Cover: Reproduction of a section of a cave painting from Lascaux in France, part of the Museum's newly-opened Hall of Human Biology and Evolution.

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The past year, the Museum’s 124th, was one of continuing progress in all our activities: science, education, and exhibitions. Finances continue strong. Our liquid endowment has a market value in excess of $200 million, and the income it produces helps nourish our operating programs. We have an operating budget of some $60 million for next year, with approximately break-even results again expected. Our fundraising campaign for operations, construction, deferred maintenance, and new programs for the millennium ahead is well designed. However, the years ahead will present new challenges emanating from the financial strains on such traditional Museum partners as the city and state of New York and the federal government. Our Museum is one of New York City’s most important cultural assets, with an annual attendance of nearly three million visitors from all over the world. There is an increasing opportunity for the Museum to play an expanded role in public science education in New York and beyond, and we aim to attract increasing numbers of visitors of all ages to the Museum and our Planetarium.

The major Museum event since our previous annual report has been the change in the presidency. George D. Langdon, Jr.’s, five-year term as the Museum’s first paid president was completed with marked progress. We are deeply grateful to him. Among the major accomplishments during his presidency were the modernization of the Museum’s organization and of its accounting system; the installation of the Barosaurus exhibit in the Theodore Roosevelt Memorial Hall; completion of the new, highly acclaimed, Hall of Human Biology and Evolution; major progress in the reconstruction of the fourth-floor dinosaur and fossil vertebrate halls; construction of the new eight-story Library building; broadening of our science and education activities; and initiation of our capital, endowment, operating fund, and bequest campaigns. In addition, two special exhibitions launched under Dr. Langdon’s direction, Global Warming: Understanding the Forecast and Chiefly Feasts: The Enduring Kwakiutl Potlatch, are now touring the country. Having completed his commitment, Dr. Langdon left in the fall to head and reinvigorate the United Nations Association at this time of historic flux in global affairs. It is a major and challenging opportunity for public service of international importance. We applaud his vision and courage in accepting this responsibility.

Ellen V. Futter was elected by the trustees, on recommendation of a search committee chaired by David Hamburg, to succeed George Langdon as president. She came on board in November 1993. She comes to us from Barnard College, which flourished for 13 years under her presidency. She is 44 years of age and a graduate of Barnard College and Columbia Law School. She has a strong record of public service, including having served as chairman of the Federal Reserve Bank of New York. With her intelligence, vision, energy, dedication, personality, leadership qualities, and administrative and fundraising experience, we are enthusiastic about prospects for the Museum and the Planetarium as she leads us into the 21st century. The convocation on December 1, 1993, celebrating her induction as president, was attended by some 500 individuals, including then Mayor-elect Rudolph W. Giuliani and other leaders in the academic, scientific, and political worlds.

For an overview of science and research at the Museum, I refer you to the “Science at the Museum” section on pages 12 and 13 of this report, and to the individual department sections, which begin on page 14. It is of special significance that our modern molecular biology laboratories are being doubled in size and scope. And increased attention is being devoted to such critical issues of the day as global climate change, extinction of species, and impairment of the environ-
ment. This is being done through the establishment of a Center for Biodiversity and Conservation, which will become an increasingly important activity of the Museum in the years ahead. It will interrelate our scientific research more effectively with a broad community of the public, of policy-makers, and of conservation organizations.

Our Hayden Planetarium is the focus of timely attention. Following on the work of a visiting committee of distinguished astronomers and administrators, planning is now under way for modernization of exhibits and equipment and for updating and increasing the science content of our programs. This will require substantial new capital investment.

We continue to broaden and improve our scientific and educational efforts. Notable are our expanded international expeditions (e.g. Cuba, Mongolia, Madagascar, French Guiana, China, Chile, and New Guinea) among more than 150 such projects annually. Many aspects of our collections are unsurpassed, our curators and scientific staff continue to pursue and play leadership roles in some of the most complex and topical scientific research in the world, our devoted and enthusiastic trustees are increasingly supportive, and public recognition of the Museum is growing.

The celebration of our 125th anniversary in 1994-95 will comprise a memorable series of events. Detailed planning is now well advanced, under President Futter’s leadership. The anniversary will be launched in May 1994 with the opening of the Lila Acheson Wallace Wing of Mammals and Their Extinct Relatives. This wing comprises the first two exhibition halls to be completed in a spectacular renovation and restructuring of our fossil halls. The entire project, including the Miriam and Ira D. Wallach Orientation Center, will be completed in 1996. It will create six new halls to tell the story of vertebrate evolution through the most extensive and scientifically important array of fossils ever assembled.

A start has been made in improving the appearance of our perimeter, including the park areas, on brightening our exterior and interior lighting, and on clarifying our signage. There is more to be done.

Progress has been made in implementing our long-range strategic plan developed by a joint trustee and staff committee chaired by Helene L. Kaplan. This important planning activity, inspired by Anne Sidamon-Eristoff and initiated when the late Tom Nicholson was director, will be reviewed comprehensively in the coming year and, of course, from time to time in the future.

To fuel the long-term program, in 1990 the Museum launched a comprehensive fundraising campaign under the banner “Knowledge for the Next Millennium: The Campaign for the American Museum of Natural History.” An initial goal of $250 million by the year 2000 for capital funds, endowment, and program support was established by the trustees, and we have already surpassed the halfway mark of $125 million targeted for our 125th anniversary. A more extensive description of our fundraising efforts is outlined in the Development and Public Affairs report, which begins on page 76.

Our Board of Trustees was strengthened this year by the addition of several outstandingly qualified members: Richard A. Jalkut, president and chief executive officer of New York Telephone; David A. Koch, executive vice-president, chemical technology, Koch Industries; Karen J. Lauder, producer and writer; and Edward O. Wilson, Mellon Professor of the Sciences at Harvard University.

We are grateful for the effective service of four trustees whose Board membership was completed during the year: Samuel C. Butler, José A. Cabranes, Jerome Kohlberg, Jr., and Franklin D.
Raines. In addition, the Board was pleased to recognize the exceptional role of Jack Rudin, a dedicated trustee for over 20 years, by electing him an Honorary Trustee.

We mourn the death of Honorary Trustee Benjamin S. Clark in March 1993. Mr. Clark, an ardent ornithologist dedicated to conservation, joined the Board in 1951. Through the years, he contributed generously to the Museum. He was a man of character and wisdom who possessed an extraordinary breadth of knowledge about nature and was a dedicated and loyal trustee. We will miss his presence, and we cherish his memory. We also record, with a deep sense of loss, the death of Honorary Trustee Thomas J. Watson, Jr., who joined the Board in 1955. Mr. Watson chaired the Museum’s 1974-75 campaign for corporate support and provided wise counsel throughout his tenure. He, too, will be missed and warmly remembered.

The Museum again expresses its deep appreciation to David N. Dinkins, Mayor of the City of New York from 1990 through 1993, who provided support and encouragement for the Museum throughout his tenure. We are grateful to City Council Speaker Peter F. Vallone and to Manhattan Borough President Ruth W. Messinger for their continuing recognition of the importance of the Museum and for their ongoing support of our efforts. We also acknowledge the loyal support of the commissioners and staffs of the New York City Department of Cultural Affairs, the Department of Parks and Recreation, the Department of General Services, the Landmarks Preservation Commission, and the Art Commission. As partners, they have worked devotedly with us throughout the year to sustain and improve the Museum as one of the City’s great cultural resources.

Rudolph W. Giuliani, Mayor of The City of New York, whose term began on January 1, 1994, has been outstandingly supportive in his interest in the Museum as a major and burgeoning cultural, scientific, and educational attraction of our city and of our country. The Museum continues to work closely with Chancellor Ramon C. Cortines toward the expansion of our role in the New York City Board of Education’s programs for the almost one million boys and girls in the K-12 system.

It is a heartwarming privilege again to express on behalf of the Board of Trustees our gratitude to our teammates, the Museum’s loyal and committed staff of some 775 men and women, whose devotion, skill, and knowledge have made possible the year’s accomplishments. And we express special thanks to the Museum’s more than 700 dedicated volunteers, named elsewhere in this report, for their important work with the public, with the staff, and behind the scenes.

The pages that follow set forth the diverse activities of the Museum with emphasis on the achievements since our previous annual report. The pride and enthusiasm which we trustees feel for this institution will be evident throughout its pages. The report should inspire in its readers a greater appreciation of the diverse, wondrous, endangered, and evolving world in which we live.

Our monthly members’ bulletin, Rotunda, heralds and describes many of the varied programs presented at the Museum in addition to our permanent and special exhibitions. If you are not a member, we hope you will consider joining. But whether or not you are a member, we look forward to welcoming you often to the Museum. It’s habit forming!

William T. Golden
Chairman of the Board of Trustees
March 1, 1994
PREHISTORIC MAMMALS ON DISPLAY
JULY 1992

Woolly mammoths, saber-toothed cats, and giant sloths were featured in the Museum’s Akeley Gallery in the exhibition The Prehistoric Mammals of Charles R. Knight. The exhibition included more than 30 paintings and sculptures of early mammals by Charles R. Knight (1874-1953), one of the first artists ever to recreate creatures and environments of prehistoric eras based on careful study of the fossil record. Knight’s artworks, which combine scientific accuracy and beauty, have shaped the popular image of prehistoric life forms.

CAPTIONING EFFORT BEGAN
SEPTEMBER 1992

In a continuing effort to make the Museum accessible to the hearing impaired, the Museum now offers sign language tours with voice interpretation. Beginning with the 1992 exhibition Global Warming: Understanding the Forecast, the Museum has made a commitment to caption its current and future video exhibits in its permanent exhibit halls. Videos with the closed-caption option will be included in future exhibits in the Hall of Human Biology and Evolution and the fossil halls. Captions, like subtitles, print the entire audio portion of a video program at the bottom of the television screen. This includes spoken dialogue, narration, song lyrics, sound effects, and voice inflection.

SNEAK PEAK AT DINOSAURS
SEPTEMBER 1992

Work in Progress: Drawing Board to Dinosaurs looked behind the scenes at the development of the six new exhibition halls for dinosaurs and other fossil vertebrates that will open at the Museum over the next few years. From initial architectural drawings to precisely detailed models, from a rough sketch of a dinosaur’s foot to a complete ten-foot-long mounted skeleton, the exhibition illustrated the techniques and artistry involved in creating a new home for the world’s greatest collection of fossils. The exhibition included specimens of Tyrannosaurus rex, Prestosuchus, and Mammalsaurus.

CELEBRATING NAVARATRI/DUSSEHRA
SEPTEMBER 26-27, 1992

Navaratri/Dussehra, one of India’s most colorful autumn festivals, was celebrated at the Museum with programs of dance, music, poetry, lectures, and Indian foods. A holiday throughout India, the festival is considered a time of joy and hope. The Museum’s presentations included music and dance of North and South India, Indian poetry, Indian women’s rights and songs, folk dance workshops, and craft demonstrations.

MARGARET MEAD FILM & VIDEO FESTIVAL
SEPTEMBER 29-OCTOBER 4, 1992

The 16th annual Festival featured revealing and intriguing recent ethnographic documentaries showcasing films on both Western and non-Western cultures. One of the most popular programs sponsored by the Education Department, this year’s films included such topics as Korean Shamanism, reindeer herding near Chernobyl, and the American obsession with baseball memorabilia. This year, a benefit featuring two special screenings was held in conjunction with the Festival. The Margaret Mead Film & Video Festival will travel to cities around the United States throughout the year.
COLUMBUS'S QUINCENTENARY CELEBRATION
OCTOBER 1992-JUNE 1993

In conjunction with the quincentennial anniversary of Columbus's arrival in the Americas, the Museum's Department of Education presented Contact: Cultural Change, Alternative Perspectives, a series of lectures and performances which offered alternative views of colonial encounters. This series included Mario Bauza and his Afro-Cuban Orchestra, lectures on voluntary black immigration, the Tainos and their vanished civilization, Asians in America during the last 100 years, and the effect of European colonization on Indian dance.

TROPICAL RAINFOREST SCREENED
NOVEMBER 1992

"Tropical Rainforest," an IMAX film shown at the Museum, explored the 400-million-year evolution of the rain forests, from the development of the earliest plants and trees, through the age of dinosaurs, birds, insects, and primates, to its recent and rapid destruction. The film was shot in Australia, Costa Rica, French Guiana, and Malaysia, documenting the indigenous and abundant plant and animal life of the regions.

YOUTH RESEARCH PROGRAM LAUNCHED
NOVEMBER 1992

The Precollege Science Collaborative for Urban Minority Youth, a newly implemented education program at the Museum, gives 35 junior and senior high-school students an opportunity for hands-on experience in performing sophisticated scientific research with Museum scientists and a chance to present their findings to peers at their home-base schools. The program is designed for students who are interested in science but do not have the resources to pursue it beyond the limitations of the classroom. The project, a joint effort with Columbia University's Lamont Doherty Geological Observatory, the Columbia University College of Physicians and Surgeons, and Columbia University Teachers College, has been funded by the Howard Hughes Medical Institute through its Precollege Science Education Initiative for Science Museums.

NEW LIBRARY OPENS
DECEMBER 1992

The new eight-story natural history library, designed by Kevin Roche John Dinkeloo and Associates, opened this year. The largest in the western hemisphere, the Library's collection of nearly one million items is used by an internal community of scholars, scientists, and students, as well as the general public. Since the Library was founded in 1869, it has continuously expanded and now contains over 440,000 volumes, a 750,000 image photographic collection, 1,100 reels of film, 700 video cassettes, 1,750 pieces of art and memorabilia, a Rare Book and Manuscript Collection of over 13,000 rare and unique items, and the Museum archives. The Library's collections provide a continuous record of the natural world dating back to the beginnings of western science in the 15th century.
ORIGAMI HOLIDAY TREE
DECEMBER 1992

The twentieth annual Origami Holiday Tree was decorated with more than 2,000 origami pieces, including birds, sharks, reptiles, bugs, and dinosaurs. The annual Origami Tree is prepared and decorated by volunteers and coordinated by Michael Shall, the Museum’s volunteer origami specialist and president of The Friends of The Origami Center of America.

SIERRA CLUB 100TH AT MUSEUM
DECEMBER 1992-JANUARY 1993

In celebration of the 100th anniversary of the Sierra Club, that organization and the Museum presented This Is The American Earth, a collection of 60 black-and-white photographs and narrative text that explored the issue of environmental conservation. This collection, created by Ansel Adams and writer Nancy Newhall in 1955, had not been on view in three decades.

KWANZAA
DECEMBER 1992

The Museum, in conjunction with the New York Urban Coalition, celebrated Kwanzaa with three days of events including an African marketplace, performances, lectures, and workshops. In Swahili, Kwanzaa means “the first fruit of the harvest,” and the holiday celebrates the richness and diversity of African culture. The celebration included poetry readings, African music, African games, and Puerto Rican music and dance.

GLOBAL WARMING AT MUSEUM
JANUARY 1993

Over 500,000 people visited Global Warming: Understanding the Forecast, the largest, most comprehensive exhibition on climate change ever developed. The exhibition, at the Museum from May 1992 through January 1993, was jointly developed by the Environmental Defense Fund (EDF) and the Museum and sponsored by Shearson Lehman Brothers Inc. Global Warming examined the possible impact of a rise in the earth’s temperature, depicted global atmospheric changes that have occurred in the past and those projected for the future, and detailed actions that individuals, communities, and nations can take to slow global warming. The exhibition included numerous multimedia exhibits such as videos, microscopes, and interactive computers. Rooftop solar panels were installed at the Museum to provide power for all the computer terminals, television monitors, video projectors, and videodisc players in the exhibition. Global Warming will tour eight U.S. cities over the next five years.

JUMBO ON DISPLAY
JANUARY-OCTOBER 1993

Jumbo: The World Famous Elephant, an exhibit featuring the skeleton of the world’s most famous elephant, was unveiled in conjunction with the 200th anniversary of circuses in America. Part of the Museum’s collections since 1887, the skeleton had not been seen by the public since 1975. The exhibit also focused attention on the current threat to the survival of the wild African elephant. “The African Elephant,” a video produced by the Museum about the natural history and conservation of the African elephant, was shown.

BLACK HISTORY MONTH
FEBRUARY 1993

The Museum marked Black History Month with a variety of programs including dance, music, performances, storytelling, and lectures on African and African-derived history and cultures. This year’s offerings were part of a year-long series, Cultural Change, Alternative Perspectives, which examined the cultures and traditions of people encountered by Europeans as well as the effect and impact of colonial contact on these cultures.
The Museum's Spring Lecture Series featured ten lectures on topics ranging from early African-American communities in New York City, to the ancient civilizations of the Andes, to new frontiers in brain science. New insights into the history of New York City's early African-American community revealed by the recent excavation of an African-American burial ground in downtown Manhattan were the topic of a three-part lecture. "Culture on Film," which explored the ways American filmmakers represent other cultures, included a Hollywood documentary classic on Thailand. Another session explored results of new research in Peru, Chile, and Bolivia indicating that the ancient civilization of the Tiwanaku greatly influenced the Inka Empire. Gems and crystals from the Museum's collection were displayed and new explorations into the human brain were explored in a three-part lecture.

**ANNUAL WINTER DANCE**
**MARCH 4, 1993**

More than 500 people attended this year's annual winter dance. The event's theme, Treasure Island, was particularly apt since the Museum is home to some of the world's most spectacular treasures, including the 563-carat Star of India sapphire and more than 40 complete dinosaur skeletons. Proceeds from the event benefited ongoing scientific research at the Museum.

**WAGLEY'S AMAZON PORTRAIT**
**MARCH-MAY 1993**

*Indios e Caboclos: Charles Wagley's Amazon Portrait*, an exhibition of 50 photographs capturing the centuries-old lifestyle of the Amazon's Tapirapé Indians, was on display in the Akeley Gallery. This exhibition of photographs, taken from 1939 through the 1950s, highlighted anthropologist Charles Wagley's landmark research among the Tapirapé Indians and peasants (caboclos) of central Brazil.

**LEGISLATORS NIGHTS AND CONGRESSIONAL TOUR**
**MARCH-MAY**

On March 1 and May 6, city and state legislators and their families were hosted at festive Museum-wide events. Over the course of the two evenings, more than 650 guests enjoyed a buffet dinner in the Hall of Ocean Life, tours of special exhibition halls, including the Hall of Human Biology and Evolution, and screenings in the Naturemax Theater and the Hayden Planetarium. On May 16, the Museum was one of the main stops of a Congressional Tour that included legislators from across the country, many with their families. A highlight of the group's visit was a talk by Lowell Dingus, project director for the Museum's fossil halls renovation, who discussed the restoration and restructuring of the Museum's dinosaur and fossil mammal halls and the *Barosaurus* exhibit in the Theodore Roosevelt Rotunda. Below, Congressman Norman Y. Mineta, a democrat from California and chairman of the Public Works and Transportation Committee, (center), chatted with William T. Golden (left) and George D. Langdon, Jr. (right) during the Congressional Tour.

**HALL OF HUMAN BIOLOGY AND EVOLUTION OPENED**
**APRIL 1993**

The Museum's newest permanent exhibition, The Hall of Human Biology and Evolution, allows visitors to explore biology and anatomy, human evolution, and the origins of human creativity. The exhibition includes "Biosystems," a high-speed tour of the internal and external workings of the human body, life-size dioramas, and one of the greatest displays of casts of pre-human and human fossils in the world. Below, Curator Ian Tattersall at the press preview for the Hall on April 23.
ENVIRONMENTAL LECTURE-LUNCHEON  
APRIL 13, 1993

The third annual Environmental Lecture-Luncheon, sponsored by the Friends of the American Museum of Natural History, focused on the global environment, a primary concern of the Museum. This year’s luncheon was dedicated to the memory of Museum Trustee Julia Serena diLapio. Nearly 600 people attended the luncheon, where environmentalist Teresa Heinz, wife of the late Senator John Heinz III, was the keynote speaker. Shown below, from left, are Melinda Blinken, Teresa Heinz, and Wren Wirth.

MOVEABLE MUSEUM INAUGURATED  
MAY 1993

This specially designed classroom and “museum on wheels” brings the AMNH’s educational resources and exhibitions to all area residents. This joint project, sponsored by the New York City Council, the Education Department of the AMNH, and The Chase Manhattan Bank, N.A., is a state-of-the-art, multimedia, walk-in exhibit space and teaching facility that travels to New York City schools, community centers, city parks, street fairs, and other neighborhood facilities to conduct on-site classes in the natural sciences, anthropology, and the arts. The 34’ wheelchair-accessible vehicle can accommodate 15 people at a time. Above, Thomas C. Lynch, executive vice president, The Chase Manhattan Bank, Peter F. Vallone, Speaker, The Council of the City of New York, George D. Langdon, Jr., and William T. Golden (back row) with guests and schoolchildren from P.S. 126 at the launching of the Moveable Museum at City Hall.

MONONYKUS DISCOVERED  
APRIL 1993

The discovery of an unusual new type of dinosaur, approximately 70 million years old and dating from the Cretaceous Period, was announced by a team of researchers from the AMNH and the Mongolian Academy of Sciences. This dinosaur has been named Mononykus and belongs to a previously unknown group of dinosaurs that is part of the evolutionary transition between carnivorous dinosaurs and modern birds. Mononykus means “one claw,” so named for the unusual structure of its short forelimb, which ends in a single stout claw. This find has contributed significant new insights into our knowledge of the early evolutionary history of birds. The fossils were found in the Gobi Desert, where the joint American and Mongolian team is conducting a four-year expedition to search for dinosaurs and other fossils.

CORPORATE DINNER DANCE  
MAY 10, 1993

Below, from left: Richard Gelb, chairman and CEO of Bristol-Myers Squibb Company, and his wife, Phyllis Gelb, with Arthur Ochs Sulzberger, publisher of The New York Times, and William T. Golden during the first annual corporate dinner dance, which was held in honor of Mr. Gelb. The dinner was also a celebration of the opening of the Hall of Human Biology and Evolution. Proceeds from the evening benefited the ongoing scientific research and conservation efforts of the Museum.
Center for Biodiversity and Conservation Established  
June 1993

Heightened international interest in examining biodiversity— the range and variety of life on earth—is necessary to make informed decisions about issues that have a direct impact on the future of the planet. In response to this need, the Museum has established a Center for Biodiversity and Conservation with new funding from a broad range of donors, including private foundations, the federal government, individuals, and trustees. The Center will coordinate the research of Museum scientists who survey, inventory, and describe myriad species both in the field and in the lab. Known as systematics, this branch of biology is essential for understanding the interrelationships of all life on earth.

Understanding Bears  
June 1993

The bear holds a special place in American culture as both a terrifying and endearing figure. For the first time in a major exhibition, the myths and realities surrounding one of the most striking symbols of the American wilderness were explored in Bears: Imagination and Reality. Focusing on two species of bear, the grizzly and black bear of North America, the exhibition challenged Museum visitors to rethink the relationship between bears and people and raised questions about the future of that relationship. The exhibition used interactive exhibits, videos, Native-American artwork and artifacts, and dioramas to compare and contrast the bear of myth, art, literature, history, and folklore. The exhibition was organized by the Science Museum of Minnesota.

Endangered Wildlife from Brazil  
June-August 1993

The Pantanal: Brazil’s Forgotten Wilderness, an exhibition of photographs of rare and endangered animals living in a remote area of South America, was an Arthur Ross exhibit-of-the-month. Comprising more than 50 color photographs by photojournalist Vic Banks, the exhibition featured the abundant plant and animal life of the Pantanal (Portuguese for swamp), an area located between Brazil’s Mato Grosso state and Bolivia.

The Dinosaurs of Jurassic Park  
June-September 1993

This special exhibition, launched in conjunction with the motion picture “Jurassic Park,” presented spectacular recreations of the film’s lifesized dinosaurs, elaborate sets, and special effects alongside actual discoveries and fossil dinosaurs from the Museum’s collection. The exhibition, presented by the Museum and the Dinosaur Society, explored the scientific facts known about dinosaurs and showed how artists and filmmakers combined those discoveries with fiction to create the astonishingly realistic dinosaurs in the film.

Ellen Futter Appointed President  
June 28, 1993

On June 28, 1993, at a special meeting of the Board of Trustees, Ellen V. Futter was named president of the American Museum of Natural History, effective November 1993. Ms. Futter has been president of Barnard College for thirteen years. She has a strong record of public service and is widely renowned as a dynamic voice for higher education.
For nearly 125 years, the American Museum of Natural History has been a world leader in the quest to understand the history of life, the patterns of evolution, and what it means to be human. Today the Museum sponsors hundreds of field studies and expeditions each year, is home to over 30 million scientific specimens and artifacts, and is the research center for some of the country’s most innovative scientists. Throughout its history, the Museum has had a commitment to the exploration and conservation of the natural world rivaled by few other institutions.

It is in behind-the-scenes laboratories, libraries, research collections, and offices that the Museum’s science flourishes. Less than two percent of the almost incomprehensible number of artifacts and specimens housed in Museum departments are on public display. The rest are stored in the Museum’s research collections, a unique “field guide” for the entire world that is studied each year by hundreds of researchers and scholars from around the world.
For Museum scientists — including some 40 curators who are at the core of a staff of over 200 investigators, technicians, doctoral students, postdoctoral fellows, and research associates — the collections are the data used to examine and test important theories about the planet and its life. These collections are continually augmented by ongoing scientific research and cared for by expert conservation and curation.

One of this year’s exciting discoveries was a new dinosaur-like bird, *Mononykus*, uncovered on the Museum’s joint expedition with the Mongolian Academy of Sciences to search for fossils in the Gobi Desert. Studies of this creature have revealed new insights into the evolutionary history of birds and the origin of flight and have raised intriguing new questions about the relationship between dinosaurs and birds.

The scientific mission of the Museum today calls for some of the most active programs in field exploration in decades. This year, to address this crucial need, the Museum established the Center for Biodiversity and Conservation to coordinate the research of hundreds of Museum scientists and initiate new research projects to understand and protect the variety of life on earth. The Center is also expanding the Museum’s training program for international students, already the largest in the world, to increase research in the areas where biodiversity is most threatened. The Center’s scientists work with external agencies and governments to provide credible and objective data for conservation measures and policy decisions.

The Center’s work focuses on fundamental issues that concern us all:

- How many living things exist in the world today?
- What do past extinctions reveal about the current loss of species?
- What is the impact of human activity on ecosystems around the globe, and how can human needs be balanced with environmental concerns?
- What can we do to ensure the future well-being of life on the earth and our own survival?

Although much of this planet has been traveled and scrutinized, uncountable mysteries remain to be solved. The explorers of the next millennium are the scientists who track ancient civilizations, piece together the events that shaped the continents, plot the course of evolution, discover new organisms and habitats, and work to save the biological treasures of the earth. For the American Museum of Natural History, the golden age of exploration has just begun.
Increasing knowledge about all aspects of the human species is the primary mission of the Department of Anthropology. During 1992-93, significant advances were made in generating, disseminating, and conserving this knowledge. In addition to research and exhibition projects, a major grant was received from the National Endowment for the Humanities for the storage of the Asian ethnology collections in a new climate-controlled space, which will begin upon completion of the current NEH-funded program for the North American ethnology collection.

Department Chairman Ian Tattersall completed work on the new *Hall of Human Biology and Evolution*. This exhibition, in active preparation for seven years, opened on April 23, 1993, to highly favorable reviews from both the media and the public. Dr. Tattersall’s companion book to the *Hall, The Human Odyssey*, was published by Prentice-Hall simultaneously with the opening of the *Hall*. In collaboration with Research Associate Jeffrey H. Schwartz, Dr. Tattersall visited the Republic of Vietnam in the fall of 1992 to establish a program of cooperative research with colleagues at the Institute of Archaeology in Hanoi and at the

*Reconstructions of Australopithecus afarensis in the Hall of Human Biology and Evolution.*
Council for the Social Sciences of Ho Chi Minh City. Drs. Tattersall and Schwartz surveyed Pleistocene cave sites in Lang Son province, northeast of Hanoi, and analyzed hominoid fossils recovered in the 1960s from the cave of Tham Khuyen. They found that at least two previously undescribed large-bodied hominoid species exist in that assemblage. An agreement was signed for future collaborative fieldwork in Vietnam. Dr. Tattersall also conducted research on species recognition in the human fossil record and on the origin of the species Homo sapiens.


Curator Enid Schildkrot spent June 1992 in Namibia, focusing on issues of museums, ethnicity, and nationalism. She continued research on the practices of collecting in the Congo, specifically by Frederick Starr and Herbert Lang. An article on this subject will appear in a volume of papers that Dr. Schildkrot is editing on natural history collecting in the Congo at the turn of the century. In addition, she returned to her Ghanaian research, analyzing a translation of an original manuscript in Arabic that she collected in 1967.

Contemporary Korean marriage practices continue to provide the central theme of research by Associate Curator Laurel Kendall. As ethnography, this work addresses some classic anthropological concerns: it describes how matches are made; how brides, grooms, and their respective families proceed through the rites; and how they finance elaborate exchanges of ritual goods. Any study of weddings amid Korea's rapidly industrializing and intensely consumer-oriented population is necessarily, of course, more than a descriptive account of "custom." In Korea, discussions about weddings rapidly generate measures of profound social change, criticisms of the foibles of modern life, and expressions of national identity in contrast to Western or, more specifically, American ways of doing things. Dr. Kendall's ethnography retrieves the diverse voices of contemporary Korea: brides and grooms, members of their families, matchmakers, purveyors of wedding goods, bureaucrats, and social critics. Additionally, Dr Kendall spent two weeks in Kunming, Yunnan Province, People's Republic of China, as a consultant to the Yunnan Nationalities Cultures Project, a consortium of ethnologists, historians, and artists concerned with issues of cultural preservation.

The principal activity of Curator Stanley A. Freed, in collaboration with Research Associate Ruth S. Freed, was to continue to analyze and publish data collected in a North Indian village from the 1950s to the 1980s. They completed a long monograph on the connection of village ideology to illness, curing, death, and the supernatural world entitled Ghosts: Life and Death in North India. In addition, they began two new monographs: one was on the yearly round of festivals and the other, a holistic analysis of changes in the village owing in large part to the Green Revolution. The Freed's continued to pursue their interest in the history and theory of anthropology, publishing an article on Clark Wissler in the Biographical Memoirs of the National Academy of Science. Further, in collaboration with Registrar Barbara Conklin, Dr. Freed supervised a major renovation of the Blackfoot Tipi group, the highlight of the Plains Indian Hall at the Museum.

Curator Craig Morris began a new phase of his Andean archaeological research. With Peruvian colleagues, he mapped the site of Tambo de Moro, which is being studied as the possible port site of the Chincha kingdom. According to a sixteenth-century document, Chincha merchants controlled the
sea trade with the area that is now Ecuador during and just before the time of the Inka empire. With Adriana von Hagen, Dr. Morris completed the book *The Inka Empire and its Andean Origins*, an illustrated volume based on the Museum’s collections that was published in fall 1993.

Curator David Hurst Thomas continued to organize and direct research exploring the 400 years of human history contained in the archaeological record of St. Catherines Island off the coast of Georgia. During 1992-93, he supervised several months of fieldwork designed to explore the late prehistoric and protohistoric Creek Indians of coastal Georgia. Working with a team of geophysicists and geoarchaeologists, Dr. Thomas designed a coordinated program of noninvasive archaeology, relying on proton magnetometer, gradiometer, resistivity, and conductivity testing. Most recently, these technologies were used in testing anomalies discovered in the pueblo portion of Mission Santa Catalina de Guale. Of particular interest are the several dozen aboriginal structures that appeared in remote sensing results yet are extremely difficult to find using conventional excavation strategies. By May 1993 the research team had successfully located and test-excavated three such structures. During the year, Dr. Thomas also spent considerable time analyzing materials excavated from the high-altitude site at Alta Toquima, Nevada, and received grants to launch a comprehensive search for the archaeological site of San Miguel de Guadalupe, the first European colony on United States soil, founded in 1526. In addition, Dr. Thomas was elected vice chairman of the Board of the National Museum of the American Indian.

During the past year, Associate Curator Charles Spencer pursued archaeological research in two areas: Mexico and Venezuela. In Oaxaca, Mexico, he continued his investigations into the rise of the early Zapotec state, which included a survey of an archaeological site that will be the subject of an upcoming four-year field project that has been approved for full funding by the National Science Foundation. In Barinas, Venezuela, Dr. Spencer pursued work on the emergence of prehispanic chiefdoms in the llanos (savanna grasslands) adjacent to the Venezuelan Andes. While in Venezuela, Dr. Spencer conducted laboratory analysis of materials that had been excavated in the state of Barinas as well as developing a brief survey of archaeological sites in Barinas.

To comply with the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, the Museum created the Office of Cultural Resources. Martha Graham was hired as registrar for cultural resources. Two additional staff members were also hired to help with this effort, and nine Departmental staff members spend between 20 and 90 percent of their time assisting in this work. The Anthropology Department contains approximately 250,000 catalog entries for archaeological, ethnographic, and biological collections from North America. Over 2,100 separate accessions come from the United States. The Office of Cultural Resources is in the process of computerizing all archaeological collections from the United States (under a grant, the ethnographic collections are being computerized by the Department’s Collections Management staff). All artifacts must be categorized by cultural affiliation, and a summary of the Museum’s collections must be compiled for use by federally recognized tribes and Native American organizations. There are 746 federally recognized tribes and native organizations, and the Office anticipates consulting with about 400 of them. The computerization of the collections and review of the accession documentation significantly increases the amount of information known about the Department’s holdings, thus enhancing the accessibility and usefulness of the collections for future scholarship.
CONSERVATION LABORATORY The aim of the Anthropology Department’s Conservation Laboratory is to ensure the stability of the Department’s collections. Objects Conservation staff members work closely with curators and Collections Management personnel in the preservation of objects and in specifying storage and exhibition environments and handling conditions that will enhance the longevity of the collection. For the first time in at least six years, the Anthropology Department was not involved in the active creation of temporary traveling exhibits, allowing the Laboratory to direct most of its attention to issues relating to the conservation and exhibition of the permanent collection. Extensive work was carried out on exhibits in the Plains Indian Hall and the Hall of Pacific Peoples. Over the past two years, the entire Blackfoot Indian Tipi diorama was dismantled and renovated; elsewhere in the Plains Indian Hall, as in the Hall of Pacific Peoples, each display case was opened and cleaned. Objects were inspected and treated for possible insect infestation, and a number of mounts were remade. All of the wigs on mannequins and display heads were replaced.

In the past year, the Objects Conservation staff processed and treated approximately 150 objects from the collection that were requested for loan to other institutions. Grants were received to support a two-year project to conserve three important collections of American Indian drawings. The paper conservator has begun work on one album and has already discovered unseen drawings on the reverse sides of sheets that were glued to album pages. Research continues on Northwest Coast paints and on techniques of consolidation of artifacts made of extremely rotted wood. Postgraduate conservation internship training also continues with support from the Getty Grant Office, and Department conservators also teach in the art conservation program at New York University’s Institute of Fine Arts.

COLLECTIONS MANAGEMENT With major funding from the National Endowment for the Humanities (NEH), the Collections Management staff moved the entire North American ethnology collection into the Department’s second compact storage facility. Over 25,000 computerized records were generated for the items in new storage, and the research potential of the collection is now fully realized through the combination of proper storage and computerized records. Significant support from the NEH is allowing the Department to address the problems of the Asian collection. The North American ethnology collection’s former storage area is being demolished, renovated, and climate-controlled. Over the next three years, modern storage will be installed and the Asian collection moved into the area.

The Digital Imaging Computer Systems staff continued to work on the Department’s database. The database will contain descriptive information and a digital image of the entire ethnographic collection. The catalog and image database of the Northwest Coast collection was completed and contains over 9,000 records and images. An additional 8,000 database records of the North American Indian collection were generated for objects moved into new storage. The entire image database contains over 16,000 images and is the largest database of its kind in use in any museum. This application of digital technology to collections management, funded by grants from the NEH, was identified as a potential prototype for museums nationwide in an independent study by the MITRE Corporation in its report to the Consortium of Free Standing Museums and Botanical Gardens.

TEXTILE CONSERVATION The Textile Conservation staff worked for several months on the reinstallation of the Blackfoot Tipi in the Plains Indian Hall. They also treated a number of objects for loan to other institutions. Grants from several private foundations permitted the conservation and storage in new facilities of several hundred more Andean archaeological textiles. The textile conservators continued to assist researchers, teach interns, and conduct lectures and classes for students from conservation and museum studies programs and an increasing number of museum professionals. They also organized a very successful symposium on “The Use of Adhesives and Consolidants in Textile Conservation.”
Of primary importance this year was the work of a Planetarium Visiting Committee headed by J. Richard Gott III, professor of astrophysics, Princeton University. The Committee had high praise for many of the Planetarium’s programs and some very constructive proposals, including recommendations related to the modernization of the Planetarium’s exhibit areas and Guggenheim Space Theater. These recommendations will be evaluated over the course of the year, and a plan will be developed to assist the Planetarium in its mission in furthering public appreciation and understanding of our universe and of the exciting discoveries being made in astronomy.

The wide variety of programs offered at the Hayden Planetarium attracted 440,092 people during the past year. The Planetarium presented *Bold Visions: Distant Worlds*, a joint production with the Planetario de Madrid in Spain. Using many panoramic images photographed on location on three continents by the Hayden and Madrid staffs, the program explored the astronomy of pre-Columbian peoples, including the Maya, Aztec, Inka, and ancient Anasazi of the American southwest.

From July through November, the Planetarium presented a sky show entitled *Amazing Worlds of Weather*, narrated by NBC’s Al Roker. The program, presented in conjunction with the Museum’s exhibition *Global Warming: Understanding the Forecast*, examined the scientific study of the earth’s weather as well as the atmospheres of other planets and satellites across the solar system. In December, the Planetarium recreated the stars as they would have appeared over Bethlehem 2,000 years ago for its annual holiday show, *The Star of Christmas*, in which several scientific explanations for the “star” are examined.

The continuing Planetarium-sponsored lecture series *Frontiers in Astronomy and Astrophysics* featured talks by leading scientists on a variety of topics, from pre-Columbian archeoastronomy to gamma ray astronomy and future astrophysical research at the south pole. Speakers included Anthony Aveni of Colgate University, Edwin Krupp of the Griffith Observatory, Margaret Geller of the Harvard Smithsonian Astrophysical Observatory, Georgi Grechko of the Laboratory for Atmospheric Research in Moscow, James Switzer of the University of Chicago, and Gerald Fishman of NASA’s Marshall Space Flight Center.

Special performance presentations in the Sky Theater included the Planetarium’s ninth annual holiday concert *Under the Stars* presented by the Ensemble for Early Music, and a performance of African Sky Legends by Something Positive, a group that includes storyteller Cheryl Byron and her troupe of dancers and musicians.

A wide variety of courses was offered on such topics as astronomy, cosmology, meteorology, and navigation. Workshops for area teachers were conducted in conjunction with the Astronomy Department of Columbia University under a grant from the ESEA Title II Staff Development Program for the New York City Board of Education. Teachers made use of the Sky Theater and Planetarium classrooms to hear lectures, conduct demonstrations, and learn about the latest in audiovisual teaching aids related to astronomy and space science.

Special shows designed for school and preschool-age children were presented throughout the school year as well as to summer day campers and families on selected Saturday mornings. Included in these offerings were *Wonderful Sky*, featuring the Sesame Street Muppets®, and *Robots in Space*, with R2D2™ and C-3PO™ from the Star Wars™ Trilogy. In June, in conjunction with the Museum’s exhibition *Bears*, the Planetarium introduced a new show for young children entitled *Teddy’s Quest*, which introduced youngsters to stars and constellations through the adventures of a teddy bear in space.
View from the Amazing Worlds of Weather sky show.
The Zeiss II Star Projector in the Sky Theater.
The first floor Art Wall featured reproductions by noted Japanese space artist Shigemi Numazawa.

The Planetarium celebrated National Astronomy Day with a telescope that enabled visitors to observe sunspots, and it sponsored special sessions led by Brian Sullivan, production designer, that taught children how to make sundials which they were able to take home. The Richard S. Perkin Library, an invaluable resource for both staff and outside researchers, continues to be used extensively. Visitors from Spain, Argentina, Germany, and the People’s Republic of China all used the facility this year. The Library also received several upgrades to its OCLC capabilities that improve electronic searches for materials at other astronomy and technical libraries around the world.

William A. Gutsch became president of the International Planetarium Society, which represents over 600 planetarium directors and staff in over 20 countries. He took part in a panel discussion on the value of planetariums to museums and science and technology centers at the annual meeting of the Association of Science-Technology Centers in Toronto. He also presented a paper on “Ethnic and Cultural Story Telling and Performance in a Planetarium” at the annual Southeastern Planetarium Conference in Bradenton, Florida.

Planetarium Artist Dennis Davidson attended the fourth Satellites and Education Conference to review the latest information on remote sensing from space to prepare for new planned exhibits. Planetarium Intern Amie Mastrangelo attended the Middle Atlantic Planetarium Society conference and presented a paper on “Cultural Programs in the Planetarium.” Dr. Gutsch hosted and delivered lectures on the astrophysics and meteorology of far northern and southern latitudes. Dr. Gutsch also delivered a lecture as part of the Museum’s Global Warming and Climate Change Lecture Series on “Weather and Climate Patterns.” Planetarium Manager of Library Services Sandra Kitt was a guest speaker at the Special Libraries Association meeting in Los Angeles.

*An image of a scene from Bold Visions, Distant Shores, sky show.*
The Department of Entomology, in its work with the world’s most diverse groups of organisms, continues to conduct far-flung field studies and develop detailed laboratory analyses of the Department’s collections. During this year, the collection grew to more than 17 million specimens. Current projects include studies of endangered northeastern U.S. tiger beetles, analyses of DNA from fossils in amber, and surveys of insect and arachnid biodiversity in southern South America and New Caledonia.

Chairman Norman Platnick concentrated on south temperate spiders. One month was spent collecting in Chile with Pablo Goloboff and Keiyin Catley (graduate students in the AMNH-Cornell University training program). Another month was spent collecting in New Caledonia with Robert Raven and Mark Harvey, arachnologists from the Queensland and Western Australian Museums. These expeditions were funded by the National Science Foundation and National Geographic Society, respectively. Studies of Chilean spiders concentrated on the pirate spiders (Mimetidae), so named because their primary prey seems to be other spiders.
Aside from one species belonging to a worldwide genus, the Chilean mimetids proved to represent an endemic subfamily. One of the genera had been considered an orbweaver (family Araneidae), but scanning electron microscopy showed it to share with other mimetids unique features of the jaws and spinnerets.

Work on New Caledonian spiders concentrated on Bracteistichus, which had been placed in its own family. Previously known only from females, they were the only spider family thought to be restricted to a single island. Bracteistichus had been considered by various workers to be related to several groups, including crab spiders and wolf spiders. Newly discovered males allowed Dr. Platnick and Research Associate Raymond Forster to show that Bracteistichus actually belongs to the fishing spider family Pisauridae.

Curator Lee Herman developed his revisionary and phylogenetic studies of the higher classification of the staphylinid beetle subfamily Paederinae. This group, with more than 6,000 species in about 220 currently valid genera, is a major component of the soil-litter fauna and is especially diverse in tropical and subtropical regions. To date, 126 of 158 genera in 12 of the 14 subtribes have been studied, and a key to the valid genera has been written. Draft descriptions have been written for 98 genera, with illustrations for 90. Twenty-eight genera have been newly synonymized, and 437 misplaced species have been reassigned. Collecting trips were made to the western United States and Ecuador in search of paederine species for these studies.

Dr. Herman is also writing a catalog of the taxa and literature for more than 20,000 extant and fossil species of the Staphylinidae (exclusive of the Aleocharinae). For the Paederinae, the nearly 1,600 works published since 1758 are almost completely analyzed. A checklist of species and genera in the other subfamilies is complete and nearly 1,000 references published between 1758 and 1899 have been cataloged for more than 8,700 species of these other subfamilies. Numerous problems relating to date, authorship, and priority have been identified.

Curator Jerome G. Rozen, Jr., completed an investigation that had its genesis on the cool, moist slopes of the Swiss Alps in July 1963, when he excavated the nest of the ground-dwelling solitary bee Rophites trispinosus and recovered its larvae. The investigations ended on the margin of a scorching desert playa near Wilcox, Arizona, in September 1992, when he dug into the nest of the tiny bee Conanthalictus conanthi and collected its immature stages. These bees belong to the sweat bee subfamily...
Rophitinae, and the resulting manuscript treats the immature stages and nesting biology of the subfamily in an attempt to understand the evolutionary relationship of the Rophitinae to other subfamilies in the Halictidae and to other families of primitive, short-tongued bees.

Accompanied by Collections Conservation Assistant Andrey Sharkov and volunteer Cal Snyder, Dr. Rozen traveled to the Atacama Desert of Chile. Immature bees never before collected included the larvae of *Taspinotaspis* and *Chilimalopsis*, the new specimens will help resolve phylogenetic relationships within the long-tongued bee family Apidae. From Arizona, the larvae of the uncommon andrenine, *Ancylandrena*, were finally excavated from nests near Tucson and Wickenburg, after many prior attempts, and should shed light on the phylogeny of the families Andrenidae and Oxaeidae.

Curator Randall T. Schuh, in cooperation with Research Associates James A. Slater and Pavel Štys, completed and submitted to Cornell University Press for final review a book manuscript entitled “Classification and Natural History of Heteroptera.” The volume summarizes the diagnostic characters and life history attributes of the 73 known families of true bugs and their included subfamilies. The authors review the history of study of the group, provide brief biographies of more than 75 noted workers, and offer substantial information on the feeding habits, habitat preferences, mimetic resemblances, and economic importance of true bugs. Morphology is treated in a general chapter, with illustrations provided for each family, showing not only the general appearance of the group, but also the details of male and female genitalia and other distinctive structures. Only one world survey of true bugs — now badly outdated — has previously been attempted. The work of Drs. Schuh, Slater, and Štys is aimed at advanced college students and experienced researchers.

Associate Curator James Carpenter’s research into paper wasp systematics continued; an NSF-sponsored study of the genus *Polistes* was completed. This is the most common paper wasp, with about 200 species worldwide, and is the most important social wasp for behavioral studies. Phylogenetic analysis of the species led to a reclassification of the subgenera, while biogeographic analysis rejected the traditional concept of a Tertiary Oriental tropics center of origin for the genus, with subsequent dispersal to South America via the Beringian land bridge. The distribution of the genus instead corresponds to vicariant events during the continental rifting of Gondwanaland. A catalog of the species of the genus was also completed.

The Museum’s NSF Research Experience for Undergraduates grant supported a summer intern, Eve Zaritsky, who completed a survey of exocrine glands of the 28 genera of paper wasps, using scanning electron microscopy. John Wenzel came to the Museum as a Kalbfleisch Fellow and began work in the Molecular Systematics Lab to obtain DNA sequence data from specimens of 26 genera, including material collected on an expedition to Iguazu Falls in Argentina. The 4,500 specimens collected included nine genera and 24 species of paper wasps, among them the rare monotypic genus *Protonectarina*, known only from northern Argentina and southern Brazil, and not previously available in sufficient quantity for molecular analysis.

Associate Curator David Grimaldi continued research on the systematics of insects...
fossilized in 25 to 30 million-year-old amber from the Dominican Republic and Mexico. Much publicity was generated by the extraction and sequencing of DNA from the extinct termite *Mastotermes electrodominicus* from Dominican amber. This research provided a unique insight into the stability of ancient DNA and clarified the evolutionary position of this genus of termites, long thought to be a “missing link” between cockroaches and termites. Older DNA has since been extracted from an insect in Lebanese amber, 125 million years old, by a California group. Lebanese amber is the oldest in the world that contains insects, and the Museum has one of only three existing collections. Two other collections of amber fossils were also acquired, through the generosity of Robert Goellet, one comprised of 2,000 specimens of Dominican amber, the other being 97 rare specimens from Mexico and the Dominican Republic. Several of the Museum’s most striking amber specimens were displayed in the exhibition The Dinosaurs of Jurassic Park.

Work progressed on the species-level systematics of the family of small fruit flies (Drosophilidae). One study examined the species limits and modes of reproductive isolation in a small group of Holarctic, morphologically very cryptic species. A second project, a revision of the genus *Cladocheta*, is nearing completion. Prior to this study, only 13 species were described; 105 new ones have been examined in detail thus far, based mostly on Neotropical material from the Museum’s collection of these flies (the world’s largest).

The current research of Assistant Curator Rob DeSalle concerns the molecular systematics of the Drosophilidae and the use of this group as a model for systematics. Thanks to the excellent biological background information on these flies, he is examining the developmental and molecular basis of morphological change, especially the character changes used in the systematics of these flies. Another aspect of Dr. DeSalle’s current research concerns the conservation genetics of endangered species. In collaboration with the New York Zoological Society, he examined the molecular genetics of several endangered species, including investigations, with Research Scientist Alfried Vogler, of the conservation genetics of endangered northeastern United States tiger beetles as a model system.

Curator Emeritus Frederick Rindge concentrated on geometrid moths from the Galápagos Islands (updating his 1973 paper on that fauna) and northwestern Argentina, especially the Parque Nacional Calilegua. Another project focused on the tribe Trichopterygini, a group well represented in the Museum’s collection from Chile.

Research Scientist James Miller continued his NSF-funded project studying the systematics and host-plant associations of the Neotropical Diotpinae. He focused on a diotpine clade, containing approximately 110 species, in which the caterpillars feed exclusively on plants in the genus *Passiflora* (“Passion flowers”). Fieldwork in Venezuela and Ecuador uncovered previously unknown life histories for 19 species, including 17 whose caterpillars feed on *Passiflora*. Dr. Miller also continued work on a monograph, co-authored with J.G. Franclemont of Cornell University, which treats the North American species of Notodontidae. Thus far, Drs. Miller and Franclemont have finished writing accounts for 36 of the 47 genera.
Amphibians, reptiles, and fishes comprise the greater part of vertebrate biodiversity and occur in all habitats of the world. Herpetology is the study of amphibians and reptiles, and ichthyology the study of fishes. The Department's collections permit study of the evolution of these animals, and of their presently changing status on an earth increasingly disturbed by human activity.

Curator Charles J. Cole completed a systematic review of fence lizards, a group of about 70 species native to the southern United States, Mexico, and Central America. In collaboration with Associate Professors J.W. Sites, Jr. (Department of Biology, Brigham Young University), J.W. Archie

Abronia anzueto, an endangered species of tropical alligator from Guatemala, recently named by Assistant Curator Darrel R. Frost and Professor Jonathan Campbell, University of Texas at Arlington.
Dr. Cole brought together diverse data, including those from his own studies of chromosomes over a period of 20 years, in a summary of the evolution of these conspicuous and ecologically important animals. Of particular significance is the finding, contrary to previous belief, that evolution of chromosomes in these animals sometimes occurs through centric fissions rather than centric fusions, with the result that chromosomes can increase in number.

Michael W. Klemens, director of the Turtle Recovery Program, completed a 17-year study of the herpetology of southern New England and southeastern New York, with publication in June 1993 of *The Amphibians and Reptiles of Connecticut and Adjacent Regions*. This monograph is the first comprehensive treatment of the amphibians and reptiles of the region, containing distributional, life-history, and conservation data on the herpetofauna. As a result of this study, the Department now has the most significant New England herpetological collection, which would be impossible to replicate, given current regulations governing scientific collecting and the continued loss of habitat. Dr. Klemens initiated new projects in Burma, Colombia, and Madagascar. He organized an international turtle conservation conference, held in July 1993, and obtained support for workers traveling from developing countries from the U.S. Departments of Interior, Agriculture, and Defense.

In collaboration with the International Field Veterinary Program of the New York Zoological Society, he visited Tanzania and obtained blood samples from wild specimens of the pancake tortoise (*Malacochersus tornieri*) to assess the health and genetic variability of the species.

Associate Curator Melanie L.J. Stiassny completed a study of fishes of Lake Bermin, Cameroon, in collaboration with Mr. U.K. Schliewen (Max Planck Institut für Verhaltensphysiologie, Seewiesen, Germany) and W.J. Dominey (Boca Raton, Florida). Dr. Stiassny determined that endemic to this lake, remarkable in its small size of 0.5 square kilometers and shallow depth of less than 12 meters, are no fewer than nine
species of tilapia. Tilapia are fishes of the family Cichlidae, long known to form species flocks in lake environments of sufficient age, notably in the Great Lakes of Central and East Africa, and particularly Lakes Victoria, Malawi, and Tanganyika, which are home to flocks of endemic species numbering into the several hundreds. Lake Bermin, one of dozens of small volcanic-crater lakes of West Africa, has been estimated to be no older than about two million years. Among the Lake Bermin tilapia are two endemic species with unusual feeding specializations: *Tilapia imbrifera* filters phytoplankton, and *T. spongatrokis* feeds on freshwater sponges. While Lake Bermin is 140,000 times smaller than, for example, Lake Victoria, the fish fauna of the lake is only 25 times smaller than that of Lake Victoria.

Field Associate Lily Rodriguez and Curator Charles Myers completed description of a new poison dart frog from Parque Nacional del Manu, southeastern Peru. The frog was discovered by Dr. Rodriguez during fieldwork in association with doctoral study at the Université de Pierre et Marie Curie, Paris, where she received her Ph.D. in 1991.

Mario C.C. de Pinna completed his Ph.D. study of catfishes in the joint American Museum of Natural History-City University of New York (City College) Program in Evolutionary Biology. Dr. de Pinna used the Department’s extensive skeletal collection in a four-year study of more than 30 families, comprising over 2,000 species, of these predominantly freshwater fishes, found in all continents of the world. He provided a novel and well-founded hypothesis of evolutionary relationships of the major catfish groups and a revised higher classification — goals that had previously eluded modern ichthyology partly because the great diversity of specimens necessary was never previously available for study in a single location. Dr. de Pinna’s graduate program was supported by a fellowship from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brazil. Dr. de Pinna’s is the 14th Ph.D. achieved in ichthyology during the 20 years of the joint AMNH-CUNY program.

Dr. Myers, in collaboration with E.E. Williams (Curator Emeritus, Museum of Comparative Zoology, Harvard University) and R.W. McDiarmid (project leader and curator, U.S. Fish and Wildlife Service, National Museum of Natural History), completed a description of a new montane lizard that he and other members of the 1984-85 American Museum expedition to Cerro de la Nebliña discovered in the borderland between Venezuela and Brazil.

In his continuing studies of electric fishes, Research Associate Peter Moller, in collaboration with C.H. Rankin (associate professor, Department of Psychology, University of British Columbia, Vancouver), finished
analysis of data collected in 1986, during Dr. Rankin's graduate study in the joint American Museum - Hunter College Program in Biopsychology. They found that the African catfish (*Malapterurus*) uses its strong electric discharge, up to 300 volts in large fish, in intraspecific communication in addition to its well-known means to stun potential prey.

Computer Project Manager Linda S. Ford participated during February-March in a field project in Brazil, supported by the Austrian *Fonds zur Förderung der Wissenschaftlichen Forschung* and in collaboration with W. Hödl and M.J. Henzl (assistant professor and postdoctoral fellow, Department of Evolutionary Biology, University of Vienna, Austria). The Department shared all specimens collected, continuing ties with an active European center, as well as the Museu Paraense Emilio Goeldi (Belém, Brazil) and Instituto Nacional de Pesquisas de Amazônia (Manaus, Brazil).

Curator C.L. Smith completed a report to the U.S. Fish and Wildlife Service, Cortland, New York, on the food of the Double Crested Cormorant, currently undergoing a population explosion in eastern Lake Ontario. By analyzing samples of regurgitated fish bones supplied by the Fish and Wildlife Service and comparing them with material in the skeleton collection of the Department, Dr. Smith determined that cormorants feed predominantly on alewife (*Alosa pseudoharengus*), which also are the principal food of Lake Ontario salmon. Another factor in the decline of alewife is pollution abatement, which has reduced primary productivity of the lake.

Grants for research received by Department members include support from the National Science Foundation for systematics of lizards (Assistant Curator Darrel R. Frost and T. Titus, postdoctoral fellow, Department of Biology, Washington University, St. Louis), survey of freshwater fishes of Madagascar (Research Associate Peter N. Reinthal and Dr. Stiassny), and systematics of African cichlid fishes (Dr. Stiassny).

With new support for three years from the National Science Foundation, computerization of the herpetology collections was begun, and data entry was completed for amphibian (140,000) specimens. With continuing support from the National Science Foundation, the collection of preserved fishes was transferred to ethanol, and recent accessions were cataloged, including the fish collection of the University of South Alabama, received by the Museum in 1987. In Herpetology, 2,042 specimens were cataloged (295,436 total now in collection). In Ichthyology, 12,004 lots (247,259 specimens) were cataloged, including 30 lots (43 specimens) of wet skeletons, and 2,016 dry skeletons.
The record of fossil and modern invertebrates provides a remarkable history of life on this planet. The number of invertebrates, both fossil and recent, probably represents at least a half billion species, embracing a wide diversity of forms. The goal of the research efforts of the Department of Invertebrates is to document the systematics, evolution, extinction, and life histories of this diverse group of animals.

Curator Neil H. Landman pursued his studies on the systematics and ontogeny of ammonoids, externally shelled cephalopods. He completed a monograph with Karl M. Waage, Yale University, on the Upper Cretaceous scaphitid ammonoids of the Fox...
Hills Formation, South Dakota, which are among the best preserved ammonoids in the world. With Research Fellow David Jacobs, Dr. Landman has explored the functional morphology of these and related ammonoids. He also completed studies with K. Tanabe, University of Tokyo, on the microstructure of some of the internal features of ammonoid shells, which will provide additional characters useful in reconstructing ammonoid phylogeny. Dr. Landman and Research Associate J. Kirk Cochran investigated the early life history of *Nautilus belauensis* based on recently hatched specimens from the Waikiki Aquarium.

Writing *The High Table*, a book that examines disputes between paleontologists and evolutionary geneticists from the mid-1960s to the present, was a project that Curator Niles Eldredge spent much of this past year working on. Dr. Eldredge also pursued his interest in the relationship between ecological and evolutionary phenomena, developing a species-sorting model of latitudinal diversity gradients. With Carl Brett, University of Rochester, he embarked on an NSF-funded study of evolutionary stasis and change of a wide assortment of invertebrate fossil species from the Middle Devonian Hamilton Group of New York and adjacent regions. Together with Sidney Horenstein, the Museum’s environmental programs coordinator, and Willard Whitson, designer in the Museum’s Exhibition Department, Dr. Eldredge began work on a new exhibition entitled *Biodiversity: A Celebration of Life*. Slated to open in 1996, the exhibition will explore evolutionary and ecological aspects of diversity, the reality and causes of mass extinctions of the geological past, and the imminent threat to modern diversity posed by human habitat destruction.

The focus of the continuing research program of William K. Emerson, curator, is on the species diversity of the shallow water mollusks of the tropical eastern Pacific Ocean. Of particular interest are the wide ranging species with Indo-Pacific faunal affinities, many of which are distributed from the Indian to the central Pacific Ocean. Some of these Old World species are known to occur on the oceanic islands and mainland of tropical west America. During the most recent El Niño event (1991-92), the first specimen of one of these Indo-Pacific gastropods (*Cypraea moneta* Linné) was found living on the continental shelf of the west American mainland. This common money cowrie shell had only previously been report-
ed on oceanic islands in the eastern Pacific (Galápagos Islands, Clipperton Island, and Cocos Island). These records plus the new find reveal a temporal occurrence during or immediately following periods of El Niño episodes. It is possible that the larvae of this cowrie require the warmer waters of an El Niño event to survive dispersal from the central Pacific to outposts in the eastern Pacific. However, the newly arrived mollusks may not be reproductively viable owing to cooling of the local waters following El Niño conditions.

Ward Wheeler, assistant curator, continued investigations into the molecular systematics of invertebrates. Work was completed on a large integrative study of arthropods and the placement of the enigmatic Pycnogonida. Dr. Wheeler was also part of the Museum’s team that was the first to isolate and characterize DNA from 25 to 30 million-year-old amber fossils. In addition to his empirical work, Dr. Wheeler has continued investigations into the theoretical aspects of the analysis of DNA sequences. This work has resulted in a more integrated approach to the establishment of homology in molecular sequence data.

Two curators emeriti have also been very active. Roger L. Batten continued his studies on the systematics of Upper Paleozoic snails. He is currently working on the Magdalena fauna from the Hueco Mountains of west Texas. Norman D. Newell and Research Associate Donald W. Boyd pursued research on the mass extinctions at the close of the Paleozoic Era and revised many bivalve taxa involved in this event. Dr. Newell has also continued to give attention to the spread of creationism and the global human population explosion and consequent environmental degradation.

Research Fellow David Jacobs is participating in a study of ammonoids with Dr. Landman and J. Chamberlain, Brooklyn
Embryonic part of a fossil ammonite from the Cretaceous Period viewed under the Museum’s Scanning Electron Microscope.

Department of Entomology and D. Lindberg from the University of California at Berkeley.

The Department also has many active research associates. Howard R. Feldman continued his work on the paleoecology of the Middle Devonian Onondaga Limestone in western New York. He spent the summer in Israel studying the biogeography and systematics of Ethiopian Province brachiopods. John J. Lee and his colleagues pursued their studies of “microforaminifera,” a group of very small foraminifera that they have recently “rediscovered” and shown to be very abundant in many marine habitats. In collaboration with the Molecular Systematics Laboratory, Dr. Lee has also been working on the molecular systematics of a diverse group of foraminifera. Leslie F. Marcus, research associate, organized several international morphometrics workshops during the past year. He also continued his collaboration with curators in other departments of the Museum, producing joint publications on the evolution of mammals and geographical distribution theory.

College. They conducted fieldwork in western North America and are evaluating the hydrodynamic properties of ammonoid shells with the use of a flow tank. Dr. Jacobs also started research as a NASA-funded principal investigator examining the Cambrian radiation of animal life in the context of developmental genetics in collaboration with Robert DeSalle, assistant curator, from the Museum’s

This specimen of the glassy sponge *Hyalascus similis* was first described in 1904 and was rediscovered during the ongoing inventory and computerization of the Department's holdings.
Several members of the Department of Mammalogy spent the year completing their work for the second edition of *Mammal Species of the World*, edited by Don E. Wilson and DeeAnn Reeder (Smithsonian Institution). Published in 1992, the volume is a significant contribution to the literature of mammalogy and will be the standard reference for professional researchers as well as staff in state and national wildlife and conservation agencies for years to come. The volume includes Curator Emeritus Karl F. Koopman’s chapter on bats (order Chiroptera); two chapters on rodents (family Dipodidae and family Myoxidae) by Associate Mary Ellen Holden; and a chapter

*Reconstruction of the extinct giant rodent Amblyrhiza inundata being studied by Curator Ross D.E. MacPhee.*
on muroid rodents (family Muridae) by
Curator Guy G. Musser and Research
Associate Michael D. Carleton. These chap-
ters reflect the authors’ expertise in these
areas, and their research demonstrates the
strength of the mammal collection and
resources at the American Museum of
Natural History.

During the same period, Dr. Musser con-
tinued his research on systematics of Asian
rodents and, with Erik Rickart (University of
Utah, Salt Lake City), submitted a manu-
script for publication on chromosomal char-
A biological survey of Cuba conducted by Curator Ross D.E. MacPhee and his colleagues has revealed the rapid depletion of the island’s biodiversity. Once widespread, almiquis (Solenodon), relatives of shrews, are now extremely rare.

northern pampas of Uruguay, and that this species represents a new genus, which they describe. The discovery is important in the context of Dr. Voss’s revisionary studies of fossil muroids from Lagoa Santa in Brazil, a study that is providing a new perspective on mammalian biology at the Pleistocene/Holocene boundary in South America. Dr. Voss’s ultimate goal in this research is to test the hypothesis that late Quaternary extinctions in North and South American mammals conformed to essentially the same size-biased pattern, perhaps caused by exploitation by early human populations of a naive and vulnerable New World megafauna. Another potentially important aspect of this research is the fossil evidence for paleoclimates different from prevailing recent conditions. North American caves have often provided faunal data with important paleoclimatic implications, and study results suggest that the Lagoa Santa caves will yield similar insights. The identity of molitor with magnus, for example, suggests that cool-temperate grasslands once occurred in central Brazil, a region that now supports tropical cerrado vegetation.

Dr. Voss also continued preparing results from his experimental studies of morphometric evolution. Two papers reporting his discoveries have been published and a final manuscript with Research Associate Leslie F. Marcus will be submitted for publication soon.
biased, and represent only a few widely scattered localities. Until the geographic patterns are convincingly documented, causal hypotheses invoking contemporary ecology or climatic history are equally premature.

Curator Ross D.E. MacPhee continued his investigations of recently extinct island mammals from Madagascar and the West Indies. He finished a monograph on the morphology, adaptations, and relationships of *Plesiorcyteropus*, an enigmatic malagasy mammal that apparently died out less than 1,000 years ago. Previously, *Plesiorcyteropus* was thought to be closely related to the aardvark of Africa, but MacPhee has shown that it is very distinct from aardvarks and belongs in a group of its own. Research Associate Audrone Biknevicius, Donald McFarland (McKenna College, Claremont), and Dr. MacPhee finished a manuscript on estimating the body weight and population size of the extinct rodent *Amblyrhiza inundata* from the small islands of Anguilla and St. Martin. Individuals of this species, weighing up to 150 kilograms, were probably never numerous, and this may have contributed to their demise.

Later this year, Dr. MacPhee and his colleagues from the Museo Nacional de Historia Natural in Cuba will continue their work at Canal Zaza, which last year yielded remains of the first Tertiary land mammal discovered in the West Indies.

Curator Emeritus Sydney Anderson continued his long-range research on Bolivian mammals, both in the field and at the Museum. His fieldwork in the Bolivian highlands was supplemented by travels to several natural history museums. Anderson’s studies of Neotropical diversity and species-distributions nears completion. Research results by Curator Emerita Ethel Tobach and her associates on activity and perception in spiny mice (*Acomys*) were published this year.
Members of the Department of Mineral Sciences study minerals, rocks, and meteorites to understand their structure and the processes they record about the evolution of Earth and the solar system. The mineral and gem collections grew by 489 specimens (up from last year’s total of 364), 418 via donation and 71 through purchase. Gifts include a collection of 396 native copper specimens from historic copper mines in Michigan, from the Phelps-Dodge Corporation, and a collection of 22 crystallized minerals from Roslyn and Norman Pellman. Important purchases include a 12 cm x 14.5 cm arborescent gold (containing approximately 8 Troy ounces of precious metal) from Placer Co., California, and a 4-centimeter diameter chrysoberyl (var. alexandrite) twin, in matrix, from the Malysheva mine, Takovaya, Urals, Russia. A total of 80

These two cut and polished meteorites are the Mungindi iron meteorite from Australia, right, and the Eguel pallasite from Argentina.
specimens were loaned for scientific research during the year.

The meteorite collection grew by 21 specimens as a result of exchanges, donations, and purchases. Some of the more important additions include Eagles Nest (Australia), a new brachinite; Cimarron (Kansas), a new CM chondrite; Monument Draw (Texas), an acapulcoite; and a slice of the Bear Creek (Colorado) iron with a 5 centimeter chromite crystal. Ninety-three samples were loaned out, and portions of 94 samples were supplied for research purposes.

The petrology collection was significantly enhanced by the addition of several drill cores from the Great Dyke, Zimbabwe. The cores and the costs associated with their acquisition and transport to the Museum were provided by the mining company BHP Utah International, Inc. The cores are particularly important because the Great Dyke, despite its enormous size, is poorly exposed and thus generally inaccessible. In addition, the cores include portions of the Great Dyke enriched in the platinum group elements, and thus their study will bear on how economic deposits of such elements formed.

Specimens from mineral deposits were collected at three pegmatite mines in North Carolina. One of these deposits is located in the lithium-tin belt of the southeastern United States and represents an important resource for lithium. Ore samples were also gathered at the historic Ducktown, Tennessee, massive sulfide mining district.

Curator George E. Harlow continued his studies of the effect of high pressure on the relative size of atoms in minerals. Using a multianvil high-pressure apparatus in the laboratory of David Walker at Lamont-Doherty Earth Observatory/Columbia University, experiments forced potassium, a large cation species, into the site of calcium, a smaller cation, in pyroxene and other minerals at conditions comparable to depths as great as 450 kilometers (300 miles) in the Earth’s mantle. Dr. Harlow has succeeded in growing pyroxene with up to 2.5 weight percent K2O, an astounding amount by previous standards, and in crystals large enough (greater than 0.1 millimeters across) to do crystal structural studies with X-ray diffraction instruments in the Department. A recently completed study of the crystal structure of a natural potassium-rich pyroxene from a diamond further verified the replacement of calcium by potassium in the crystal. These studies will improve the understanding of how minerals respond to pressure, how mineralogy changes in the Earth’s mantle, and how the Earth evolved.
With the support of the Department of Energy, Associate Curator Edmond A. Mathez has begun a study of the effect of carbon on electrical conductivities of rocks. Electrical conductivity is an important means of characterizing the earth’s interior and yields information on the structure of the deep continental crust. Electrical conductivity is also used as an exploration tool for metals and hydrocarbons. Many rocks contain trace quantities of carbon, which is suspected to exert a strong influence on electrical conductivity. With colleagues R. Fogel, A. Leger, and C. Peach, Dr. Mathez is mapping the distribution of carbon in rocks using the electron microscope and X-ray analytical techniques. Their specific goals are to relate distribution and concentration of carbon to electrical conductivity and devise means of estimating electrical conductivity on a large scale from observations made on individual samples.

Dr. Mathez is continuing his research on the origin of platinum-rich rocks, which include the Bushveld Complex of South Africa, the Great Dyke of Zimbabwe, and the Stillwater Complex of Montana. These bodies are composed of rocks crystallized from enormous magma chambers in the shallow crust. In order to understand how these magmas crystallized, Mathez is analyzing the Bushveld rocks for trace elements and stable isotopes. The data demonstrate that important geochemical characteristics developed after most of the rock had crystallized. Another aspect of the origin of platinum-group-element deposits is being investigated by Cheryl Peach, a graduate student at Columbia University working under Mathez’s supervision. As the final part of her Ph.D. thesis, she has been conducting experiments to determine the extent to which these elements may be concentrated in sulphide minerals. During the summer of 1992, Dr. Mathez organized a field trip to the Stillwater Complex for geology graduate students of Columbia University.

As part of his research program, Curator Martin Prinz continued to delve deeper into the CR (Renazzo-type) carbonaceous chondrite group with the aid of NASA funding. A major paper that established these chondrites as a separate group was published, and new studies resulted in the recognition of a CR clan, which includes some important meteorites not belonging to any major group. New data show members of the CR clan have chemical and isotopic characteristics related to CR chondrites but are physically dissimilar. Research this year focused on the LEW85332 carbonaceous chondrite from the Lewis Cliff area in Antarctica. Although it is CR related, it differs in having anhydrous chondrules coexisting with hydrous matrix. Whether hydrous minerals in chondrites form in the solar nebula prior to accretion or whether they react with accreted ice on the parent body is currently a matter of heated debate. The question has important implications for understanding the origin of the planets. The LEW85332 meteorite provides data that appears to support the controversial hypothesis of hydration in the solar nebula.

Assistant Curator James Webster continued his research into the effects of water, fluorine, and chlorine in driving volcanic eruptions and in the formation of mineral deposits that occur in igneous rocks. Powdered rock samples from mineral
deposits in the United States, Mexico, and Canada are melted at high temperatures and pressures in the new experimental petrology laboratory in the Department. Processes occurring in natural magmas are simulated by melting rock samples in the laboratory, and the products of these experiments are studied to determine how magmas are generated, how volcanoes erupt, and how a large variety of mineral deposits are formed. Natural abundances of water, fluorine, and chlorine in mineralized magmas are determined by analyzing small samples of volcanic gas trapped and sealed in quartz grains. The quartz grains occur in volcanic rocks associated with mineral deposits mined for tin, lithium, beryllium, uranium, and fluorine. The results of these studies are incorporated into computer models that predict the efficiency with which hot, water-rich fluids transport ore metals within the earth. Dr. Webster is currently serving as research advisor to Andries Kriegsman, who is a Ph.D. student at Columbia University. Mr. Kriegsman will be conducting field and experimental investigations into the origin of lithium-pegmatite deposits.

With NASA funding, Robert Fogel, research fellow, has been examining the behavior of volcanic systems under reducing (oxygen deficient) conditions applicable to the origins of the solar system, to lunar evolution and to early Earth evolution. The structure of silicate melts (molten rock) under normal to oxygen-rich conditions is dominated by silicon-to-oxygen bonds. The experiments aim to show that nitrogen can replace oxygen in the silicate framework under oxygen-poor conditions and apply directly to the formation of the enstatite meteorites, which contain nitrogen-rich minerals such as sinoite (Si2N2O) and osbornite (TiN). Considering that these meteorites have been suggested as representing the bulk composition of the earth, the experiments bear directly on terrestrial evolution. Dr. Fogel’s calculations show that sinoite and osbornite can condense from a “solar nebula” that differs somewhat from solar compositions, suggesting that condensation in a non-homogeneous solar nebula could have given rise to the enstatite meteorites.

Research Fellow Michael K. Weisberg continued his study of pyroxene minerals in the enstatite chondrites (a primitive meteorite group), utilizing an ion microprobe at the Woods Hole Oceanographic Institute. He was able to measure minor and trace element abundances in the pyroxene minerals with this microbeam instrument, and the data indicate that the enstatite chondrites experienced a complex history in the early solar system that included: formation of chondrules under conditions more oxidizing than that classically postulated for the enstatite chondrites, solid state reduction of the chondrules in the solar nebula, and vapor-solid condensation of estatite from the nebula. This study contributes to the understanding of the origin of chondrites and chondrules and the nature of the solar nebula in which they formed.

Curatorial Fellow Albert Leger joined the Department in January to take charge of the electron microprobe facility and has been supervising the implementation of new automation for the instrument. Dr. Leger’s main line of research is fluid-rock interaction during metamorphism. His current project involves characterization of magmatic and metamorphic fluids near igneous intrusions in the Waits River Formation of northeastern Vermont.

A portion of the Bear Creek iron meteorite from Colorado showing an unusual occurrence of the mineral sinoite (dark gray) partially surrounded by troilite (light gray).
Members of the Department of Ornithology are engaged in research on the systematics and natural history of the birds of the world using the Department's unmatched collections as well as through fieldwork. During the past year, Department members traveled on expeditions to five continents to procure new specimens and make observations; they visited museums throughout North America and Europe.

In October 1992, the Department was pleased to welcome a fourth member to the curatorial staff, Joel Cracraft, formerly of the University of Illinois in Chicago. Dr. Cracraft has been investigating the higher

Emperor Penguins of the Antarctic live and breed in frigid temperatures.
level systematics of birds for many years using both morphological and molecular methods. At the Museum, his lab will be involved in DNA studies aimed at developing hypotheses for the relationships of birds-of-paradise, Australian lyrebirds, and Australian crow-like birds. Arriving at the Museum with Dr. Cracraft were a graduate student, Alejandro Espinosa, a native of Mexico City, and two post-doctoral fellows, Shannon Hackett from Louisiana State University in Baton Rouge, and Gary Nunn from the University of Nottingham. These researchers are all pursuing studies of avian relationships using DNA sequences. At the 1993 annual meeting of the American Ornithologists’ Union in Fairbanks, Alaska, in June, Dr. Cracraft was awarded the society’s prestigious Elliott Coues Award for outstanding contributions to ornithology.

Department Chairman George F. Barrowclough continued his studies of phylogeny and geographic variation of juncos. Besides lab work on their size, shape, and color, an expedition during June 1993 to the isolated mountain ranges of Utah and Nevada yielded new specimens for analysis of the temporally fluctuating hybrid zone between the Oregon Juncos of California and the Gray-headed Juncos of the Great Basin. Barrowclough’s DNA studies of endangered spotted owls continued.

Drs. Barrowclough and Cracraft, along with Robert M. Zink of the University of Minnesota, have used random sampling techniques to obtain for the first time an estimate of the total number of phylogenetic species of birds in the world. The estimate (18,043 with a 95 percent confidence interval of 15,845 to 20,470) indicates that there are approximately twice as many species-level taxa as previously thought. This result was presented as part of a national symposium in Fairbanks, Alaska, in June 1993.

Lamont Curator Lester Short continued his long-term field studies of the comparative
biology of honeyguides and barbets; this extensive fieldwork is taking place in Kenya, East Africa, in conjunction with Jennifer F. M. Horne, research fellow at the National Museums of Kenya. Radio-tagging and color-banding are being used to decipher the life histories of these little-known birds. The writing of a monographic treatment on these two families of birds is under way. During the past year, Dr. Short also published a popular book, *The Lives of Birds*; it represents the first in the Museum’s new series of books on animal behavior.

Curator François Vuilleumier performed fieldwork in northern Patagonia, Argentina, during October and November 1992. During this time, Dr. Vuilleumier worked along a transect from the Atlantic to the foothills of the Andes through a mixture of steppe and shrublands. Target species of a number of genera were studied in a continuing examination of speciation in southern South America. A major paper describing some of this work appeared during the year and a second major paper was written and submitted.

In May and June, Dr. Vuilleumier made a trip to Poland and Denmark to study bird communities in beech (*Fagus*) forests. Niche utilizations in this northern beech biome will be compared with results from earlier work on southern beech (*Nothofagus*) forests in South America, Australia, New Zealand, and New Caledonia; these southern beech forests are occupied by birds of different phylogenetic origins than are the European forests.

Research associates continue to represent a major portion of the Department’s research productivity and visibility. Robert Rockwell of the City University of New York, in addition to joint projects with Dr. Barrowclough on theoretical aspects of conservation biology, continued field and modeling studies on the population demography, ecology, and genetics of Alaskan Emperor and Brant Geese. Robert W. Dickerman, research associate, continued to analyze and write papers based on his expeditions to Liberia, West Africa, in 1988 and 1990; during March 1993 he spent time at the British Museum working on problems associated with this
The Bee Hummingbird, weighing less than $\frac{1}{10}$ ounce, is the smallest bird in the world.

completed a major manuscript on the history of the usage of avian family names; this paper will provide an important source of information for avian taxonomists. Walter J. Bock, research associate, also continued his analysis of the enigmatic South American Hoatzin, genus *Opisthocomus*. Departmental Associate Parker Cane continued studies of skeletal growth trajectories of terns and related birds, in part using Great Gull Island as a source of study material. Associate Ben King continued his extensive field activities in Asia; in the past year he made trips to China, several of the former Soviet Republics, the Philippines, and southeast Asia.

The research efforts of post-doctoral fellows also represent a major part of the Department’s productivity. Chapman Fellows Jeff Groth and Craig Farquhar led expeditions to Nepal and Ecuador, respectively, to obtain specimens and study species related to their on-going projects. Dr. Groth finished his molecular studies of cardueline finches, while Dr. Farquhar continued his field and museum work on Red-backed Hawks. Both researchers presented papers at national meetings during the year. The Department was very fortunate to have Evgeny Kurochkin of the Paleontological Institute of the Russian Academy of Sciences spend six months in residence as a visiting Chapman Fellow. During this time, Dr. Kurochkin worked closely with members of the Department of Vertebrate Paleontology on the phylogeny and evolution of early (Cretaceous) birds. His visit has helped to further the Department’s ties with researchers in Russia.

material. Stuart Keith, research associate, continued writing and editing activities for the multi-volume work, *The Birds of Africa*; Volume Four appeared during 1992. Dr. Walter Bock of Columbia University com-
“Bird or not a bird” is one of the questions raised as Department paleontologists began to study the wealth of new fossils from the second year of fieldwork in Mongolia’s Gobi Desert. That such esoteric controversies could rage in the press is partly attributed to the public’s growing awareness of the inhabitants of the 200 million-year-long Mesozoic, or Age of Dinosaurs, a span of time that vastly exceeded the duration of human existence.

*The Dinosaurs of Jurassic Park*, the temporary exhibition inspired by Steven Spielberg’s movie, curated by Assistant Curator Mark Norell, brings flight of fancy down to earth by showing what can be
known about extinct animals from their bones. Such exhibitions give the Department’s staff an opportunity to inform the public and demonstrate the scope and relevance of the research being carried out at the Museum. Work on the complete renovation of all the exhibitions of fossil vertebrates on the fourth floor of the Museum continued to occupy all of the Department’s curators — especially the paleomammalogists — whose efforts will be realized during the next year.

With National Science Foundation support, Dean of Science Michael Novacek, Curator Malcolm McKenna, Assistant Curator Mark Norell, and Postdoctoral Fellows James Clark and Luis Chiappe joined Demberelyin Dashzeveg of the Mongolian Academy of Sciences and Perle Altangerel of the Mongolian Museum of Natural History for a third field season in the Mongolian Gobi this summer. A fourth season is now financially assured, and the team hopes to extend their exploratory work for new sites.

Curator and Chairman Richard Tedford and Research Associate Larry Flynn (Harvard University) moved into the final year of support from the NSF for their cooperative study of the Yushu Basin, Shanxi, People’s Republic of China, with colleagues from the Institute of Vertebrate Paleontology and Paleoanthropology, Beijing. An extensive summary of the results in monographic form is planned combining the studies of all collaborators. In connection with this work, a number of Chinese investigators visited the Department this year.

Dr. McKenna pursued a number of phyletic problems involving insectivores, rodents, rabbits, and primates, while continuing to improve the classification of mammal genera. Arrangements for its publication are being sought so that the long-awaited revision of George Gaylord Simpson’s influential classification, published by the Museum in 1945, might have an up-to-date successor by the fiftieth anniversary of its original publication.

Curator Eugene Gaffney began a major project on the side-necked turtles, a group of considerable interest because of its wide distribution in the southern hemisphere.
The Apatosaurus is refurbished to reflect new scientific thinking as part of the complete renovation and restructuring of the fossil halls. The two new dinosaur halls will open in 1995.
The study is being conducted with Research Associate Peter Meylan (Eckerd College, St. Petersburg, Florida) and Roger Wood (Stockton State College, New Jersey).

During the last Brazilian winter, Curator John Maisey, Columbia University graduate student Alex Kellner, and Professor Diogenes Campos of the Federal University of Rio de Janeiro, conducted a second season of fieldwork on the early Cretaceous deposits of northeastern Brazil. The work was mainly exploratory, but it resulted in collections that extend knowledge of the stratigraphic distribution of the rich fossil-fish faunas of the region. Further fieldwork is planned for this winter in Brazil.

In addition to his participation in the Mongolian project, Dr. Norell has been pursuing theoretical work on the development of a phylogenetic approach to paleobiology and exploring the congruence between the fossil record and cladistic phylogeny.

Dr. Chiappe of Argentina joined the staff as a Postdoctoral Fellow this year. His work will center on the important new Cretaceous birds discovered in Argentina and their relevance to the history of birds. Xiaoming Wang, research scientist, completed his fellowship producing a monograph on the earliest members of the dog family. He remained at the Museum to collaborate with Dr. Tedford on other canid projects. Dr. Clark continued work on Crocodilia and engaged in the Mongolian project as well as fieldwork in the reptile-bearing Triassic marine deposits of Nevada.

New research associates worked on various projects. Ann Bleefield is studying problems of rabbit phylogeny and Larry Witmer (New York College of Osteopathic Medicine) is examining the structure of the heads of living archosaurs (birds and crocodiles) as models for similar structures of their extinct relatives. Eric Delson (City University of New York) participated in the development of the Hall of Human Biology and Evolution and in the primate alcove of the fourth-floor renovation project, in addition to pursuing his research on monkeys.

A dinosaur egg collected in the Gobi desert in the 1920s by Museum explorer Roy Chapman Andrews.
SOUTHWESTERN RESEARCH STATION  As the years pass since the founding of the Southwestern Research Station in 1955, the wisdom of locating a major field station in the Chiricahua Mountains of southeastern Arizona becomes clearer. The Station continues to provide excellent facilities for scientists from around the world to study organisms in one of the most ecologically exciting places on earth.

As the nation and the world face the issues of conservation of planetary biodiversity, the studies of past decades at the Station acquire deeper significance. The Station has been accumulating knowledge, through the publications of its scientists, of a region of North America that is outstanding for its biodiversity. North of Mexico, the “Sky

During the 1993 field season, twice as many Roseate Terns nested in the terraces of Great Gull Island than in the last two field seasons.
Islands” of southeastern Arizona and adjacent areas probably harbor the richest biota in the United States. These terrestrial “islands” exist as an archipelago of mountain ranges — the Madrean Archipelago — stretching northward from the Sierra Madre Occidental of western Mexico to the Rocky Mountains of the western United States. Here, the biota is so diverse and outstanding that we should consider this area as the “Biological Grand Canyon” of the United States.

This year, the Station’s director, Wade C. Sherbrooke, continued his studies of horned lizard biology and antipredator behaviors. He was keynote speaker at the first Horned Lizard Conservation Society meeting in Austin, Texas, where National Public Radio interviewed him for its “All Things Considered” program. His studies on the blood-squirt defense from the orbit of the eye of these strange lizards were featured in Natural History, Discover, National Geographic, Australian Natural History, Scholastic, Newstime, and elsewhere. He and other scientists working at the Station were featured on a national television show of the Public Broadcasting System, “The Desert Speaks.”

The scientific capabilities of the Station’s physical plant were enhanced further this year through a second grant from the National Science Foundation (NSF). The NSF/American Museum of Natural History matching funds project has resulted in the construction of a large four-chamber Animal Behavior Observatory, with a centrally located observation blind. Numerous projects are already under way that rely on this addition in capabilities, as well as new collection storage cabinets, a precision microanalytical balance, and a super cooling freezer received under the grant. In addition, the Museum made numerous capital improvements to existing buildings during the last year — among these, modernization of the electrical supply and wiring, roofing repairs, and additions.

Additional funding was received from private foundations and individuals. The Margaret T. Morris Foundation and Rupp Industries, Inc., continued their generous support of the last several years. The Horace W. Goldsmith Foundation awarded the Museum a three-year grant of $100,000 in support of the Station’s work. Continuing
contributions of other donors to the Southwestern Research Station Student Support Fund resulted in grant awards to students working at the Station in 1992: Kevin Dixon, Qinfeng Guo, Randall Morrison, Jorge Santiago-Blay, Geoffrey Smith, and Jeffrey Paul Bruce. In addition, one student at the Station received a Frank M. Chapman Memorial Fund grant, and seven received grant support from the Theodore Roosevelt Memorial Fund.

Overnight guests at the Station numbered 1,222, including 628 naturalists, 381 visitors in groups, 192 scientists, and 40 volunteers. Researchers gave 44 seminars for Station residents and members of the surrounding communities. The volunteer program continued to attract outstanding students exploring careers in field biological sciences. In addition to working at chores in exchange for room-and-board, volunteers assisted scientists with field research projects and gained valuable hands-on scientific experience.

**GREAT GULL ISLAND** What are the prospects for terns in the Long Island area by the year 2000? How large does a colony have to be to be productive? What are the variables that affect success? The answers to these questions and others will be the subjects of a series of papers based on data, now computerized, on 131,394 terns banded on or near Great Gull Island, New York, during the last 26 years. This is the most complete data set on the largest colony of Common Terns anywhere in the world. The files also include data on the second largest concentration in the western hemisphere of the endangered Roseate Tern.

Data entry was completed by a team of professionals and volunteers. The generous and substantial support of the Gordon Rousmaniere Roberts Fund during the last four years, with additional support from the Drumcliff Foundation in 1992, made possible the computerization of data. In 1993 the first papers will be published using part of this computerized database.

In early August 1992 a tractor rolled off a landing craft and onto Great Gull Island. Purchased with funds donated by The Norcross Foundation, the tractor enables participants to clear new areas and to better maintain all sections on the island that the terns use.

With the help of a major grant from The Norcross Foundation, 10 telescopes were purchased and an aerial photograph was made for future mapping work. The purchase of the new Kowa telescopes will provide the best optical equipment for determining numbers of Common and Roseate Terns back early in the season. In addition to making it easy to read color bands, these instruments will be strong enough to read numbers on an aluminum band if a bird has lost its plastic bands.

A substantial contribution from the Goelet Collections Fund was used to purchase computer mapping software. The program not only creates a display of the nests marked each season on Great Gull Island, but it links the mapping data to dBase files, giving researchers a way of spatially analyzing the data, a capability that is extremely important when working with a colonial species.

A generous grant from the Bernice Barbour Foundation in 1991 supported the creation of new nesting areas on the Island for the endangered Roseate Tern during the last three field seasons. Three sets of terraces were built on the side of the big gun emplacement on the eastern end of Great Gull Island. Eleven pairs of Roseate Terns nested on the terraces in 1992. In 1993, 20 pairs nested on the terraces. A grant from the Bernice Barbour Foundation, made in the fall of 1992, will cover transportation costs and other expenses incurred in searching for wintering concentrations of Roseate Terns in Brazil.

The annual Great Gull Island Birdathon raised over $12,000 for support of the 1992 field season.
During the 1992 field season, 5,051 nests of Common Terns were paired, and over 11,000 young were banded. The Station contracted with the U.S. Fish and Wildlife’s Roseate Recovery Team to continue the study of the Roseate population on Great Gull Island. Project personnel continued work with New York State’s Endangered Species Unit to attract Roseate Terns to island sites near Great Gull Island.

ST. CATHERINES ISLAND  Archaeology, ecology, and evolutionary biology research continued on St. Catherines Island, a barrier island off the Georgia coast. David Hurst Thomas, curator in the Department of Anthropology, is the Museum’s principal investigator in the archaeology program on St. Catherines.

Dr. Thomas and his colleagues are completing the third year of a three-year program to study the adaptations of coastal Creek Indians of Georgia from A.D. 1450 through A.D. 1700. This research examines what life was like during precontact times and how the social environment changed with the arrival of Spanish settlers. In previous years, this investigation employed a broad range of geophysical prospecting techniques to explore key Creek Indian sites. By employing nondestructive, noninvasive technology — such as magnetometry, resistivity, conductivity, and gradiometry — these investigators are able to learn from archaeological sites while conserving these nonrenewable resources for future generations.

This past year was spent testing anomalies discovered in the pueblo portion of Mission Santa Catalina de Guale. Of particular interest are the several dozen aboriginal structures that have appeared in the remote sensing results, but are extremely difficult to find using conventional excavation strategies. By May 1993 however, the research team had successfully located and test-excavated three such structures.

The St. Catherines Island research program is administered by the Office of Grants and Fellowships.

BLACK ROCK FOREST  Among the forested hills and mountains of the Hudson Valley Highlands is Black Rock Forest, a 3,700-acre preserve. The forests are dominated by oak, but maple, hemlock, birch, ash, and other trees also grow there. It is one of the few areas in the metropolitan area that hosts a diversity of native animals, including deer, mink, river otter, bobcat, wild turkeys, and coyotes. Seven ponds and numerous streams are also part of the ecological composition of the Forest. The Forest’s director, William Schuster, and John Brady oversee the use and maintenance of the Forest and buildings. Two buildings house groups of students and other visitors; one has additional laboratory facilities. Black Rock’s proximity to New York, its system of 45 miles of trails and unpaved roads, and its ecological diversity make it a unique resource for the use of 14 public and private research and educational organizations, including the American Museum of Natural History.

This year, Sidney Horenstein, coordinator of environmental programs, led a field trip for members of the Museum, who observed the geology and botany of the Forest. The Education Department had students in the Ecology Club participate in several projects, including tree measurements, plot surveys, and aquatic invertebrate sampling. Associate Curator in Entomology David Grimaldi conducted field trips with his CUNY Entomology class to gather data on aquatic insects in the Forest, which may be useful to studies of stream chemistry conducted by other scientists using Black Rock Forest.

A grants program with annual awards up to $5,000 sponsors scientific research on the biology, geology, and other environmental aspects of the Forest.
Interdepartmental Research Facilities has grown extensively during the past year. The most significant development is the installation of a computer network linking all science departments together and to the Internet. This project came about over the past year and was funded through several grants. The system was designed and is being overseen by William Barnett, who used an earlier experimental connection to develop the project. Support came from Michael Novacek, dean of science, and grants from the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). The NSF grant, written with Charles Myers in the Department of Herpetology, helped cover the installation costs of the internal computer network linking the scientific departments as well as the interdepartmental laboratories and the molecular biology lab. Robert Fogel in Mineral Sciences received a NASA grant to install the high-speed link to the rest of the Internet and worked closely with NASA to set up the connection.

Thousands of computer sites in 137 countries worldwide are linked together to form the backbone of the Internet. Universities, government agencies, museums, schools, nonprofit organizations, companies, and individuals are also part of the vast complex known as the "Internet Community." The Internet can also interact with private services such as Compuserve. There are currently approximately 1.8 million computers on the Internet, and it is growing at an annual rate of 80 percent. As the Museum joins this community, the resources available on the Internet are also expanding rapidly. By linking to the Internet, the Museum becomes a participating member of this community.

Initially, the Museum’s network will provide the full spectrum of Internet services to 140 scientific staff through 45 workstations, primarily DOS and Mac PCs, located throughout the Museum. Two Sun UNIX computers were installed and configured to act as a communications server and a network administration computer. Internet services include electronic mail, logins to other computers on the Internet, and the ability to search databases interactively and to copy data, files, images, movies, sounds, and computer programs from the Internet. The system is designed to bring these services to personal workstations so that scientific staff can easily combine their desk work with the resources available on the Internet. A curator working on a manuscript at a PC, for example, can research references at a multitude of available libraries, insert a copy of the document into an electronic mail message, and deliver it, within seconds, cross-country to a publisher or a colleague for review.

The system is designed to be flexible so that it does not depend on a single operating system or hardware platform; it is expandable so that it can ultimately provide Internet access to individual desktops. The internal computer system also connects the Museum’s analytical facilities. In future, it will be possible to make Museum resources available to scientific staff and the general public. Plans are under way to connect the Library, the Planetarium, and the Education, Graphics, and Exhibitions Departments in the coming year. By becoming a member of the Internet community, the Museum puts
itself in a position to become a prominent member of the national information infrastructure that is radically changing the way science and education are done.

These computing facilities complement the existing Scanning Electron Microscope laboratory and digital imaging system. The SEM facility consists of a Zeiss digital scanning electron microscope, a Link energy dispersive spectrometry (EDS) microanalysis system, a backscattered electron detector, a color video copy processor, and equipment used in the preparation of SEM samples, including a sputter coater and a critical point dryer. The digital imaging system is a high-end Macintosh system consisting of an internally modified Mac IIci CPU with image analysis software, a high-resolution 24-bit color monitor, a frame grabber for digitally capturing live images from the SEM, and a high-resolution laser printer. The Macintosh IIci can process and analyze any digital images, including those captured from the SEM. By manipulating digital images, researchers can re-scale and combine images to bring out features of specimens and other samples in an unlimited fashion. The Link EDS software allows digital dot maps of elemental concentrations to be analyzed and integrated with images of the sampled area. By reconfiguring color scales and measuring distances and areas, scholars can use images as analytical documents.

The SEM is used extensively by many different scientific departments and by scholars from other institutions. The unique imaging capabilities of the SEM are crucial to Museum entomologists who identify new species of spiders, flies, beetles, and wasps through diagnostic microscopic morphological features. Mineral scientists combine backscattered electron imaging with elemental information from EDS analysis to identify mineral phases in meteorites, metamorphic rocks, and experimental melt samples. In anthropology, the SEM proved invaluable for identifying pigments used in wall paintings from early prehistoric sites in the Amazon. It is also used to aid in conservation problems and in research on pottery, fibers, textiles, beads, and teeth.

MOLECULAR SYSTEMATICS LABORATORY The Museum’s state-of-the-art Molecular Systematics Laboratory, established in 1990, has become one of the most important and widely used facilities in the Museum. The molecular lab complements the traditional work of the museum by bringing the molecular information of DNA to the problems of systematics, evolution, and biodiversity. The main technique in the laboratory is DNA sequencing producing hundreds of thousands of bits of nucleic acid information each year.

The laboratory, headed by Assistant Curators Ward Wheeler and Rob DeSalle, was the first to sequence DNA from insects fossilized in amber last year and this year is investigating the genetics of extinct mammals by recovering fossil DNA from bones. A highly automated environment, the molecular systematics lab has recently installed a DNA sequencing robot, and laser DNA sequencer. Additionally, the laboratory has installed a large parallel-processing supercomputer to analyze DNA sequence data.

The lab is staffed by three curators, three technicians, seven postdoctoral fellows, and eight graduate students.
After three years of planning and building, work on the new library came to a successful conclusion on December 9 at a ribbon-cutting ceremony hosted by Museum and New York City officials. This opening was the culmination of hundreds of hours of work by Museum administrators, architects, engineers, contractors, and vendors. Library Director Nina Root, aided by Joel Sweimler, assistant to the library director, was in charge of the building program.

The new library, designed by Kevin Roche John Dinkeloo Associates, consists of two renovated 15,000 square foot floors, and a new 42,800 square foot eight-story book-tower. The new building, the first built at the Museum in over 20 years (and the first phase of the redesign and restoration of the fourth-floor paleontology halls), echoes the Neo Gothic facade of the Museum's first building, designed by Calvert Vaux in 1877.

The facility, designed to house one of the world's preeminent natural history collections, has environmental controls and modern storage facilities specifically designed to preserve rare and fragile materials. The layout provides comfortable reading rooms...
Conducive to research, accessibility, sufficient space, and a logical workflow. Because of the Library's welcoming comfort and efficiency, use has increased by over 30 percent.

The collections, dispersed throughout the fourth floor and basement, were rehoused, relabelled, and prepared for moving by the Library staff. Joel Sweimler, Nina Root, and National Library Relocations, Inc., planned the layout and move to ensure the re-integration of collections from various storage areas in the Museum. Due to careful labelling and the experienced library moving company, the herculean task was accomplished in just 28 working days. The Library closed to the public on October 19 and reopened on December 15; limited service was provided to the Museum staff throughout the move.

The Library staff moved into its new quarters on November 20 and was honored at a champagne ribbon-cutting by Museum President George D. Langdon, Jr., and Director William J. Moynihan. An official ribbon-cutting with Trustees, City officials, and Museum staff was held on December 9, and a gala black-tie dinner celebrated the new Library on January 2. A reception for over 100 area librarians and colleagues was held on January 11.

**SERIALS AND SPECIAL COLLECTIONS** The inventory, reclassification to Library of Congress classification, relabelling, and input of data into the on-line catalog of the 16,000-title serials collection continued, and an additional 2,608 titles were converted and integrated into the main collection. In addition, the Library continued to participate in the METRO Union List of Serials Project by contributing an additional 795 records for a total of 15,922 over the course of the project. As part of the preparatory work for the new library, a computer-generated serials catalog was produced by Priscilla Watson, senior acquisitions librarian; copies were placed on all stack floors, as well as in the reading room, to facilitate access. Supplements are generated every two weeks, reflecting the progress of serials reclassification.

The preparation of fragile archives, glass-plate negatives, films, art, and memorabilia was the foremost preoccupation. An inventory of various collections and their location in the new stacks was completed by Joel Sweimler, Barbara Rhodes, conservation manager, and intern Alan Balicki. The collections were cleaned, the film and negative storage vault was arranged, and the art collection was unwrapped and hung in the new storage area. The long-term program to convert all nitrate negatives to safety film continued with the conversion of 1,415 negatives from the Central Asiatic, the Jesup, Chapin Congo Peacock, Roosevelt South
America, and Bennett Bird Expeditions. Inventories were made of the Philip Hanson Hiss Collection of over 10,000 images plus films, and of the original photographic albums collection. Conservation intern Alan Balicki encapsulated one album as a prototype for a proposed grant project. Working with several Native American groups, photographic resources for the Hopi and Blackfoot nation archives were prepared.

Nina Root and volunteer Charles King identified and transferred 390 titles from the general stacks to the enlarged Rare Book Collection. Ms. Root completed the rearrangement of the Collection and began a computerized catalog of this unique resource.

Since the Library’s collections serve the international scientific and scholarly community and contain a large percentage of unique and fragile materials, extensive conservation work is necessary. Volunteer Josephine D’Ambrosio continued the protective enclosure project to rehouse items presently in acidic envelopes and binders: 1,369 items were rehoused; over 1,000 items were encapsulated in mylar; 350 lantern slides and glass-plate negatives were protected; and 3,830 items were shrink-wrapped. Thirty-seven brittle and fragile volumes were reproduced onto alkaline paper, providing stable, usable copies for research. Barbara Rhodes continues to monitor and refine the new environmental systems so necessary for the preservation of collections.

**EXHIBITS, LOANS, GIFTS** The inaugural exhibition in the Library Gallery, *Librarian’s Choice*, opened in February. A selection of pieces from the Library’s resources were chosen by Barbara Rhodes, Mary Genett, Donald Jacobsen, Joel Sweimler, Nina Root, and volunteers Harold Bernard and Charles King.

Images from the Photographic Collection were used for the *Jumbo* exhibit. Footage from the Central Asiatic Expedition was used in the BBC documentary “Ghosts in the Dinosaur Graveyard”; and in the video for the exhibition *The Dinosaurs of Jurassic Park*. A video copy of “Meshee,” the chimpanzee, was donated to the Wisconsin Regional Primate Research Center. The film “Preparing a Museum Group” was loaned to Harvard University for an exhibit design class; “A Day with John Burroughs” to the John Burroughs Society for a program; and “Latuko” to the Pacific Film Archive, University of California at Berkeley, for a research project.

The Shapiro Family deposited the impor-
tant collection of papers and publications of Harry Shapiro documenting his significant contribution to physical anthropology. Sixteen reels of films were donated by Gertrude Legendre and Volkmar Wentzel of the Legendres’ African expeditions; the Pond Family deposited an additional 2,500 slides documenting Alonzo Pond’s work on world deserts; Rhoda Kalt, Charles Knight’s granddaughter, funded the framing of nine Knight equine watercolors that now grace the new reading room; and Florence Fearington added to her fund to recopy and restore rare malacology volumes. Robert Golet gave a grant of $100,000, including $75,000 for the deacidification of emblitted books.

With a grant from the New York State Library, 21 scrapbooks of early Museum memorabilia were disassembled and the contents rehoused. Nearly 9,000 items of ephemera were removed from acidic, brittle scrapbooks and conservationally rehoused. The U.S. Department of Education Title II-C program granted $132,000 for the second year of the project to reclassify the monographic collection to the Library of Congress system and to enter the Library’s holdings into the international database OCLC. In the first four months of the project, 31,667 records were converted, of which 6,203 titles were uniquely held by the Library. The project is managed by Miriam Tam, assistant director for reference services, and Diana Shih, senior cataloging librarian.

With a grant from the Dr. Herbert R. Axelrod Foundation, M.E. Bloch’s rare “Allgemeine Naturgeschichte der Fische,” 1792-1795, was reprinted from the Library copy. Proceeds from the sale of the publication will be shared by the Library and the Department of Ichthyology.

Now that there is sufficient space, Museum departments are transferring important and fragile collections to the Library: Vertebrate Paleontology transferred the journals of Morris Skinner, who worked in Nebraska and Colorado building Museum fossil collections, and 15 positive glass transparencies used as window panes in early Paleontology halls; Anthropology transferred artwork, labels, and photographs from the African Peoples Hall.

The new building has attracted considerable attention: Many librarians and administrators planning new facilities have called or visited, including the National Gallery of Australia, Bank Street College of Education, New York Hospital-Cornell Medical Center, and the Barnes Foundation.

Despite being closed to the public and providing limited service to the Museum staff, the Library served 8,000 users (750 fewer than the previous year), answered over 22,000 reference questions, circulated 29,000 items, provided 6,600 photocopies, performed 67 database searches, filled 362 staff interlibrary loan requests, and received 718 loan requests from libraries throughout the world. It processed 4,240 photographic orders, realizing an income of $78,200, and granted $12,965 in gratis permissions. Nine orders for film footage were processed, netting an income of $1,800. Added to the collection were 1,760 monograph titles, 49 new serial titles, and 11,282 journal issues. Some 17,250 issues of Museum scientific publications and Recent Publications in Natural History (RPINH) were distributed. This year marked the end of the publication of RPINH.

Miriam Tam and Nina Root attended the International Federation of Library Associations in New Delhi. Ms. Tam is a member of the METRO Area Biology Research Libraries Committee, which explores resource sharing options. Nina Root was elected to the Board of Trustees of the Mercantile Library and presented a lecture, “Architecture for Dinosaurs,” to Museum and Sorosis members.

A Fellows of the Library group has been formed by the Trustee Library Committee, which is chaired by Henry G. Walter, Jr. The Fellows, chaired by Gerard Piel, held a black-tie dinner in the Library in April.
The Grants and Fellowships Programs broaden the Museum’s base of scientific investigation and continue to reinforce its commitment to the education and training of scientists. Each year these Programs — the Research and Museum Fellowship Program, the Doctoral Training Program, the International Graduate Student Fellowship Program, the Research Grants Program, and the Research Experiences for Undergraduates Program — provide opportunities for over 250 undergraduate and graduate students, postdoctoral investigators, and established scientists, including national and international scholars, to conduct important research projects in partnership with Museum scientists. This year’s international participants from Mexico, South America, Great Britain, the Netherlands, Russia, Ukraine, Australia, India, and China have not only enriched the scientific exchange of ideas but have fostered keystone relationships between the Museum and foreign institutions.

Since its inception nine years ago, the highly competitive Research and Museum Fellowship Program has supported 60 postdoctoral scientists engaged in independent research for a limited period of time, usually one or two years. The Doctoral Training Program, an educational partnership with selected universities, is dedicated to the training of Ph.D. candidates. The Museum has joint programs with Columbia University in vertebrate and invertebrate paleontology, anthropology, molecular biology, and mineral sciences; Cornell University in entomology; City University of New York in evolutionary biology; and Yale University in molecular biology/systematics. With the support of the recently established International Graduate Student Fellowship Program, the Museum will actively recruit international students to pursue doctoral degrees within the framework of the Museum’s joint programs. Focusing on systematics, biodiversity issues, and conservation biology, students will develop the expertise to foster and advance environmental conservation and policy-making in their own countries.

The Research Experiences for Undergraduates (REU) Program, a summer internship program supported by the National Science Foundation, immersed eight students in the challenge and excitement of original research at the Museum. Under the direction of Melanie L.J. Stiassny, associate curator in the Department of Herpetology and Ichthyology, this program, now in its fifth summer, promotes student participation in discussions and special lectures that focus on evolutionary biology, systematics, the biodiversity crisis, and conservation.

The Research Grants Program supported 219 predoc toral candidates and postdoctoral investigators. The program awarded 74 Frank M. Chapman Memorial Fund grants in ornithology; 43 Lerner-Gray Fund for Marine Research grants; 50 Theodore Roosevelt Memorial Fund grants in North American zoology and paleozoology; and two Southwestern Research Station Student Support Fund grants. Collection Study Grants enabled 50 graduate students and recent postdoctoral investigators to visit the Museum’s scientific collections in the Departments of Anthropology, Entomology, Herpetology and Ichthyology, Invertebrates, Mammalogy, Ornithology, and Vertebrate Paleontology.

The Grants and Fellowships Programs are made possible by the generosity of many donors and grants from funding agencies, including: Esther Hoffman and William Beller Fund, Boeschenstein Fund, Frank M. Chapman Memorial Fund, Lincoln Ellsworth Fund, Hoffman Research Fund, International Student Fund, Franklin H. Kalbfleisch Endowment Fund, Lerner-Gray Fund for Marine Research, National Aeronautic and Space Administration, National Science Foundation, Theodore Roosevelt Memorial Fund, Rudin Fund, Southwestern Research Station Student Support Fund, Thorne Fund, Anthony and

This year 11 research fellows were in residence engaged in independent projects at the Museum or one of its field stations. Arthur Joyce, Kalbfleisch Research Fellow in the Department of Anthropology, investigated the interregional impact of state formation in the Valley of Oaxaca, Mexico, through the systematic comparison of ceramics from six regions. In the Department of Entomology, Kalbfleisch Research Fellow John Wenzel analyzed the relationships of the social wasps using nest architecture, traditional morphology, and molecular genetics. The completed study will be of interest not only to systematists, but also to behaviorists. Vladimir Ovtsharenko, a curator at the Zoological Institute of the Academy of Sciences of Russia in St. Petersburg, accepted a Lincoln Ellsworth Research Fellowship to revise the Gnaphosidae family of North Asian spiders. Juan Morrone, a visiting scientist from Museo de la Plata in Argentina, accepted a one-year research fellowship supported by a National Science Foundation grant. His work in the Department of Entomology explored the evolution and biogeography of Macrostyphlus Kirsch, a genus of weevils distributed from Colombia to the southern extreme of Argentina and Chile and on the Falkland Islands.

Anthony Gill, a Lerner-Gray Research Fellow in the Department of Herpetology and Ichthyology, studied the significance of branchial anatomy of gobid fishes. Aleksandr Kostenko, a research scientist at the Institute of Zoology in the Ukraine, began a one-year appointment as a Boeschenstein Research Fellow in the Department of Invertebrates working on the relationships of flatworms within the order Acoela. Much controversy exists over whether their simplicity of structure is primitive or derived, and his work not only addresses relationships within the order, but will have important implications for higher group relationships in the invertebrates as well.

John Gatesy, Kalbfleisch Research Fellow in the Molecular Systematics Laboratory, is studying the molecular relationships within the Caimanoids (Crocodilia) using data from specimens collected over a wide geographic area. The results of his study will have applications for conservation genetics and systematics. Luis Chiappe, a research scientist at Museo Argentino De Ciencias Naturales “B. Rivadavia” in Buenos Aires, began a two-year appointment as Frick Research Fellow in the Department of Vertebrate Paleontology. His project focuses on a thorough analysis of the osteology and interrelationships of the abundant Late Cretaceous enantiornithine birds, a subclass of Cretaceous flying birds. Frick Research Fellow James Clark began his second year appointment in the Department of Vertebrate Paleontology continuing his work on the resolution of two conflicting hypotheses arising from molecular and morphological analyses of Crocodilia.

Chapman Research Fellows Jeffrey Groth and Craig Farquhar began their second year appointments in the Department of Ornithology. Jeffrey Groth investigated the evolutionary genetics of cardueline finches using DNA sequencing. Craig Farquhar continued his investigation of the systematics, biogeography, and ecology of Buteo polyosoma and B. poecilochrous, two morphologically and ecologically similar high-Andean hawks.

The 14 students in the Doctoral Training Program continued their work in the Museum’s scientific departments. Bruce Lieberman began his final year toward completion of his dissertation under the direction of Department of Invertebrates Curator Niles Eldredge; Sherri McGehee is conducting her project in the Department of Vertebrate Paleontology under the supervision of Dean of Science Michael J. Novacek; Gina Gould is working with Department of Vertebrate Paleontology Curator Malcolm McKenna and Herpetology and Ichthyology
Assistant Curator Darrel Frost; Alexander Kellner continued his work with Curator John Maisey, Department of Vertebrate Paleontology; Cheryl Peach and Robert Hutchinson continued their work with Edmond A. Mathez, associate curator, Department of Mineral Sciences; Andries Krijgsman, new to the program, began doctoral work under the direction of James Webster, assistant curator, Department of Mineral Sciences. All of the above are doctoral candidates in the Department of Geological Sciences, Columbia University, and conduct their research at the Museum. Dilrukshan Wijesinghe, Carole Griffiths, and Alejandro Espinosa of City College, City University of New York, continued their doctoral work: Wijesinghe with Norman Platnick, chairman and curator, Department of Entomology, and Griffiths with George Barrowclough, associate curator, Department of Ornithology. Espinosa began his first year of the program under the direction of Joel Cracraft, curator, Department of Ornithology. Pablo Goloboff and Keify Catley of Cornell University are also working with Dr. Platnick. Paul Vrana, from Columbia University's Department of Biological Sciences, continued his research with Assistant Curator Ward Wheeler in the Department of Invertebrates/Molecular Systematics Laboratory. Paulyn Cartwright, the first student in the joint AMNH-Yale University program, studied with Robert DeSalle, assistant curator, Department of Entomology/Molecular Systematics Laboratory.

This summer, 40 applicants representing many universities within the eastern United States applied to the Museum's Research Experiences for Undergraduates (REU) Program; eight undergraduates were chosen to participate. Andrea Peffley, graduating from the University of Pittsburgh, worked with Nancy Simmons, assistant curator, Department of Mammalogy, on the facial morphology and phylogeny of New World leaf-nosed bats. Elizabeth Bonwich, completing her junior year at Barnard College, examined the paleobiology of amber insect fossils with David Grimaldi, associate curator, Department of Entomology. Evan Matros, completing his sophomore year at the University of Pennsylvania in Philadelphia, worked on the molecular evolution and conservation genetics of birds under the direction of Joel Cracraft, curator, Department of Ornithology. Kathleen Reddy, from Long Island University's C.W. Post Campus, conducted research on the pearly nautilus and other shelled cephalopods with Neil Landman, curator, Department of Invertebrates. Brian Scully, finishing his junior year at Duke University, examined the molecular systematics of insects with Dr. Wheeler. Courtney Reich, completing her freshman year at Tufts University, worked with Niles Eldredge, curator, Department of Invertebrates, on ecological and evolutionary studies in the Middle Devonian Hamilton group. Jonathan Schlosser, from Southampton College, conducted research on the reproductive biology of cichlid fishes under the direction of Melanie Staassny, associate curator, Department of Herpetology and Ichthyology. Roland Kays, graduating from Cornell University, engaged in field and laboratory studies on rainforest mammal diversity in French Guiana with Robert Voss, associate curator, Department of Mammalogy.
The Department of Education’s goal is to have an individual come away from his or her visit to the Museum with a greater comprehension of the complex ecological issues confronting the world as it approaches the 21st century, as well as with an appreciation for the diversity of human cultures. Natural history knowledge is a continuum of proficiencies ranging from zero mastery to very high scholarship. The Education Department is concerned with fostering scientific literacy and has implemented several model projects this year to demonstrate effective methods to reinforce the public’s knowledge and appreciation of the natural world. Two major objectives that underscore the Department’s systemic change initiatives are improving teacher education in natural history, thereby facilitating an understanding of scientific endeavor in the context of societal and scholastic history, and increasing public awareness and knowledge about science and cultural diversity.

The Museum School is a research and development science-education demonstration project with the goal to create a unique inquiry natural history education model for middle school students and their teachers. The program format has students and teachers working weekly in the Museum using constructivist and cooperative learning theories to investigate intricate natural science concepts. The Museum School is a collaborative project of the Museum, Community School District #3, and the Manhattan Institute. The pilot year supported 90 sixth grade students and 18 teachers from the William O’Shea Intermediate School (L.S. 44), Community School District #3, and New York City Public Schools.

The Teacher Enhancement Programs are designed to inspire and support all teachers to reach their curricular goals. This program nurtures the professional growth of teachers by providing a training environment to gain practical knowledge and pedagogical skills for teaching natural history subjects. Over 1,650 teachers practiced and refined their discovery techniques, shared new knowledge, and experimented with hands-on activities while attending over 30 classroom programs, workshops, and seminars. The College Level Courses for Teachers, offered in cooperation with the Graduate School of Education, City College of New York, had 189 teachers in nine courses taught by Museum educators and scientists.

A special group of 17 Teachers Associates worked on production of the national Teacher’s Resource Guide, conducted teacher training workshops and public programs, and participated in the project evaluation created for the Museum’s Global Warming: Understanding the Forecast exhibi-
bition. A total of 1,038 teachers and administrators attended 56 Global Warming in-service training workshops, 35 of which were conducted by the Teachers Associates in their school districts for 560 teachers and 19,600 students in grades five through 12. This annual program will continue to select outstanding classroom teachers to participate in a year-long mentoring program where participants attend special lectures and seminars presented by Museum scientists, develop and test new Museum curriculum activities, and conduct workshops in their home-base schools. The teachers, recruited from local and regional public school systems, are nominated by their colleagues and school administrators.

The Dalton School collaboration, now in its ninth year, continues to be an extraordinary venture with its annual support of an anthropology scholar-in-residence. This Lecturer works with 50 Dalton teachers and their students testing new and revised anthropology and natural science curricula designed for either museum or school use. The Dalton School Lecturer also presents special workshops for teachers participating in the Department’s College Courses for Teachers, serves on exhibition committees, and is developing prototype curriculum modules on anthropology and human evolution themes.

From October to June, the precollege program accepted 4,631 school reservations, representing over 130,000 young people, for visits to the Museum either on independent teacher-led trips or to participate in the many hands-on natural science and cultural diversity courses and events scheduled during the year. Black History Month continues to be the largest single-visit special events program, with over 8,500 New York City public and private school students enjoying 112 different program formats, designed to demonstrate the integration of African and African-American contemporary and traditional arts within cultural and historical settings. The program, supported by the Museum’s exhibits and teaching collection, addresses the issue of diversity and provides teachers with model workshop ideas to enhance their multicultural curriculum programs.

The Precollege Science Collaborative for Urban Minority Youth is a five-year science research training program. Funded by the Howard Hughes Medical Institute through the Precollege Science Education Initiative for Science Museums, the program offers
field and laboratory training experiences for New York City high school students. The first class of young scholars, 10 inner-city high school juniors, are actively involved in field and laboratory investigations with Museum and Columbia University mentors. The students' research projects include studies of the African elephant nose fish (*Gnathocheilus petersii*), the social behavior of the Japanese monkey (*Macaca fuscata*), and the differential effects of climate on tree growth.

The Museum continues to offer after-school programs for middle and high school students in cooperation with the Borough President of Manhattan, the New York State Council on the Arts, the New York City Department of Cultural Affairs, and the New York Public Schools, Manhattan High School Division. These programs have demonstrated how cultural institutions can liberate and refine the intellectual growth of urban youth through unique cultural arts and science experiences.

The Creative Expressions Through Arts and Sciences: Participatory Workshops For Manhattan High School Students offered 250 Manhattan high school students 11 after-school courses of 10 sessions each taught by Museum educators, scientists, and artists over an eight-month period. The session presenters included O.R. Anderson, senior scientist at Lamont Doherty Geological Observatory at Columbia University, Carl Wynter, President, Health Care Systems Research, and Education staff member Teddy Yoshikami.

This is the fourth season of the Museum's participation in the New York City Department of Cultural Affairs Cultural Arts Program for Children Living in Temporary Housing. The program supported 45 young people from the Powers Avenue and Jackson Avenue Family Centers in the Bronx. They met once a week for two hours, over a ten-week period, and explored the properties of light, visual systems, optical instruments, photography, natural science, and astronomy. Participants received a family membership for one year to encourage continued visits to the Museum.

More than 100 ninth-grade students from three New York City high schools participated in the fourth year of the Arts-In-Education/China Program, sponsored by the New York State Council on the Arts. The students— from Brandeis High School, Martin Luther King, Jr., High School, and Seward Park High School — worked with professional artists for four months. This intensive arts program is designed to enrich
the ninth-grade Asian Global Studies curriculum and to help familiarize students with cultures different from their own. In sessions conducted at the schools and the Museum, students attended workshops in Chinese calligraphy, music, martial arts, and lion-dance sessions.

The Museum’s Ecology Club is voluntary and open to students in the eighth through 12th grades. Now in its third season, it provides a framework for 32 inner-city junior high and high school members to explore their interests in environmental issues through laboratory and fieldwork. The aim of the Ecology Club is to help students develop their planning and communication skills and to feel empowered by actively designing their curriculum.

When students, family groups, and older adults cannot come to the Museum, the Museum will go to them in the form of The Moveable Museum. A specially designed bus measuring 34-feet long and eight-feet wide, this wheelchair-accessible, self-contained mobile museum is outfitted with changing exhibitions and equipped with a state-of-the-art multimedia exhibit system. A collaborative program between the Museum and other New York City cultural institutions, it is designed to bring educational resources to underserved New York City schools, hospitals, shelters, community centers, city parks, and street fairs. The Moveable Museum is a partnership between the New York City Council, the Museum’s Education Department, and Chase Manhattan Bank, N.A., with additional support from Brooklyn Union Gas Company.

The Discovery Room had over 25,500 visitors this year, most of whom were children between the ages of six and eight accompanied by their parents, who investigated the natural world using artifacts and specimens. This family learning center is open on weekends and is used during the school year as a classroom for children with special needs. The Alexander White Natural Science Center, a primary study center on the urban natural environs of New York City, had 69,761 visitors from October through June. The Center includes a number of interactive displays and small live exhibits of local aquatic and terrestrial creatures.

Ringling Bros. and Barnum & Bailey Circus and the Museum celebrated the 200th anniversary of circuses in America with an exhibition Jumbo: The World-Famous Elephant. Education Department staff organized the opening event, including clowns and a circus ringmaster, which was attended by over 800 visitors. A weekend puppet theater performance and film festival, which featured such famous Hollywood elephant films as “Dumbo,” “Elephant Boy,” and Billy Rose’s “Jumbo,” was seen by 528 children.

Adult educational programs attracted nearly 7,500 participants. The 20 lectures and lecture series covered topics ranging from research on the “Frontiers of Brain Science” to “500 Years and Columbus.” There were 11 workshops and field trips, including the popular “Whale Watch off Cape Cod,” and a visit to see climate models.
at NASA Goodard Institute of Space Studies. A half-dozen panels and film programs included the "Climate Change and Film Video Festival," and a panel of writers, poets, and scientists who discussed the nature of Antarctica. Hundreds of people attended the keynote lecture for the Global Warming exhibition, "Life on the Warming Earth," which was presented by Sir Crispin Tickell, world leader on environmental affairs. Nearly 1,000 people listened to three noted scientists present "New Views Into Human Origins," in conjunction with the opening of the new permanent Hall of Human Biology and Evolution. Over 1,500 adults participated in field excursions on boats circling Manhattan and traveling to Far Rockaway and Newark Bay to learn about geology, local history, and ecology.

The 1992 Margaret Mead Film & Video Festival attracted nearly 5,000 people who, along with a large number of international film and videomakers, celebrated the latest productions in ethnographic film. The two major highlights of this festival were a two-day academic symposium that explored the work of Bob Connolly as he documented change in a Papua New Guinea community, and the closing night benefit with Mary Catherine Bateson, who introduced two films by and about Margaret Mead. The 1992 festival also marked the beginning of the national tour of the Festival. This began with screenings at the Pacific Film Archive, University of California at Berkeley, and travelled to eight other cities in the United States.

Contact: Cultural Change, Alternative Perspectives was a new year-long programming concept initiated in conjunction with the Columbus quincentenary celebration. The series, promoted in three-month segments, consisted of lectures, demonstrations, films, and performances that articulated the effects of contact with Columbus and other Europeans on non-European cultures. The series comprised of a total of 136 free weekend and evening performances and lectures — offered in the Frederick H. Leonhardt People Center, Henry Kaufmann Theater, Harold Linder Theater, and the Main Auditorium — attended by 24,900 visitors. These programs significantly increased attendance by people of color and individuals who had never before visited the Museum. Program highlights included Aires de Aragon, one of Spain's most famous musical groups; the National Folkloric Ballet of Chile; Mario Bauza & His Afro-Cuban Orchestra; the Foot & Fiddle Dance Company; Kwanzaa; the Maroon Film Festival; and the Native American Festival.
his year witnessed several important achievements for the Museum's exhibition program. *The Hall of Human Biology and Evolution* was completed and opened on April 23, 1993, to enthusiastic visitors and the international press. The exhibition, developed by Anthropology Curator Ian Tattersall and Senior Exhibition Developer J. Willard Whitson, features four life-size dioramas, 11 computer-interactive workstations, several holograms, a combination classroom and video theater, and a comprehensive display of hominid fossil skull casts.

Global Warming: Understanding the Forecast, organized by the Museum in collaboration with the Environmental Defense Fund, and shown here in 1992-93, moved to the next venue of its multi-year North American tour and also was honored by the Curators Committee of the American Association of Museums with the annual award for best exhibition. Two other Museum productions, *Chiefly Feasts: The Enduring Kwakiutl Potlatch* and *African Reflections: Art of Northeastern Zaire*, continued their tours of North America with showings in respectively, Houston, Washington D.C., Victoria, Atlanta,
Cincinnati, and Houston.

Exhibit development and design efforts began for a traveling exhibition on the subject of biological diversity that will debut at the Museum in 1996. Invertebrates Curator Niles Eldredge, Director of Exhibitions Samuel Taylor, Coordinator of Environmental Programs Sidney Horenstein, and J. Willard Whitson are the team working on this project.

The Museum staged a number of temporary exhibitions during the past year. *Jumbo: The World Famous Elephant*, displayed in the Theodore Roosevelt Memorial Hall, featured Jumbo’s articulated skeleton along with historical memorabilia documenting the career of the famous circus animal.

*Bears: Imagination and Reality* was displayed on the first floor in Gallery 77 and included specimens and interpretive graphics, video, and computer interactives to explain the biology and history of the various species of bears.

*The Dinosaurs of Jurassic Park* opened in Gallery 3 in June in conjunction with the premiere of the science fiction movie. The exhibition displayed full-sized models from the movie production as well as fossil specimens from the Museum’s own collection, and highlighted the differences between the fantasy of the science-fiction story and the reality of dinosaur research at the Museum.

The Arthur Ross Foundation sponsored several exhibitions during the year: *The Prehistoric Mammals of Charles R. Knight* featured paintings and sculpture by the famed artist as well as memorabilia and photographs documenting his illustrious association with the American Museum of Natural History. *Pantanal: Brazil’s Forgotten Wilderness* exhibited 50 photographs of this region in South America. *Indios e Caboclos: Charles Wagley’s Amazon Portrait* presented documentary photographs of the indigenous peoples of the Amazon and of the incursion of Western society into the region.
The Museum’s publications, membership, and marketing activities support the Museum’s educational mission and increase awareness of the Museum’s resources, while also generating a financial contribution to the Museum’s operating budget. *Natural History* magazine provides a membership base that is further served by programs, both inside and outside of the Museum, including educational travel programs that explore cultural and natural history sites throughout the world. The Museum Shop and Special Publications offer books and products related to the Museum’s ongoing work in a variety of fields.

*Natural History*, the Museum’s monthly magazine, publishes articles for the general reader that are written by scientists and ethnographers. The scope is international, and the emphasis is on fresh perspectives and
new findings. This year, several contributors wrote about the reactions of traditional cultures to the onslaughts of modernity. Alexander Milovsky documented the persistence of ancient Slavic folk rituals in remote villages of western Russia and shamanic practices in Siberia, which have survived despite attempts of both Christians and Communists to annihilate them. American anthropologist-physician Warren M. Hern, who has worked for 25 years with the Shipibo people of Peru, reported on an unexpected result of the decline of polygamy: a rising birth rate and worsening health status. In her chronicle of a day in the life of an eight-year-old daughter of Iranian shepherds, ethnographer Erika Friedl dramatized the huge — but largely unappreciated — contribution of children to traditional household economies.

Articles by field biologists explored hyperaggressiveness in hyenas, fidelity in swans, sex appeal of male spider monkeys, hairiness of tarantulas, field mice that live beneath the snowpack, and the okapi, a mysterious large mammal. Paleontologists wrote about the hunting habits of the ichthyosaurs, the paucity of Meganeian carnivores, and arthropods that lived in the soil more than 400 million years ago. Scottish plant ecologist George Hendry explained the destructive power of oxygen, American geneticist Robert A. Browne explored whether parthenogenesis is an evolutionary dead end, and wildlife ecologist John du Toit of South Africa speculated that giraffes, as the world’s tallest flower pollinators, may have had something to do with the evolution of acacia trees.

In conjunction with the opening of The Hall of Human Biology and Evolution, the magazine published “How Did Humans Get That Way?,” a series of related articles that presented new perspectives on the early evolution of humans and highlighted some spectacular new archaeological finds. Introduced by Ian Tattersall, curator and chairman of the Museum’s Department of Anthropology, the two-part supplement included an article by the Norwegian osteologist Torstein Sjovold, who wrote about the “Iceman,” whose body was discovered in 1991 near the Italian-Swiss border after having been preserved in an Alpine glacier for 5,000 years. Another article, by French prehistorian Jean Clottes and archaeologist Jean Courtin, reported on the recent discovery of a Mediterranean sea cave containing paintings dating to about 27,000 years ago.

Museum scientists who contributed articles to Natural History this year included John P. Alexander, senior scientific assistant in Vertebrate Paleontology, who, in “Alas, Poor Notharctus,” told how the discovery of a 50-million-year-old prosimian fossil buried in the Wyoming badlands revised the scenario of primate evolution; Nina J. Root, director of the Library, who documented Britain’s animal craze in “Victorian England’s Hippomaniac;” and David Grimaldi, associate curator in Entomology, whose article “Forever in Amber” explained how he and the team at the Museum’s Molecular Systematics Laboratory — Rob DeSalle, John Gatesy, and Ward Wheeler — extracted DNA from a 30 million-year-old termite preserved in amber. Stephen Jay Gould, Raymond Sokolow, Robert H. Mohlenbrock, Roger Welsch, Gail Cleere, and Jared Diamond all continued as columnists.

The total gross revenue of Natural History was approximately $9.7 million for 1992-93. Average paid circulation was approximately 509,000 as documented in the June report of the Audit Bureau of Circulation. DISCOVERY TOURS Beginning in 1953, the American Museum of Natural History was one of the first cultural institutions to offer a travel program that, over the years, has provided more than 7,000 travelers with enriching educational travel experiences. These Discovery Tours and Cruises are part of the
Museum’s educational mission to offer members a greater insight into the worldwide scope of the Museum’s work. Each travel study program is carefully developed to parallel the Museum’s research and exhibition activities, visiting the world’s greatest wildlife areas, archaeological sites, and cultural centers. During the past year 1,200 travelers participated in a Discovery Cruise or Tour, choosing from 42 cruise and land tours to over 50 countries.

Each of the travel study programs was led by a team of prominent Museum and guest lecturers who presented a series of illustrated lectures, led informal discussions, and offered their personal experiences in a wide range of fields including geology, astronomy, archaeology, biodiversity, and anthropology. With this unique perspective, members visited some of the world’s greatest natural and cultural treasures. Discovery Tour programs included a visit to West Africa to explore the ancient civilizations of Ghana, Mali, and Songhai; a private train journey along China’s Silk Road to visit the remote ancient trading cities of Xian, Urumchi, and Turfan; and a wildlife safari to Belize, home to the world’s longest unbroken living barrier reef and where 200 species of birds have been sighted in one reserve alone. Discovery Cruise participants traveled to the Antarctic peninsula to visit the natural habitat of millions of Adelie, Gentoo, and Chinstrap penguins; while, on the other side of the globe, members cruised the Arctic Ocean to remote Spitsbergen, 600 miles from the North Pole and the base for Arctic whalers, hunters, and explorers for many years. Other cruise programs included a voyage along the protected lagoons of Baja California during whale migration season; a cruise through the Galápagos Islands to explore its indigenous life forms; and an expedition along the Amazon and Orinoco Rivers in South America, the site of numerous Museum research expeditions.

Closer to home, Discovery Tours and Cruises travelers were invited to a celebration of the Museum’s newly opened *Hall of Human Biology and Evolution.* The Discovery Tours and Cruises program has expanded in the last decade from 20 programs to more than 40 per year, and has also expanded in breadth to cover all seven continents and numerous disciplines. Revenue from the Discovery Tours and Cruises program reached approximately $1.3 million this year.

**MEMBERSHIP** The Museum’s ongoing commitment to ecological studies and conservation was emphasized at several Members’ programs. Participants stepped behind the scenes to observe the research projects and collections of the Departments of Entomology and Vertebrate Paleontology. The well-attended preview of the *Hall of Human Biology and Evolution* was complemented by a presentation on human origins by the hall’s curator, Anthropologist Ian Tattersall. Other Museum scientists discussed their work with members, including Michael Klemens, herpetologist, who offered an update of the Museum’s Turtle Recovery Project; Curator Jerome Rozen, who discussed his studies of the evolution of cephaloparastic bees; and Project Director Lowell Dingus, who described the assembly of the *Barosaurus* exhibit. Distinguished guest speakers included Paleontologist Richard Leakey, Ethologist Frans de Waal, and Paleontologist Jack Horner. Efforts to protect the endangered African elephant were described by Cynthia Moss, director of Kenya’s Amboseli Elephant Research Project; and by Mark and Delia Owens, who work in the Rift Valley of Zambia.

World AIDS Day was observed on December 1 with a screening of *Common Threads: Stories from the Quilt.* A presentation by the director of Memphis’s National Civil Rights Museum marked the 25th anniversary of the assassination of Martin
Luther King, Jr., along with a showing of the documentary *We Shall Overcome.*

A tour of the Yeshiva University Museum’s exhibition *The Sephardic Journey* was offered in conjunction with the quincentennial observance of the Sephardic diaspora. Members also attended a program led by the exhibition’s coordinator, who discussed the material culture and artistic achievements throughout the diaspora. In another program, Members visited the Pierpont Morgan Library and saw the rare books, manuscripts, and drawings housed there.

Other New York City resources explored by Members on walking tours were the South Street Seaport, Riverside Park, and the city’s first IRT station at City Hall. Day trips outside of the City included visits to West Point and Constitution Island, Hawk Mountain Sanctuary in the eastern Appalachians, and Black Rock Forest.

The number of participating members increased 14 percent in the current fiscal year to a total of 30,000. Revenue from the Museum’s Membership Program totaled $1.4 million.

**MUSEUM SHOP** The Museum Shop offers a variety of quality merchandise and books that reflect the Museum’s educational and research activities. Recent merchandise selection was influenced by the opening of the new permanent exhibition, *The Hall of Human Biology and Evolution.* The Shop offered several books pertaining to this exhibition: *The Human Odyssey,* by Ian Tattersall, curator and chairman of the Department of Anthropology; *Origins Reconsidered,* by Richard Leakey; and *Myths of Human Evolution,* by Museum curators Niles Eldredge and Ian Tattersall. The *Hall* opening inspired specially designed posters, a T-shirt, a tote, and post cards. In addition, there are anatomical charts, skeleton models, holograms, and scientific kits and related paper products.

Gallery 3 had two major shows: a presentation on the making of the *Global Warming* exhibition and the enormously popular *Dinosaurs of Jurassic Park* exhibition. Sales in the special exhibition shop set a new record. Visitors purchased dinosaur books, T-shirts, kits, posters, games, and both plush and scale models. Two new books, *American Museum of Natural History Barosaurus* and *American Museum of Natural History Tyrannosaurs,* were popular additions to the shop. Before the opening of *Dinosaurs of Jurassic Park,* the Gallery 3 shop was enhanced and reconfigured to separate it from the exhibition space; it will be available to the public on a year-round basis.

For the exhibition *Bears: Imagination and Reality,* in Gallery 77, the Shop carried an extensive selection of teddy bears, Native American jewelry and carvings, children’s toys, and an adult T-shirt. Related books included *Bears of the World,* *The Sacred Paw: The Bear in Nature, Myth, and Literature,* and *The Last Panda.*

On the book balcony, a new audio system allows visitors to listen to a half-minute each of 24 different cassettes and CDs featuring sounds from the natural world. In addition, visitors continued to respond enthusiastically to the increased offerings of cassettes, CDs, and videos. The year saw a surge in sales of scientific products for children and adults. Especially popular were a build-your-own volcano kit, science activity kits for children, microscopes for all ages, and the perpetual motion novelty item “Revolution.” Gross sales and royalty income totaled $2.8 million.

**MICROPALEONTOLOGY PRESS** The world’s major source of reference data on the microscopic fossils used in oil exploration continued to expand the *Ellis and Messina Catalogues of Microfossil* with the 95th volume of *Foraminifera,* the 59th volume of *Ostracoda,* and the 10th volume of *Diatoms,* which were distributed to oil com-
companies, geological surveys, and universities around the world. Also published during the year were volume 38 of the quarterly research journal *Micropaleontology* and volume 21 of the monthly *Bibliography and Index of Micropaleontology*. Most major oil companies have now installed *PalCat*, a specialized software package developed by Micropress in cooperation with professionals from the exploration industry, to manage the tens of thousands of specimen illustrations and pages of description in microfossil databases.

**SPECIAL PUBLICATIONS** *The Lives of Birds: The Birds of the World and Their Behavior* by Lester Short, Lamont Curator of Birds, is the first in a planned series of popular books on animal behavior. Published by Henry Holt in association with the Museum, the book contains a summary of the current knowledge of bird behavior.

The first two volumes of the dinosaur book series, published by Dorling Kindersley in cooperation with the Museum, met with tremendous popularity. Coming in late summer are the second two volumes, *Triceratops* and *Corythosaurus*. Each volume traces one particular dinosaur from its history millions of years ago to its place in the Museum’s fossil collection.

This year the Museum is offering two wall calendars. The first, *Audubon’s Kingdom*, showcases some of John James Audubon’s most famous natural history paintings along with his own descriptive commentary. *Insects of the New World* by Maria Sibylla Merian, includes original drawings and captions created by one of the world’s first naturalist painters. Once again the Members’ Book Program offered members and friends an intriguing array of books and other gift items through the Member’s Choice annual catalog and advertisements in *Natural History*.

*Curator*, the Museum’s quarterly journal for museologists, is now in its 37th year. Approximately one-third of its circulation is to museums outside the United States. *Forum* — first published in Volume 35/2 as a section for criticism, comment, and exchange — is now firmly established, and the book review section has grown as well. In addition, there has been a significant improvement in the number and quality of manuscripts submitted for consideration and in the breadth of topics they address.
CONSTRUCTION  Maintaining and improving the Museum’s physical plant is the primary mission of the Construction Department. The Department works closely with the exhibition and science departments of the Museum and supervises contractors carrying out capital projects. During the past year, two major projects were completed: the new eight story, 40,000-square-foot library building with state-of-the-art environmental controls and a compact storage system; and the new permanent Hall of Human Biology and Evolution.

Fully renovated office space was completed for Payroll and Benefits, Personnel, and the Office of the Deputy Director for Administration as part of the second phase of renovation of administrative office spaces. The Museum Shop was redesigned and renovated to separate it from the temporary exhibition area known as Gallery 3, thus allowing the Shop to remain open when the Gallery is closed. Separate male and female locker room facilities used by the Museum’s uniformed guards were completely reconstructed and upgraded.

Work on continuing projects included the Museum’s fourth floor fossil halls, the new chiller plant for climate control of the first floor, and new facilities to accommodate the relocation of the photo studio and the audio visual shop.

BUILDING SERVICES  To improve the Department’s ability to maintain the security of the Museum, planning has begun for a $500,000 security and fire protection upgrade that will be funded through the City Capital Budget with an appropriation provided by The Honorable Ruth Messinger, Borough President of Manhattan. A security consultant/architect is developing all necessary scopes of work and drawings for the City’s Department of General Services, the agency responsible for overseeing the security upgrade. The project will include a uniplex CCTV System, electro-magnetic door locks, and contact alarms controlled from a central security center. A design is also being developed to upgrade, integrate, and consolidate existing fire detection and alarm systems.

A new parking lot booth was installed in the visitors parking lot. In order to improve the appearance of the complex, the Museum has provided a cleaning crew to clean and maintain the exterior steps and sidewalk areas on Central Park West and 77th Street.

MAINTENANCE  One of the major responsibilities of the Maintenance Department is to operate, maintain, and improve the mechanical systems in the Museum buildings. A $5.7 million City-funded capital budget project for asbestos abatement and rehabilitation of water and steam lines is now complete. Items included in this project are removal of asbestos from subbasement and basement areas of the Museum; repair and replacement of domestic water tanks; replacement of 6-foot main water lines from Central Park West and Columbus Avenue; installation of new 4-foot domestic water lines Museum-wide; and upgrading and replacement of high, medium, and low-pressure steam lines as well as condensate return lines. Another Museum infrastructure project was the installation of new leader lines for building 8, which was completed at a cost of $277,000 in City-appropriated funding.

An engineering study that includes the development of cost estimates to upgrade the Museum’s drainage and sewer system has been completed. It is expected that construction on this $1.8 million City-funded project will begin in July 1994 and will be completed by June 1996.

Two additional exhibition spaces, the Hall of African Peoples and the Birds of the World Hall, are now air-conditioned.

A feasibility study was completed including cost estimates to air condition the exhibit halls on the entire first floor of the Museum. Design for this $6.9 million City- and Museum-funded project is now underway.

Several other heating, ventilating, and air-conditioning projects were completed this year, including the replacement of a 25-ton compressor in the Planetarium and installation of new drinking fountains, the latter project supported by a generous gift from Joan Bull.

NATUREMAX THEATER  The Naturemax Theater continued to attract a significant share of total Museum attendance. In fiscal year 1993, visitors to the Naturemax Theater topped 360,000. Attendance by school groups, which equaled 130,000, represents a 30 percent increase over the previous year. The IMAX film “Ring of Fire” was followed by “Tropical Rainforest,” both productions of The Science Museum of Minnesota. “Tropical Rainforest” focuses on the diverse animal and plant life found in the rainforests of Costa Rica, Malaysia, and Indonesia. In February of 1993, “Antarctica,” a Heliograph Production in conjunction with the Chicago Museum of Science and Industry and the Australian Film Finance Corporation Pty Ltd., was added to the schedule.
Over the course of the year, the Offices of Development and Public Affairs found many new ways to convey the Museum’s mission to donors, the media, and the public and to obtain vital support for the Museum’s myriad programs in science, education, and exhibitions.

**DEVELOPMENT** Gifts, grants, and ticket sales of $14.3 million in the 1992-93 fiscal year reflected significant increases in support from foundations (up 39.5%), federal and state government grants (up 37.9%), and corporations (up 27.1%) compared to the previous year. In addition, New York City capital commitments increased substantially during this year. A detailed overview of City funding is provided in the Treasurer’s Report. Income from benefit events increased by $1 million this year, largely due to the success of the Museum’s first corporate dinner. The bulk of this year’s support, $11.6 million, defrayed operating expenses, while the rest funded capital projects and bolstered the Museum’s endowment.

Significant progress was made toward the Museum’s $250 million fundraising campaign, “Knowledge for the Next Millennium,” with over $112 million in commitments and pledges secured as of June 30, 1993. The success of the campaign reflects nearly $20 million of Trustee support and major commitments from private and public sources.

The creation of the *Hall of Human Biology & Evolution*, the most ambitious permanent exhibition to open at the Museum in the last decade, was made possible by the strong support of the Lila Acheson Wallace Fund at the New York Community Trust, the Bristol-Myers Squibb Company, and the National Science Foundation. Additional generous funding was provided by the Vincent Astor Foundation, the Edith C. Blum Foundation, the Booth Ferris Foundation, the Charles Hayden Foundation, the Robert Lehman Foundation, the Richard Lounsbery Foundation, The New York Times Company Foundation, and the Peter J. Solomon Family.

The Hall’s opening was celebrated at a Corporate Dinner that honored Bristol-Myers Squibb CEO Richard Gelb and his wife Phyllis Gelb for their far-reaching and longstanding support of the Museum. The success of the dinner, which raised over $1 million for the Museum, was in large part due to the energetic leadership of Museum Trustee Samuel C. Butler, presiding partner of Cravath, Swaine & Moore; Maurice R.

From left: the Honorable Alan J. Blinken, Trustee Melinda Blinken, and Constantine Sidamon-Eristoff, the husband of Trustee Anne Sidamon-Eristoff, were guests at a joint Museum and Ronald McDonald House benefit which included a screening of the movie Jurassic Park and a viewing of the Museum’s exhibition The Dinosaurs of Jurassic Park.

The Museum’s myriad education programs for students, teachers, and the general public, including the After School Natural History Program for At-Risk Youth and interpretive programs for hearing-impaired visitors, received fundamental support from the Lila Acheson Wallace Fund at the New York Community Trust’s grant of $1.6 million. The mammal wing of the fossil halls, scheduled to open in the spring of 1994, will be named in honor of Lila Acheson Wallace, co-founder of The Reader’s Digest Association, whose generosity has created a lasting legacy at the Museum.

In the past year, foundations played an increasingly central role in supporting Museum programs. The Vidda Foundation’s $225,000 pledge provides vital funding for education programs that enrich the Museum experience for visitors of all ages. The William Randolph Hearst Endowment for the Department of Education was created by the William Randolph Hearst Foundation’s $250,000 gift, bringing the Foundation’s total campaign support to $500,000. In addition, the Museum’s fossil halls renovation project received support from the Booth Ferris Foundation’s $150,000 grant.

Corporate funding increased significantly this year, reflecting the Museum’s growing ties with the business community. The Chase Manhattan Bank, N.A., demonstrated its commitment to Museum audiences by sponsoring the Moveable Museum, a new initiative to reach communities and schools throughout the five boroughs. The restoration and future maintenance of the Museum’s new fossil halls received key support under Exxon Corporation’s $2.5 million campaign pledge, resulting in a $500,000 payment this year. Under the leadership of Trustee John S. Reed, chairman of Citicorp, contributions from the Corporate Members Program increased nearly 15% this year, raising close to $1 million.

The Museum’s new Center for Biodiversity & Conservation represents a major institution-wide scientific initiative to understand and preserve the diversity of life throughout the world. Trustee Karen Lauder launched a $1-million corporate challenge for the Center with an initial $100,000 grant from Origins Natural Resources, Inc.- Estée Lauder Companies. The American Express Publishing Corporation’s additional $100,000 pledge provided a timely and supportive seconding of the Origins challenge. With this enthusiastic initial backing, the Center will be the focus of major fund-raising efforts in the next year.

Trustees continued to provide the Museum with a solid base of support. The Frederick P. Rose Chair of Honorary Curator in Invertebrates, with Stephen Jay Gould as its initial occupant, was established in recognition of the generous $1.5 million pledge from the Frederick P. and Sandra P. Rose Foundation. The Rose Chair, which is the first named chair of the “Knowledge for the Next Millennium” campaign, underscores the Museum’s commitment to excellence in natural science research and reinforces its ability to attract the world’s top scientists. The annual appeal component of Trustee donations increased broadly compared to the previous year, thanks to efforts spearheaded by Board Chairman William T. Golden.

Support from dedicated members also enriched many Museum projects. The Miriam and Ira D. Wallach Orientation Center, named in honor of this couple’s $1.5 million pledge, will be a centerpiece of the fossil halls renovation. The Julia Serena di Lapigio Fund, created by thoughtful friends and family in the memory of this Museum Trustee, will support the annual Environmental Lecture-Luncheon Series. The Hall of Human Biology and Evolution’s popular Australopithecus afarensis diorama, which was based on the fossil skeleton popularly known as “Lucy,” was named in recognition of Nancy and William Rollnick’s
staunch Museum support.

The Museum’s scientific expeditions provided the themes for two benefit events. Special decor provided by Estee Lauder Companies graced the annual fall gala, “Expedition, Exploration, and Discovery.” The gala was both a popular and financial success thanks to the tireless leadership of Trustees Deborah Kessler, Karen Lauder, Constance Spahn, Anne Sidamon-Eristoff, and Museum friend Cathy Eckstein. The success of the winter dance, “Treasure Island,” which was attended by over 500 guests, was a testament to the inspired leadership of Joshua and Tamara Leuchtenberg.

The newly created Patrons Circle attracted over 300 members, who were treated to rare behind-the-scenes views of the Museum. Young supporters were given the opportunity to deepen their affiliation with the Museum through the Junior Council, which sponsored special events for over 100 members in its inaugural year. The Natural History Society was established to provide personalized services to donors who support the Museum through planned giving and bequests.

Special events introduced the Museum to new friends. The benefit for the exhibition The Dinosaurs of Jurassic Park, which was sponsored by Universal Studios and Amblin Entertainment, was organized in partnership with the Ronald McDonald House and raised funds for both organizations under the leadership of Trustees Melinda Blinken and Karen Lauder. Residents from Millbrook, New York, were invited to share their interests in nature and the environment at an event entitled “ Mostly Millbrook,” an evening which came together under the gracious chairmanship of Belinda Kaye, Deborah Krulewitch, and Zibby Tozer. Jacquie Garrett’s capable leadership guided the Friends Third Annual Environmental Lecture-Luncheon Series for more than 880 guests, which raised over $125,000 for environmental programs. The luncheon featured Teresa Heinz, widow of the late senator H. John Heinz, III, who spoke about her personal role as an advocate and promoter of information in the environmental debate. The Environmental Journal, an anthology of articles by the Museum’s leading scientists on the biodiversity crisis, was distributed at the spring luncheon, support for which was secured under the leadership of Trustee Eugene McGrath and Journal Chairman Eileen Pulling.

**PUBLIC AFFAIRS** Public Affairs generated an extraordinarily high profile for the Museum in the media this year, initiating or coordinating hundreds of radio and television segments and print stories that helped explain the Museum’s achievements to an international audience.

One of the major events around which media attention was centered was the creation of the new Hall of Human Biology and Evolution. Major print coverage included a “Science in Pictures” photo essay in Scientific American, a five-page photo-feature in LIFE, and feature-length reviews in The New York Times, The Washington Post, The New Yorker, USA Today, the Philadelphia Inquirer, and the Star Ledger. Television highlights on the Hall of Human Biology and Evolution included a major news story on PBS-TV’s “MacNeil/Lehrer Newshour,” which featured an interview with Ian Tattersall, curator of the hall, by host Robert MacNeil; a five-minute segment on the top-rated national morning program, ABC-TV’s “Good Morning America”; and two full-length news segments on CNN.

The advertising campaign for The Hall of Human Biology and Evolution was one of the highlights of the year’s advertising program. An evocative photograph of the two figures from the Australopithecus afarensis, or “Lucy” diorama, was used in bus shelter ads appearing in all five boroughs and in advertisements in The New York Times, New York Magazine, Where, and elsewhere.

Among the Museum’s many scientific discoveries this year, two were the subject of
intense media interest around the world. These included the discovery of the bird-like
dinosaur *Mononykus* — found on the
Museum’s 1992 expedition to Mongolia,
which was featured on the cover of the April
26 issue of *Time,* as well as on the front page
Another was the announcement in Septem-
ber of the recovery of 25- to 40-million-year-
old fossil DNA from a termite preserved in
amber, which was featured in publications
ranging from *The New York Times,* *The
Washington Post,* and the *London Times,* to
*Smithsonian,* *Discover* and *New Scientist,* as
well as by CNN and National Public Radio.
A special emphasis was placed on encour-
aging coverage for the Museum in science
documentaries. The Museum’s work in ver-
tebrate paleontology was prominently fea-
tured in the PBS-TV series “Dinosaur,”
which was among the top ten most highly
watched PBS programs this year. The BBC
sent a crew on the 1992 Mongolia expedi-
tion, which resulted in an hour-long pro-
gram on the Museum’s modern research and
historical exploration in the Gobi Desert.
This program, which was shown in the U.K.
in April, was one of the most highly rated
programs ever aired in the “Horizon” series.
In May the Public Affairs Office and the
Press Office of the New York City Council
organized a press conference at City Hall to
launch the Museum’s Moveable Museum, a
specially designed vehicle with a walk-in
exhibit and teaching space that travels
throughout the five boroughs. The event
featured remarks by Peter F. Vallone,
Speaker, The Council of the City of New
York; Herbert E. Berman, chairman of the
City Council Finance Committee; Thomas C.
Lynch, executive vice president of The Chase
Manhattan Bank, and Museum representa-
tives. The City Council and Chase were both
major sponsors of the Moveable Museum,
and the launch generated broad coverage for
the project throughout the City.
The Public Affairs Office took advantage
of the interest in scientific questions raised by
the film “Jurassic Park” to arrange dozens of
interviews with the Museum’s scientists on
fossil DNA, amber, dinosaurs, and cloning.
These included an ABC-TV “Nightline”
interview by Ted Koppel with Ward Wheeler,
Museum curator; coverage in *Newsweek’s*
“Jurassic Park” cover story; a week-long
series of articles in the *New York Post,* major
articles in *USA Today,* *Newsday,* and the
*Wall Street Journal,* and news stories on
CNN and numerous other television stations
across the country and around the world.
The subsequent press preview and open-
ing weeks of the special exhibition *The
Dinosaurs of Jurassic Park* generated a rarely
paralleled amount of interest from the New
York City broadcast media, while segments
on such national programs as ABC-TV’s
“Live with Regis and Kathie Lee” and inter-
national television coverage in such countries
as Japan, Spain, Germany, France, Italy, and
Brazil reached millions of viewers around the
world.
In June, Public Affairs organized a press
luncheon attended by chief editors and
senior reporters from *Scientific American,*
*Audubon,* *Popular Science,* National Public
Sciences,* *Newsday,* and other publications
to announce the creation of the Museum’s
Center for Biodiversity and Conservation.
The luncheon was the first step in a long-
term campaign to foster public recognition
of the Museum’s leadership role in under-
standing and preserving the diversity of life
on earth.
The Guest Services Department actively encourages corporations, organizations, and other groups to use the Museum’s exhibition halls for their entertaining needs. Holding special events in these unique spaces provides the host with a dramatic setting, and these events bring new audiences to the Museum and provide an important source of revenue.

Some of the more unique events orchestrated by Guest Services this year included use of the Roosevelt Rotunda’s Barosaurus mount as the setting for MCA Universal’s Jurassic Park merchandising promotion to 1,000 toy manufacturers; use of the Hayden Planetarium for the USA Network’s launch of its new Sci-Fi channel on cable television; and use of the Hall of Ocean Life for the New York State Department of Environmental Protection’s all-day conference and luncheon on water. Abbott Laboratories, NPD Group, MIT, AmFAR, Kidder Peabody, Benetton, New York State Bar Association, Rogers and Wells, Pantheon Books, Cohn & Wolfe, Bank of New York, Oak Investment Partners, McKinsey & Co., Cable Networks Inc., NYNEX, and The Chase Manhattan Bank also entertained at the Museum. Returning to the Museum again this year were the Carnegie Corporation, American Brands, and Lehman Brothers.

In addition to special events, Guest Services is responsible for coordinating filming and photography projects on site. Footage was shot at the Museum for use in a documentary for Norwegian Broadcasting, an editorial for the Japanese Travel Bureau, and a documentary entitled “The Brain and Mind” for the Discovery Channel. Author Paul Thoreaux had his portrait taken in the Hall of African Mammals for Conde Nast Traveler, and actor Michael J. Fox, star of the film, “Life with Mikey,” filmed a scene at the Museum’s Central Park West main entrance.

Guest Services collaborates with Museum departments on programs and special events. This includes managing the Museum’s master schedule and coordinating the personnel and the resources required to ensure the success of events such as the Education Department’s Margaret Mead Film & Video Festival and the Development Department’s Friends Lecture-Luncheon Series. In conjunction with the openings of special exhibitions, Guest Services supports production of receptions, lectures, press openings, and private viewings. A special Members’ “Breakfast with the Bears” was hosted in the Museum’s Garden Café to celebrate the opening of the exhibit, Bears: Imagination and Reality.

Through increased efforts to enhance Museum visibility, other Guest Services programs have benefitted. Group tour package sales increased significantly and the Dinner/Naturemax Theater package continues to be very popular. The third annual Senior Citizen Month was also well attended.
During the 1992-93 fiscal year, more than 670 people, ranging in age from 16 to 87 volunteered over 102,000 hours of service to the Museum. They either worked directly with the public, behind the scenes, or at the Museum’s research stations. Volunteers, including 160 new applicants, worked in 31 areas of the Museum. They gave tours to more than 22,200 visitors and were responsible for more than $150,000 in sales for the Museum Shop, memberships recruited at the information desks, and income from pre-arranged group tours.

The Museum Highlights Tour Program continued to expand. Sixty-five tour guides were active in the program. Highlights Tours are offered five times a day seven days a week to the general public. In addition to the 1,784 Highlights Tours, guides also presented 319 Spotlight Tours on such topics as Marine Mammals, Human Biology and Evolution, Antarctica, and a Dog Lover’s Tour. Four volunteer lecturers presented off-site slide lectures at 46 different organizations throughout the tri-state area. This year sign-language tours with voice interpretation were also offered, and the sign-language tour on Native American Cultures attracted an audience of over 100 hearing-impaired visitors and their families and friends. Other popular sign-language tours included Bears, Birds of the World, Dinosaurs and Ancient Animals, and Hidden Stories of the Museum. The Volunteer Department also initiated a Discovering Minerals workshop to provide a hands-on approach for learning about the physical properties of minerals for Scout troops working on their geology badges.

The 128 Education Department volunteers donated over 10,000 hours to the many projects of the Department. Teaching volunteers received training in such subjects as Human Biology, Human Evolution, Jumbo and the Natural History of Elephants, Peoples of Africa, Mammals of Asia, and Voice Projection and Relaxation.

In an effort to continue to integrate volunteers into many projects of the Education Department, volunteers acted as teaching assistants in several departmental classes. They worked with the Children’s Weekend Workshops, the Junior High School Calder Laboratory Program, Camp-Ins, the Margaret Mead Film & Video Festival, the Discovery Room, the Natural Science Center, and on community projects.

Volunteers also participated in many special projects. They helped with public surveys, staffed special events and evening benefits, and worked at origami teaching tables that were set up for the Origami Holiday Tree, for the display of Jumbo, and in the Hall of Ocean Life during the summer. Volunteers donated over 25,000 hours to scientific departments and 3,500 hours to the Library.

At the annual volunteer recognition reception, the following volunteers were chosen by the departments for which they work for outstanding service: Stephanie Gartner (Anthropology), Isabel Schoenemann (Astronomy & Planetarium), Melissa Chitwood (Entomology), Theta Lourbacos (Invertebrates), Hank Silverstein (Mineral Sciences), Wally Elvers (Vertebrate Paleontology), Albert Gubar (Education), Hal Bernard (Library), Elizabeth Youman (Development), Carol Dubin (Natural History magazine), Etta Kaganov (Membership), Dick Haig (Great Gull Island), Robert Campanile (Museum Highlight Tours), Joan Bull (Information Desks), Helen Schwartz (Volunteer Office), Stella Freyre (Special Publications), Bernice Smith (Origami), and Kate Wallach (Museum Reproductions).

Eight volunteers joined the category of Volunteer Emeritus, an honor available to those who serve over five years or give 1,000 hours to the Museum.
Scientific research requires extensive communication of results. The interplay of scientific ideas, disseminated in large part through publication, provides the ferment that creates scientific advancement. The Museum is recognized throughout the scientific community for its prodigious output of research papers and books. These are contributions not only by staff curators, but also by research associates, postdoctoral fellows, students, curators *emeriti*, and scientific assistants. This body of published work represents a formidable influence in public education as well as in the world of science. The publications listed by department on the following pages were published between July 1, 1992, and June 30, 1993, the period covered in this Annual Report.

Michael J. Novacek
Vice-President and Dean of Science

Abronia reidi, an extremely rare tropical alligator lizard from southeastern Mexico studied by Assistant Curator Darrel R. Frost.
ANTHROPOLOGY

SCIENTIFIC PUBLICATIONS

Bettinger, R.L.

Carneiro, R.L.

Dole, G.E.

Fisher, H.E.

Freed, S.A., and R.S. Freed

Goldstein, P.

Gould, R.A., E.C. Harris, and J.R. Triggs

Grayson, D., and J.M. Broughton

Joyce, A.A., and R.G. Muellor

Joyce, A.A.

Kendall, L.
(The following publications, dated 1991, appeared too late for inclusion in prior annual reports)

Authors shown in black type are on the staff of the Museum.

In the bibliographies, an asterisk appears beside the names of graduate students whose work is being sponsored by members of the staff of the American Museum of Natural History.


Larsen, C.S.

Larsen, C.S., and D.L. Hutchinson

Larsen, C.S., C.B. Ruff, M.S. Schoeninger, and D.L. Hutchinson

Larsen, C.S., M.J. Schoeninger, N.J. van der Merwe, K.M. Moore, and J. A. Lee-Thorp

Morris, C.

Roscoe, P. B.

Ruff, C.B., E. Trinkaus, A. Walker, and C.S. Larsen

Schildkrot, E.

Schwartz, J.H.
Spencer, C.  


Tattersall, l., and J.H. Schwartz  

Tattersall, l.  


Thomas, D.H.  


**ABSTRACTS, REVIEWS, AND POPULAR PUBLICATIONS**

Brauer, J.L.  


Carneiro, R.L.  

Dole, G.E.  


Fisher, H.E.  


Freed, S.A.  

Gould, R.A.  

Kendall, L.  


Larsen, C.S.  


Miller, T.R.  


Milner, G.R., and C.S. Larsen  

Ruff, C.B., E. Trinkaus, A. Walker, and C.S. Larsen  

Sering, L.E., and C.S. Larsen  


Redmond, E., and C. Spencer  

Schildkraut, E.  


Schwartz, J.H.  

Tattersall, l.  


ENTOMOLOGY

Scientific Publications


Kathirithamby, J., and D. Grimaldi

Liebherr, J.K.

Liebherr, J.K., and D.L. Wagner

Meinke, D.J., J.A. Hoelzer, R. Absheer* (Sponsor: R. DeSalle), and M. Ashley

Morone, J.J.

Ovtsharenko, V.I., and Y.M. Marusik

Platnick, N.I.

Platnick, N.I., and F. di Franco

Platnick, N.I., and R. Jocqué

Rozen, J.G., Jr.


Ruz, L., and J.G. Rozen, Jr.

Schwartz, A., and K. Johnson

Shear, W.A.

Shear, W.A., and S.B. Peck

Thorne, B.L., and J.M. Carpenter


Wei, K.Y., Z. Zhang, and C. Wray* (Sponsor: R. DeSalle)

Wenzel, J.W.

Wijesinghe, D.P. (Sponsor: N. I. Platnick)

Wray, C.G.* (Sponsor: R. DeSalle), J.J. Lee, and R. DeSalle

ABSTRACTS, REVIEWS, AND POPULAR PUBLICATIONS

Carpenter, J.M.

DeSalle, R.

Grimaldi, D.

Platnick, N.I.

Riday, G.

Wagner, D.L.

Wenzel, J.W.

HERPETOLOGY AND ICHTHYOLOGY

SCIENTIFIC PUBLICATIONS

Cole, C.J., H.C. Dessauer, and A.L. Marklelieh

Daly, J.W., I. Caceres, R.W. Moni, F. Gusovsky, M. Moos, Jr., R.B. Seaman, K. Milton, and C.W. Myers
Klemens, M.K.

Lowe, C.H., and R.G. Zweifel

Moller, P.

Nelson, G.

Nelson, G., and J. Cole

Nelson, G., and P.Y. Ladiges

Pappanontious, A., J.W. Rachlin, and B.E. Warkentine

Pinna, M.G.C. de*

Pinna, M.C.C. de*, P. Escalante*, and G. Nelson

Pinna, M.C.C. de*, and C. Ferraris

Rachlin, J.W.

Rachlin, J.W., A. Pappanontious, and B.E. Warkentine

Radding, J.M.*

Stlassney, M.L.J.

Toledo-Piza, M.* (Sponsor: M.L.J. Stlassney)

Van Tassell, J.L.* (Sponsor: G. Nelson)

Zweifel, R.G.

**INVERTEBRATES**

**SCIENTIFIC PUBLICATIONS**

Anderson, S., and L.F. Marcus

Campbell, K.E., Jr. and L.F. Marcus

DeSalle, R., J. Gatesy, W. Wheeler, and D. Grimaldi

Elrodige, N., and M. Greene

Elrodige, N.

Emerson, W.K.

Faber, W.W., and J.J. Lee

Feldman, H.


Jacobs, D.K. and N.H. Landman

Jacobs, D.K. and D.L. Sahagian
Landman, N. H. and K.M. Waage

Landman, N.H., K. Tanabe, R.H. Mapes, S.M. Klofak, and J. Whitehill

Whitehill, L.F.

Tanabe, K., N.H. Landman, and W. Weitschat


Wheeler, W.C.

Wheeler, W.C., and D.M. Gladstein

Voss, R.S., and L.F. Marcus

Burgess, C.M., and W.E. Sage III

Eldredge, N.


Lakes, aquifers, and sea level. Stratigraphic record of global change: Climate, eustasy and life. SEPM Abst. 32.


Obituary of Waverley H. Harmon. N.Y. Shell Club Notes 324:5.


MAMMALOGY

SCIENTIFIC PUBLICATIONS


ABSTRACTS, REVIEWS, AND POPULAR PUBLICATIONS


ORNITHOLOGY

SCIENTIFIC PUBLICATIONS


MINERAL SCIENCES

SCIENTIFIC PUBLICATIONS


ABSTRACTS, REVIEWS, AND POPULAR PUBLICATIONS


VERTEBRATE PALEONTOLOGY

SCIENTIFIC PUBLICATIONS

Chippewa, L.M.

Conroy, M., and P. Mehl

Dean, D., and E. Delson

Delson, E.

Dawson, M., C. Beard, H. Hutchinson, and M.C. McKenna

Dean, E., and D. Dean

Delson, E., G.G. Eck, G.M. Leakey, and N. Jablonski

Delson, E., and R. Hoffstetter

Emry, R.J.

Gaffney, E.S.

Gaffney, E.S., M. Archer, and A. White

Gaffney, E.S., and Xiangkui Ye

Goodman, D.K., R.C. Becker, and J.A. Van Couvering

Hecht, M.K.

Herrmann, J.W., and B.J. MacFadden

Hunt, R.M., and R.H. Tedford

LaGarry, H., and R.M. Hunt

MacFadden, B.J.

Meikle, P.A., and E.S. Gaffney

Norell, M.A., and M.J. Novacek

Norell, M.A., and M.J. Novacek

Norell, M.A.

Novacek, M.J.

Rosing, R.L.

Rose, R.D., R.J. Emry, and P.D. Gingerich

Senft, B., M. Pickford, P. Mein, C. Conroy, and J.A. Van Couvering


LIBRARY SERVICES

AMNH Department of Library Services 1993. Recent Publ. in Nat. Hist. 10(1) (2) (3).


n 1993, the Museum revitalized exhibition and facility spaces by completing the $11.2 million capital expansion and renovation of the library building, building the new Hall of Human Biology and Evolution and renovating several collection compact storage areas for anthropology and entomology. Also the Museum’s new molecular systematics laboratory completed its first full year in operation.

Supporting the Museum in its effort, the City of New York made a major commitment of over $4 million in Fiscal 1993 for capital renovation work. Thus far in Fiscal 1994 the City has committed close to $10 million more for Museum infrastructure improvement. These funds are expended directly by the City and therefore are not shown in the Museum’s financials, yet they reflect the Museum’s crucial partnership with the City.

The Museum’s continued focus on revenue generation led to significant increases in revenues in such areas as benefit events, which raised about $1.3 million in net income. To emphasize longer-term needs, a planned giving program was instituted this past year whereby donors make deferred contributions to the Museum through a number of specialized options that include a pooled income fund and charitable gift annuity.

Museum management controlled expenses which were limited overall to a 4 percent growth, although programs in education and science and revenue enhancement areas received greater investment.

**Operating Financial Results** The result of the Museum’s focus on revenue generation, controlled expense growth, and continued good endowment investment performance was a positive operating fund and a strengthened endowment fund.

The Museum had a modest operating surplus of $10,787 in 1993 versus deficits of $184,611 and $441,060 in fiscal years 1992 and 1991, respectively. Total Revenue and Support grew to $54.8 million, or 4.4 percent above 1992. A major contributor to this growth was the increased Distribution from Endowment Funds, which grew $0.9 million or 10 percent over the prior year. The Museum draws 5 percent of a three-year rolling average market value of the endowment investments for operating use, a rate considered conservative among peer institutions.

Another significant change for 1993 was in City Support, which increased $0.6 million, or 12 percent over last year. The increase was a result of partial restoration of prior cuts and additional funding received during the year for past collective bargaining payments. Total energy and pension payments by the City also increased $0.3 million, or 18 percent over 1992, which was offset by corresponding expenses in Plant Operations.

Visitor Contributions were bolstered with the opening in May of the new permanent exhibition *Hall of Human Biology and Evolution* and the temporary exhibition *Jurassic Park*, which opened in June. Enthusiasm for these two exhibitions was such that Visitor Contributions for the year increased $0.2 million, nearly 5.2 percent over the prior fiscal year. This momentum should carry over into the next fiscal year and will be reinforced by the opening in Spring 1994 of the first two halls in the Museum’s major fossil halls renovations.

The success of the Museum’s Corporate Dinner in May and an active tour program were major factors in the 12 percent increase in Auxiliary Activities and Benefit revenues. The net contribution from total auxiliary operations and benefit events was $3.9 million in 1993, up 17 percent over last year. However, the sluggish economy did have an effect on some operations. While overall attendance was up about 5 percent over 1992, Museum Shop net income was down
over 27 percent as visitors purchased fewer and less expensive items. Corporations also cut back on events held at the Museum which was reflected in a 41 percent drop in Special Events net earnings. We anticipate a potential recovery in these areas in fiscal year 1994, with several exciting new exhibition openings scheduled and a continued strengthening of the New York City economy.

One major area that was directly affected during the slow advertising environment was Natural History magazine. The magazine depends heavily upon revenue from advertising sales, which showed a slight increase over 1992, although they were nearly 19 percent, or $0.6 million, below 1991, a level which is more reflective of normal economic conditions. Total magazine revenues in 1993 were $9.7 million, essentially flat with last year, and magazine expenses were held to less than a 3 percent increase.

Overall expense growth in 1993 of 4 percent over 1992 reflects the investment in various revenue generating areas such as Development and Auxiliary Activities and general inflationary items such as costs of materials and salary increases. Partially offsetting this was the absence of a major one-time exhibition cost made in 1992.

Increased staffing for Scientific Research was necessary in order to address federal legislation concerning the repatriation of certain collections of the Museum and to remain at the forefront of scientific discovery. In addition, a number of vacant programmatic positions were filled in Education, whose overall expenses were 12 percent above the prior year.

Development and Public Affairs expenses increased to $3.0 million from the $2.1 million spent in 1992. This increased investment in the fundraising and audience development capability of the Museum yielded significant additional return this year: a new planned giving program was established, benefit events revenue grew by over $1.0 million, $10 million in new pledges to the campaign were generated, and total cash raised for operating purposes grew. Increased costs associated with a growing membership base are also reflected in the Development budget. Public Affairs implemented an aggressive advertising and promotion campaign for the Museum and for several new public exhibitions. Staff vacancies in both departments were also filled in 1993.

While several new exhibitions opened at the Museum in 1993, overall Exhibition expenses of $2.6 million were $1.1 million below 1992 due to the major costs in the prior year for the temporary exhibition Global Warming. Guardianship, Maintenance & Operating Costs were 12 percent higher than last year due to higher energy costs (funded by the City), increased guards and cleaners for the new permanent Hall of
Human Biology and Evolution, and negotiated collective bargaining payments for union employees. The Museum was able to lower its General & Administrative costs by 5 percent or $0.3 million, as outside legal and consulting services were reduced and staff hiring was delayed.

**Plant Funds** The Museum made significant investment into capital construction, equipment and exhibition halls in 1993. The Museum’s $11.2 million new library building was completed in December 1992 slightly ahead of schedule and on budget. As noted above, the new permanent Hall of Human Biology and Evolution was opened to the public, and the first two fossil halls on the fourth floor will open in the spring of 1994.

The Plant fund had an ending fund balance of $34.9 million as of June 30, 1993, an increase of $2.9 million over the prior year. Private gifts and capital appropriations from the City of New York totalled $8.1 million during the fiscal year. In addition, the City directly provided $3.9 million for capital maintenance projects that are not reflected in the financial statements.

**Endowment Funds** The Museum’s endowment, which had investments valued at $241 million as of June 30, had an investment return of about 13 percent in 1993. Funds are invested by leading investment managers in diversified equity and fixed income securities and are overseen by the Museum’s Investment Committee. As of June 30, 1993, the endowment’s fund balance had a market value of $225 million, up $16 million or nearly 8 percent over the prior year.

**Hayden Planetarium** The Hayden Planetarium had an operating surplus before depreciation of $145,455 on total revenues of $1.9 million in fiscal year 1993. Total revenues remained even with the prior year as the increased income from the restructuring of the Planetarium’s operating investments was offset by a decline in attendance-related revenues. Total assets of the Planetarium were $3.2 million, and fund balances on a cost basis were $0.9 as of June 30, 1993.

The Planetarium expects to reverse its recent downturn in attendance with the opening of the temporary exhibition Star Trek, on display from July 1993 through March 1994, and a series of special lectures and events which will attract new visitors.

Charles H. Mott
Treasurer
MUSEUM FINANCIAL STATEMENTS

BALANCE SHEETS AS OF JUNE 30, 1993 AND 1992

<table>
<thead>
<tr>
<th>OPERATING FUNDS</th>
<th>1993</th>
<th>1992</th>
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</thead>
<tbody>
<tr>
<td><strong>ASSETS:</strong></td>
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<td></td>
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<tr>
<td>Cash</td>
<td>$1,453,373</td>
<td>$1,294,743</td>
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<tr>
<td>Receivable for securities sold</td>
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<tr>
<td>Accrued interest and dividends receivable</td>
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<tr>
<td>Accounts receivable, less allowance for doubtful accounts of $274,565 and $264,417, respectively</td>
<td>$2,155,027</td>
<td>$2,818,008</td>
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<tr>
<td>Due from City of New York - Note 2</td>
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<td>Investments - Notes 3 and 7</td>
<td>$81,378</td>
<td>$1,340,154</td>
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<td>Interfund receivable/(payable) - Note 4</td>
<td>$11,858,879</td>
<td>$8,694,843</td>
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<td>Merchandise and paper inventories - Note 5</td>
<td>$983,519</td>
<td>$1,469,286</td>
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<td>Planetarium Authority Bonds - Note 6</td>
<td>$425,000</td>
<td>$425,000</td>
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<td>Prepaid expenses and other assets</td>
<td>$2,084,863</td>
<td>$1,533,652</td>
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<tr>
<td>Deferred bond issuance costs, net - Note 7</td>
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<tr>
<td>Plant and equipment, less accumulated depreciation - Note 8</td>
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<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td>$19,042,039</td>
<td>$17,575,686</td>
</tr>
</tbody>
</table>

| **LIABILITIES AND FUND BALANCES:** |          |         |
| Accounts payable and accrued expenses | $4,564,156 | $5,197,620|
| Accrued interest payable |         |         |
| Accrued employee benefit costs | $4,179,735  | $3,901,842|
| Payable for securities purchased |         |         |
| Unearned membership income | $7,223,297  | $7,385,276|
| Loan from Trust for Cultural Resources - Note 7 |         |         |
| Fund Balances - Note 9 | $3,074,851  | $1,090,948|
| **TOTAL LIABILITIES AND FUND BALANCES** | $19,042,039 | $17,575,686|

The accompanying notes are an integral part of these financial statements.
<table>
<thead>
<tr>
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<td>$5,587</td>
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<td>(1,437,835)</td>
<td>(1,037,996)</td>
<td>(7,656,847)</td>
<td>983,519</td>
<td>1,469,286</td>
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<td><strong>$201,432,002</strong></td>
<td><strong>$181,608,362</strong></td>
<td><strong>$308,444,033</strong></td>
<td><strong>$285,867,772</strong></td>
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|                |                 |                 |                      |                      |            |            |
| $2,619,466     | $4,202,179      | $117,458        | $111,363             | $7,301,080           | $9,511,162 |
| 455,552        | 462,188         | 455,552         | 462,188              |                      |            |            |
| 30,006         | 23,917          | 4,209,741       | 3,925,759            |                      |            |            |
| 11,486,745     | 4,848,225       | 11,486,745      | 4,848,225            |                      |            |            |
| 7,223,297      | 7,385,276       | 50,000,000      | 50,000,000           |                      |            |            |
| 34,864,968     | 31,995,440      | 189,827,799     | 176,648,774          | 227,767,618          | 209,735,162 |
| **$87,969,992**| **$86,683,724** | **$201,432,002**| **$181,608,362**     | **$308,444,033**     | **$285,867,772** |
### MUSEUM FINANCIAL STATEMENTS

**STATEMENTS OF REVENUE, SUPPORT AND EXPENSES OF OPERATING FUNDS FOR THE YEARS ENDED JUNE 30, 1993 AND 1992**

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE AND SUPPORT:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution from Endowment Funds - Note 10</td>
<td>$9,873,600</td>
<td>$8,957,000</td>
</tr>
<tr>
<td>Gifts, bequests and grants</td>
<td>9,958,302</td>
<td>10,285,121</td>
</tr>
<tr>
<td>Appropriation from the City of New York: Funds for guardianship and maintenance</td>
<td>5,506,787</td>
<td>4,906,862</td>
</tr>
<tr>
<td>Value of energy services and contribution to pension costs - Note 11</td>
<td>2,320,364</td>
<td>1,974,191</td>
</tr>
<tr>
<td>Visitors' contributions and admissions</td>
<td>4,079,263</td>
<td>3,878,131</td>
</tr>
<tr>
<td>Membership</td>
<td>1,396,359</td>
<td>1,428,268</td>
</tr>
<tr>
<td>Auxiliary activities and benefits - Note 12</td>
<td>9,354,765</td>
<td>8,339,679</td>
</tr>
<tr>
<td>Publications and other revenue</td>
<td>2,555,994</td>
<td>2,952,345</td>
</tr>
<tr>
<td><strong>REVENUE AND SUPPORT BEFORE MAGAZINE</strong></td>
<td>45,045,434</td>
<td>42,721,597</td>
</tr>
<tr>
<td>Natural History magazine</td>
<td>9,730,597</td>
<td>9,764,843</td>
</tr>
<tr>
<td><strong>TOTAL REVENUE AND SUPPORT</strong></td>
<td>54,776,031</td>
<td>52,486,440</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXPENSES:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific research</td>
<td>14,439,769</td>
<td>13,955,433</td>
</tr>
<tr>
<td>Education</td>
<td>1,512,169</td>
<td>1,348,908</td>
</tr>
<tr>
<td>Exhibition</td>
<td>2,642,110</td>
<td>3,761,627</td>
</tr>
<tr>
<td>Guardianship, maintenance and operating costs - Note 11</td>
<td>10,372,216</td>
<td>9,232,721</td>
</tr>
<tr>
<td>General and administrative</td>
<td>5,953,898</td>
<td>6,297,009</td>
</tr>
<tr>
<td>Development and public affairs</td>
<td>2,978,598</td>
<td>2,073,253</td>
</tr>
<tr>
<td>Membership</td>
<td>847,034</td>
<td>742,651</td>
</tr>
<tr>
<td>Visitor services</td>
<td>760,695</td>
<td>694,243</td>
</tr>
<tr>
<td>Auxiliary activities and benefits - Note 12</td>
<td>5,460,217</td>
<td>5,003,666</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES BEFORE MAGAZINE</strong></td>
<td>44,966,706</td>
<td>43,109,511</td>
</tr>
<tr>
<td>Natural History magazine</td>
<td>9,798,538</td>
<td>9,561,541</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES</strong></td>
<td>54,765,244</td>
<td>52,671,052</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXCESS OF REVENUE AND SUPPORT OR (EXPENSES)</strong></td>
<td>$ 10,787</td>
<td>($ 184,612)</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
<table>
<thead>
<tr>
<th>FUND BALANCES</th>
<th>JUNE 30, 1993 AND 1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING FUNDS</td>
<td>PLANT FUND</td>
</tr>
<tr>
<td>$1,090,948</td>
<td>$5,045,308</td>
</tr>
<tr>
<td>1,943,289</td>
<td>2,940,950</td>
</tr>
<tr>
<td>3,147,331</td>
<td>1,052,413</td>
</tr>
<tr>
<td>57,575</td>
<td>298,502</td>
</tr>
<tr>
<td>16,005,782</td>
<td>6,918,186</td>
</tr>
<tr>
<td>10,787</td>
<td>(184,612)</td>
</tr>
<tr>
<td>10,787</td>
<td>(184,612)</td>
</tr>
<tr>
<td>350,845</td>
<td>465,451</td>
</tr>
<tr>
<td>2,924,352</td>
<td>2,406,530</td>
</tr>
<tr>
<td>8,973,600</td>
<td>8,957,000</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2,527,949</td>
<td>(2,527,949)</td>
</tr>
<tr>
<td>(554,833)</td>
<td>(3,769,748)</td>
</tr>
<tr>
<td>1,973,116</td>
<td>(3,769,748)</td>
</tr>
<tr>
<td>$3,074,851</td>
<td>$1,090,948</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
NOTES TO FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Fund Accounting - The accounts of the American Museum of Natural History ("Museum") are maintained in accordance with the principles of fund accounting in order to abide by the limitations and restrictions placed on the use of the resources available to the Museum. Revenue received and expenses incurred for specified purposes are classified for accounting and financial reporting purposes into individual funds for which separate accounts are maintained. However, in the accompanying financial statements, funds that have similar characteristics have been combined into fund groups.

- Operating Funds, which consist of unrestricted and restricted funds, represent funds available for support of the Museum's operations. Restricted funds are restricted by donors for particular operating purposes such as specific research projects, acquisitions or expeditions.
- Plant Fund represents resources restricted for plant acquisitions and funds expended for plant. Operating funds used for plant acquisitions are accounted for as transfers to the Plant Fund.
- Endowment Funds include permanent endowment and quasi-endowment funds. Permanent endowment funds are funds subject to the restrictions of gift instruments requiring that the original principal be invested in perpetuity and only the income be used for unrestricted or restricted purposes. Quasi-endowment funds represent monies transferred to Endowment by the Museum's Board of Trustees ("Board"), for either unrestricted or restricted purposes.

Cash - The Museum deposits cash with large, well-known financial institutions. At times such deposits may be in excess of the Federal Deposit Insurance Corporation limits.

Investments - Investments are carried at cost or, if acquired by gift, at fair value at date of acquisition. Purchases and sales of securities are reflected on a trade-date basis. Realized gains and losses on sales of securities are based on average cost. Interest and dividend income on Endowment Funds is distributed to Operating Funds based on a formula adopted by the Board as described in Note 10.

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

Plant and Equipment - Plant and equipment are stated at cost, with depreciation calculated on a straight-line basis over the estimated useful lives of the assets. The land and building occupied by the Museum are owned by the City of New York ("City") and are not reflected in the financial statements.

Collections - In conformity with accounting policies generally followed by museums, the value of collections and other holdings of the Museum is not included in the balance sheets.

Pledges - Pledges are not reflected in the financial statements until they are paid.

Membership - Membership income is recognized ratably over the membership term which ranges from one to three years.

New Pronouncements - In June 1993, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards No. 116, "Accounting for Contributions Received and Contributions Made," which significantly changes the methods by which organizations account for contributions. This statement mandates that contributions received, including unconditional promises to give (pledges), are recognized as revenues at their fair values in the period received. As of June 30, 1993, gross outstanding pledges totalled approximately $51,000,000, exclusive of City commitments, maturing over the next five years. No estimate has been made of the collectibility of these pledges.

At the same time, FASB issued Statement of Financial Accounting Standards No. 117, "Financial Statements of Not-for-Profit Organizations." The implementation of this standard will require the Museum, among other things, to restate total fund balances into three categories: unrestricted net assets, temporarily restricted net assets and permanently restricted net assets - and to report the net change in each of the three classes of net assets as well as the change in total net assets in a statement of activity. In addition, the Museum will be required to report the change in its cash and cash equivalents in a statement of cash flows.

The Museum will be required to comply with FASB No. 116 and No. 117 no later than the fiscal year ending June 30, 1996. The impact of adopting these standards has not been determined at this time.

2. DUE FROM THE CITY OF NEW YORK:

The City has traditionally appropriated funds for the renovation, improvement and alterations of the City-owned buildings occupied by the Museum. These funds are not reflected in the financial statements since they do not flow through the Museum's books. Funds expended by the City for these capital projects in fiscal 1993 and 1992 amounted to $2,873,187 and $2,632,178, respectively.

In fiscal 1992 the Museum entered into its first "pass-through" contract with the City for certain renovations to the Roosevelt Rotunda. In fiscal 1993 the Museum entered into additional pass-through contracts for other projects. Under a pass-through contract, the Museum is responsible for managing the project and paying all costs. The City, in turn, is responsible for reimbursing the Museum for costs incurred up to the stated amount in the contracts. The amounts funded by the City are recorded as revenues of the Plant Fund in the Statements of Changes in Fund Balances and amounted to $3,147,331 and $1,052,413 in fiscal 1993 and 1992, respectively. Any unpaid amounts are reflected as receivables of the Plant Fund in the Balance Sheets and amounted to $23,494 and $1,052,413 as of June 30, 1993 and 1992, respectively. Since the Operating Funds advanced these monies to the Plant Fund, the receivables are included in the interfund receivable/(payable) between the Plant Fund and Operating Funds.

3. INVESTMENTS:

Cost and fair values of investments as of June 30 are as follows:

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost</td>
<td>Fair Value</td>
</tr>
<tr>
<td>Operating Funds</td>
<td>$ 81,378</td>
<td>$ 5,362</td>
</tr>
<tr>
<td>Plant Fund</td>
<td>28,618,031</td>
<td>29,044,091</td>
</tr>
<tr>
<td>Endowment Funds</td>
<td>206,429,763</td>
<td>241,440,737</td>
</tr>
<tr>
<td>Total Investments</td>
<td>$285,129,172</td>
<td>$270,490,190</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost</td>
<td>Fair Value</td>
</tr>
<tr>
<td>Short-term investments</td>
<td>$ 32,313,360</td>
<td>$ 32,313,360</td>
</tr>
<tr>
<td>Fixed income securities</td>
<td>94,227,879</td>
<td>99,506,037</td>
</tr>
<tr>
<td>Common and preferred stocks</td>
<td>101,846,672</td>
<td>131,997,584</td>
</tr>
<tr>
<td>Other investments</td>
<td>6,741,270</td>
<td>6,673,209</td>
</tr>
<tr>
<td>Total Investments</td>
<td>$285,129,172</td>
<td>$270,490,190</td>
</tr>
</tbody>
</table>
The carrying amounts for short-term investments approximate fair values. The fair values for fixed income securities carried at cost are generally based upon quoted market prices. For certain fixed income securities for which market prices were not readily available, fair values were estimated using values obtained from independent pricing services. The fair values of common and preferred stocks are based on quoted market prices.

The Museum is exposed to credit risk in the event of nonperformance by the issuers of short-term investments and fixed income securities held by the Museum. However, the Museum does not anticipate such nonperformance since it generally invests in financial instruments issued by entities with high credit ratings.

The Museum enters into foreign exchange contracts as a hedge against foreign investment transactions. Market value gains and losses on the currency contracts are deferred and included in the measurement of the related foreign investment transactions. As of June 30, 1993 and 1992, the Museum had contracts to sell European currencies with expected proceeds of approximately $12,974,600 and $3,894,000, respectively, and a fair value of $12,422,000 and $4,020,000, respectively. These contracts have various maturities not in excess of four months following June 30. Fair value of foreign currency contracts is based on quoted market prices.

The Museum temporarily loans certain endowment fund securities to brokerage firms through its custodian bank. The Museum retains all rights of ownership to the securities loaned and, accordingly, receives all related investment income plus compensation for lending the securities. Under the terms of the lending agreement, the custodian has agreed to indemnify the Museum against any loss resulting from a borrower's failure to return securities. At June 30, 1993 and 1992, the book value of securities loaned amounted to approximately $16,487,000 and $12,570,000, respectively.

4. INTERFUND RECEIVABLE/(PAYABLE):

In May 1990, the Board authorized a transfer of $8,100,000 of surplus unrestricted operating funds to the Endowment Fund to be invested by the endowment managers. This amount is reflected as receivable from the Endowment Fund as of June 30, 1993 and 1992.

In fiscal 1993, the Board authorized the funding of prior years' unrestricted fund deficits amounting to $2,527,949 from the Endowment Fund. This transaction is included as an interfund transfer. Subsequently, it was decided to leave $2,227,949 invested in the Endowment Fund until needed for operations. Therefore, that amount is also reflected as a receivable from the Endowment as of June 30, 1993.

As of June 30, 1993 and 1992, the Operating Funds had other miscellaneous receivables/(payables) from/(to) the Endowment Fund of $93,095 and $1,517,591, respectively.

As of June 30, 1993 and 1992, the Operating Funds had advanced $1,647,295 and $1,196,456, respectively, to the Plant Fund for capital expenditures which are reimbursable from bond proceeds and from the City. Accordingly, they are reflected as a receivable from the Plant Fund. At June 30, 1993 and 1992, there were miscellaneous payables of $209,460 and $158,460, respectively, due to the Plant Fund.

5. MERCHANDISE AND PAPER INVENTORIES:

Merchandise and paper inventories as of June 30 consist of:

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural History magazine paper</td>
<td>$415,794</td>
<td>$718,407</td>
</tr>
<tr>
<td>Museum Shop merchandise</td>
<td>$67,728</td>
<td>$750,879</td>
</tr>
<tr>
<td>Total</td>
<td>$483,521</td>
<td>$1,469,286</td>
</tr>
</tbody>
</table>

6. PLANETARIUM AUTHORITY BONDS:

The Museum and the American Museum of Natural History Planetarium Authority ("Planetarium") are separate legal entities which share the same Board of Trustees and Officers. The Museum has an investment in bonds of the Planetarium at a cost of $425,000 ($570,000 principal amount), which are past due. For each of the years ended June 30, 1993 and 1992 interest on these bonds (at 4 1/2%) of $28,650 was received and is included in Operating Funds revenue. The fair value of the Planetarium bonds has been determined by management to be approximately $890,000 as of June 30, 1993 and 1992, based on the present value of future cash flows discounted at a rate of 6.5%.

7. LOAN FROM TRUST FOR CULTURAL RESOURCES:

In May 1991, the Museum entered into a loan agreement with the Trust for Cultural Resources of the City of New York ("Trust") primarily to provide long-term financing of the cost of the construction, renovation and equipping of sections of the Museum's facilities. The Trust issued $25,000,000 of Series 1991A Revenue Bonds and $25,000,000 of Series 1991B Revenue Bonds, and loaned the proceeds to the Museum. The entire issued amounts outstanding as of June 30, 1993 and 1992 were as follows:

| Series A 5.75% to 6.75%, due serially 1997 to 2008 | $7,235,000 |
| Series A 6.90% Term Bond, due April 1, 2021 | $17,765,000 |
| Series B Variable Rate Bonds, due April 1, 2021 | $25,000,000 |
| Total | $50,000,000 |

The Series A Bonds are dated May 1, 1991 and interest is payable on each April 1 and October 1. The term of the Series B Bonds is divided into consecutive interest rate periods selected by the Trust as set forth in the bond resolution. Since inception through June 30, 1993, the interest rate of the Series B Bonds has been a Weekly Interest Rate. The Museum may elect at any time to adjust all of the Series B Bonds to a new alternate Interest Rate Period, subject to the satisfaction of certain conditions specified in the bond resolution, but no Series B Bond shall bear interest in excess of the Series B Bond Interest Rate as defined in the bond resolution. The weighted average interest rate of the Series B Bonds for the fiscal years ended June 30, 1993 and 1992 was 5.94% and 5.02%, respectively.

The Series A Bonds are redeemable by the Trust, at the direction of the Museum, at a price of 102 during the period April 1, 2001 to March 31, 2002 and at a price of 101 during the period April 1, 2002 to March 31, 2003. Thereafter, the Series A Bonds are redeemable at par. The Series B Bonds are redeemable by the Trust, at the direction of the Museum, at a price of 100 when the bonds are bearing interest at a Weekly Interest Rate, or a Bond Interest Term Rate and a price ranging from 100 to 102 when the bonds are bearing interest at a Long-Term Interest Rate, as these terms are defined in the bond resolution.

While the bonds are not the debt of the Museum, the agreement obligates the Museum to make payments equal to the debt service and sinking fund requirements of the bonds, including any premium on redemption. At June 30, 1993, the Museum's estimated interest payments under the loan agreement (with interest on the variable rate portion of the loan estimated at a rate of 5.00%) are $2,937,000 per annum for each of the next five years. Actual interest payments for the years ended June 30, 1993 and 1992 amounted to $2,182,600 and $2,710,905, respectively. The first principal and sinking fund payments in the next five years are scheduled to occur as follows: $425,000 on April 1, 1997 and $450,000 on April 1, 1998.

The Internal Revenue Code places limitations on the amount of interest that can be earned on the proceeds of certain tax exempt bonds. Interest earned in excess of these limitations must be rebated at the end of the fifth Bond Year to the U.S. Treasury. While the amount of the ultimate rebate, if any, at the end of five years, cannot be determined until that time, the loan agreement between the Trust and the Museum requires that the rebate be calculated annually and that the rebate at the calculation date be segregated in a separate Rebate Fund. As of June 30, 1993, the rebate calculated by the Museum was $645,328, which has been reflected as a liability of the Plant Fund. As of June 30, 1992 the rebate was $350,451.
MUSEUM FINANCIAL STATEMENTS

As of June 30, 1993 and 1992, unexpended loan proceeds, including earnings thereon, totalling $22,125,579 and $33,302,128, respectively, were invested in cash equivalents and U.S. Treasury Notes and were in the custody of a trustee bank. Of the unexpended proceeds as of June 30, 1993, $3,711,082 was held as a reserve for the payment of debt service through April 1, 1994, $17,766,185 was held for construction expenditures and $648,362 was held in the Rebate Fund.

Payment of the principal and interest on the Series A Bonds and Series B Bonds is insured under certain conditions by separate financial guaranty insurance policies issued by Municipal Bond Investors Assurance Corporation (MBIA).

The Museum incurred loan issuance costs of $2,259,757 which are being amortized over the estimated average maturities of the Series A and B Bonds, which are 21 and 20 years, respectively. Amortization of these issuance costs amounted to $109,071 in fiscal 1993 and 1992.

Pursuant to the loan agreement and an agreement with MBIA, the Museum is required, among other things, to maintain unrestricted assets, as defined in the bond resolution, having a market value of at least 120% of the Museum’s long-term debt. At June 30, 1993 and 1992, the Museum had unrestricted assets having a market value of 178% and 165%, respectively, of the Museum’s long-term debt.

The fair value of the Series A Revenue Bonds is estimated by the Museum’s remarketing agent at approximately $27,300,000 and $26,200,000 at June 30, 1993 and 1992, respectively. The fair value of Series B Revenue Bonds approximates carrying amount.

As discussed in Note 18, the Museum intends to refund a portion of the aforementioned debt in fiscal 1994.

8. PLANT AND EQUIPMENT:

Plant and equipment as of June 30 consist of:

<table>
<thead>
<tr>
<th></th>
<th>1992</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibition halls</td>
<td>$21,366,512</td>
<td>$13,206,461</td>
</tr>
<tr>
<td>Leasehold improvements</td>
<td>26,362,405</td>
<td>11,277,767</td>
</tr>
<tr>
<td>Equipment, furniture and fixtures</td>
<td>7,985,220</td>
<td>6,365,514</td>
</tr>
<tr>
<td>Construction in-progress</td>
<td>18,261,873</td>
<td>26,791,158</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>73,926,010</td>
<td>57,638,897</td>
</tr>
<tr>
<td>Less: Accumulated depreciation</td>
<td>16,106,585</td>
<td>13,191,274</td>
</tr>
<tr>
<td>Net investment in plant and equipment</td>
<td>$57,819,425</td>
<td>$44,447,623</td>
</tr>
</tbody>
</table>

Interest expense, net of the interest earned on the invested proceeds of the loan from the Trust, has been capitalized and added to the cost of debt-financed projects. Of the total net interest capitalized as of June 30, 1993, $1,435,861 was allocated to construction-in-progress and $501,577 was allocated to completed projects and will be depreciated over the lives of the related assets. As of June 30, 1992, net capitalized interest of $85,339 was allocated to construction-in-progress.

9. FUND BALANCES:

Included in Operating Fund balances are approximately $2,918,000 and $2,878,000 in fiscal 1993 and 1992, respectively, restricted by donors for specific purposes.

Included in Plant Fund balances are investments of $28,618,031 and $40,025,718 in fiscal 1993 and 1992, respectively, which are restricted as to use for capital projects and payment of interest.

Endowment Fund balances consist of:

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Endowment Funds, income available for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted purposes</td>
<td>78,496,499</td>
<td>72,024,959</td>
</tr>
<tr>
<td>Unrestricted purposes</td>
<td>23,997,034</td>
<td>21,924,580</td>
</tr>
<tr>
<td>Quasi-endowment (funds functioning as endowment), principal and income available for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted purposes</td>
<td>17,665,334</td>
<td>16,622,474</td>
</tr>
<tr>
<td>Unrestricted purposes</td>
<td>69,688,932</td>
<td>66,076,761</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$189,827,799</td>
<td>$176,648,774</td>
</tr>
</tbody>
</table>

10. DISTRIBUTION FROM ENDOWMENT FUNDS:

The policy adopted by the Board provides for distributions to unrestricted and restricted funds within the Operating Funds at five percent of the average of the market value of the Endowment Funds for the three preceding years. The distributions are allocated among funds on a unit basis, which reflects the ratio of the related funds invested in the pooled portfolio to the total market value.

The distributions were:

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrestricted Funds</td>
<td>$7,264,241</td>
<td>$6,706,300</td>
</tr>
<tr>
<td>Restricted Funds</td>
<td>2,609,359</td>
<td>2,250,700</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$9,873,600</td>
<td>$8,957,000</td>
</tr>
</tbody>
</table>

11. GUARDIANSHIP, MAINTENANCE AND OPERATING COSTS:

The City supplies energy services to the Museum, the value of which amounted to $2,135,664 and $1,804,245 in fiscal 1993 and 1992, respectively. In addition, the City made payments directly to the Museum’s pension plan in fiscal 1993 and 1992, amounting to $184,700 and $169,946, respectively. The value of these donated services and payments are included in revenue and in guardianship, maintenance and operating costs.
12. AUXILIARY ACTIVITIES AND BENEFITS:
Revenue and expenses for auxiliary activities and benefits in fiscal 1993 and 1992 were:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Museum Shop</td>
<td>$2,807,641</td>
<td>$2,286,805</td>
<td>$2,896,828</td>
<td>$2,177,749</td>
</tr>
<tr>
<td>Discovery Tours</td>
<td>1,290,926</td>
<td>875,299</td>
<td>1,070,688</td>
<td>761,108</td>
</tr>
<tr>
<td>Naturemax</td>
<td>1,055,111</td>
<td>401,458</td>
<td>1,051,632</td>
<td>364,956</td>
</tr>
<tr>
<td>Benefits</td>
<td>1,793,287</td>
<td>493,249</td>
<td>694,213</td>
<td>310,802</td>
</tr>
<tr>
<td>Other</td>
<td>2,407,800</td>
<td>1,403,406</td>
<td>2,626,318</td>
<td>1,389,051</td>
</tr>
<tr>
<td>Total</td>
<td>$9,354,643</td>
<td>$5,460,217</td>
<td>$8,339,679</td>
<td>$5,003,666</td>
</tr>
</tbody>
</table>

13. PENSION PLAN:
The Museum participates in the Cultural Institution Retirement System Plan ("CIRS Plan"), which consists of an employer-funded defined benefit plan and an employee contributory 401K savings plan. It is a multiemployer plan and the actuarial present value of vested and unvested accumulated plan benefits and net assets available for plan benefits is not determinable on an individual institution basis.

The Museum accrues and funds annually the normal cost for eligible employees participating in the CIRS Plan. To be eligible under this plan, employees must be over 21 and employed for a minimum of one year. Total pension costs for eligible employees, including Planetarium personnel, amounted to $836,898 and $732,154 in fiscal 1993 and 1992, respectively, exclusive of payments made directly by the City.

The Planetarium reimburses the Museum for actual payroll costs for its staff. It also reimburses the Museum for all employee benefit costs, including pension, which are calculated as a percentage of payroll and amounted to $198,772 and $177,668 in fiscal 1993 and 1992, respectively.

14. POSTRETIREMENT BENEFITS:
The Museum provides health insurance for all retired employees and life insurance for certain retired employees. Postretirement benefit costs are expensed when paid and totalled $210,778 and $541,453 in fiscal 1993 and 1992, respectively. Museum employees are covered by one of two plans: a multiemployer plan offered by the City or an independent plan offered by the Museum. The multiemployer plan is not subject to the reporting requirements of Statement of Financial Accounting Standards No. 106, "Employers' Accounting for Postretirement Benefits Other Than Pensions," which requires a change in accounting to the accrual method for postretirement benefit costs. The Museum's plan is subject to the requirements of the Statement but because the number of employees covered under the subject plan is under 500, compliance is postponed to fiscal years beginning after December 15, 1994. The impact of adopting this statement has not been estimated.

15. RELATED PARTY TRANSACTIONS:
The Museum provides certain services to the Planetarium, such as insurance, accounting and maintenance, for which the Planetarium was charged an aggregate amount of $203,535 and $208,385 in fiscal 1993 and 1992, respectively. The Museum also received $42,768 and $48,240 in fiscal 1993 and 1992, respectively, for visitors who entered the Museum from the Planetarium. As of June 30, 1993 and 1992, the Planetarium owed the Museum $153,814 and $84,486, respectively, for various charges which are included in accounts receivable on the balance sheets.

16. TAX STATUS:
The Museum is a not-for-profit organization exempt from corporate federal income tax under Section 501(c)(3) of the Internal Revenue Code.

17. RECLASSIFICATIONS:
Certain amounts in fiscal 1992's statements have been reclassified to conform to fiscal 1993's presentation.

18. SUBSEQUENT EVENTS:
The Trust, at the request of the Museum, intends to issue new bonds in fiscal 1994 with expected proceeds of approximately $26,700,000 in order to defease the callable portion of its Series 1991A Revenue Bonds amounting to $22,610,000 as of June 30, 1993. The net proceeds from the sale of the new bonds will be deposited into an escrow account and used to pay the interest and principal payments of the original bonds, when due. It is expected that this action will reduce the Museum's annual interest payments.
REPORT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

To the Board of Trustees of the American Museum of Natural History:

We have audited the accompanying balance sheets of the American Museum of Natural History as of June 30, 1993 and 1992, and the related statements of revenue, support and expenses of operating funds, and statements of changes in fund balances for the years then ended. These financial statements are the responsibility of the Museum’s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the American Museum of Natural History at June 30, 1993 and 1992, and the results of its operations and changes in its fund balances for the years then ended, in conformity with generally accepted accounting principles.

Coopers & Lybrand

New York, New York
October 1, 1993
### PLANETARIUM FINANCIAL STATEMENTS

#### BALANCE SHEETS AS OF JUNE 30, 1993 AND 1992

<table>
<thead>
<tr>
<th>ASSETS:</th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>$133,173</td>
<td>$317,366</td>
</tr>
<tr>
<td>Investments - Note 2</td>
<td>2,212,186</td>
<td>2,060,946</td>
</tr>
<tr>
<td>Accounts receivable and other assets</td>
<td>202,603</td>
<td>6,406</td>
</tr>
<tr>
<td>Planetarium shop inventory</td>
<td>54,707</td>
<td>45,083</td>
</tr>
<tr>
<td>Plant and equipment - at cost:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building</td>
<td>1,019,210</td>
<td>1,019,210</td>
</tr>
<tr>
<td>Building improvements</td>
<td>1,613,130</td>
<td>1,577,160</td>
</tr>
<tr>
<td>Zeiss Planetarium instruments</td>
<td>221,928</td>
<td>221,928</td>
</tr>
<tr>
<td></td>
<td>2,854,268</td>
<td>2,818,298</td>
</tr>
<tr>
<td>Less: Accumulated depreciation</td>
<td>(2,239,009)</td>
<td>(2,127,839)</td>
</tr>
<tr>
<td>Net plant and equipment</td>
<td>615,259</td>
<td>690,459</td>
</tr>
<tr>
<td>TOTAL ASSETS</td>
<td>$3,217,928</td>
<td>$3,120,260</td>
</tr>
</tbody>
</table>

#### LIABILITIES, CONTRIBUTED CAPITAL AND FUND BALANCES:

<table>
<thead>
<tr>
<th>Liabilities:</th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts payable and accrued expenses</td>
<td>$313,543</td>
<td>$260,893</td>
</tr>
<tr>
<td>Accrued employee benefit costs</td>
<td>181,399</td>
<td>170,666</td>
</tr>
<tr>
<td>4 1/2% Refunding Serial Revenue Bonds, past due - Note 3</td>
<td>570,000</td>
<td>570,000</td>
</tr>
<tr>
<td>Accrued interest, past due</td>
<td>315,450</td>
<td>315,450</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>1,380,392</td>
<td>1,317,009</td>
</tr>
<tr>
<td>Contributed Capital:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charles Hayden</td>
<td>156,869</td>
<td>156,869</td>
</tr>
<tr>
<td>Charles Hayden Foundation</td>
<td>429,455</td>
<td>429,455</td>
</tr>
<tr>
<td>The Perkin Fund</td>
<td>400,000</td>
<td>400,000</td>
</tr>
<tr>
<td>Total Contributed Capital</td>
<td>986,324</td>
<td>986,324</td>
</tr>
<tr>
<td>Fund Balances - Note 4</td>
<td>851,212</td>
<td>816,927</td>
</tr>
<tr>
<td>TOTAL LIABILITIES, CONTRIBUTED CAPITAL AND FUND BALANCES</td>
<td>$3,217,928</td>
<td>$3,120,260</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
## STATEMENTS OF ACTIVITY AND FUND BALANCES
FOR THE YEARS ENDED JUNE 30, 1993 AND 1992

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission fees, net</td>
<td>$1,364,954</td>
<td>$1,407,201</td>
</tr>
<tr>
<td>Planetarium shop sales</td>
<td>207,507</td>
<td>234,838</td>
</tr>
<tr>
<td>Special lectures and courses</td>
<td>37,885</td>
<td>55,477</td>
</tr>
<tr>
<td>Gifts, bequests and grants</td>
<td>5,000</td>
<td>8,500</td>
</tr>
<tr>
<td>Income from investments</td>
<td>168,929</td>
<td>119,712</td>
</tr>
<tr>
<td>Other revenue, net</td>
<td>145,271</td>
<td>128,385</td>
</tr>
<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td>1,929,546</td>
<td>1,954,113</td>
</tr>
<tr>
<td><strong>EXPENSES:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation, presentation and promotion</td>
<td>782,044</td>
<td>691,985</td>
</tr>
<tr>
<td>Operation and maintenance</td>
<td>324,244</td>
<td>379,582</td>
</tr>
<tr>
<td>General and administrative</td>
<td>186,311</td>
<td>188,518</td>
</tr>
<tr>
<td>Planetarium shop expenses</td>
<td>207,080</td>
<td>210,741</td>
</tr>
<tr>
<td>Special lectures and courses</td>
<td>35,568</td>
<td>33,633</td>
</tr>
<tr>
<td>Special purpose programs and projects</td>
<td>5,594</td>
<td>7,490</td>
</tr>
<tr>
<td>Laser program expenses</td>
<td>217,600</td>
<td>220,196</td>
</tr>
<tr>
<td>Interest on past-due 4 1/2% Refunding Serial Revenue Bonds</td>
<td>25,650</td>
<td>25,650</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES BEFORE DEPRECIATION</strong></td>
<td>1,784,091</td>
<td>1,757,795</td>
</tr>
<tr>
<td><strong>EXCESS OF REVENUE OVER EXPENSES</strong></td>
<td>145,455</td>
<td>196,318</td>
</tr>
<tr>
<td>Depreciation expense</td>
<td>111,170</td>
<td>125,008</td>
</tr>
<tr>
<td><strong>EXCESS OF REVENUE OVER EXPENSES</strong></td>
<td>34,285</td>
<td>71,310</td>
</tr>
<tr>
<td>Balances, beginning of year</td>
<td>816,927</td>
<td>745,617</td>
</tr>
<tr>
<td><strong>BALANCES, END OF YEAR</strong></td>
<td>$851,212</td>
<td>$816,927</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
NOTES TO FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Fund Accounting - The accounts of the American Museum of Natural History, Planetarium Authority ("Planetarium") are maintained in accordance with the principles of fund accounting in order to abide by the limitations and restrictions placed on the use of the resources available to the Planetarium. Revenue received and expenses incurred for specified purposes are classified for accounting and financial reporting purposes into individual funds for which separate accounts are maintained. However, for reporting purposes in the accompanying financial statements, all funds have been combined.

Cash - The Planetarium deposits cash with large, well-known financial institutions. At times such deposits may be in excess of the Federal Deposit Insurance Corporation limits.

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

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

Plant and Equipment - The land utilized by the Planetarium was donated by the City of New York ("City"). In the event the Planetarium discharges all its liabilities, including bonds, the real property reverts to the City. As of June 30, 1993 and 1992, the building had been fully depreciated. Major building improvements and equipment purchases are capitalized at cost and depreciated by the straight-line method over their useful lives.

New Pronouncements - In June 1993, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards No. 116, "Accounting for Contributions Received and Contributions Made," which significantly changes the methods by which organizations account for contributions. This statement mandates that contributions received, including unconditional promises to give (pledges), are recognized as revenues at their fair values in the period received. As of June 30, 1993 and 1992, the Planetarium had no pledges receivable.

At the same time, FASB issued Statement of Financial Accounting Standards No. 117, "Financial Statements of Not-for-Profit Organizations." The implementation of this standard will require the Planetarium, among other things, to restate total fund balances into three categories - unrestricted net assets, temporarily restricted net assets, and permanently restricted net assets - and to report the net change in each of the three classes of net assets as well as the change in total net assets in a statement of activity. In addition, the Planetarium will be required to report the change in its cash and cash equivalents in a statement of cash flows.

The Planetarium will be required to comply with FASB No. 116 and No. 117 no later than fiscal year ending June 30, 1996. The impact of adopting these statements has not been determined at this time.

2. INVESTMENTS:

Investments as of June 30, 1993 and 1992 consist of short-term investments and an interest in a fixed income mutual fund. The short-term investments at June 30, 1993 and 1992 were carried at a cost of $1,150,000 and $1,550,000, respectively, which approximately fair value. The interest in the fixed income mutual fund at June 30, 1993 and 1992 is carried at a cost of $1,062,186 and $510,946, respectively, with a fair value of $1,104,956 and $540,376, respectively. The fair value of the Planetarium's interest in the fund is based on the fair value of the fixed income securities in the fund, as determined by an independent pricing agency.

The Planetarium is exposed to credit risk in the event of nonperformance by the issuers of short-term investments and fixed income securities held by the Planetarium. However, the Planetarium does not anticipate such nonperformance as it generally invests in financial instruments issued by entities with high credit ratings.

3. REVENUE BONDS:

The Planetarium's 4 1/2% Refunding Serial Revenue Bonds are owned by the American Museum of Natural History ("Museum"). The Charles Hayden Foundation contributed $200,000 to the Museum toward the purchase of such bonds.

The fair value of the Planetarium bonds has been determined by management to be approximately $390,000 at June 30, 1993 and 1992, based on the net present value of future cash flows discounted at a rate of 6.5%.

4. FUND BALANCES:

Included in fund balances is approximately $131,000 as of June 30, 1993 and 1992 restricted by donors for specific purposes.

5. RELATED PARTY TRANSACTIONS:

The Planetarium and the Museum are separate legal entities which share the same Board of Trustees and Officers.

The Museum provides certain services, such as insurance, accounting and maintenance, to the Planetarium. The aggregate charges for these services in fiscal 1993 and 1992 were $203,535 and $208,385, respectively.

The Planetarium reimburses the Museum for actual payroll costs for its staff. It also reimburses the Museum for all employee benefit costs, including pension, which are calculated as a percentage of payroll and amounted to $198,772 and $177,608 in fiscal 1993 and 1992, respectively. The Planetarium also paid the Museum $42,768 and $48,240 in fiscal 1993 and 1992, respectively, for visitors who entered the Museum from the Planetarium.

As of June 30, 1993 and 1992, the Planetarium owed the Museum $153,814 and $84,486, respectively, for various services. These amounts are included in accounts payable and accrued expenses on the balance sheets.

6. TAX STATUS:

The Planetarium is a not-for-profit organization exempt from corporate federal income tax under Section 501(c)(3) of the Internal Revenue Code.
REPORT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

To the Board of Trustees of the American Museum of Natural History Planetarium Authority:

We have audited the accompanying balance sheets of the American Museum of Natural History Planetarium Authority as of June 30, 1993 and 1992, and the related statements of activity and fund balances. These financial statements are the responsibility of the Planetarium’s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the American Museum of Natural History Planetarium Authority at June 30, 1993 and 1992, and the results of its operations and changes in its fund balances for the years then ended, in conformity with generally accepted accounting principles.

New York, New York
October 1, 1993
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Board of Trustees
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Frederick A. Klingenstein,
Vice Chairman
Anne Sidamon-Eristoff,
Vice Chairman
Henry G. Walter, Jr.,
Vice Chairman
L.F. Boker Doyle,
Secretary
Charles H. Mott,
Treasurer
Robert G. Goelert,
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(as of June 30, 1993)

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Commissioner of the
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Commissioner, Department
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Betsy Gotbaum,
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James S. Rockefeller
Oscar S. Straus, II
Edwin Thorne
Thomas J. Watson, Jr.

* Deceased
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Plato Malozenoff
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* chairman through May 1993

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Lansing Lamont
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Gerard Piel
Frederick P. Rose
Jack Rudin
Frederick Seitz
Anne Sidamon-Eristoff
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