, *Natural History* is advised by an Editorial Board composed of members of the Museum's scientific staff. This year, articles by staff members included Craig Morris's "Master Design of the Inca" and Howard R. Topoff's "The Pit and the Antlion."

Encouraging its readers to capture on film the world around them, the 1977 *Natural History* Photographic Competition drew more than 30,000 entries, from which eighteen winners were selected. In addition to their inclusion in a magazine portfolio, the

prize-winning photographs will be exhibited at the Museum.

A new and rapidly growing phase of Membership is the Participating and Donor Member program. Designed to attract residents of the New York metropolitan area, the program encourages closer involvement and participation in special Museum events. Participating Members also receive *Rotunda*, a bi-monthly newspaper highlighting Museum events, with commentary and whimsical vintage illustrations. The development of Participating and Donor Membership has seen an increase from 3000 to 5600 members this year alone, with foreseeable continued rapid growth.

*Natural History* reached yet another peak in advertising pages and revenue, generating \$1.2 million, a twenty percent rise over last year. The number of four-color pages increased by an eleven percent margin over the previous year.

In addition, the magazine continues to test and to expand its membership marketing program.

### **Development**

By the close of the fiscal year, the corporate campaign generated \$351,000 from 297 donors. William F. May, Chairman of American Can Company, led a spirited drive with the aid of 38 Vice-Chairmen to solicit funds from 51 donors and 246 repeating donors, of whom twenty percent increased their previous level of support.

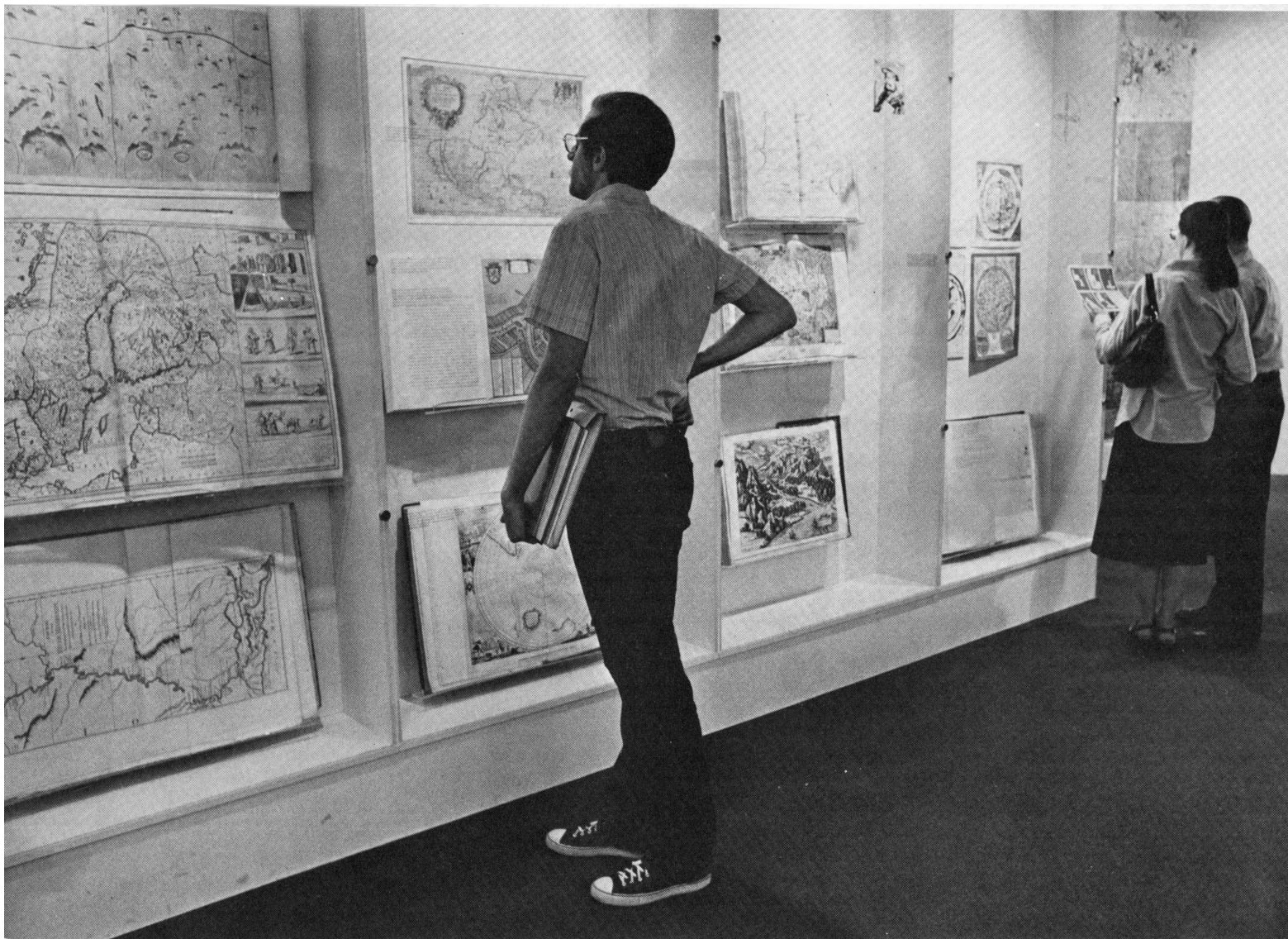
The corporate campaign opened the fund raising year with a "Museumfest" to introduce business executives and their families to the scientific staff and its work; it was followed by six seminar luncheons during the course of the year.

Above and beyond response to annual solicitation, several corporations provided special-purpose funding. A sum of \$400,000 was contributed through five-year pledges by the mining industry to further the work of the Department of Mineral Sciences. An experimental employee admissions program was inaugurated with two corporations, Time, Inc. and CIBA-GEIGY.

The year 1976 marked a milestone in the history of the Museum and in modern science with the celebration of Margaret Mead's 50th year of Museum association and her 75th birthday. On December 16, at a birthday party in her honor, the Margaret Mead Fund for the Advancement of Anthropology was announced, with a goal of \$5,000,000 to be reached by 1979; gifts received thus far are \$245,000 from the Andrew W. Mellon Foundation and an additional \$281,000 from individuals, corporations and foundations. The Fund will support the preservation of the anthropological collections, the renovation of the Hall of the Peoples of the Pacific and a Margaret Mead Chair in Anthropology.

The contributors' program exceeded last year's total by eight-and-one-half percent, mainly due to





Trustee-generated contributions. The Men's and Women's Committees fell somewhat behind. However, the committees, chaired by Daniel W. Seitz, William W. Reese, Mrs. Carl C. Ulstrup, Mrs. Frederic G. Cammann and Mrs. John V. Lindsay, added an exotic touch to fund raising with "South Pacific Evening," a gala benefit with Margaret Mead as guest of honor, and an "African Mini-Safari" featuring the celebrated dancer Charles Moore and African fashion, culture and cuisine. Both evenings were highly successful and netted \$44,000 for the Museum.

Travel, as Bacon said, is a part of education and a part of experience, a description which aptly fits the Museum's Discovery Tours program. This year, in the company of our scientists, program participants cruised the Nile to survey its awesome pyramids and birdlife; sailed to Central America to climb Maya temples and to discover exquisite reefs and cruised around the British Isles to explore their lovely natural life and ancient glories. Contributions made by all participants totalled \$127,400. The upcoming year holds two return trips to the Nile, a Director-led trip to natural history museums in five European cities, expeditions to Alaska, East Africa and the Galapagos Islands, as well as another cruise on the Adriatic and Aegean Seas. In addition, the Discovery Tour program will incorporate Education Department tours to Mexico, Central and South America and Morocco.

### **Public Affairs**

This year, Public Affairs efforts concentrated on presenting to the public a Museum image of innovation, excitement and vitality.

"Darwin's Descendents," a 28-page booklet, highlighted eleven Museum scientists and their fields of study. It is presented in a visually handsome format, enjoyably written for a diverse audience.

Media coverage of two temporary exhibitions, "Treasures of Cyprus" and "Maps: Their Science and Their Art," demonstrated that a natural history museum could display the same fine-calibre art exhibition as a fine arts institution. To promote both exhibitions, the office worked closely with Ogilvy & Mather, Inc. to create highly successful radio announcements. Extensive press coverage was generated by the opening of the Education Department's Discovery Room, the Discovery Tour program, concerts and lectures.

The office produced the third in a series of radio programs featuring Director Thomas D. Nicholson's interviews with Museum scientists. Like the previous series, the fourteen new programs were distributed nationwide to 350 radio stations which specifically requested to air the series. Along with appearances of Museum ads in such "opinion group" magazines as *Harper's*, *Psychology Today*, and *New York*, Public Affairs worked with Time, Inc. and other organizations to create new print ads.

## ADMINISTRATION

Charles A. Weaver, Jr.,  
Deputy Director for Administration

It should be mentioned that considerable Public Affairs staff time was expended on circulating factual, well-documented information on the Museum's animal behavior program to controvert a wave of unfounded accusations about Museum research.

Guest Services produced the Museum's first multi-lingual general information brochure, of which 12,235 in four languages and 109,790 English copies were sent to visitor information bureaus, hotels, airlines and other tourist outlets.

In addition to regular lectures, meetings, classes and screenings, Guest Services arranged 839 events sponsored by both the Museum and outside organizations. Among these functions were symposia, fund raising events, musical programs, press previews, filmings and behind-the-scenes tours.

To provide information, a recorded telephone message served 114,485 potential visitors. The bimonthly Calendar of Events was distributed to 123,000 members and visitors; 283,000 floor plans, including 5000 in foreign languages, were provided Museum visitors.

The Volunteer Office scheduled 80,722 hours of much-needed volunteer assistance to departments and services throughout the Museum.

The past year's results are impressive evidence that the American Museum is more widely recognized than ever as a multi-faceted resource whose scientific research and educational programs contribute significantly to the quality of our lives.



## Building Services

An experiment with the use of single-seat personnel carriers by attendant-guards in patrolling selected public areas of the Museum has proven successful in coping with the problem of keeping the Museum open to the public despite reductions in manpower due to the City's fiscal crisis. Four additional personnel carriers were purchased during the year and are used by guards patrolling all floors of the Museum.

In an effort to better utilize closed-circuit television surveillance for Museum security purposes, Charles L. Miles, Manager of Building Services, has secured additional television cameras and relocated others.

Furniture donated by American Express Company and by Mobil Oil Corporation were distributed to those departments where they were most needed.

## Office of the Controller

During the current year, the office computerized the accounting records of the Hayden Planetarium and finalized the code structure and report format for the Museum, thereby making them compatible with the Management Information System introduced by the City of New York on July 1, 1977. In addition, controls have been developed that will meet the new Audit Guide requirements in connection with such items as pledges, capitalization of fixed assets, and donated services and materials. Considerable progress has been made in reducing the number of supplies carried in inventory through standardization. Substantial savings have been made through increased volume purchases, partially offsetting price increases.

## General Services

The division continues to cope with the increasing needs of the Museum in the areas of mail processing, printing, duplicating, shipping and receiving and telephone services. An additional 125,000 items in the Museum's Central Files have been microfilmed, bringing the total items microfilmed to 275,000. An effort has been made to refurbish and better organize some

*In response to popular demand, R. Buckminster Fuller, world-famous architect and philosopher, returned to the Museum to give a second lecture, aided by grandson Jamie Snyder. "An Afternoon with R. Buckminster Fuller," one of the Membership Department's many special events, proved a resounding success.*

of the administrative files on the Museum's early history. Microfilming and consolidating of files has released precious storage space for other uses.

### **Museum Shops**

A very successful year was highlighted by a new monthly sales record set in December. An increased emphasis has been placed on American crafts, especially pottery and glass, and on ethnic apparel. More merchandise is being sold at the first floor Roosevelt Information Desk and at the new Information Desk in the 77th Street Foyer. Success in selling at these small satellite areas has led to the development of a mobile selling unit which can be stationed near exhibition areas. The design and construction of this unit should be completed early next year. The opening of the Section of Meteorites, Minerals and Gems in May, 1976, has increased the sale of mineral specimens and related books. Appropriate items will also be sold in connection with the November, 1977, opening of the Hall of Reptiles and Amphibians.

### **Personnel**

The department has recruited for 43 positions for a one-year project funded by the Federal government's Comprehensive Employment Training Act. The range of titles recruited for includes Handyman, Assistant Maintainer, Warehouseman, Curatorial Assistant Grade III, Museum Instructor and Librarian. The work force employed under the CETA project will reclaim under-utilized storage areas, refurbish the Museum park area, upgrade the preservation and retrievability of various collections, provide staff to interpret exhibitions and collections for the visiting public and catalog the Library's rare book and manuscript collections.

### **Photography**

During the year, publishers of trade books, encyclopedias and other publications paid the Museum for the right to reproduce 1005 photographs from the Museum's vast collection of black-and-white prints and color transparencies. The department also sold over 14,000 color slides and more than 2500 prints to universities, high schools, elementary schools and individuals.

### **Plant Operations, Construction and Maintenance**

A paper recently published by Harvard University's Graduate School of Business Administration advised that a non-profit institution could save construction funds by acting as its own contractor, hiring its own subcontractors for the necessary electrical, sheet-metal, heating, ventilating and carpentry work. Walter F. Koenig, Manager of Construction and Maintenance,

has been practicing this cost-saving method for many years. An outstanding example of a project successfully completed under this practice is the recently-completed renovation of the Museum Auditorium, financed by the Lila Acheson Wallace Fund, Inc. The project included installing an air conditioning system and new seats, rebuilding the stage, improving the projection lighting and stage facilities and constructing a new entrance lobby.

Funds for the steam used to heat the Museum complex and for the electrical energy used to illuminate the buildings and exhibitions are provided by the City of New York. In an effort to reduce costs, the City required the Museum to save an additional 25 percent in steam utilization and an additional five percent in electrical consumption. An innovative program of turning the steam on and off at pre-determined times and under pre-determined conditions, enabled the Museum to meet the required reduction. An increase in the level of interior night lighting, which allows exhibition lighting to be turned on later in the day and off earlier in the day, coupled with other energy-saving procedures, enabled the Museum to meet its goal for saving electricity.

Significant progress was made in the construction of the new Mineral Sciences laboratories, including the installation of an electron microprobe and several X-ray units.

Minor construction included new terrazzo tile flooring and relocation of some cases in the Warburg Memorial Hall of Man and Nature, a new forced-air ventilation system for the Hall of Mexico and Central America, new wood paneling for the Hall of Eastern Woodlands and Plains Indians and new carpeting for the Man in Africa Hall and the John Lindsley Hall of Earth History. Carpeting donated by Mobil Oil Corporation was installed in the subway entrance lobby and in the Hall of Asian Mammals.

### **Projection**

The division continues to provide projection services for an increasing number of Museum programs as well as for the large number of meetings held at the Museum. During the year, the division installed in the Auditorium a new audio system and assisted in the installation of new stage lighting, including electronic control devices. During this renovation, projectionists were able to reclaim two 16 mm D.C. arc projectors by substituting Zenon as a light source. The two salvaged units are now being used in the Education Hall projection booth.

### **Attendance**

During the year, 1,790,855 persons visited the Museum and 699,743 persons (including 404,756 paid admissions) visited the Planetarium, making a total attendance of 2,490,598.

## TREASURER'S REPORT

Frederick A. Klingenstein, *Treasurer*

The Museum's financial statements, consisting of the Balance Sheet, Statement of Revenue and Expenses of Current Funds and Statement of Changes in Fund Balances, have been audited by Coopers and Lybrand and appear on the following pages.

In reviewing the Balance Sheet, it should be noted that investments in marketable securities of \$52,423,581 are recorded at cost. These investments comprise Endowment Funds, Special Funds and the General Fund. The Endowment Funds investments of \$45,444,255 represent the balance of the funds donated to the Museum since its organization; the General Fund investments of \$3,523,075 generally represent amounts reserved for member benefits in future years; the Special Funds investments of \$3,456,251 generally represent amounts reserved for the completion of special programs and projects funded by private and government grants, together with other Museum funds set aside for such purposes.

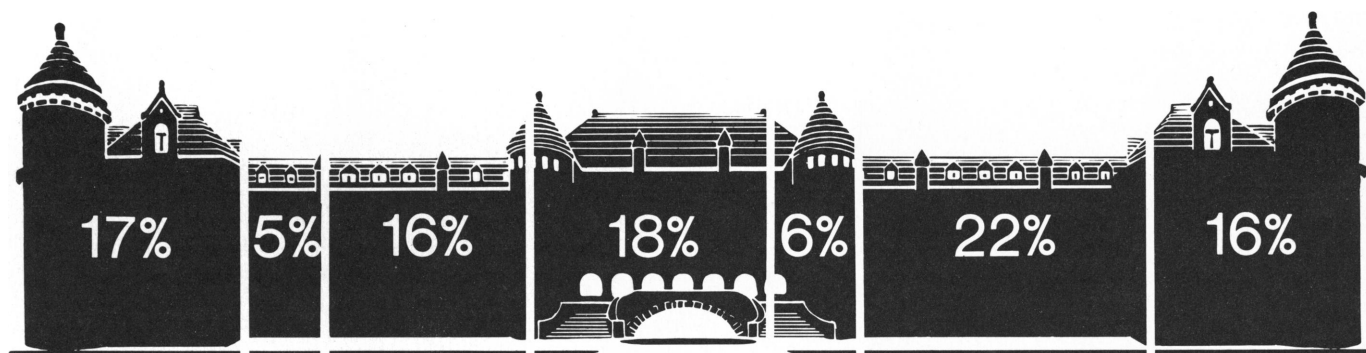
The market value of investments in marketable se-

curities, as of June 30, 1977, amount to \$55,433,830, \$3,010,249 greater than cost; \$2,967,674 of this increase in value is applicable to the Endowment Funds as detailed in Note 1 of the financial statements.

The Statements of Revenue and Expenses of Current Funds on page 35 consist of the General Fund and Special Funds. The total revenue of these two funds for fiscal 1976-1977 was \$16,653,448, an increase of \$1,869,889 over 1975-1976. The total expenses of these two funds for fiscal 1976-1977 were \$16,425,778, an increase of \$1,425,603 compared to 1975-1976. The revenue and expenses, by source and activity, for fiscal 1976-1977, and the percentages that each bear to the total for the year, appear in the graph below.

The annually-budgeted ongoing operations of the Museum are supported in the main from the General Fund, since the use of Special Funds is donor-controlled and covers special programs and projects which may either be limited in time or transcend the

**Total Revenue: \$16,653,448**  
(Year Ending June 30, 1977)



17% City of New York

5% Corporate and Individual Contributions

16% Endowment and Related Funds

18% Grants and Other Restricted Funds

6% Visitor Contributions (Admissions)

22% Museum Membership

16% Sales, Services and Other Revenue



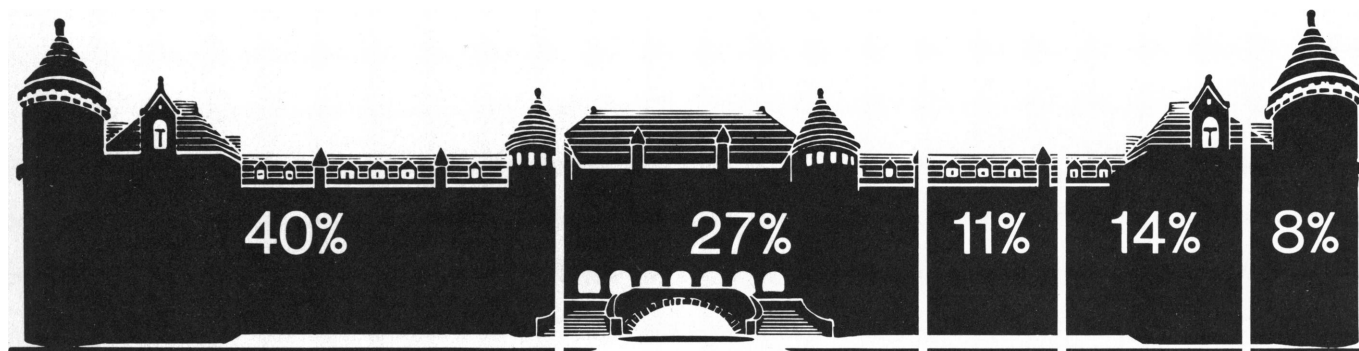
limits of the budgetary year. In fiscal 1976-1977, the operating deficit of the General Fund was \$760,339 compared to \$565,581 in 1975-1976, after giving effect to the 1976-1977 New York State Council on the Arts support grant of \$550,000 to the General Fund and to the support grant of \$660,000 and the cumulative effect of accounting changes of \$744,207 in 1975-1976; the net General Fund deficit amounted to \$210,339 and \$649,788 in 1976-1977 and 1975-1976, respectively.

In comparing General Fund revenue and expenses for fiscal 1976-1977 with 1975-1976, it should be noted that General Fund revenue increased by \$795,379, or seven-and-one-half percent, and General Fund expenses increased by \$990,137, or nine percent, thus resulting in an increase in the General Fund deficit of \$194,758. It is apparent that substantial increases in revenue from Endowment and related funds, Museum membership and sales, services and other revenues were not, however, great enough to

offset the increased costs of purchasing labor, supplies and services. The inflationary conditions in the economy and the necessity of expanding services to meet social and economic conditions have caused a significant increase in administrative expenses.

Notwithstanding the difficult economic climate in 1976-1977, the Museum did not reduce its services to the scientific community and the general public. In order to insure the continuation of the quality of these services at the current level, the Administration is actively engaged in several fund-raising campaigns which, hopefully, will provide new members and additional support from the private sector. While applications have been made to the New York State Council on the Arts for continued support and while City support appears to have been stabilized, it is apparent that under the present economic conditions the Museum must look for increasing financial support from both the public and private sectors if services are to continue at their current level.

### **Total Expenses: \$16,425,778** (Year Ending June 30, 1977)



40% Scientific Research, Education, Exhibition

27% Natural History Magazine and  
Other Membership Services

11% Administrative, Service Offices and General Expense

14% Operations and Maintenance

8% Pensions and Social Benefits

**AMERICAN MUSEUM OF NATURAL HISTORY  
BALANCE SHEETS, JUNE 30, 1977 AND 1976**

1977

	Current Funds		Endowment Funds	Total	1976 Total
	General Fund	Special Funds			
<b>ASSETS:</b>					
Cash	\$ 60,042	\$ 8,438	\$ 507,129	\$ 575,609	\$ 155,886
Receivable from sale of securities				3,231,709	10,133
Accrued interest and dividends receivable	393,694	124,540		518,234	471,877
Accounts receivable, less allowance for doubtful accounts of \$94,941 in 1977 and \$59,030 in 1976	372,119	450,329		822,448	462,061
Due from City of New York	287,726			287,726	124,544
Due from other funds	547,710	66,910		614,620	662,518
Investments in marketable securities (Note 1)	3,523,075	3,456,251	45,444,255	52,423,581	50,755,061
Planetarium Authority bonds (Note 2)		425,000		425,000	425,000
Museum Shop inventory	119,419			119,419	94,473
Prepaid expenses	489,906			489,906	546,802
	<u>\$5,793,691</u>	<u>\$4,531,468</u>	<u>\$49,183,093</u>	<u>\$59,508,252</u>	<u>\$53,708,355</u>
<b>LIABILITIES and FUNDS:</b>					
Accounts payable and accrued liabilities	\$1,436,937	\$ 77,471		\$ 1,514,408	\$ 1,302,156
Accrued employee benefit costs	1,130,890			1,130,890	1,086,290
Payable for securities purchased			\$ 2,713,292	2,713,292	
Due to other funds			614,620	614,620	662,518
Unearned membership income	3,406,287			3,406,287	3,226,596
Funds:					
General Fund (deficit)	(180,423)			(180,423)	(547,710)
Special Funds (Note 3)		4,453,997		4,453,997	2,943,625
Endowment Funds (Note 4)			45,855,181	45,855,181	45,034,880
	<u>\$5,793,691</u>	<u>\$4,531,468</u>	<u>\$49,183,093</u>	<u>\$59,508,252</u>	<u>\$53,708,355</u>

The accompanying statement of significant accounting policies and notes are an integral part of these financial statements.

**STATEMENTS OF REVENUE AND EXPENSES OF CURRENT FUNDS  
FOR THE YEARS ENDED JUNE 30, 1977 AND 1976**

	1977		1976
	General Fund	Special Funds	Total
<b>Revenue:</b>			
Appropriation from the City of New York	\$ 2,830,228		\$ 2,830,228
Gifts, bequests and grants	805,593	\$3,072,485	3,878,078
Interest and dividend income	2,066,510	551,138	2,617,648
Visitors' contributions		967,888	967,888
Museum membership	3,663,534		3,663,534
Other revenue	2,118,829	577,243	2,696,072
Total revenue	<u>11,484,694</u>	<u>5,168,754</u>	<u>16,653,448</u>
<b>Expenses:</b>			
Scientific and educational activities	2,744,904		2,744,904
Exhibition halls and exhibits		1,035,675	1,035,675
Natural History Magazine	4,447,915		4,447,915
Other special purpose programs and projects		2,746,615	2,746,615
Administrative and general	1,708,891	177,885	1,886,776
Plant operating and maintenance	2,323,137		2,323,137
Pension and other social benefits (Note 5)	1,020,186	220,570	1,240,756
Total expenses	<u>12,245,033</u>	<u>4,180,745</u>	<u>16,425,778</u>
Excess of revenue over expenses (expenses over revenue) before cumulative effect of accounting changes and support grant	(760,339)	988,009	227,670
Cumulative effect of accounting changes (Note 7):			
Employee benefit costs			(1,052,241)
Income from investments			<u>380,915</u>
Excess of revenue over expenses (expenses over revenue) before support grant			(887,942)
Support grant (Note 6)	<u>550,000</u>		<u>550,000</u>
Excess of revenue over expenses (expenses over revenue)	<u>(\$ 210,339)</u>	<u>\$ 988,009</u>	<u>\$ 777,670</u>

The accompanying statement of significant accounting policies and notes are an integral part of these financial statements.

**STATEMENTS OF CHANGES IN FUND BALANCES  
FOR THE YEARS ENDED JUNE 30, 1977 AND 1976**

	Current Funds				Endowment Funds		Pension and Frick Employees Retirement Funds (Note 5)
	General Fund		Special Funds		1976		
	1977	1976	1977	1976	1977	1976	
Balance (deficit), beginning of year	(\$547,710)	(\$207,537)	\$2,943,625	\$2,446,356	\$45,034,880	\$42,787,233	\$6,224,560
Additions:							
Gifts, bequests and grants					755,488	109,083	
Interest and dividend income					101,264		213,967
Net gain (loss) on sale of investments					1,278,007	2,416	(80,658)
Excess of expenses over revenue, as annexed			988,009	421,846			
Total additions			988,009	421,846	2,134,759	111,499	133,309
Deductions:							
Excess of expenses over revenue, as annexed	210,339	649,788					
Payments to pensioners and beneficiaries							
General administrative expenses					92,554	90,842	189,862
Past service contributions to CIRS (Note 5)					121,915	132,155	22,086
Purchase of pension annuities (Note 5)							
Total deductions:	210,339	649,788			214,469	222,997	3,401,738
Transfer between funds:							
Financing of:							
1976 and 1975 General Fund deficits	547,710	207,537			(547,710)	(207,537)	
Special Funds activities			552,279	82,423	(552,279)	(82,423)	
Other	29,916	102,078	(29,916)	(7,000)		(95,078)	
Termination of Pension and Frick Employees Retirement Funds (Note 5)							(2,744,183)
Total transfers	577,626	309,615	522,363	75,423	(1,099,989)	2,359,145	(2,744,183)
Balance (deficit), end of year	(\$180,423)	(\$547,710)	\$4,453,997	\$2,943,625	\$45,855,181	\$45,034,880	—

The accompanying statement of significant accounting policies and notes are an integral part of these financial statements.



## AUDITORS' REPORT

The Board of Trustees of  
the American Museum of Natural History,  
New York, N.Y.:

We have examined the balance sheets of the AMERICAN MUSEUM OF NATURAL HISTORY as of June 30, 1977 and 1976 and the related statements of revenue and expenses of current funds and changes in fund balances for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly the financial position of the American Museum of Natural History at June 30, 1977 and 1976 and the results of its operations for the years then ended, in conformity with generally accepted accounting principles consistently applied during the period subsequent to the changes, with which we concur, made as of July 1, 1975, in the methods of accounting for income from investments and certain employee benefit costs as described in Note 7 to the financial statements.

*Coopers & Lybrand*

1251 Avenue of the Americas  
New York, New York 10020  
September 26, 1977

## STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

The Museum maintains its accounts principally on the accrual basis.

The land and buildings utilized by the Museum (most of which are owned by the City of New York), fixed assets (which are charged off at time of purchase), exhibits, collections and the Library are not reflected in the balance sheet.

To ensure observance of limitations and restrictions placed on the use of the resources available to the Museum, the accounts of the Museum are maintained in accordance with the principles of "fund accounting." This is the procedure by which resources for various purposes are classified for accounting and financial reporting purposes into funds that are in accordance with activities and objectives specified. Separate accounts are maintained for each fund; however, in the accompanying financial statements, funds that have similar characteristics have been combined into fund groups. Accordingly, all financial transactions have been recorded and reported by fund group.

Within current funds, fund balances restricted by outside sources or by the Board of Trustees are so indicated (Special Funds) and are segregated from the General Fund. These Special Funds may be utilized only in accordance with the purposes established for them as contrasted with the General Fund over which the Trustees retain full control to use in the general operation of the Museum.

Endowment Funds include (a) funds subject to restrictions established by the donor requiring that the original principal be invested in perpetuity, and (b) funds established by donors or Trustees (funds functioning as endowments) where the principal may be expended with the approval of the donor or the Trustees.

Income derived from investments of Endowment Funds is distributed to the current funds on a unit basis which reflects the ratio of the related funds invested in the pooled portfolio at market value.

Investments are stated at cost or, if acquired by gift, at fair market value at date of acquisition.

Museum Shop inventory is stated at the lower of cost (first-in, first-out method) or market.

Membership income is recognized as income ratably over the membership term and a portion of that income is allocated to the Natural History Magazine.

The Museum accrues and funds annually the normal cost of eligible employees participating in the Cultural Institutions Retirement Systems ("CIRS") Pension Plan. The unfunded prior service cost, with interest, is being funded over 30 years ending in fiscal 2004.

## NOTES TO FINANCIAL STATEMENTS

1. Cost and market quotations of investments at June 30 are as follows:

	1977		1976	
	Cost	Market	Cost	Market
General Fund	\$ 3,523,075	\$ 3,544,566	\$ 3,048,707	\$ 3,048,707
Special Funds	3,456,251	3,477,335	2,068,914	2,068,914
Endowment Funds	45,444,255	48,411,929	45,637,440	51,654,489
	<u>\$52,423,581</u>	<u>\$55,433,830</u>	<u>\$50,755,061</u>	<u>\$56,772,110</u>

The Museum's investments consist of the following:

Short-term obligations	\$ 6,127,209	\$ 6,122,929	\$ 5,930,031	\$ 5,930,031
Bonds	16,608,242	17,161,543	17,735,082	17,327,853
Preferred stocks	1,000,000	1,000,000	1,000,000	1,000,000
Common stocks	28,688,130	31,149,358	26,089,948	32,514,226
	<u>\$52,423,581</u>	<u>\$55,433,830</u>	<u>\$50,755,061</u>	<u>\$56,772,110</u>

2. The investment in bonds (\$570,000 principal amount of the American Museum of Natural History Planetarium Authority is carried at cost. The financial statements of the Planetarium, which is operated under the supervision of the Museum, are annexed. Interest income of \$25,650 received from the Planetarium in the years ended June 30, 1977 and 1976 is included in other revenue of the General Fund.

3. The balances at June 30, 1977 and 1976 of Special Funds (funds which are received or appropriated for specific purposes) are net of overdrafts of certain of these funds of approximately \$188,000 and \$182,000, respectively. These overdrafts represent expenditures in anticipation of transfers from Endowment and/or General Funds, receipt of gifts and grants, or the sale of property and equipment utilized by the Special Funds.

4. Endowment Funds (including funds functioning as Endowment Funds) are summarized as follows:

	June 30	
	1977	1976
Endowment Funds, income available for:		
Restricted purposes	\$20,984,990	\$20,716,552
Unrestricted purposes	7,796,952	7,717,128
Funds functioning as endowment, principal and income available for:		
Restricted purposes	5,131,293	4,864,738
Unrestricted purposes	11,941,946	11,736,462
	<u>\$45,855,181</u>	<u>\$45,034,880</u>

5. All eligible employees of the Museum are members of the CIRS Pension Plan. The costs of the CIRS plan charged to the current funds (including normal service cost and amortization of unfunded prior service cost) were \$618,000 in fiscal 1977 and \$575,000 in fiscal 1976.

Included in Endowment Funds is the Pension Support Fund, a Board-designated restricted fund established to provide a source of funding for the Museum's pension costs. The fund was established from the assets remaining in the Museum's Pension Fund after the purchase of an annuity contract that satisfied the Museum's obligation to those former employees not covered by CIRS. The income generated from this fund is added to its principal, and an amount equal to 5% of the average balance is used to fund annual prior service contributions.

Included in pension costs shown above is \$120,000 and \$100,000 for fiscal 1977 and 1976, respectively, representing amortization (over a twenty-year period) of the excess of unfunded prior service cost over the Pension Support Fund's assets at the date the fund was established.

6. In fiscal 1977 and 1976, grants were received from the New York State Council on the Arts towards the support of the General Fund's Operations.

7. Effective July 1, 1975, the Museum changed its methods of accounting for income from investments and certain employee benefit costs in order to reflect more clearly the operations of the Current Funds. As a result, interest and dividend income from the investment portfolio is recognized as those earnings have accrued to the Museum and the cost of annual leave and sick benefits is accrued as it becomes vested. Previously, income from investments and the employee benefit costs were generally recorded when received or disbursed. These changes had the following effect upon the fiscal 1976 excess of expenses over revenue before support grant for the General and Special Funds:

	General Fund	Special Funds	Total
Excess of revenue over expenses (expenses over revenue) before support grant and before giving effect to accounting changes	(\$493,652)	\$355,167	(\$138,485)
Effect of accounting changes:			
Recognition of income from investments	(37,880)	(6,202)	(44,082)
Employee benefit costs	(34,049)		(34,049)
Excess of revenues over expenses (expenses over revenue) before cumulative effect of accounting changes and support grant	(\$565,581)	\$348,965	(\$216,616)

8. The Museum provides certain services, including accounting and maintenance services, for which the Planetarium was charged an aggregate amount of \$72,820 in fiscal 1977 and \$33,324 in fiscal 1976.

9. Certain amounts in the fiscal 1976 financial statements have been reclassified to conform with the fiscal 1977 presentation.

**AUDITOR'S REPORT**

The Members of the American Museum of  
Natural History Planetarium Authority,  
New York, N.Y.

We have examined the balance sheets of the AMERICAN MUSEUM OF NATURAL HISTORY PLANETARIUM AUTHORITY as of June 30, 1977 and 1976 and the related statements of income, expenses and deficit and of changes in restricted funds for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly the financial position of the American Museum of Natural History Planetarium Authority at June 30, 1977 and 1976 and the results of its operations for the years then ended, in conformity with generally accepted accounting principles consistently applied during the period subsequent to the change, with which we concur, made as of July 1, 1975, in the method of accounting for certain employee benefit costs as described in Note 6 to the financial statements.

*Coopers & Lybrand*

1251 Avenue of the Americas  
New York, New York 10020  
September 26, 1977.



**AMERICAN MUSEUM OF NATURAL HISTORY  
PLANETARIUM AUTHORITY  
BALANCE SHEETS, JUNE 30, 1977 AND 1976**

<b>ASSETS:</b>		1977	1976	<b>LIABILITIES:</b>		1977	1976
Cash		\$ 7,185	\$ 85,346	Accounts payable		\$ 94,640	\$ 19,759
Short-term investments		400,000	199,038	Accrued employee benefit costs		65,217	72,475
Accounts receivable		13,693	2,297	4½ % Refunding Serial Revenue bonds, past due (Note 1)		570,000	570,000
Inventory (publications and souvenirs)		27,608	24,385	Accrued interest, past due		315,450	315,450
		448,486	311,066			1,045,307	977,684
				<b>CONTRIBUTED CAPITAL, RESTRICTED FUNDS AND DEFICIT:</b>			
Equipment, fixtures, etc.:				Contributed capital:			
Zeiss planetarium instrument, at cost		221,928	221,928	Charles Hayden		156,869	156,869
Building improvements		109,800	109,800	Charles Hayden Foundation		429,455	429,455
		331,728	331,728	The Perkin Fund		400,000	400,000
						986,324	986,324
Less, Allowance for depreciation		(99,744)	(83,150)	Restricted funds:			
		231,984	248,578	Trust Agreement Fund		2,500	2,500
Furniture, fixtures and equipment		1	1	Billy Rose Foundation Fund (Note 2)		1,471	98,570
		231,985	248,579	Guggenheim Foundation Fund (Note 3)		15,066	19,624
				Other (Note 4)		409,553	241,650
Buildings, at cost		1,019,210	1,019,210	Deficit, as annexed		(760,540)	(747,497)
		\$1,699,681	\$1,578,855			654,374	601,171
						\$1,699,681	\$1,578,855

The accompanying statement of significant accounting policies and notes are an integral part of these financial statements.

**STATEMENTS OF INCOME, EXPENSES AND DEFICIT  
FOR THE YEARS ENDED JUNE 30, 1977 AND 1976**

	<u>1977</u>	<u>1976</u>
Income:		
Admission fees, less allowances and commissions	\$573,619	\$471,323
Auxiliary activity, sales booth	109,559	101,823
Special lectures and courses	40,794	35,837
Other income and grants	23,584	35,876
Total income	<u>747,556</u>	<u>644,859</u>
Expenses:		
Preparation, presentation and promotional	354,454	301,814
Operation and maintenance	176,580	136,443
Auxiliary activity, sales booth	88,545	88,966
Administrative and general	40,428	37,254
Pension and other social benefits (Note 5)	58,348	61,822
Total expenses	<u>718,355</u>	<u>626,299</u>
Income before interest and depreciation	<u>29,201</u>	<u>18,560</u>
Interest on past due 4½ % Refunding Serial Revenue bonds	(25,650)	(25,650)
Provision for depreciation	<u>(16,594)</u>	<u>(16,594)</u>
Loss from operations before cumulative effect of accounting change and support grant	(13,043)	(23,684)
Cumulative effect of change in accounting for certain employee benefit costs (Note 6)		(67,798)
Support grant		15,000
Net loss	<u>(13,043)</u>	<u>(76,482)</u>
Deficit, as annexed	<u>(747,497)</u>	<u>(671,015)</u>
Deficit, end of year	<u>(\$760,540)</u>	<u>(\$747,497)</u>

The accompanying statement of significant accounting policies  
and notes are an integral part of these financial statements.

**STATEMENTS OF CHANGES IN RESTRICTED FUNDS  
FOR THE YEARS ENDED JUNE 30, 1977 AND 1976**

	Billy Rose Foundation Fund (Note 2)	Guggenheim Foundation Fund (Note 3)	Other (Note 4)
Balance, June 30, 1975	<u>\$ 82,076</u>	<u>\$ 2,884</u>	<u>\$ 91,556</u>
Additions:			
Contributions	200,000	21,350	259,047
Proceeds from special presentations			
Expenditures:			
Special purpose programs and projects	(183,506)	(4,610)	(4,419)
Special presentation expenses	<u>98,570</u>	<u>19,624</u>	<u>(104,534)</u>
Balance, June 30, 1976	100,000	6,500	241,650
Additions:			
Contributions			23,700
Proceeds from special presentations			262,514
Income from investments			17,679
Expenditures:			
Special purpose programs and projects	(197,099)	(11,058)	(51,975)
Special presentation expenses	<u>\$ 1,471</u>	<u>\$15,066</u>	<u>(84,015)</u>
Balance, June 30, 1977			<u>\$409,553</u>

The accompanying statement of significant accounting policies and notes are an integral part of these financial statements.

## STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

The Planetarium's corporate charter terminates when all its liabilities, including bonds, have been paid in full or otherwise discharged. At that time, its personal property passes to the American Museum of Natural History and real property to the City of New York to be maintained and operated in the same manner as other city property occupied by the Museum. The land utilized by the Planetarium was donated by the City of New York.

The policy of the Planetarium is to capitalize only major plant additions and replacements of equipment, machinery and other items and to depreciate such items on the straight-line method over their useful lives. Fully depreciated assets are carried at nominal value. Because of the nature of owner-

ship of the property, provision for depreciation of the buildings is considered unnecessary.

Short-term investments are stated at cost, which approximates market value.

Inventories are stated at the lower of cost (first-in, first-out method) or market.

Fund balances restricted by outside sources or by the Management Board are so indicated (restricted funds). These restricted funds may only be utilized in accordance with the purposes established by the source of such funds.

The Planetarium and its employees participate in the Cultural Institutions Retirement System's (CIRS) Pension Plan. It is the Planetarium's policy to fund pension expense accrued.

## NOTES TO FINANCIAL STATEMENTS

1. The Planetarium Authority bonds were purchased by the American Museum of Natural History ("Museum") in 1948. The Charles Hayden Foundation contributed \$200,000 to the Museum toward the purchase of such bonds.

2. During fiscal 1976, the Planetarium began the construction of the Hall of the Sun. The cost of this project is estimated to be \$400,000 and is being funded by contributions of \$400,000 from the Billy Rose Foundation of which \$100,000 was received in fiscal 1975, \$200,000 was received in fiscal 1976 and the final \$100,000 in fiscal 1977.

3. In fiscal 1972 the Daniel and Florence Guggenheim Foundation contributed \$188,000 to establish and maintain a Space Theater at the Planetarium. In fiscal 1976 it pledged a contribution of \$51,350 to be paid over the next five years. Through June 30, 1977, \$27,850 has been received on this pledge.

4. The Management Board of the Planetarium has designated that the net income from special presentations be set aside in a board designated restricted fund to fund current and future improvements and renovations.

5. Pension expense for fiscal 1977 and 1976 was \$30,805 and \$31,615, respectively.

6. Effective July 1, 1975, the Planetarium changed its method of accounting for certain employee benefit costs in order to reflect more clearly its operations. As a result, the cost of annual leave and sick benefits is accrued as it becomes vested. Previously, these costs were generally recorded when disbursed. This change had the following effect upon the fiscal 1976 loss from operations before support grant:

Loss from operations before support grant and before giving effect to accounting change	(\$19,007)
Effect of change in accounting for employee benefit costs	<u>(4,677)</u>
Loss from operations before cumulative effect of accounting change and support grant	<u>(\$23,684)</u>

7. The Planetarium receives certain services, including accounting and maintenance services, from the Museum. The aggregate charges for such services in fiscal 1977 and 1976 aggregated \$72,820 and \$33,324, respectively.



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 gem (yttrium-aluminum garnet),  
 113.45 carats  
 Government of Saudi Arabia through  
 the Ministry of Education—items of  
 general ethnology  
 Alice Gray—5124 specimens of  
 miscellaneous insects  
 Richard Heitzman—4532 specimens  
 of Lepidoptera  
 Mervyn Kamran—13,815 insect  
 specimens  
 Charles Kimball—3151 assorted  
 specimens of Lepidoptera  
 David H. Kistner—960 paratypes  
 of rove beetles  
 Mr. and Mrs. Morton Keinman—  
 14 assorted gem stones  
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 Bryant Mather—5911 assorted  
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 the United States  
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