

SMITHSONIAN INSTITUTION

Budget Justifications for Fiscal Year 1988



Submitted to the Committees on Appropriations
Congress of the United States

January 1987

SMITHSONIAN INSTITUTION

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THE SECRETARY*

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National Portrait Gallery
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Smithsonian National Associate
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Assistant Secretary for RESEARCH*

International Environmental Science
Program
Joseph Henry Papers
National Zoological Park
Office of American Studies
Office of Exhibits Central
Smithsonian Astrophysical Observatory
Smithsonian Environmental Research Center
Smithsonian Institution Archives
Smithsonian Institution Libraries
Smithsonian Tropical Research Institute

Assistant Secretary for MUSEUMS*

Anacostia Neighborhood Museum
Archives of American Art
Center for Asian Art
Freer Gallery of Art
Arthur M. Sackler Gallery
Cooper-Hewitt Laboratory
Cooper-Hewitt Museum
Hirshhorn Museum and Sculpture Garden
National Air and Space Museum
National Museum of African Art
National Museum of American Art
National Museum of Natural History
Museum of Man
Museum Support Center
National Museum of Cultural History
Office of Exhibits Central
Office of Horticulture
Office of Museum Programs
Office of Map Research
Smithsonian Institution Training
Foundation Services

Assistant Secretary for PUBLIC SERVICE*

Office of Elementary and Secondary
Education
Office of Folklife Programs
Office of Public Affairs
Office of Smithsonian Symposia and
Special Events
Office of Telecommunications
Smithsonian Institution Press
Smithsonian Magazine
Visitor Information and Associates
Reception Center

Assistant Secretary for ADMINISTRATION*

Contracts Office
Management Analysis Office
Office of Congressional Liaison
Office of Equal Opportunity
Office of Facilities Services
Office of Information Systems
and Historic Preservation
Office of Design and Construction
Office of Plant Services
Office of Protection Services
Office of Priority Programs
Office of Information Resource
Management
Office of Personnel Administration
Office of Printing and Photographic
Services
Office of Procurement and Budget
Management
Office of Special Services
Office of Supply Services
Travel Services Office

*Smithsonian Management Committee

SMITHSONIAN INSTITUTION

FISCAL YEAR 1988 ESTIMATES OF APPROPRIATIONS

TABLE OF CONTENTS

	<u>PAGE</u>
ORGANIZATION OF THE SMITHSONIAN INSTITUTION	
INTRODUCTION.....	1
SALARIES AND EXPENSES	
Summary Tables	9
Uncontrollable Increases.....	12
<u>Research</u>	
Office of the Assistant Secretary.....	20
Smithsonian Astrophysical Observatory.....	24
Smithsonian Tropical Research Institute.....	35
Smithsonian Environmental Research Center.....	44
National Zoological Park.....	48
Smithsonian Institution Archives.....	56
Smithsonian Institution Libraries.....	59
<u>Museums</u>	
Office of the Assistant Secretary.....	65
National Museum of Natural History/Museum of Man.....	68
National Air and Space Museum.....	76
National Museum of American History.....	85
National Museum of American Art.....	94
National Portrait Gallery.....	100
Hirshhorn Museum and Sculpture Garden.....	108
Center for Asian Art.....	112
Archives of American Art.....	120
Cooper-Hewitt Museum.....	123
National Museum of African Art.....	128
Anacostia Neighborhood Museum.....	136
Conservation Analytical Laboratory.....	141
Office of Exhibits Central.....	146
Smithsonian Institution Traveling Exhibition Service.....	149
<u>Public Service</u>	
Office of the Assistant Secretary.....	153
Smithsonian Institution Press.....	157

Directorate of International Activities..... 161

Special Programs

American Studies and Folklife Programs..... 169
International Environmental Science Program..... 173
Academic and Educational Programs..... 178
Museum Support Center..... 184

Administration..... 190

Facilities Services

Office of Design and Construction..... 200
Office of Protection Services..... 203
Office of Plant Services..... 208

MUSEUM PROGRAMS AND RELATED RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)..... 213

FACILITIES PLANNING, RENOVATION, RESTORATION, AND CONSTRUCTION

Construction and Improvements, National Zoological Park..... 217
Restoration and Renovation of Buildings..... 219
Construction - F.L. Whipple Observatory Base Camp..... 234

APPENDIX

Appropriation by Object Class, Salaries & Expenses..... A-1
Visitors to Smithsonian, FY 1982 - FY 1986 A-2
Columbus Quincentenary..... A-3
Smithsonian Institution, Financial Summary, FY 1986 - FY 1988..... A-5
Treasurer's Report - FY 1986 A-6
Adjustments to FY 1987 Appropriation A-54

SMITHSONIAN INSTITUTION
FY 1988 Budget Request
(\$000's)

<u>APPROPRIATION ACCOUNT</u>	<u>FY 1986 APPROPRIATION</u>	<u>FY 1987 APPROPRIATION</u>	<u>FY 1988 REQUEST</u>
Salaries and Expenses	\$ 169,384	\$ 183,920	\$ 204,862
Construction	3,805	6,095	4,470
Restoration and Renovation	10,536	12,975	14,254
Zoo Construction	5,281	2,500	5,150
Special Foreign Currency	2,378		
TOTAL	<u>\$ 191,384</u> =====	<u>\$ 205,490</u> =====	<u>\$ 228,736</u> =====

INTRODUCTION

The formulation of the Smithsonian Institution's FY 1988 budget request was initiated under the assumption that the Balanced Budget and Emergency Deficit Control Act of 1986 would allow for only very limited program growth in only those areas of critical importance to the future of the Institution. With this assumption in mind, each of the Institution's bureaus and offices was instructed to develop an FY 1988 budget which gave priority to uncontrollable costs and those activities required by law. In addition, through a careful assessment of its base resources, the Institution embraced the opportunity to redirect funds from low priority activities and from certain nonrecurring costs to other new requirements, higher priority activities, promising new initiatives and support functions where troubling budget deficiencies have existed for some time. The Smithsonian Institution's FY 1988 budget request therefore recognizes the new era of constrained Federal resources, and at the same time it reflects a continuing emphasis on research, collections management and inventory control and a commitment to establish an adequate level of safety and security programs consonant with statutory and regulatory requirements. Without a careful balance between the resources dedicated to these various efforts, the Institution would find it increasingly difficult to effectively fulfill its mandate to increase and diffuse knowledge in the years ahead.

ORGANIZATION AND GOALS -- Founded in 1846, the Smithsonian Institution is an independent Federal establishment devoted to public education, research and national service in the arts, sciences and history. Centered on the Mall in Washington, D.C., the Institution operates major facilities and activities throughout the country and overseas. It is one of the world's leading research centers and encompasses the world's largest museum complex, attracting millions of visitors annually to its museums, galleries and zoological park. Many others also view Smithsonian traveling exhibitions, which appear across the United States and abroad, and the annual Folklife Festival. As custodian of the National Collections, the Smithsonian possesses more than 100 million art objects, natural history specimens and artifacts. These collections are displayed for the enjoyment and education of visitors and are available for research by the staff of the Institution and by hundreds of visiting students, scientists and historians each year. Other significant study efforts draw their data and results directly from terrestrial, marine and astrophysical observations at various Smithsonian installations.

The Smithsonian complex presently consists of 13 exhibition buildings on and near the Mall in Washington, D.C. and New York City in the fields of science, history, technology and art; a zoological park in Washington, D.C. and an animal conservation and research center near Front Royal, Virginia; the Anacostia Neighborhood Museum, which performs research and exhibit activities in a low income area of the city in cooperation

with the community; a preservation, storage and air and spacecraft display facility at Suitland, Maryland; two natural preserves, in Panama and on the Chesapeake Bay; an oceanographic research facility at Link Port, Florida; astrophysical stations in Massachusetts and Arizona; and supporting administrative, laboratory and storage areas.

The mandate of the Smithsonian Institution is to promote the increase and diffusion of knowledge. To accomplish this mandate, the Smithsonian conducts a broad variety of programs alone and in cooperation with other institutions, universities and government agencies in the United States and abroad. These programs include:

- Collections Management: The Smithsonian Institution has the legal responsibility (20 U.S.C. 59) to serve as the official repository of the National Collections, which contain more than 100 million art, technological and cultural history objects and natural history and anthropological specimens and artifacts. The responsibility involves the acquisition, documentation and conservation of these materials, along with detailed record keeping and cataloguing, regular inventories and storage or display in secure and atmospherically controlled environments.
- Basic Research: The Smithsonian, by virtue of its staff, collections, data bases and research facilities, is a unique international resource in basic research. Complementing industrial, Federal and university research, the Smithsonian's long-term research activities provide critical continuity to the Nation's research enterprise in a number of disciplines. Smithsonian research also serves as the foundation for the Institution's public activities. The accuracy and currency of the Institution's exhibitions and the quality of its public education programs depend directly on the research of the staff.
- Exhibitions, including performances and festivals or celebrations: These presentations constitute one means of diffusing knowledge on a wide scale. In Washington, D.C. and New York City, Smithsonian museums, galleries and the zoological park devote exhibit space to showing significant objects, specimens and animals from the permanent collections. In addition, temporary exhibitions with loan materials enhance these presentations, adding fresh concepts and ideas--further enriching visitor experiences. Through the Smithsonian Institution Traveling Exhibition Service, approximately 120 exhibitions are seen annually by millions of people in most states and the District of Columbia. Live performances, festivals, celebrations, lectures and records also are enjoyed by millions of people.
- Education: Education programs of the Institution offer enormous variety in content and form; they range from in-depth, scholarly symposia to activities for fun and enjoyment and reach all ages from young children to senior citizens. They include classes and workshops, guided tours by trained docents, and radio, television and motion picture programs, sponsored by the individual museums and by centralized offices including Fellowships and Grants, Symposia and Seminars, and Elementary and Secondary Education. A significant aspect of the education effort involves production each year of several hundred publications, including museum catalogues, books, scholarly monographs, articles, papers, the Archives of American Art Journal, the Smithsonian magazine, which is received by over 2 million Associates' families and the new Air and Space Smithsonian magazine. At any given time, there are likely to be two to three hundred visiting scholars, scientists and students working throughout the Institution in various collections, laboratories and offices. Finally, as another educational endeavor, the Institution offers assistance to museums across the country and abroad by conducting museum training courses, producing and distributing audio-visual programs on conservation

principles and techniques, and by awarding grants for professional museum training and research.

--Collections Acquisition: The Smithsonian museums acquire works of art, artifacts and specimens and other objects in three ways: by collecting, by donation and by purchase. Collecting and donation are and will continue to be the major means for acquiring materials for the collection. However, donations and gifts of collections, for the most part, do not lend themselves to planned development. If the Institution's research and exhibition programs are to thrive, the collections must grow by thoughtful design. To meet this responsibility and challenge, the Smithsonian provides funding specifically for collections acquisition for the museums. Some Federal funds are requested each year to permit regular planned purchases.

In order to carry out these functions, the Institution's administrative and facilities services units provide the required support. The Smithsonian has the responsibility for the maintenance, operation and protection of a large complex of museum and gallery buildings and other facilities and for the safety and health of visitors and staff. The Institution also provides architectural and engineering services for major repairs, alterations and improvements to the physical plant.

FY 1988 BUDGET HIGHLIGHTS -- During FY 1986, the Smithsonian Institution was reorganized to achieve strengthened coordination and oversight of related programs. The line responsibilities of the former positions of Assistant Secretary for History and Art and for Museum Programs were combined under the Assistant Secretary for Museums. All museums and closely related program and support activities are assigned to this position. Similarly, the position of Assistant Secretary for Research was established, replacing the Assistant Secretary for Science, with direct responsibility for the Institution's research programs and closely related support activities. The following chart summarizes the requested increases in Salaries and Expenses for FY 1988 reflecting the new organizational structure (\$000):

	<u>FY 1987/1</u> <u>Base</u>	<u>Uncontrollable</u> <u>Increases</u>	<u>Program</u> <u>Increases</u>	<u>FY 1988</u> <u>Request</u>
Research	\$35,301	\$ 708	\$1,352	\$37,361
Museums	72,515	1,607	1,426	75,548
Public Service	2,464	63	-25	2,502
Directorate of Internat'l Activities	638	13	257	908
Special Programs	6,782	. 67	153	7,002
Administration	15,736	5,706	914	22,356
Facilities Services	<u>56,364</u>	<u>1,649</u>	<u>1,172</u>	<u>59,185</u>
Total	\$189,800	\$9,813	\$5,249	\$204,862

/1 Includes FY 1987 requirement for legislated pay raises; increased costs associated with the new Federal Employees Retirement System; and the restoration of the \$862,000 transferred to the R&R account in the FY 1987 appropriation process for construction to accommodate SERC-Rockville activities transferred to SERC-Edgewater.

The Smithsonian Institution's FY 1988 budget request in the Salaries and Expenses account totals \$204.9 million. As in FY 1987, continuing high priority is given to research activities and support for them. The Institution includes in this budget a redirection of funds available from the closure of the Smithsonian Environmental Research Center's Rockville facility to provide a molecular capability in the Institution aimed at enhancing systematic and evolutionary biology, by blending the latest research techniques to its traditional scientific efforts. Another priority is the request for funds to furnish and equip the Tropical Research Institute's new Tupper Laboratory and Conference Center, which will become operational by the end of FY 1988, and to maintain and administer this facility and support the research staff who will utilize it. Equally high in importance is the request for additional staff to support new facilities at the National Zoological Park and to meet needs for safe and healthy care of animals. A new research initiative is also proposed in the areas of Arctic anthropology, archeology and biology for the National Museum of Natural History. Research will be conducted by a National Arctic Studies Center, which is in response to the Arctic Research and Policy Act of 1984, and concerns raised about the effects of economic development, urbanism and communication on the Arctic region. In addition, the Smithsonian Astrophysical Observatory (SAO) requests funds to further develop technology for submillimeter receivers and also to build receivers for use on existing telescopes. SAO is also requesting funds to initiate work to convert and upgrade its Multiple Mirror Telescope at Mount Hopkins, Arizona. The current six-mirror telescope will be converted using new technology to a much larger single-mirror telescope that will allow the Smithsonian Institution to retain its leadership role in optical astronomy.

Enhancements to base level inventory programs at the National Museum of Natural History (NMNH) and the National Museum of American History (NMAH) are also requested. The enhancement for NMNH is essential to increase the level of refinement of the current inventory, while the enhancement for NMAH is important in that museum's efforts to eliminate the continually growing backlog of inventory records. In addition, resources are requested for the National Museum of Natural History, to further expand automated inventory management and to pay related computer usage costs, and for the Freer Gallery of Art for collection storage equipment and furnishings.

The Smithsonian Institution's FY 1988 budget request also provides increased emphasis to health and safety issues. Specifically, the Office of Environmental Management and Safety is requesting new funds to address important requirements related to the disposal of hazardous waste, asbestos abatement, fire protection and prevention, and hazard communication. In addition, the Institution plans to strengthen its safety programs, as well as its facilities maintenance and planning and plant services programs, through increased automation. Additional computer capability is requested for the Office of Environmental Management and Safety, the Office of Design and Construction and the Office of Facilities Services. Additional staff would accompany the automated support for the Office of Facilities Services to provide a strengthened planning capability that will allow for the definition of short- and long-term physical requirements, the assessment of alternative solutions and the development of preliminary plans and cost estimates as necessary facilities modifications and additions are identified.

The FY 1988 budget request also gives high priority to ensuring that an adequate level of resources is made available in several important support areas. For the past two years, the budget for the Office of Accounting and Financial Services has been inadequate to cover the actual costs of computer usage. The problem will worsen in FY 1988 if not addressed, since acquisition of new financial systems will require parallel processing for a period of three to six months. In addition to funds redirected from within base resources to address the full staffing requirements of the Office of Protection Services, funds are also requested to address a serious long-term imbalance in the resources available to adequately operate, maintain and service the Smithsonian's various facilities. For each of the past five years, it has been repeatedly necessary to

reprogram funds to the Office of Plant Services from research, collections management, exhibitions and other public service programs to pay these costs. In addition funds are requested for the Offices of Personnel Administration and Procurement and Property Management to provide adequate base support in recognition of increased regulatory and workload requirements.

The Quadrangle, which has been under construction since October, 1983, is scheduled to open to the public in September, 1987. Funds requested in this budget will establish the necessary base for a fully operational level of program and support efforts associated with this new facility.

To plan and prepare exhibitions and events to commemorate the Bicentennial of the Constitution and the Columbus Quincentenary, the Smithsonian Institution will redirect FY 1987 base funds provided for these same purposes. However, some additional funds are requested for a variety of exhibitions and events at several of the Institution's museums and galleries.

Additional support for educational outreach programs is also requested in FY 1988. With these funds, the National Science Resources Center will work in collaboration with state and local school systems, science museums, professional and scientific organizations and scientists from universities and industry to organize programs to improve the teaching of science and mathematics.

Finally, funds are sought in FY 1988 to finance costs that are beyond the control of the Institution. These costs include legislated pay raises, workers' compensation, and the increased costs of the new Federal Employees Retirement System, utilities, and rent.

On the capital outlays side, the Smithsonian Institution is requesting \$14,254,000 in Restoration and Renovation funds, much of which is required to address a backlog of serious facilities maintenance needs. Included in the request are projects estimated at \$1 million or more for the National Museum of American History, the Smithsonian Institution Building, and the Tropical Research Institute. In the Construction account, \$4,470,000 is requested to construct a base camp at the Whipple Observatory. The request for the Construction and Improvements, National Zoological Park account, includes funding for the renovation of the final section of the Olmsted Walk and other renovation, repair, and preventive maintenance projects at the Rock Creek and Front Royal facilities.

NONAPPROPRIATED SOURCES OF FUNDING

In addition to the support provided by Federal appropriations, the Institution also provides nonappropriated funds to expand and enrich its programs. The nonappropriated fund activities (Trust funds) are presented along with the Federal budget request to provide an overview of all uses of funds for each Smithsonian bureau. It must be emphasized that the estimates for Trust funds are subject to change due to the unpredictability of donations, grants and contracts to the Institution, fluctuations in visitor attendance and uncertain economic factors, which affect restaurant, mail order and shop revenues, Associates' memberships and other auxiliary activities. The Institution's gross operating revenue, less the expenses of the auxiliary activities, represents the net operating revenue available for programmatic and other worthwhile purposes.

The FY 1987 Trust budget comprises approximately 25 percent of net operating revenues. Included in the above are Federal grants and contracts received from government agencies and are expected to total \$18 million in FY 1987. Gross revenues of Trust funds

(excluding Federal grants and contracts) are expected to continue to grow as in previous years and reach \$192 million in FY 1987. Net income, however, is projected in the \$45 million to \$49 million range (of which \$18 million is projected for restricted purposes).

The Trust funds are composed of unrestricted funds, restricted funds and Federal grants and contracts and are applied in the following manner:

Unrestricted Funds

General - General unrestricted funds are generated from: short-term investment income; unrestricted endowment income; and net proceeds from museum shops and food service concessions, sales of Smithsonian books, records and other products based on designs and objects in the collections, and the Resident Associate and National Associate Programs (including Smithsonian magazine and the new Air and Space magazine). Central management and administrative service units of the Institution, such as legal counsel, accounting, personnel, procurement and budget, receive Trust allotments from the General fund. These administrative costs are primarily funded from overhead recovery on grants and contracts received by the Smithsonian and from internal administrative fees charged to other Trust-funded activities. General funds are also provided to various activities, such as the Visitor Information and Associates' Reception Center, the Cooper-Hewitt Museum, Smithsonian Tropical Research Institute, Office of Telecommunications and the Office of Folklife Programs, along with a variety of program allotments for important Institutional and bureau needs as approved by the Board of Regents.

Special Purpose - These funds are generated by income-producing activities operated by the various bureaus and offices, the largest of which are the Theater and Spacearium operations of the National Air and Space Museum. Special Purpose funds also include: miscellaneous bureau revenues from the sale of posters, exhibit brochures and publications; tuition reimbursement from universities; the museums' share of sales in the restaurant and museum shops; membership and admission fees; exhibit rental; and investment income from current fund balances.

Beginning in FY 1979, the Board of Regents approved transferring General funds to Special Purpose funds for certain programs previously financed with appropriated funds. These include the Institution's various fellowship programs (FY 1987 allotment of \$2.6 million) and the appropriate Trust fund share of rental costs of administrative units in L'Enfant Plaza, funded in part from rental payments by auxiliary activities occupying space on The Mall (FY 1987 allotment of \$961,000). Special Purpose funds are also created by transfers from the General fund for award programs such as the Institution's Collections Acquisition, Scholarly Studies and Educational Outreach Program, the Research Opportunities Fund, the Smithsonian Society Awards Program and the Special Exhibition Fund. Of the \$3 million approved annually, for the Collections Acquisition, Scholarly Studies and Educational Outreach Program, an amount of \$1.2 million is available for purchase of outstanding objects of importance to the collections. In FY 1986, the Sackler Gallery purchased the Vever collection of magnificent Islamic and Persian Art consisting of 39 volumes, 291 miniatures, 98 calligraphies and illuminations, 29 book-bindings, 4 textiles and examples of almost all of the classical Persian texts known. The Hirshhorn Museum and Sculpture Garden acquired the sculpture, "Soft Engine for Air flow with Fan Transmission-Scale 5 (Model)", by Claes Oldenburg; a bronze sculpture, Cronos, by Isamu Noguchi, one of this century's most significant sculptors; and an oil on canvas painting, Berkeley #22, by Richard Diebenkorn. In addition, the National Museum of American History acquired three clockwork objects: an orrery, by Aaron Willard, Jr., which is a mechanical model of the solar system, made about 1825, and the earliest signed American orrery and one of the earliest signed American scientific instruments ever to come on the market; a tall case clock, signed by Peter Stretch and dated between 1702 and 1715, which is among the earliest clocks made in this country; and

a tall case clock signed by David Rittenhouse, the leading American clockmaker, instrument maker and astronomer of the 18th century.

An additional amount of \$1.2 million is designated by the Program for innovative scholarly research projects which by definition do not lend themselves to or cannot be accommodated in a timely manner into the Federal budget process. These include multidisciplinary research projects that can be conducted within and between bureaus and projects that may have also been awarded external funds, requiring additional matching Trust support. For example, scientists at the National Museum of Natural History/Museum of Man are conducting research on the paleoecology and behavior of early Pleistocene hominids of East Africa. Study sites are located in areas where the earliest evidence of man has been found and form a more definitive picture of their habitats approximately 1.5 to 0.5 million years ago. Another important study by scientists at the National Zoological Park focuses on the issues of behavior and nutrition in the growth rates of carnivores. Using two species, the Red Panda and the Black Bear, scientists wish to explore what role food, and its relative availability, have on growth rates and animal reproduction. By identifying certain foods that are key to an animals' development, researchers will be able to assist zoos in planning diets for animals in captivity to allow adequate reproduction for species survival. In the National Museum of American History, scholars are in the process of examining the role of science and technology in contemporary America. This research is directed toward providing the educated lay public with an understanding of the role of science and technology and its continuing impact on contemporary society. Relying on first hand documentation of selected research communities, scholars hope to show how active researchers view themselves, and how these individuals function within the larger national society.

The remaining \$550,000 of the \$3 million available for this Program is allocated to conduct a wide range of educational outreach programs of benefit to the public. For example, a three-day conference brought together leading scientists and educators from across the country to discuss the teaching of science in elementary schools and to make recommendations for its improvement. Funds also have gone to support the development of a career awareness program manual for museum professionals, school teachers and administrators to help them establish similar programs in their own communities. Teacher workshops, and other activities to help teachers enhance student awareness of today's space-age technology, also have been funded. The program also has contributed to the development of a conceptual and implementational design to assist Smithsonian scholarly, educational and outreach programs in expanding minority community participation in Smithsonian activities.

In addition, the Program has supported the following outreach activities: a National Teleconference on Biodiversity that will explore the rapid destruction of the Earth's natural habitats and subsequent loss of plant and animal species; reference guides on tropical forest conservation; the production of innovative programs on Paul Robeson, and the play, "Hughie," by Eugene O'Neill, which was performed by deaf actors; a symposium on Rhythm and Blues; the production of a variety of films including one that examined the role of horticulture in a museum setting and the interrelations between horticulture, decorative arts and the conservation of plant species; a film to accompany the exhibition "Magnificent Voyagers" for use in secondary schools and on cable TV; and "SI Quest," a film to encourage upper elementary school children to think in multidisciplinary terms.

In FY 1985, the Board of Regents approved an annual Trust-fund allocation for the Special Exhibition Fund. The cost of exhibition programs has generally been met with Federal funds which will continue to provide the predominant financing for the Institution's overall exhibition effort, with supplemental donations being provided by individuals, foundations and corporations. Administered similarly to the Collections Acquisition, Scholarly Studies and Educational Outreach Program, the Special Exhibition

Fund, with \$2.7 million in FY 1987, will increase opportunities within the Institution to create exhibitions in the sciences and the humanities that interpret various collections and that increase the public's understanding of our heritage. In FY 1986, Special Exhibition awards partially supported ten exhibitions, including two inaugural exhibitions in the new Quadrangle facility. "The Fabric of Life: West African Weaving Traditions" will use 40 examples of west African woven cloths to provide an overview of the history, traditional technology and artistry of the region. "Generations: Birth Rituals and the Roots of Becoming" will open in the gallery of the Directorate of International Activities and will provide a cross-cultural, multi-disciplinary investigation of art and rituals associated with birth and infancy from ancient times to the present. Among other funded exhibitions are "Tropical Rainforests: A Disappearing Treasure," featuring the diversity of rainforests, threats to their existence and efforts to preserve these areas, and "Crossroads of Continents," an anthropological study of the development of the complex cultures in the Bering Sea and north Pacific areas.

Restricted Funds

Restricted Trust funds include gifts, grants and endowments from individuals, foundations, organizations and corporations which specify the use of the donation or bequest. Generally, these funds provide support for a particular exhibit or research project. The Freer fund is the largest restricted endowment of the Institution. It is strictly controlled under the terms of the original gift and bequest for the sole use of the Freer Gallery of Art.

Federal Grants and Contracts

Federal grants and contracts are provided by various agencies and departments for special projects which can be conducted at the Smithsonian because of its expertise in a particular area of science, history, art or education, and because of its ability to respond quickly to certain kinds of needs.

SALARIES AND EXPENSES

SMITHSONIAN INSTITUTION

SALARIES AND EXPENSES

Summary of FY 1988 Increases

FY 1987 Appropriation	\$183,920,000
Base Legislated Pay Requirements	5,018,000
Base Environmental Research Center Funding <u>/1</u>	<u>862,000</u>
FY 1987 Base	\$189,800,000
FY 1988 Requested Increases:	
Uncontrollable Pay Increases.	8,650,000
Other Uncontrollable costs	1,163,000
Program Increases	<u>5,249,000</u>
FY 1988 Request	\$204,862,000

/1 Transferred from Salaries and Expenses to the Restoration and Renovation of Buildings account in the FY 1987 appropriation process for construction to accommodate SERC-Rockville activities transferred to SERC-Edgewater.

FY 1986 REQUEST

ACCOUNT, Bureau	Item	FTE	FTE	Dollars
Museums (Cont.)				
Museum of African Art	Annualization of FY 1987 approved positions (Quad)	0	3.25	95
Museum of African Art	Assistant for Central African art	1	1.00	25
Museum of African Art	Automated systems development	1	1.00	40
Museum of African Art	Funds for shipping major loan exhibitions	0	0.00	65
Anacostis Neighborhood Museum	Termination of Carver Theater lease	0	0.00	25
Anacostia Neighborhood Museum	Research and exhibition enhancement	0	0.00	35
Office of Exhibits Central	Exhibitions and program support	1	1.00	31
Office of Exhibits Central	Annualization of FY 1987 approved position (Quad)	0	1.40	10
Traveling Exhibition Service	Support for Quadrangle-related activities	2	2.00	45
Traveling Exhibition Service	Columbus Quincentenary activities	0	0.00	50
Public Service				
Office of Public Affairs	Redirection of one-time publicity campaign costs	0	0.00	(21)
S.I. Press	Redirection of one-time Columbus Quincentenary costs	0	0.00	(4)
Directorate of Internatl. Activities				
	Columbus Quincentenary activities	0	0.00	40
	Exhibition planning	0	0.00	11
	Tropical biological workshop development	0	0.00	30
	International Center programs	0	0.00	71
Special Programs				
Office of Folklife Programs	Columbus Quincentenary activities	0	0.00	35
Office of Fellowships & Grants	Molecular biology research	0	0.00	160
Office of Symposia & Seminars	Redirection of Constitution Bicentennial funding	0	0.00	(100)
Office of Elem. & Second. Ed.	Redirection of Constitution Bicentennial funding	0	0.00	(11)
Natl. Science Resources Dir.	Support for program activities	1	1.00	125
Administration				
Director, Facilities Services	Support for long-range facilities requirements	2	2.00	131
Off. of Personnel Admin.	Staff support due to implementation of new systems	2	2.00	55
Accounting and Financial Svcs.	Computer costs	0	0.00	150
Accounting and Financial Svcs.	Accounting Service Unit for Quadrangle	1	1.00	15
Procurement & Property Mgmt.	Support costs	2	2.00	105
Office of Safety Programs	Administrative officer	1	1.00	37
Office of Safety Programs	Hazardous waste program	1	1.00	112
Office of Safety Programs	Asbestos abatement program	2	2.00	132
Office of Safety Programs	Fire protection engineer	1	1.00	42
Office of Safety Programs	Hazard communication program	1	1.00	50
Office of Safety Programs	Computer equipment	0	0.00	71

ACCOUNT, Bureau	Item	F- 1988 POSSES*		
		FTE	FTE	Dollars
Facilities Services				
Ofc of Design & Construction	Automated management and production scheduling system	0	0.00	75
Office of Protection Services	Annualization of positions approved in FY87 for Quad	0	13.05	207
Office of Protection Services	Guard positions for Quadrangle	11	11.00	155
Office of Protection Services	Redirection of funds: elimination of summer hours	0	0.00	(310)
Office of Protection Services	Redirection of funds: completion of Proprietary Alarm System	0	0.00	(353)
Office of Protection Services	Hire guard positions authorized by Congress	0	0.00	622
Office of Plant Services	Annualization of positions approved in FY87 for Quad	0	2.00	54
Office of Plant Services	Adequate base support	0	0.00	540
Office of Horticulture	Gardener and program support	1	1.00	40
Quadrangle Facility Mgmt	Annualization of positions approved in FY87	0	5.00	91
	SUBTOTAL, Salaries and Expenses	4,060	4,109.50	204,962
CONSTRUCTION AND IMPROVEMENTS, NATIONAL ZOOLOGICAL PARK:				
	Dimsted Walk - Phase III	0	0.00	2,600
	Renovation, repair, and improvements at Rock Creek	0	0.00	1,300
	Renovation, repair, and improvements at Front Royal	0	0.00	750
	SUBTOTAL	0	0.00	5,150
RESTORATION AND RENOVATION OF BUILDINGS:				
	General repairs and improvements	0	0.00	655
	Facade, roof and terrace repairs	0	0.00	1,950
	Fire detection and suppression systems	0	0.00	2,385
	Access for disabled, safety and security	0	0.00	950
	Utility systems repairs and improvements	0	0.00	5,580
	Other projects	0	0.00	2,724
	SUBTOTAL	0	0.00	14,294
CONSTRUCTION:	Whipple base camp	0	0.00	4,470
	TOTAL, SMITHSONIAN INSTITUTION	4,060	4,109.50	229,736

Page No.	Unit	FY 1987 Base			Supplemental Requirement / 2	Total	FY 1988 Estimate		Analysis of Increase			
		FTE	Amount	Appropriation / 1			FTE	Amount	FTE	Uncontrollable Program		
<u>PUBLIC SERVICE</u>												
153	Asst. Secretary for Public Service	25	1,163	24	1,269	26	1,295	24	1,305	0	31	(21)
157	Smithsonian Institution Press	27	1,066	29	1,144	25	1,169	29	1,197	0	32	(4)
	Subtotal, Public Service	52	2,229	53	2,413	51	2,464	53	2,502	0	63	(25)
161	<u>DIRECTORATE OF INTERNAT'L ACTIVITIES</u>	11	508	13	625	13	638	13	908	0	13	257
<u>SPECIAL PROGRAMS</u>												
169	American Studies & Folklife Programs	12	680	8	736	16	752	8	806	0	15	39
173	Int'l Environmental Science Program	10	687	13	738	5	743	13	750	0	7	0
178	Academic and Educational Programs	17	625	19	823	17	840	20	971	1	17	114
184	Museum Support Center	44	4,653	36	4,426	21	4,447	36	4,475	0	28	0
-	John F. Kennedy Center Grants	0	333	0	0	0	0	0	0	0	0	0
	Subtotal, Special Programs	83	6,978	76	6,723	59	6,782	77	7,002	1	67	153
190	<u>ADMINISTRATION</u>	248	12,592	270	13,493	2,243	15,736	283	22,356	13	5,706	914
<u>FACILITIES SERVICES</u>												
200	Office of Design and Construction	35	1,783	35	2,100	39	2,139	35	2,261	0	47	75
203	Office of Protection Services	624	16,665	711	18,255	346	18,601	735	19,419	24	446	372
208	Office of Plant Services	422	30,840	498	35,311	313	35,624	506	37,505	8	1,156	725
	Subtotal, Facilities Services	1,081	49,288	1,244	55,666	698	56,364	1,276	59,185	32	1,649	1,172
<u>GRAND TOTAL</u>												
		3,740	169,199	3,996	183,920	5,880	189,800	4,110	204,862	114	9,813	5,249

/1 Reflects reorganizations and the distribution of the OMB Grade Target Reduction.

/2 Includes FY 1987 requirement for legislation for increased costs associated with the new Federal Employee Retirement System; and the restoration of the \$862,000 transferred to the Restoration and Renovation of Buildings account in the FY 1987 appropriation process for construction activities transferred to SERC-Edgewater.

/3 OMB full-time equivalent calling is 3,975.

8,197,000

8,204,200

/3

/3

FY 1988 UNCONTROLLABLE INCREASES

Funds are sought to finance costs that are beyond the control of the Institution. These costs result both from established practices in setting and paying wages and benefits; from higher utilities, postage, communications and rental costs. Consequently, an amount of \$9,813,000 is requested for uncontrollable costs in the following areas:

Salary and Related Costs	
--Within-grade Step Increases	\$2,050,000
--One Additional Workday	458,000
--Workers' Compensation	92,000
--Annualization of Pay Raises	1,149,000
--Federal Employees Retirement System	5,274,000
--Personnel Payroll System	400,000
--OMB Grade Target Reduction	<u>-373,000</u>
Total Salary and Related Costs	\$9,050,000
Utilities, Postage and Communications	\$ 529,000
Rental Space	<u>\$ 234,000</u>
Grand Total, Uncontrollable Increases	<u>\$9,813,000</u>

SALARY AND RELATED COSTS - An amount of \$9,050,000 is required for the projected higher costs in FY 1988 for FY 1987 staff. Costs required for within-grade increases are calculated for each of the bureaus and offices, taking into consideration workyears authorized by the Office of Management and Budget (OMB) (\$2,050,000). Funds also are required in FY 1988 to cover costs attributable to one additional paid day (\$458,000), increased legislated pay raises granted employees in January 1987 (\$1,006,000), special salary rate increase for clerical employees (\$143,000), increased costs associated with the new Federal Employees Retirement System (\$5,274,000), workers' compensation (\$92,000), and operating costs for the new Personnel Payroll System (\$400,000). These requested increases are being offset by a reduction of \$373,000, which was mandated by OMB and affects positions in grades GS-11 through GS/GM-15.

Within-grade Step Increases - A sum of \$2,050,000 is sought in FY 1988 for within-grade step increases. For General Schedule employees, these increases are required by Section 5335 of Title 5, United States Code. Wage employees are covered by law and prevailing rates. Increases include the part-year cost of new actions scheduled to occur in the budget year, as well as the cost of annualizing step increases occurring in FY 1987.

Additional Workday - Currently, base funding is available for employee compensation for a 261-day workyear based on a 2,087 hourly rate calculation. FY 1988, however, contains 262 workdays requiring additional funding of \$458,000 to cover employee salaries and benefits costs.

Workers' Compensation - An amount of \$92,000 is required to meet the provisions of Section 8147(b) of Title 5, United States Code as amended on April 21, 1976 by Public Law 94-273. This law provides for payments to be made to employees for injuries and to their families in cases where work accidents result in employees' deaths. These payments are determined and made by the United States Department of Labor's Employment Standards

Administration, which subsequently bills agencies for costs incurred for their employees. The Institution continues to pursue its Accident Safety Program administered by the Office of Environmental Management and Safety. This program includes employee training on safe working environments and supports a staff whose duties include identifying and eliminating potential accident hazards. The FY 1988 bill for the Institution's Federal portion totals \$838,000. (This bill covers the actual expenses incurred for the period July 1, 1985 through June 30, 1986.) With an amount of \$746,000 in the Institution's base for workers' compensation, additional funds totaling \$92,000 are requested.

Annualization of Pay Raises - Funds of \$1,149,000 are required to annualize the cost of General Schedule, Merit Pay, Executive and Wage pay increases effective in FY 1987; and to cover the proposed special rates increase for clerk-typists, clerk-stenographers, data transcribers and other clerical positions.

-- General Schedule, Merit Pay, Executive Schedule and Wage Board - In accordance with the pay plan established by the President under Section 5305 of title 5, United States Code, annual salaries for Smithsonian General Schedule, Merit pay and Executive level employees were increased as established in Public Law 99-591 on January 4, 1987. Prevailing practices required Wage Pay scales to be reviewed by a Wage Finding authority in each geographic area. Public Law 99-591 also provides that Wage Board employees receive the same pay increases as General Schedule employees. An amount of \$1,006,000 is required to provide full-year funding in FY 1988 for these legislated pay increases granted in FY 1987.

-- Special Salary Rates for clerk-typists, clerk-stenographers, data transcribers and all other clerical positions - The United States Office of Personnel Management has proposed the need for special salary rates for clerk-typists, clerk-stenographers, data transcribers, and all other clerical positions with the parenthetical title (typing) or (stenography) for GS-2 through GS-7 in the Washington metropolitan area, due to the restriction in recruitment and retention of well-qualified individuals because of the higher salaries offered in the private sector. An amount of \$143,000 is requested to provide full year funding in FY 1988 for these positions.

Federal Employees' Retirement System - The Federal Employees Retirement System Act of 1986 (P.L. 99-335) established a new basic benefit pension plan and a savings plan for Federal civilian employees. For FY 1988, an amount of \$5,274,000 is required to cover increased costs that will be incurred under the new retirement system. This amount has been computed in accordance with guidance in Office of Management and Budget Bulletin 87-2.

Personnel Payroll System - The Institution has entered into an agreement with the Department of Agriculture's National Finance Center (NFC) for computer services in support of personnel management and payroll production with full documentation, enhanced capability, improved internal controls and guaranteed maintenance. Funding required to meet the NFC's development effort is estimated at \$225,000, which with other start-up costs, will be met by the Institution's Trust funds as a one-time expense. The new systems are expected to be operational in late 1987. Thereafter, annual operating costs are estimated at approximately \$630,000, based on NFC's cost of \$90.00 per employee (regardless of his or her duration on the payroll) times an estimated 7,000 employees (civil service and trust, including temporaries). Base savings (primarily funds now used for processing on the Institution's computer) and the Trust share of the costs for its employees are estimated at about one-third of the total requirement. The balance of \$400,000 in support of a more responsive system is sought in this FY 1988 request.

OMB Grade Target Reduction - In FY 1985, at the direction of the President, the Office of Management and Budget and the Office of Personnel Management implemented a

joint initiative to improve the management of positions and lower the average grade levels in the GS-11 through GS/GM-15 grade range. Thus far, the reduction assessed the Smithsonian is \$933,000. A sum of \$373,000 will be relinquished in FY 1988. For FY 1989, the reduction will be \$186,000. The cumulative reduction over the five-year period will total \$1,492,000.

UTILITIES, POSTAGE, AND COMMUNICATIONS - In FY 1987, a base of \$17,227,000 is available to fund the costs of electricity, steam, gas, fuel oil, water, postage and communications of nearly all Institution facilities including the Quadrangle. Due primarily to increased consumption associated with the full operation of the Quadrangle and increased occupancy of the MSC, an amount of \$529,000 is sought to cover higher costs of these items.

Projections of future year utilities costs are determined based on analyses which take into account a variety of factors. These include comparative data on actual energy consumption in previous years for each facility; adjustments for normal weather conditions for this area based on information provided by the National Weather Service; actual and projected rates charged by utility companies; actual and anticipated reimbursements for utility costs from concessions, museum shops, and the Friends of the National Zoo; modifications to work and public spaces within facilities; vigorous energy conservation efforts under way in all Smithsonian buildings; improvements to heating, ventilating and air conditioning systems and components installed throughout the physical plant; the design of new facilities constructed; and anticipated increases in consumption due to the installation of computers and other equipment used throughout the Institution in support of program objectives.

The following table shows the costs and base funds available to cover the components of the Utilities account between fiscal years 1986 and 1988.

ANALYSIS OF UTILITIES AND COMMUNICATIONS COSTS
FY 1986 - FY 1988

	<u>FY 1986</u> <u>Actual</u>	<u>FY 1987</u> <u>Estimate</u>	<u>FY 1988</u> <u>Estimate</u>
<u>ELECTRICITY</u>			
Use - Millions of KWH	90.6	95.5	100.8
Unit Cost - Average per KWH	.06885	.0754	.0794
<u>Cost - \$000's</u>	\$6,237	\$7,201	\$8,003
FY 1988 Estimated Cost			\$8,003
FY 1987 Base			<u>\$8,397</u>
		Base Surplus, Electricity	\$ 394
<u>STEAM</u>			
Use - Millions of Pounds	177.5	211.5	214.1
Unit Cost - Average per 1,000 lbs.	15.33	15.50	15.50
<u>Cost - \$000's</u>	\$2,721	\$3,279	\$3,318
FY 1988 Estimated Cost			\$3,318
FY 1987 Base			<u>\$2,958</u>
		Base Shortage, Steam	\$ 360
<u>GAS</u>			
Use - Millions of Cubic Feet	.878	.902	.923
Unit Cost - Average per Cubic Ft.	1.192	1.192	1.192
<u>Cost - \$000's</u>	\$1,047	\$1,075	\$1,100
FY 1988 Estimated Cost			\$1,100
FY 1987 Base			<u>\$ 998</u>
		Base Shortage, Gas	\$ 102
<u>FUEL OIL/WATER</u>			
<u>Cost - \$000's</u>	\$ 178	\$ 235	\$ 250
FY 1988 Estimated Cost			\$ 250
FY 1987 Base			<u>\$ 390</u>
		Base Surplus, Fuel Oil/Water	\$ 140
<u>TELEPHONE</u>			
<u>Cost - \$000's</u>	\$2,834	\$3,318	\$3,535
FY 1988 Estimated Cost			\$3,535
FY 1987 Base			<u>\$3,206</u>
		Base Shortage, Telephone	\$ 329
<u>POSTAGE</u>			
<u>Cost - \$000's</u>	\$1,333	\$1,650	\$1,850
FY 1988 Estimated Cost			\$1,850
FY 1987 Base			<u>1,278</u>
		Base Shortage, Postage	\$ 572
<u>TOTALS</u>			
		FY 1988 Estimated Cost	\$18,056
		FY 1987 Base	\$17,227
		Anticipated Reimbursements	\$ - 300
		FY 1988 Requested Increase	<u>\$ 529</u>

Electricity - The major component of the Utilities account is electricity. Estimates of consumption and costs have been refined and take into consideration full occupancy of the Museum Support Center in Suitland, Maryland, and the Quadrangle facility on the Mall. Strengthened energy conservation efforts and lower than expected rate increases resulted in actual costs for FY 1986 being less than originally estimated. However, in anticipation of increased occupancy of the Museum Support Center and full operation of the Quadrangle and installation of computers and other equipment throughout the Institution, along with projected rate increases and higher fuel adjustment charges, costs are expected to increase by \$802,000 in FY 1988 over the FY 1987 estimate. Funds are available in the existing base to cover the increase and result in a projected surplus of \$394,000.

Steam - The projected deficit of \$360,000 for steam is attributable primarily to projected increases in consumption associated with the full operation of the Quadrangle and a return to normal winter temperatures in the Washington, D.C. area.

Gas - Estimates of rate increases for gas expected to take effect in FY 1987 and FY 1988 have been lowered based on actual rates experienced in FY 1986. This situation, coupled with energy conservation efforts, have helped limit overall consumption (and costs) despite increased occupancy of the Museum Support Center and ongoing renovations to facilities at the National Zoological Park. As a result, \$102,000 in additional base funds are required to cover the estimated costs of gas in FY 1988.

Fuel Oil and Water - The projected surplus of \$140,000 in funds available to cover the costs of fuel oil and water is attributable to lower than expected rate increases in FY 1986 and FY 1987 and a change in the use of the Smithsonian Environmental Research Center facility at Rockville.

Telephones - Measures implemented over the past several years continue to limit escalating telephone costs. These include monitor and review of long distance calls by management officials throughout the Institution, removal of access to long distance dialing from telephones to reduce the potential for abuse, and heightened scrutiny of actual charges by telephone companies for services performed. Despite these efforts, additional costs of \$329,000 are anticipated in FY 1988 due to increased charges for operation of the Federal Telecommunications System passed on by the General Services Administration (\$140,000); higher costs for Washington, D.C. local telephone service provided by C&P and AT&T (\$90,000); increases for service provided the Tropical Research Institute in Panama and the Cooper-Hewitt Museum in New York City (\$40,000); and the purchase of integrated voice and data multiplexors and circuits required to link personal computers to larger capacity central computers to meet Smithsonian data communications needs (\$59,000).

Postage - Measures implemented over the past several years to limit postage costs are continuing. These include limiting international air express mailings, eliminating first class domestic package mailings and reducing the use of express mail services offered by the United States Postal Service for domestic mailings. Although the measures have helped limit escalating costs, a deficit of \$572,000 is projected for postage attributable to an overall increase in the volume of mailings. For example, in recent years a tremendous growth in the number of requests for information from the public coupled with general increases in the number of mailings due to expanded program activities of Smithsonian organizations have been experienced.

Energy Conservation Program - The Office of Plant Services administers a comprehensive energy conservation program for the Institution under which vigorous measures to conserve all forms of energy are in effect. These measures include minimizing energy costs by reducing peak energy demands, which is accomplished through a computer based energy management system that permits the cycling of motors on an off and, when

necessary, selectively shutting down equipment and monitoring all buildings for fluctuations or malfunctions in their established operating systems; continuing the phased program of performing comprehensive building energy audits; renovating heating, ventilating and air conditioning, plumbing and electrical systems within the Institution's facilities; and reducing lighting levels in work and nonpublic areas. Additional measures include installing more efficient lighting fixtures with new switching patterns and controls; operating heating and air conditioning systems at minimum levels required to prevent damage to collections; shutting down fans and other heavy consumers of electricity during nonpublic hours; continuing an awards program for employees whose original suggestions to conserve energy are implemented; and devoting greater attention to energy conservation when determining space use, modifying existing space and designing new facilities.

Rental Space - For FY 1988, an amount of \$1,583,000 for the central rental account managed by the Office of Plant Services is required to provide adequate resources for the proportionate Federal space rental costs of the administrative activities located at L'Enfant Plaza, Smithsonian Institution Service Center at 1111 North Capitol Street, and the Archives of American Art space in New York City and Boston, Massachusetts. The amounts shown on the following table reflect anticipated costs for rental space at these sites:

FEDERAL RENTAL PROGRAM ADMINISTERED BY THE OFFICE OF PLANT SERVICES
FY 1986 - FY 1988

(\$000's)

	FY 1986		FY 1987		FY 1988	
	Actual Cost		Estimated Cost		Estimated Cost	
	<u>Federal</u>	<u>Trust</u>	<u>Federal</u>	<u>Trust</u>	<u>Federal</u>	<u>Trust</u>
L'Enfant Plaza	\$ 474	\$758	\$ 389	\$961	\$ 408	\$999
No. Capitol St.	805	52	939	--	1,017	--
Archives of American Art:						
- New York	57	--	130	--	150	--
- Boston	<u>7</u>	<u>--</u>	<u>7</u>	<u>--</u>	<u>8</u>	<u>--</u>
Total Costs	\$1,343	\$810	\$1,465	\$961	\$1,583	\$999
Base	<u>\$1,346</u>	<u>\$810</u>	<u>\$1,349</u>	<u>\$961</u>	<u>\$1,349</u>	<u>\$999</u>
Surplus/(Deficit)	\$ (3)	\$ --	\$(116)	\$ --	\$(234)	\$ --

Estimates of FY 1988 Federal costs for space at L'Enfant Plaza continue to take into account the offsetting Trust fund contribution based in part upon the amount of Mall office space occupied by the auxiliary activities. An amount of \$19,000 is required in FY 1988 to cover increased costs of Federal space rental costs at L'Enfant Plaza.

The total rental costs for space at 1111 North Capitol Street reflect the annual cost increase specified in the current long-term lease agreement as well as increased Federal costs due to relocation of the Museum Shops' warehouse activities in FY 1986. Consequently, an amount of \$78,000 is required in FY 1988 to defray increased space rental costs.

For space needs of the Archives of American Art, additional funds totaling \$21,000 are sought in FY 1988. Of this amount, \$20,000 is needed to cover annual cost increases specified in the proposed lease for new facilities to house the Archives' New York operations. It is anticipated that the new space, located in the area where New York's art museums and galleries are concentrated, will be fully occupied in FY 1987. An amount of \$1,000 is required for the Archives of American Art's Boston location.

A base of \$1,349,000 is available for FY 1987--\$116,000 short of the projected FY 1987 costs. The Federal rental share projected for the central rental account in FY 1988 totals \$1,583,000--\$118,000 increase over the projected cost for FY 1987. Therefore, an additional amount of \$234,000 is required to defray space rental costs at these locations in FY 1988.

Salary and Related Costs
 FY 1988
 (Dollars in Thousands)

<u>Unit</u>	<u>Within- grade Increases</u>	<u>Annuali- zation of Pay Raises</u>	<u>One Additional Work Day</u>	<u>TOTAL</u>
Assistant Secretary for Research	16	7	4	27
Smithsonian Astrophysical Observatory	96	47	21	164
Smithsonian Tropical Research Institute	46	22	10	78
Smithsonian Environmental Research Center	12	8	3	23
National Zoological Park	168	86	38	292
Smithsonian Archives	8	5	2	15
Smithsonian Institution Libraries	49	49	11	109
Assistant Secretary for Museums	13	9	2	24
National Museum of Natural History	301	167	67	535
National Air and Space Museum	114	61	25	200
National Museum of American History	183	100	41	324
National Museum of American Art	58	35	13	106
National Portrait Gallery	44	36	10	90
Hirshhorn Museum and Sculpture Garden	38	22	8	68
Center for Asian Art	32	17	8	57
Archives of American Art	12	8	3	23
Cooper-Hewitt Museum	15	7	3	25
National Museum of African Art	23	14	5	42
Anacostia Neighborhood Museum	9	5	2	16
Conservation Analytical Laboratory	24	13	5	42
Office of Exhibits Central	24	13	5	42
Smithsonian Traveling Exhibition Service	7	4	2	13
Assistant Secretary for Public Service	16	11	4	31
Smithsonian Institution Press	18	10	4	32
Directorate of International Activities	6	5	2	13
American and Folklife Programs	7	6	2	15
International Environmental Science Program	4	2	1	7
Academic and Educational Programs	9	6	2	17
Museum Support Center	17	8	3	28
Administration	171	104	38	313
Office of Design and Construction	27	14	6	47
Office of Protection Services	257	131	58	446
Office of Plant Services	226	117	50	393
Total	2,050	1,149	458	3,657

OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General FTP**	Amount	Special Purpose FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	17	653	1	92	-	36	10	382	16	1,010
FY 1987 Base	30	1,236	1	101	-	4	16	1,067	7	567
FY 1988 Estimate	30	1,263	1	102	-	23	11	499	5	614

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	30	0	30
11 Personnel Compensation.....	764	23	787
12 Personnel Benefits.....	107	4	111
21 Travel.....	36	-	36
22 Transportation of Things.....	1	-	1
23 Rent, Communications & Utilities.....	12	-	12
24 Printing & Reproduction.....	2	-	2
25 Other Services.....	267	-	267
26 Supplies & Materials.....	36	-	36
31 Equipment.....	11	-	11
Total	<u>1,236</u>	<u>27</u>	<u>1,263</u>

Analysis of Increase

Necessary Pay..... 27

ABSTRACT - The Office of the Assistant Secretary for Research provides guidance, planning and overall policy direction to the Institution's research efforts and research support activities. The Joseph Henry Papers, which was formerly included in the line of the Assistant Secretary for History and Art, has been incorporated into this line item, while the National Science Resources Center, which was formerly a part of this line item, has been transferred to the Office of the Assistant Secretary for Public Service. No program increase is requested for FY 1988. Necessary pay of \$ 27,000 is required for existing staff.

PROGRAM - I. The Office of the Assistant Secretary for Research: With base funding of 25 workyears and \$1,051,000, this Office, in concert with the Secretary and other

appropriate management staff, supervises the research activities of the Institution. The Office also serves as the major Institutional liaison for research centers in the United States and abroad.

A fundamental responsibility of this Office is the development of guidelines to ensure the superior quality of research conducted at the Institution. This entails providing guidance on shifts of emphasis, suggestions for new areas of research, and access to state-of-the-art facilities and equipment, and advising on the selection and promotion of scholarly staff. In addition, the Office strives to better disseminate Smithsonian research findings to the public and to specialized audiences.

Carbon Dating and Solar Research Studies - Following the closure of the Smithsonian Environmental Research Center (SERC) at Rockville, the Office assumed responsibility for the carbon dating activities and solar research studies, which had been conducted at this facility. The Office of the Assistant Secretary for Research will use the funds formerly associated with these programs to contract services for carbon dating and to continue solar studies.

Dating objects is significant to Smithsonian research in such areas as anthropology, geology, and paleontology, and for the past several decades, the staff at SERC-Rockville has dated on average, over 200 samples per annum using carbon dating techniques for several Smithsonian bureaus, principally the National Museum of Natural History/Museum of Man and the Smithsonian Tropical Research Institute.

Following an internal review, it was determined that the need for carbon dating could be addressed best by contracting services. The Institution will, therefore, establish a competitive fund to support carbon dating. Proposals will be submitted and reviewed by an internal committee for scholarly merit and cost efficiency. Funding also will be used to clean and conserve objects, and to investigate alternative dating techniques.

The Smithsonian pioneered studies in the collection of solar data, particularly with respect to the measurement of ultraviolet radiation. The closing of SERC-Rockville led the Institution to conclude that the solar studies previously conducted at SERC would be enhanced by a new collaboration between the Institution and the National Oceanic and Atmospheric Administration.

The new effort will focus not only on studies of the solar spectrum, but on its effects on the Earth. These studies will address such topical issues as the atmospheric concentration of ozone. Specifically, the researchers will seek to determine if ozone shifts are a natural occurrence or a man-made phenomenon. These studies are of utmost importance if man is to avert the deadly effects of the shifting concentrations of atmospheric ozone. The funds also will be applied to the development of new instruments, the analysis and correlation of historical data with respect to other relevant fields, and the dissemination of research results.

The Joseph Henry Papers: With a base of 5 workyears and \$185,000, the Henry Papers, conducts a documentary publication project that is dedicated to collecting, transcribing, editing, and publishing the manuscripts of Joseph Henry, conveying to the scholarly community, as well as to the general public, the significance of Henry's papers to American history. The Henry Papers is a source of otherwise unpublished and often previously unknown letters and papers that shed light on the history of science, the development of Federal policy towards the sciences, and the institutional and social structure of the scientific community of the 19th century. As a centralized repository of documents relating to Henry and his milieu, the project serves as an essential resource for research in the history of science and the cultural history of the United States. Publication objectives include a 15-volume selected letterpress edition, an indexed

microform edition of all extant Henry manuscripts, and special publications aimed at a more general audience. The Alexander Graham Bell-Joseph Henry Library is maintained by the project and contains 2,400 monographs, serial titles, and pamphlets which belonged to the two men.

In FY 1988, the Henry Papers plans to publish the sixth volume (1844-1846), which chronicles the end of Henry's professorship in natural philosophy at Princeton University, the establishment of the Smithsonian Institution, and the selection of Joseph Henry as the Smithsonian's first Secretary. To commemorate the publication of this volume, which is the last of the Princeton years series, the Henry papers is also planning a symposium.

The Henry Papers will continue its educational outreach activities and its cooperation with other Smithsonian units on projects relating to its mission. Sponsored by the Henry Papers, the 19th-Century Seminar, an academic forum, will continue to provide the scholarly community with an opportunity to hear and discuss works-in-progress on interdisciplinary topics common to the 19th century. Cooperative fellowship programs with the National Historical Publications and Records Commission, Smith College, and the Smithsonian Office of Fellowships and Grants will continue in FY 1988. The project will remain involved in presenting symposia and exhibitions in cooperation with the National Museum of Natural History/Museum of Man, the National Museum of American History, and the Directorate of International Activities.

NONAPPROPRIATED SOURCES OF FUNDING:

I. The Office of the Assistant Secretary for Research: Unrestricted General and Special Purpose Funds - These funds are provided by annual allotments and are used primarily to support three significant international foundations which operate field research stations used by Smithsonian staff members as well as by the world scientific community: the Seychelles Islands Foundation operates the former Royal Society station on the island of Aldabra, located in the Indian Ocean, where biological research is conducted (estimated expenditures of \$15,000 in FY 1987 and in FY 1988); the Charles Darwin Foundation operates a biological research station in the Galapagos Islands (estimated expenditures of \$30,000 in FY 1987 and in FY 1988); and the King Mahendra Trust for Nature Conservation provides scholars with access to a unique environment on the Indian sub-continent by operating a field station in the terai region (a low-land, grassy plain) of Nepal where significant ecosystem research is in progress (estimated expenditures of \$10,000 in FY 1987 and in FY 1988). Smithsonian support facilitates the continued accessibility of these areas for the research community at large. Support also is provided for the exchange of scholars and scientific information between the Smithsonian and a number of nations, principally, the People's Republic of China and Cuba (estimated expenditures of \$20,000 in FY 1987 and in FY 1988).

Restricted Funds - These consist of restricted endowments, gifts and grants from individuals, foundations and corporations which specify the use of the donation or bequest. Competitive awards are made to Smithsonian units from the Seidell Endowment Fund, administered by this Office, which provides for dissemination of scientific information (estimated expenditures of \$75,000 in FY 1987 and in FY 1988). The FY 1986 awards from the Seidell Endowment are reflected in the expenditures of the recipient organizations. Ecotechnics provided support to develop and construct a Chesapeake mesocosm and later a tropical estuarine mesocosm (estimated expenditures of \$460,000 in FY 1987 and \$400,000 in FY 1988). In FY 1987, an anticipated grant will provide one-year funding to support a collaborative effort with the Australian government to develop a living coral reef exhibition (estimated expenditures of \$452,000 in FY 1987).

Federal Grants and Contracts - Contract funds have been provided by the Office of Naval Research for the continuation of studies in the area of manpower research and development (estimated expenditures of \$210,000 in FY 1987 and \$214,000 in FY 1988). A grant from the Agency for International Development (AID) provides funds for the continuation, expansion and operation of the research laboratory at Grand Turk Island (estimated expenditures of \$296,000 in FY 1987 and \$400,000 in FY 1988). Related research which was previously funded by AID over a three-year period was completed during FY 1986 (actual expenditures of \$656,000 in FY 1986) and contribute to the variance between total FY 1986 actual expenditures and FY 1987 and FY 1988 projected expenses.

II. The Joseph Henry Papers: Restricted Funds - The Joseph Henry Papers will receive funding from the National Academy of Sciences to support project expenses (estimated expenditures of \$2,000 in FY 1987 and in FY 1988). Funds are anticipated from the American Philosophical Society and the National Academy of Sciences to support clerical assistance and the purchase of automation equipment and supplies (estimated expenditures of \$20,000 in FY 1987 and in FY 1988).

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	102	8,642	43	2,665	32	1,853	-	161	100	12,486
FY 1987 Base	103	9,276	47	2,866	32	1,683	-	103	97	14,300
FY 1988 Estimate	105	10,217	47	2,741	31	1,935	-	113	88	11,000

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	103	2	105
11 Personnel Compensation.....	5,021	226	5,247
12 Personnel Benefits.....	584	30	614
21 Travel.....	100	12	112
22 Transportation of Things.....	40	1	41
23 Rent, Communications & Utilities.....	549	-	549
24 Printing & Reproduction.....	28	3	31
25 Other Services.....	1,907	520	2,427
26 Supplies & Materials.....	305	45	350
31 Equipment.....	742	104	846
Total	<u>9,276</u>	<u>941</u>	<u>10,217</u>

Analysis of Increase

Necessary Pay.....	164
Program Funds.....	777

ABSTRACT - The Smithsonian Astrophysical Observatory (SAO) located in Cambridge, Massachusetts, conducts basic astrophysical research in the following interrelated disciplines: atomic and molecular physics, high energy astrophysics, optical and infrared astronomy, planetary sciences, radio astronomy and geoastronomy, solar and stellar physics, and theoretical astrophysics. SAO cooperates in its scientific programs with the Harvard College Observatory (HCO), and together the two observatories form the Center for Astrophysics (CfA). SAO also operates the Fred Lawrence Whipple Observatory (FLWO) on Mt. Hopkins, Arizona, the site of the Multiple Mirror Telescope (MMT), a joint project with the University of Arizona.

Scientific data are obtained from laboratory experiments conducted in Cambridge; telescopic observations, especially at FLWO; and space observations utilizing satellites, rockets and balloons. The reduction and analysis of these data are performed mostly with SAO's computer systems in Cambridge. The resulting astrophysical information and scien-

tific interpretations are published in scientific journals and reports. These results also are conveyed to the scientific community and to the public through lectures and more general articles and books.

For FY 1988, an increase of 2 workyears and \$777,000 is requested for the continuation of the development of instrumentation for use in the new field of submillimeter wave astronomy (2 workyears and \$252,000); and for the design work for conversion of the Multiple Mirror Telescope (\$525,000). Necessary pay of \$164,000 is required for existing staff.

PROGRAM - The Smithsonian Astrophysical Observatory is a leading international astrophysical research center. The Observatory was founded in 1890 by Samuel Pierpont Langley, the third Secretary of the Institution, and moved to Cambridge, Massachusetts, in 1955. SAO has pioneered in studies of solar-terrestrial relationships; establishment of a worldwide network of stations to track the first earth satellites; application of new technology to telescope design; and surveys of the distribution of galaxies in space. SAO's leadership in astrophysics grows out of a broad and diversified approach to research. Observations at radio, infrared, optical, ultraviolet and X-ray wavelengths involving innovative instrumental designs are combined with theoretical studies to provide deeper understanding of astrophysical processes.

All of SAO's research programs are concentrated in seven divisions at the CfA, with the different efforts largely complementing each other: atomic and molecular physics, high energy astrophysics, optical and infrared astronomy, planetary sciences, radio astronomy and geoastronomy, solar and stellar physics, and theoretical astrophysics. SAO also maintains an engineering department, a computational facility and an extensive astronomical library. In addition, because it is located outside the Washington metropolitan area, SAO has its own administrative support structure funded by Federal funds and by indirect charges to grants and contracts.

During FY 1986, SAO research produced a number of significant scientific results:

-- SAO scientists measured the distribution in space of more than a thousand distant galaxies and found from these measurements that the universe is frothy--galaxies appear to be concentrated on the surfaces of giant bubbles. These bubbles, each up to about 100 million light years in diameter, contain virtually nothing visible inside. Theorists are baffled as to how this remarkable structure might arise. (Optical and Infrared Astronomy)

-- Many scientists are convinced that black holes exist--objects whose gravity is so strong that not even light can escape from them. But so far strong evidence for their existence has been difficult to obtain. Scientists at SAO this year discovered the best candidate yet for a black hole--an object in which more than three times the mass of the sun is compressed into a space only a few miles across. (High Energy Astrophysics)

-- Working with radio telescopes, SAO researchers and their collaborators discovered that the Milky Way, our galaxy, is almost a third smaller than previously thought. The new figure will force astronomers to revise their understanding of the sizes and distances to most objects in our galaxy. (Radio Astronomy and Geoastronomy)

-- After more than a decade of work, SAO scientists and their Harvard collaborators have succeeded in operating an atomic clock within one-half degree of absolute zero. This "cold" clock is expected to be one thousand times more accurate than any existing clock. (Radio Astronomy and Geoastronomy)

The major accomplishments of SAO research are published by staff members in approxi-

mately 200 articles in scientific journals each year. A brief summary of the research conducted in each of its seven scientific divisions follows. In each section, the first paragraph describes the research program in general terms and the subsequent paragraphs describe recent accomplishments, in addition to those highlighted above.

Atomic and Molecular Physics - Interpreting observations of astronomical objects requires detailed information about atomic and molecular processes. Accurate determination of physical conditions in these objects depends on the precision and completeness of the underlying atomic and molecular data. The major objective of the research of the Atomic and Molecular Physics Division is to obtain such data using laboratory and theoretical studies.

Accurate measurements of the way ultraviolet sunlight is absorbed by molecular oxygen are required to determine the distribution of gases in the Earth's atmosphere and the amount of sunlight it absorbs. Light absorption by molecules of oxygen in the Earth's atmosphere breaks them into oxygen atoms needed for the formation of ozone in the stratosphere, the layer that protects us from the harmful ultraviolet rays of the sun. Accurate laboratory measurements were made for the first time of the strength of absorption of ultraviolet radiation by molecular oxygen at low temperatures. Future similar measurements of ultraviolet absorption by oxygen will concentrate on regions in the spectrum (characteristic colors of light) for which absorption is small. This part of the solar radiation can therefore penetrate deeper into the lower stratosphere, altering the altitude profile of ozone and other trace constituents thought responsible for the greenhouse effect that is causing the Earth to warm. To be able to predict more accurately the future course of this important influence on the Earth's climate, these basic measurements on oxygen need to be made.

In low density, high temperature gases, nature balances collisions of ions and electrons by a process in which an electron and an ion recombine forming a new less-charged ion and giving off light of a characteristic color. The absolute strength of this process was measured for carbon atoms that were each stripped of three electrons, using an original and novel experimental technique developed for the laboratory's ion and electron beams apparatus. This ion of carbon was chosen for the first absolute measurement because the characteristic light from it is often used by astronomers to interpret the physical conditions in outer space.

Molecules, both very simple and very complex, survive in large concentrations in the seemingly hostile environment of the interstellar medium. There is still a very limited understanding of how interstellar molecules are formed, how they react chemically and how they are destroyed. Many molecules are thought to be destroyed in space by light; these molecules, by absorbing ultraviolet light, break into fragments. This limitation of our understanding is especially severe for species called radicals, which react chemically so rapidly that it is extremely difficult to obtain a sufficient concentration in the laboratory for study. Thus, theoretical approaches are necessary. Recent calculations at SAO have shown that even the simplest and most abundant radicals produce light in a large variety of colors. These studies have provided a framework for understanding the process of breaking by light of more complex molecules and will lead to a better understanding of how interstellar molecules are formed and destroyed.

High Energy Astrophysics - Research in high energy astrophysics is concentrated on those astronomical objects which emit a substantial fraction of their energy in X-rays. Scientific studies are directed at a broad range of topics, including the processes for generating the X-ray radiation, the amount of matter in the universe, and the formation, evolution, and ultimate fate of the universe. Since X-rays are absorbed by the Earth's atmosphere, observations must be made from balloons, rockets, the Space Shuttle or satellites. SAO scientists and engineers are currently involved in the analysis of existing X-ray data and in the design and development of new instrumentation for future space science missions.

Analysis of data that SAO obtained from the Einstein satellite has revealed the presence of higher density, relatively cool X-ray emitting gas in the central regions of some galaxies. As this gas cools still more, it is believed to condense and form new stars showing that these otherwise relatively old galaxies still show the activity characteristic of younger galaxies. SAO scientists have also used observations of quasars, those extremely luminous objects at the cores of some galaxies, to demonstrate that their X-ray emission is essentially a universal signature and, therefore, provides a very efficient way to find quasars. This result is important for obtaining complete samples for analyzing and understanding the formation and development with cosmic time of these objects. This understanding, in turn, will tell us much about the properties of the universe over the past 15 billion years.

SAO scientists and engineers are working with the National Aeronautics and Space Administration (NASA) and industry on detailed definition and design studies of the Advanced X-ray Astrophysics Facility (AXAF), one of the major space observatories being planned by the United States for launch in the next decade. With its large increase in angular resolution and sensitivity over all previous X-ray satellites, AXAF has great potential for answering fundamental questions, revealing previously unknown phenomena, and possibly discovering new laws of science. A particularly important set of science objectives involves development of an inventory of the mass content of galaxies, of clusters of galaxies and of the universe as a whole, and then a cross-check of the results to find out how much material of different kinds exists in space, and what the ultimate fate of the universe is likely to be.

SAO scientists have also developed a novel X-ray telescope for high-resolution X-ray imaging of the sun. This telescope will be tested for the first time in a series of rocket flights starting in 1986. Balloon flights will also be made with another new type of telescope to observe unusual celestial sources of X-rays at much higher energies than was possible with other X-ray telescopes. This new telescope can provide important insight into the energetic processes that produce these higher energy rays. SAO also has developed a high resolution imaging X-ray detector for flight on the West German-British-U.S. Roentgen Satellite (ROSAT), and SAO has been selected by NASA to work with the Goddard Space Flight Center to develop and operate the U.S. ROSAT data center. In this connection, SAO is developing a portable, maintainable system of software for analysis of X-ray data based on software developed for optical astronomy at Kitt Peak and at the Hubble Space Telescope Science Institute. This software system for X-ray data will incorporate much of the experience gained from previous satellites that gathered X-ray data and should provide scientists at all institutions with the tools needed to analyze high-quality X-ray data.

Optical and Infrared Astronomy - Research in optical and infrared astronomy is concentrated on studies of the large scale structure of the universe and the formation and evolution of stars and stellar systems. In support of this and other research, SAO operates the Fred Lawrence Whipple Observatory on Mt. Hopkins in Arizona, the site of the Multiple Mirror Telescope (MMT), operated jointly with the University of Arizona. The MMT is at present the third largest optical telescope in the world. SAO also operates two smaller telescopes at Mt. Hopkins, which have proven especially effective for large scale surveys and for observations in support of the research using the MMT. In addition, there is a ten-meter-diameter light collector which is the most sensitive in the world for ground-based searches for high-energy ("gamma") rays from celestial sources.

Since their discovery, cosmic rays have been a great puzzle to scientists: no satisfactory explanation has been found for how they are created. Recent observations with the ten-meter-diameter light collector at FLWO have contributed importantly to the evidence suggesting that cosmic rays may be produced by a handful of very rare systems of stars in our galaxy. Each such system contains two stars orbiting about one another with one having already collapsed under its own gravity and thereby creating the

environment needed to produce the very high-energy particles that constitute the cosmic rays.

Planetary Sciences - Research in planetary sciences strives to understand the planets, satellites, and small bodies of the solar system, and the processes that created them from gas and dust billions of years ago. Optical observations of newly discovered, faint or unusual minor planets and comets are made at the Oak Ridge Observatory in Massachusetts and are closely coordinated with the International Astronomical Union's Minor Planet Center and Central Bureau for Astronomical Telegrams, both operated by SAO.

The Central Bureau for Astronomical Telegrams is responsible for receiving, verifying, cataloguing and disseminating information about transient astronomical phenomena such as the discoveries of comets and asteroids that approach the earth, and of novae and supernovae. For comets and asteroids, the Bureau computes orbits and provides information on where the objects can be observed in the future. The Bureau provides such information to 750 astronomers and observatories around the world. The Minor Planet Center concentrates on asteroids and comets and provides detailed information on these objects to some 250 subscribers worldwide. The presence of Halley's Comet added substantially to the work of these organizations in 1985 and 1986.

SAO scientists were among many involved in planning and research involving the 1985-1986 appearance of Halley's comet, including measurements of the remarkably diverse physical characteristics of its nucleus -- the first glimpse ever of the heart of a comet. These measurements confirmed and extended the famous "dirty-snowball" model of a comet's nucleus developed by an SAO scientist.

The Voyager missions discovered Saturn's outermost ring to be curiously uneven in brightness: two bright regions 180 degrees apart are separated by two darker regions. An SAO scientist has mapped these variations and devised a theory to explain this unevenness, not by an uneven distribution of particles in the rings, but by a tendency of the particles to cluster gravitationally in aligned arrays that reflect light better in one direction than in the direction perpendicular to it.

Laboratory studies of lunar samples collected by the Apollo astronauts continued; a collaborative study of rocks from the Apollo 16 site has been carried out with workers at other institutions. The Apollo 16 site is in the central highlands of the Moon and consists of a complex of layers of debris splashed to the site from the giant impacts that created the large basins on the Moon, approximately 3.9 billion years ago. SAO's studies have shown that one of these contributing impacts, the one that formed the Imbrium basin, appears to have occurred some 50 million years earlier than was previously thought, providing a more accurate chronology of the early history of the Earth-Moon system. The impact also exhumed a diverse and highly evolved suite of crustal igneous rocks. Studies of these ancient crustal rocks, some of which were brought to Earth by the astronauts, help in understanding how, after the planets were formed, they sorted themselves into layers and continents having different compositions.

Radio Astronomy and Geoastronomy - Research in radio astronomy concentrates on understanding the structure, evolution, sources of energy and ultimate fate of radio wave-emitting astronomical objects distributed throughout the universe. In geoastronomy, research concerns the use of radio astronomy techniques to measure the contemporary drifts among the continents, to probe the interior structure of the Earth, and to test the theory of general relativity. Other facets of research in this division involve the development of atomic clocks, optical interferometry, and applications of tethers in space, a concept conceived and patented by SAO scientists.

The first detailed evidence has been obtained that infrared sources associated with dense cores contain, and are powered by, extremely young low-mass stars, and that near

the star, the circumstellar matter typically has a "cavity." This cavity contains a flattened structure, a "disk," which emits at near- and mid-infrared wavelengths and therefore allows its presence to be detected. Such disks may eventually form planets and their study is therefore of great interest to SAO scientists.

Optical interferometry is a technique that seeks to achieve extremely high angular resolution by extending interferometric techniques developed at radio wavelengths to optical wavelengths. An astrometric observatory using a 20-meter-long stellar interferometer is being installed at Mt. Wilson Observatory as part of a joint project of SAO, the Massachusetts Institute of Technology, the Naval Research Laboratory, and the United States Naval Observatory. This Mark III interferometer, which became operational in the fall of 1986, is expected to be 10 to 100 times more accurate than conventional optical telescopes for determining positions of stars on the sky, making possible, for example, searches for massive planetary companions of nearby stars.

SAO scientists have also designed a dual optical interferometer for placement in Earth orbit to make measurements of positions of astronomical objects with errors at the microarcsecond level. (A microarcsecond is the angular size of the thickness of a dime on the Moon as seen from the Earth.) This instrument would be used to search for other planetary systems, to conduct a significant new test of general relativity and to improve the cosmic distance scale through extension of triangulation to much greater distances.

Solar and Stellar Physics - Research in solar and stellar physics is directed principally towards understanding the physical processes operating in the Sun and stars. Stars like the Sun are studied in order to increase understanding of the dependence of their properties on age, on composition and on their physical associations in pairs and in groups. Research in this division includes study of the behavior of hot gas under varied conditions--in extended stellar atmospheres, in the interstellar medium and in material ejected from young stars and supernovae.

A noteworthy result from this year's SAO research activities was the discovery of a flattened, rotating gas cloud surrounding a very young star. Study of spectra obtained at Mt. Hopkins and at the four-meter-diameter telescope of the Kitt Peak National Observatory revealed the signatures of the thin gaseous disk orbiting the star. It is thought that planets and other solar system objects originally formed from a similar disk rotating around the Sun. The new observations suggest that such disks do occur around cool stars; thus, if this theory about the origin of the solar system is correct, scientists may now be seeing other planetary systems in the process of formation.

Supernova remnants contain material violently ejected by a dying star, as well as interstellar gas heated to hundreds of thousands of degrees by the expanding shockwave. The hot material is observed as long, narrow filaments. Physicists at SAO, the California Institute of Technology, and the University of Wisconsin hypothesized that these filaments are ripples in a very large, thin sheet of glowing gas, and predicted the gas motions that would result were this idea correct. Observations with the Multiple Mirror Telescope and the Kitt Peak telescope confirm the hypothesis. Until now, most theorists assumed that interstellar space is filled with small, discrete clouds of dense gas immersed in a much lower density background gas. The new observations and the new hypothesis thus point to the need to rethink the processes by which stars and planets form out of the materials in space.

A new technique of astronomical imaging--rapid picture taking to avoid the blurring caused by motions in the Earth's atmosphere--combined with sophisticated data analysis techniques, revealed a faint companion star to one of the well known and brightest stars in the sky: Betelgeuse. The new technique will enable SAO scientists to learn just how common low mass companions are and to get an idea of how common planetary systems, which represent even less massive companions, might be.

Theoretical Astrophysics - Theoreticians study astronomical systems by means of physical analysis and mathematical modeling. A broad range of topics is investigated, including the interiors of neutron stars, the properties of atoms and molecules in interstellar space, the formation of spiral structure in galaxies, high temperature plasmas and the formation of planets in the early solar system.

One of the most exciting recent theories in cosmology is the "new inflationary universe." Some fundamental theories of elementary particle physics have suggested that the universe underwent a phase of rapid expansion at a very early time in its history, at a time after the "big bang" when particle energies were enormous. The existence of this expansion or "inflationary" phase explains several previously unexplained facts about the universe, such as its impressive uniformity. It should also be possible in principle to use the properties of the universe resulting from this inflation phase to calculate the deviations from uniformity of the distribution of matter and energy in the early universe, and thus to predict the very fluctuations in density out of which galaxies and other large-scale structure formed. These calculations would provide a critical test of such inflationary theories and the underlying theories of elementary particles. In order to carry out such a program, one SAO scientist is using a simplified model of a basic quantum theory of physics to calculate the nature of the initial fluctuations. This calculation will be followed by a detailed analysis of the subsequent development of the fluctuations to the point where they become observable structures, such as galaxies or clusters of galaxies. In this project one can see the surprising unity and scope of science which enables researchers to understand the largest structures in the universe from properties of the smallest elementary particles.

Scientific Equipment Replacement Program - With funding provided in FY 1984 and following years, SAO has been addressing its most pressing needs to replace and improve old and obsolete laboratory and computer equipment. The effectiveness of existing laboratory equipment is also being substantially enhanced by microprocessor-controlled data acquisition and data presentation capabilities. A significant beginning is also being made in establishing a system of distributed computers at SAO. Several computer workstations and their associated disk- and tape-drive memories are now linked together on an Observatory-wide Ethernet system. This system allows some easing of the workloads on SAO's still very overloaded central computers.

Facilities Development - Legislation to authorize the construction of a new base camp for the Whipple Observatory was enacted in 1986 (Public Law 99-423). The FY 1988 Construction appropriation request includes funds to design and construct the new Whipple Observatory base camp.

Education Program - SAO conducts regular programs of public information and education, including popular lectures, "Observatory Nights for the Public" in Cambridge, and guided bus tours of the Whipple Observatory and popular lectures in Arizona. SAO is also involved in an extensive, national program to develop a curriculum, based on astronomical examples, to teach science and mathematics in the high schools throughout the United States.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 2 workyears and \$777,000 is requested for the continuation of the development of instrumentation for use in the new field of submillimeter wave astronomy (2 workyears and \$252,000); and for the design work for conversion of the Multiple Mirror Telescope (\$525,000).

Instrumentation for Submillimeter-Wave Astronomy (2 workyears and \$252,000) - For FY 1988, an increase of 2 workyears and \$252,000 is requested to continue the development of instrumentation for use in the new field of submillimeter-wave astronomy. The last frontier for ground-based astronomy consists of observing the skies with telescopes sensitive to submillimeter waves, light with wavelengths between those of the infrared and

radio waves. The formation of stars and planetary systems and the puzzling processes taking place in the cores of galaxies and quasars can best be studied at submillimeter wavelengths, because the radiation from these objects is usually much more intense at these than at other wavelengths. In the past few years, technology has advanced sufficiently to allow instrumentation to be built with characteristics suitable for use in submillimeter-wavelength astronomy.

With funding of \$150,000 provided in the FY 1987 budget, development of such instrumentation is being initiated. In FY 1988, SAO seeks increased funding of \$252,000 to develop further the technology of submillimeter instrumentation and, in particular, to build receivers for use on existing telescopes. With total program funding of \$402,000 in FY 1988, SAO would be able to hire a lead physicist to direct this development and a skilled technician to aid in construction of the receivers to detect, amplify, filter and record the focused submillimeter waves (2 workyears and \$92,000); and to continue the outfitting of a special laboratory for research in this new field (\$157,000). An additional \$153,000 is requested in FY 1988 for supporting expenses, including materials and supplies, and machine-shop work.

The use of SAO submillimeter-wavelength receivers on existing telescopes will be of unquestioned scientific importance for the study of (1) the composition and evolution of the surfaces of the terrestrial planets, as well as the composition of and, to a certain extent, the chemical processes taking place in planetary atmospheres. In addition, the abundance of molecular constituents in the central regions of comets could be probed effectively; (2) the formation and interaction of molecules in interstellar space under conditions not achievable in terrestrial laboratories. The insights gained are not only of interest for understanding the birth of stars and the characteristics of the interstellar medium, but could conceivably lead to important chemical applications on Earth; (3) the distribution of dust in galaxies and the role of such dust in star formation. Because of its low temperature, dust is especially amenable to study at submillimeter wavelengths; (4) the structure of galaxies through the measurement of the distributions of certain molecules that seem to trace out the locations of most of the mass in galaxies; and (5) quasars whose sources of enormous energy remain an outstanding enigma. Submillimeter observations can penetrate deeply into the heart of quasars and provide powerful discriminants to distinguish among various theories proposed to explain the source of the power radiated by these objects. These studies represent research programs from all of SAO's divisions, and scientists from each division would be involved in the observations and their analysis.

Several existing telescopes are expected to be available for use with SAO submillimeter-wavelength receivers, and the institutions in charge of these telescopes are desirous of having these receivers there. These institutions include the Royal Observatory, Edinburgh, Scotland, which has expressed interest in initiating an arrangement where SAO submillimeter receivers would be used on the new 15-meter-diameter U.K.-Netherlands submillimeter telescope in Hawaii in exchange for SAO's being granted extended periods of observing time. This arrangement would represent an important opportunity for SAO, as this telescope is the largest in the world operable at submillimeter wavelengths--it has twice the collecting area of its nearest competitor.

Submillimeter observations will reveal much greater detail when they can be made at angular resolution much finer than is available from the single telescopes mentioned above. In a separate, but related, initiative, SAO wishes soon to take this next step toward significantly increased resolution by beginning construction of a pioneering array of submillimeter telescopes designed to achieve arcsecond resolution--more than a factor ten greater than achievable with single telescopes. With astronomical observations from space suffering severe delays, due to the Challenger tragedy, pioneering new frontiers with ground-based observations becomes of even greater importance.

Conversion of the Multiple Mirror Telescope (\$525,000) - As a result of their collaborative involvement in the design, construction and operation of the Multiple Mirror Telescope (MMT), the Smithsonian Institution and the University of Arizona have assumed a world-wide leadership role in the application of modern technology to ground-based research in optical and infrared astronomy. The MMT, though initially regarded primarily as a prototype for the giant telescopes of the future, is now recognized as a forefront astronomical facility in its own right.

The successful use of light-weight mirrors in the MMT led staff of the University of Arizona to explore the possibility of casting such mirrors with diameters of up to 8 meters and with unprecedentedly short focal lengths. These short focal lengths allow small housings to be used and, hence, make telescopes relatively much less expensive. Early experiments by the University of Arizona have been so encouraging that several institutions are planning telescopes with such short focal lengths in this 8-meter-diameter size. The National Optical Astronomy Observatories have begun the design of the National New Technology Telescope (NNTT), an MMT approach that is expected to use four 8-meter diameter mirrors. The NNTT will be the equivalent of a 16-meter diameter telescope and will cost an estimated \$125 million. In another parallel effort, the University of California and the California Institute of Technology are designing and building the 10-meter-diameter Keck telescope using related new technology, with an estimated cost of \$85 million.

For Smithsonian astronomers to remain in the forefront of research in optical and infrared astronomy through the remainder of the 20th century, an improvement in its telescope facilities is required. A promising approach exists: replacing the six mirrors of the MMT with a single 6.5-meter-diameter mirror, yielding the largest, short-focal-length telescope that can be fit in the present MMT structure. If begun now (see below), the MMT conversion might be completed by 1992 with the relatively modest expenditure by the Smithsonian of \$10 million. Such an effort would have the great advantage of being a modification of an existing facility where many of the subsystems--the telescope mount and the rotating building, for example--would remain intact, thus allowing the actual conversion to be accomplished with the telescope being out of use for only six months or less. More importantly, the experience gained with the converted MMT, both with the primary mirror and the instrumentation, would provide a valuable test bed for the planned future telescope development by other groups in the nation such as for the NNTT--just as the successful experience with the present MMT provided the basis for selection of the MMT mode as the design choice for the NNTT. Also of importance is the casting and evaluating of this intermediate-sized mirror, of about 6.5 meters in diameter, which would be the largest single telescope mirror ever made. It is very desirable to make such an evaluation before the casting of the even larger 8-meter-diameter mirrors are attempted for the NNTT and other telescopes. The converted MMT would thus play a very valuable intermediate role for the development of telescope technology on the road to the next plateau.

Since the United States space research program has been so severely delayed by the Challenger tragedy, it seems imperative to proceed vigorously with forefront ground-based programs (as also noted above) in order for the nation to maintain a competitive position in this general field of research. In this context the conversion of the MMT into a large-diameter telescope with a wide field of view seems an exceptionally cost-effective program. The converted MMT would not only have more than twice the collecting area of the present MMT, but would be able to observe nearly one hundred times more of the sky at any given instant, an enormous advantage.

To explore in depth the scientific benefits of this conversion of the MMT, a workshop was conducted at the Smithsonian Astrophysical Observatory (SAO) in Cambridge in April 1986, in which SAO and other scientists presented descriptions of unique research opportunities that could be exploited with a converted MMT. From this workshop emerged

the conclusion that such a telescope would allow great qualitative and quantitative advances in the kind of research that could be done relative to projects possible with the present telescope configuration.

First, the wide field of the new telescope would open the possibility of studying many objects simultaneously and, for certain types of problems, would realize up to a hundredfold increase in efficiency of data collection over that now possible with the relatively narrow field of view of the present MMT. This new capability would make feasible many new and important studies of clusters of stars and galaxies, that would yield, for example, fundamental information not now obtainable on the very largest structures in the universe.

Second, data of the same quality as now produced at the MMT could be obtained with the converted telescope on objects 2.5 times fainter. This improvement would allow the 6.5-meter diameter telescope to be used in many new areas of research, such as studies of the evolution of the Universe and the formation of stars and planetary systems.

Third, the ability of the converted telescope to gather data much faster than the current rate will, for the first time, allow the study of certain rapidly changing astrophysical phenomena. In such cases, changes occur too rapidly to be studied with any of today's telescopes; for example, some of these rapidly changing processes take place in double stars that are so close to each other that their surfaces almost touch, and in systems with one star whose core is so dense that not even light can escape from it -- a black hole. Such systems give rise to very unusual conditions which would, for the first time, be able to be studied and allow us to gain deep insights into new physical processes.

In summary, the conversion would continue the MMT's tradition of pioneering new technology for the advancement of astronomical research, and would assure that the Smithsonian Institution retains the leadership role in optical and infrared astronomy that it has assumed as a result of its involvement in the MMT.

It must be emphasized, however, that the time scale for this development is not certain. We will be venturing well beyond previous technology, both in the size of the telescope mirror and in its large curvature (small focal length), leading to uncertainty in the estimated times that will be required to solve the accompanying technological problems. However, we are aware of no "showstoppers," only of possible "show delayers."

by the Smithsonian

The total cost for conversion of the MMT is estimated to be \$10 million. As with the original MMT, the University of Arizona would be primarily responsible for the development and the production of the primary mirror and related optics, and the Smithsonian for the support of the mirror and accompanying mechanical structures.

Because of the anticipated schedule of the mirror-casting furnace at the University of Arizona, and the lead time required for obtaining the special raw glass and refractories needed for the casting, it is necessary to have funding in FY 1987 in order for the orders for the raw glass to be placed before the summer of 1987. As a result, and with Congressional concurrence, the Smithsonian anticipates spending approximately \$535,000 in FY 1987, including \$250,000 to be provided by the Institution's nonappropriated Trust funds.

For FY 1988, the requested increase of \$525,000 will provide funding for the following work:

1. Fabrication of a support for the mirror during grinding (\$350,000). The new mirror will be lightweight and requires a support to allow its shape to be controlled accurately during grinding and polishing of its surface. This support structure will resemble, but must be different from, the cell that will eventually hold the mirror in the telescope.

2. Engineering analysis of the effects of gravity on the mirror and its support structure (\$25,000). This analysis is needed to insure that the precision of the mirror will not degrade when the telescope points in different directions.

3. The design of the system to be used to mount the mirror in the telescope (\$30,000). In any telescope, but particularly in one using a lightweight mirror, the support system must be carefully designed so that the mirror is able to retain its shape to within very small tolerances under varying temperatures and orientations.

4. Design of the structure that supports the optical components of the telescope (\$110,000). The stability of the optical support structure is critical for the performance of the telescope.

5. Miscellaneous expenses (\$10,000). Production of reports, travel needed to oversee subcontractors to insure quality control, etc.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Unrestricted general funds come primarily from overhead charged on contracts and grants. These funds are used to support administrative positions and some of the other administrative costs of SAO. Special Purpose funds come primarily from two sources: external users of SAO's Computer Center and the Institution's Trust funds, with the vast majority being from the Trust funds. The former may be used for research purposes and for computer related purchases in future years. The latter involves direct support of some research as well as the Fellowships and Visiting Scientists Program, which is by far the largest single special purpose program (estimated expenditures from these Trust funds are \$430,000 in FY 1987 and \$500,000 in FY 1988).

Restricted Funds - Restricted funds consist of restricted endowments, gifts and grants from individuals, foundations, or corporations which specify funds for a particular project. Restricted endowment funds provide support for studies in various physical sciences (estimated expenditures of \$62,000 in FY 1987 and \$89,000 in FY 1988). A grant from the Chemical Manufacturers Association has assisted SAO over the past several years in studies of the chemical balance of halogens and ozone in the stratosphere (expenditures of \$69,000 in FY 1986 completed this very successful program).

Federal Grants and Contracts - SAO receives a majority of its funding through Federal agency grants and contracts for research. This research is often carried out in cooperation with both governmental and academic institutions in the United States and abroad. Funding is received from Federal agencies, such as NASA, the Naval Research Laboratory and the Air Force, to support specific projects in areas of SAO's expertise (estimated expenditures of \$14,300,000 in FY 1987 and \$11,000,000 in FY 1988). The estimated decrease for FY 1988 is due primarily to delays in NASA's programs.

SMITHSONIAN TROPICAL RESEARCH INSTITUTE

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			Amount	FTP**	Amount					
FY 1986 Actual	89	3,613	2	101	-	365	-	388	14	79
FY 1987 Base	95	4,122	2	164	1	332	-	593	14	573
FY 1988 Estimate	112	5,711	2	176	1	342	-	412	14	591

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	95	17	112
11 Personnel Compensation.....	2,390	353	2,743
12 Personnel Benefits.....	480	44	524
21 Travel.....	85	25	110
22 Transportation of Things.....	8	-	8
23 Rent, Communications & Utilities.....	32	-	32
24 Printing & Reproduction.....	23	-	23
25 Other Services.....	438	285	723
26 Supplies & Materials.....	389	83	472
31 Equipment.....	277	799	1,076
Total	<u>4,122</u>	<u>1,589</u>	<u>5,711</u>

Analysis of Increase

Necessary Pay.....	78
Program Funds.....	1,511

ABSTRACT - The Smithsonian Tropical Research Institute (STRI), located in the Republic of Panama, serves as the Nation's leading international center devoted to research in tropical biology and conducts basic research in ecology, behavior and evolution. STRI's basic research programs are complemented by carefully selected applied studies with a common theme of "Alternatives to Destruction" (providing an environmentally and economically valid substitute for the traditional clearing of forest for conventional agriculture). In addition to STRI staff, scientists throughout the world conducting research in tropical biology use STRI facilities for their fieldwork. Under the terms of the Panama Canal Treaty of 1979, STRI has been designated the custodian of the Barro Colorado Nature Monument, a 12,000-acre tropical nature preserve (consisting of Barro Colorado Island (BCI) and five adjacent peninsulas in Gatun Lake) located in the Panama Canal. Other STRI research facilities include a marine laboratory at Naos Island (on the

Pacific Ocean); a marine laboratory at Galeta Point and a field station in the San Blas Islands (both on the Atlantic Ocean); and a research library, laboratories, conference and study facilities, and administrative headquarters in Panama City.

For FY 1988, an increase of 17 workyears and \$1,511,000 is requested. Of this amount, \$800,000 has been made available through the redirection of funding associated with the closure of the Smithsonian Environmental Research Center's Rockville facility to establish a program in molecular evolutionary studies at STRI (6 workyears and \$800,000). The remainder of the increase is requested to equip and provide necessary staffing for the new Tupper Laboratory and Conference Center (8 workyears and \$567,000); and to staff and to furnish the new BCI Dormitory and Dining/Conference buildings, and the Gamboa Dormitory (3 workyears and \$144,000). (Funding for the full-year costs of the positions associated with the Tupper Center and BCI facilities, which will be hired midway through FY 1988, will be requested in the FY 1989 budget.) Necessary pay of \$78,000 is required for existing staff.

PROGRAM - The Smithsonian Tropical Research Institute, the Nation's leading international center for the advancement of basic research in tropical biology, performs at least four major functions as it strives to expand the horizons of tropical biology: 1) conducts fundamental research on the ecology, evolution and behavior of tropical plants and animals, including mankind; 2) provides major facilities for the international scientific community to study both terrestrial and marine tropical biology; 3) is deeply committed to environmental education and to conservation of tropical ecosystems; and 4) has the treaty-assigned responsibility to protect and manage the Barro Colorado Nature Monument.

During the past few years, considerable governmental attention has been directed to and great concern expressed over the problem of deforestation of tropical forests and the need to provide development assistance for protecting biological diversity in developing countries. The biological research conducted at STRI contributes basic data necessary for an informed implementation of those legislative initiatives.

Current research projects are summarized in an annual report and in STRI Contributions to Research, an offprint of STRI publications, which are distributed to appropriate organizations throughout Panama and the rest of the world. During FY 1986, the most significant accomplishments and major program activities have been:

Biotic Diversity - One of many projects at STRI addressing the generation and maintenance of tropical diversity is the 124 acre forest census on Barro Colorado Island. Stephen Hubbell, STRI staff member, and Robin Foster, STRI research associate, have just completed the second census of a quarter of a million woody plants on this plot. This recensus after five years quantifies the dynamics of tropical forests and is now being used to identify promising native species for use in reforestation efforts.

In cooperation with the Malaysian Forest Research Institute, and with Peter Ashton of Harvard University, Dr. Hubbell has begun mapping a 124 acre plot of tropical rain forest in a Malaysian forest reserve. In contrast to the 235,000 trees of over 1/2-inch diameter on the plot at Barro Colorado, the Malaysian plot will have over 350,000; when all the identifications are complete, the Malaysian plot may have over 700 species of free-standing woody plants, compared to 300 on the plot at Barro Colorado.

This comparative work is unique, pioneering and so conceptually exciting that several other countries (China, India, Sri Lanka) have requested technical assistance in developing similar census plot in their forests. Only with this comparative approach can we expect to produce basic knowledge and management recommendations that are general enough to be useful throughout the tropics without regard for regional idiosyncrasies of regional biological systems. With funding received in FY 1987, STRI will reinforce its

forest biology research programs at BCI. Such studies are fundamental to the development of a sound scientific foundation for reforestation of damaged watersheds, for conservation of tropical biotas as genetic reservoirs, and for sustained yield exploitation of tropical ecosystems.

Long-term Research and Biological Catastrophes - Solutions to the many biological problems of human societies in the tropics require long-term studies. STRI's permanent location and continuity of research efforts in the tropics contribute toward the development of those solutions. As a result of long-term research programs, STRI has come to recognize the significance of the catastrophes to which tropical communities are some times subjected.

The most recent illustration results from an oil spill that occurred near STRI's Galeta Research Laboratory on the Atlantic coast of Panama in April 1986. Enough oil reached Galeta to cause extensive mortality on the reef flat, and perhaps far more long-lasting damage to nearby mangrove forests. This is the first time an oil spill has occurred in so well studied a place.

Jeremy Jackson, of the STRI staff, has assumed responsibility for studying the consequences of the oil spill. The studies will trace the fate of the oil itself -- where it has gone, and where it is accumulating, changes in mangrove trees and the communities of organisms growing on their roots, and the effects on sea grasses, reef flats and subtidal reefs.

Although there have been no previous quantitative studies of subtidal reefs, a reef coral, like a temperate zone tree, contains a record of its previous growth. By drilling sections of reef corals at a variety of sites, the effect of the oil spill on reef growth will be examined.

Rhythms of Tropical Communities - In addition to recognition of the biological diversity of the tropics, it is important to understand how that diversity fits together in the life of the community as a whole. Seasonal rhythms of many forest organisms are tied to the cycles of the wet and dry season. Other cycles, although less obvious, are also important in marine communities (such as tidal and upwelling). STRI staff member Joseph Wright experimentally abolished one aspect of the seasonal rhythm in plots on Barro Colorado Island. By irrigating these plots, he kept soil moisture at rainy season levels throughout the dry season. Most deciduous trees on irrigated plots dropped their leaves in synchrony with conspecifics outside, although two species within the plot kept their leaves all through the dry season in contrast to their unirrigated conspecifics. Irrigation did not affect the timing or amount of litter fall, but it vastly accelerated the decay of this litter. Some insect groups were far more abundant on irrigated plots than in plots that were not irrigated. The response of arthropods to these altered micro-climatic regimes may help clarify the circumstances that produce outbreaks of insect populations at pest-levels.

Man in the Tropics - Tropical man, and his relations with natural resources, is another major theme of STRI research. Olga Linares, of the STRI staff, recently spent five months in Senegal among the Jola of Casamance studying how the spread of Islam affected gender roles in agriculture. Participation in ritual helps develop bonds of cooperation in practical affairs such as farming. Before Islam, men and women participated equally in religious ritual and worked together in the same rice fields. After Islam, women grow only rice, the subsistence crop, and men grow groundnuts, the cash crop. Major publications on the Jola will address the effects of the drought and the social division of labor in agriculture.

Visiting Scientists - In addition to the research of our permanent staff, the Smithsonian Tropical Research Institute promotes basic research in tropical biology by

hosting several hundred students studying in association with the staff and visiting scientists from many countries. Research goals can be pursued in biologically rich environments without concern for intellectual isolation. Hundreds of scientists from major universities and research institutions all over the world, including from 37 states of the United States, insure a continuing infusion of new ideas leavened by the long experience in the tropics of our permanent staff.

Publications - At least 200 scientific papers and books were published during 1986 as a result of work at STRI. Staff and visiting scientists are currently involved in over 140 research projects which will produce at least the same number of publications.

Facilities - STRI research facilities in Panama include the Barro Colorado Nature Monument; a marine laboratory at Naos Island (on the Pacific Ocean); a smaller marine laboratory at Galeta Point (on the Atlantic Ocean); a small field station in the San Blas Islands; and a cloud forest station at an elevation of 6,500 feet in western Panama. STRI also maintains a 63-foot research vessel for studies in both oceans. In addition, these facilities are used as home base for research conducted at numerous other sites throughout Panama. STRI research programs include both comparative studies among habitats and geographic regions and numerous carefully organized experimental studies.

With funding provided in FY 1987 as part of the Construction appropriation, together with a donation received from the family of Earl S. Tupper, STRI will construct the Tupper Laboratory and Conference Center at its central administrative complex in Panama City, scheduled for completion in mid-1988. With funding provided in FY 1987 as part of the Restoration and Renovation of Buildings appropriation, STRI will construct a new kitchen/dining/conference building at Barro Colorado Island and renovate an existing apartment building at Gamboa into a dormitory. Funding is requested as part of the FY 1988 Restoration and Renovation of Building appropriation request to construct a new dormitory on Naos Island.

Fellowships, Conservation and Environmental Education - Because of its location in the Republic of Panama, STRI is in a unique position among Smithsonian bureaus to play a significant role in the study and conservation of tropical environments. The goals of STRI in the area of education are two-fold: first, STRI is interested in the development of creative scientists from tropical and nontropical nations; and second, STRI is committed to the conservation of tropical ecosystems and is aware that their survival depends on the combined efforts of international organizations, the governments, the private sector, and people in the tropical countries themselves.

Approximately 100 young men and women representing a dozen nations (50 from Latin America) participated in STRI's academic programs in FY 1986. Also, STRI and the University of Panama organized a graduate-level course in tropical terrestrial ecology. Most of the participants were students in the Master's in Entomology program at the University of Panama, and included students from five Latin American nations.

STRI's educational function in tropical biology is enhanced by its premier reference library for tropical studies in Latin America. This library serves STRI's staff, visiting scientists and students from secondary schools and universities in Panama. Currently, the library has over 1,000 patrons per month.

STRI is deeply involved in conservation activities in the Republic of Panama and in selective other countries. Examples include participation in the National Forum on BioDiversity held in Washington, D.C. in September 1986; the X Latin American Congress of Zoology held in Chile in November 1986; sponsorship of student conservation groups; preparation of radio and television programs, articles, posters, exhibitions and workshops; cooperative agreement with the Kuna Indians Employee Association to develop a biological

reserve in the Comarca of San Blas; and technical assistance for the National Park Volcan Baru in Chiriqui. Studies of green iguana and forest gardening involve efforts to transfer the products of basic research programs to the "grass roots" local community.

The general objective of STRI's conservation/education program is to encourage a conservation ethic and to promote the preservation of forests and other threatened ecosystems in the tropics. STRI's activities in conservation include synthesizing and disseminating information for the general public and to agencies of the Government of Panama and the United States in an attempt to promote the implementation and enforcement of ecologically oriented national policies. For example, Marina Wong, a STRI postdoctoral fellow, and Jorge Ventocilla of STRI's Office of Educational Programs have just completed the text and illustrations for a "self-guiding" nature trail on Barro Colorado Island designed to help visitors make sense of the forest's complexities. Egbert Leigh, of the STRI staff, has arranged for an artist, George Angehr, and a Malagasy botanist, M. Abraham of the Service de l'Eau et des Forêts, to prepare an illustrated guide to the 50 most common species of tree in a forest reserve near Perinet between Tananarive and the east coast of Madagascar. An audio-visual program on STRI was prepared for presentation to over 60 Government of Panama officials who interact with the Institute and to civic and conservation groups.

All of these activities are designed to encourage research in the tropics, either by the direct support of individual projects or indirectly by encouraging the training of young scientists. This support is partly developed as a result of STRI's efforts as a constant advocate of the importance of studies in tropical biology to mankind as a whole.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 17 workyears and \$1,511,000 is requested to establish a program in molecular evolutionary studies at STRI (6 workyears and \$800,000); to equip and to provide necessary staffing for the new Tupper Laboratory and Conference Center (8 workyears and \$567,000); and to staff and to furnish the new BCI Dormitory and Dining/Conference buildings and the Naos and Gamboa Dormitories (3 workyears and \$144,000). (Funding for the full-year costs of the positions associated with the Tupper Center and BCI facilities, which will be hired mid-way through FY 1988, will be requested in the FY 1989 budget.)

Molecular Evolutionary Studies (6 workyears and \$800,000) - While STRI scientists have made advances with modest laboratory facilities, establishment of better equipped laboratories, a major STRI goal in recent years, will greatly enhance the Institute's ability to initiate new research in tropical biology using molecular and physiological techniques. The requested amount of 6 workyears and \$800,000 will allow the establishment of laboratories with up-to-date equipment and technical and support staff capable of studying genetic variation and physiology in tropical organisms. Such increased capabilities are consistent with the maintenance of STRI's leadership in tropical biology. Funding for this program has been made available through the redirection of funding associated with the closure of the Smithsonian Environmental Research Center's Rockville facility.

The importance of studying tropical organisms close to and in their natural environment in ways not heretofore possible and with minimal logistical problems cannot be overemphasized. The value of using live organisms is self-evident. Transportation of live organisms to temperate-zone laboratories through customs and agricultural quarantines is impractical to say nothing of the restrictions this imposes upon the scientific questions that can be pursued. Further, many research protocols require that organisms be sampled at specific stages of the reproductive cycle, which for tropical species (the phenology of which is largely unknown) means that the scientist has to be on location for the entire year. Panama City, a cosmopolitan center with efficient transportation of

materials from United States suppliers, is an ideal location to undertake such a research effort.

With these laboratories STRI's historical strength -- field research -- will be integrated with sophisticated laboratory work. In addition to generating new, critically needed knowledge about tropical biology, STRI's expansion will provide increased opportunities for Latin American researchers to be trained in modern scientific methods in both laboratory and field.

Modern technologies and insight from molecular biology to physiology will provide new research opportunities. Most questions in evolutionary biology ultimately benefit from knowledge of the genetic underpinnings of variation. Thus, molecular techniques can answer basic questions that have remained unanswered since the emergence of evolutionary biology as a distinct scientific discipline. With molecular techniques, STRI can contribute directly to knowledge of genetic variation within and between populations; determine the relationships between individuals, species and higher taxa; establish the existence of species that cannot be distinguished morphologically; supply information about the relation between breeding systems and patterns of gene flow among populations; and perhaps determine the date at which lineages split. By exploiting the character of the Isthmus of Panama as a barrier of known geological age between the Atlantic and Pacific Oceans, STRI researchers are uniquely capable of examining the effects of isolation in the process of speciation. This information may prove critical to evaluation of the environmental impacts of various alternatives to the existing Panama Canal and to stock assessment in selected marine fin and shell fisheries.

The new program will emphasize the most promising molecular techniques used in evolutionary studies: protein electrophoresis, restriction mapping and sequencing of nucleic acids, and DNA-DNA hybridization. Electrophoresis is a relatively inexpensive methodology for broad scale screening of populations at the species level while DNA-DNA hybridization is ideal for constructing phylogenies at higher taxonomic levels. Laboratories with all these capabilities would impart to STRI research potential that no one technique possesses alone.

Similarly, some of the most vexing problems in tropical biology derive from our rudimentary knowledge of physiological processes in tropical organisms. This remains true despite increasing evidence of the importance of physiological processes in both the generation and maintenance of the diversity of tropical biotas. The difficulty involved in transplanting tropical organisms to temperate research centers insures that knowledge will remain rudimentary until tropical laboratories can be established. Indeed, more detailed knowledge of organismal physiology will benefit both basic and applied biology. For example, plant physiology is a central factor in understanding both distribution of plants and regeneration of forests. Thus, physiological knowledge will play a critical role in efforts to reforest extensive areas in the tropics.

Success in accomplishing the goals of this initiative requires the juxtaposition of four elements: 1) Addition of three scientists and three technicians familiar with the new approaches to evolutionary biology; 2) availability of laboratories equipped with modern scientific equipment; 3) presence of promising young post-doctoral scientists; and 4) presence of existing staff with long experience on the Isthmus of Panama.

Equipment required in this initiative ranges from microcentrifuges and spectrophotometers to an electron microscope. A scanning electron microscope is instrumental in studies of paleontology and in documenting land use by pre-Columbian peoples through the study of pollen and phytoliths, a procedure that has recently been pioneered at STRI. It is important that we understand the role of prehistoric man in the ecology of tropical ecosystems. Examination of the human component in the ecology of tropical forests is often confined to the process of deforestation. Yet man has played a role in the har-

vesting of tropical resources for millennia. Existing forest have evolved selective pressures imposed by human society; study of those pressures and their effects on tropical forest will be instrumental in countering destructive pressures throughout the tropics.

STRI's current fellowship program provides only one year of support, not enough for most students to complete a major research program, particularly in the presence of seasonal or annual variation. STRI intends to offer fellowships of up to three years to allow young scientists to integrate field and laboratory work to an extent unprecedented in tropical biology. STRI will grant these 3-year post-doctoral fellowships to recent Ph.D.'s who propose particularly imaginative ways to take advantage of the simultaneous presence of tropical environments and well-equipped laboratories.

Just as the opening of the tropics to studies of ecology and behavior produced revolutions in knowledge of biology during both the 19th and 20th centuries, expanded efforts to understand molecular and physiological phenomena in the tropics will stimulate yet another revolution.

Specifically, the requested funding will allow STRI to hire 3 scientists and 3 technicians (6 workyears and \$182,000); purchase advanced laboratory equipment (\$225,000); provide for contractual services (\$150,000); support the costs of laboratory chemicals, glassware and other supplies (\$83,000), and travel (\$25,000); and grant postdoctoral fellowships (\$135,000).

Tupper Laboratory and Conference Center Staffing (8 workyears and \$567,000) - The new Tupper Laboratory and Conference Center will provide laboratory space for approximately 12 permanent staff members and 24 visiting scientists, fellows and assistants. In addition to scientific office and laboratory spaces, other indoor areas will include darkrooms, an aquarium room, a specialized environmental control laboratory, an analytical chemistry room, space for instrument repair, a computer room, chemical storage and disposal systems, reference collection storage, a herbarium and specialized laboratories for the new programs in molecular evolution. Adjacent to the main laboratory will be an insectary, an aviary and a small animal facility for mammals, reptiles and amphibians, and plant growing space. The conference center will consist of two rooms; an auditorium with a seating capacity of 180 and a room with movable partitions to host seminars, workshops and other recurring activities important to a scientific community. It will also provide the capability of hosting local, regional and international conferences.

For FY 1988, a sum of \$460,000 is requested to purchase equipment and furnishings for the Tupper Center. The requirements for furnishing and equipping the Tupper facility will be partially satisfied through the reuse of office furniture and related items from STRI's current office building at Ancon, and the transfer of scientific equipment originally purchased for the Smithsonian Environmental Research Center's Rockville facility. After an extensive survey conducted by a professional architectural/engineering firm, the following items totaling \$736,000, were identified as necessary to complete the furnishings of the Tupper facility and to ensure efficient operation of the programs to be centered there: Health and Safety and Animal Care Equipment (chemical storage, mammal cages, etc.) - \$52,000; Specimen and Collection Storage Cases (herbarium and insect collections) - \$102,000; Computer Equipment (Mainframe computer, terminals, printers, software, etc.) - \$218,000; Maintenance and Shop Equipment (photographic and maintenance shops, wood and metal shops for construction of cages and other scientific apparatus) - \$57,000; Research Equipment (sound and electronics laboratories, compound and dissecting microscopes, etc.) - \$92,000; Furnishings (desks and chairs, office and laboratory cabinets and tables, file cabinets, etc.) - \$215,000. The requested funding will be needed in FY 1988 and FY 1989 to complete the purchase of these new furnishings and equipment. In future years, this funding will be justified in the base to provide an expanded base for STRI's equipment replacement and acquisition fund.

The construction of the Tupper Laboratory and Conference Center is scheduled for completion in June 1988. Sixteen new positions will be required to staff and operate the new facility. For FY 1988, funding of 8 workyears and \$107,000 is requested to hire these 16 positions approximately mid-way through the fiscal year. This hiring schedule, based on the construction timetable, will allow these positions to be hired and trained prior to the beginning of the relocation of program activities and operations to the new facility. (In FY 1989, a further amount of 8 workyears and \$124,000 will be required to annualize the partial-year funding for these positions requested in the FY 1988 budget.)

To provide essential building maintenance and plant services, 6 positions are requested: two maintenance mechanics, two custodial workers, an electronics mechanic, and an air conditioning mechanic (3 workyears and \$39,000). In addition, a food service worker position is requested to staff the Center's kitchen facilities (0.5 workyear and \$5,000).

To provide staff support for the herbarium and small animal facility, 2 positions are requested: a biological technician (herbarium) and an animal/plant keeper (1 workyear and \$16,000). In addition, 7 positions are requested to provide general program and administrative support: an editorial assistant, a management services assistant, a supply clerk, a procurement clerk, a receptionist/clerk-typist, a secretary, and a messenger (3.5 workyears and \$47,000).

Staffing and Furnishings for New Facilities on BCI and Gamboa (3 workyears and \$144,000) - With funding provided in FY 1987 as part of the Institution's Restoration and Renovation of Buildings appropriation, STRI will construct needed research support facilities for its field research locations. On Barro Colorado Island, a two-story kitchen/dining/conference facility will replace the present inadequate wooden frame building. At Gamboa, the renovation of an existing apartment building into a dormitory will provide housing within easy access to several field sites, including Barro Colorado Island. These facilities are scheduled to be completed by the end of FY 1987.

For FY 1988, funding is requested to provide necessary staffing and to purchase equipment to furnish these new facilities. A total of \$114,000 is requested for furnishings, including \$54,000 for the BCI dormitory and \$60,000 for the BCI kitchen/dining/conference building. Six new positions are requested to staff these new facilities: two food service workers, a secretary and three custodial workers (3 workyears and \$30,000). (In FY 1989, a further amount of 3 workyears and \$30,000, will be required to annualize the partial-year funding of these positions, which will be hired in mid-FY 1988.)

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are derived from a variety of sources including receipts and collections from users of Barro Colorado Nature Monument facilities (20 U.S.C. 79b (d)) and annual allotments of Smithsonian Trust funds. Such funds are used to support, in part, the salaries and related costs of the fellowship program, the senior sabbatical program, insurance, supplies, and a long-term collaborative research program with the Forest Research Institute in Malaysia. As a result of the U.S. Ambassador's directive banning the use of the Panama railroad for official purposes, funding was provided at the end of FY 1986 for the purchase of a high speed vessel to transport personnel to Barro Colorado Island (although the funding is not reflected in the figures). Funds also are used to support a short-term fellowship program in tropical biology; visiting scientists and students; field research; seminars and lectures; environmental, conservation and education activities within the country; and to defray expenses at international scientific colloquia and ceremonial occasions. Funds also are provided from the Institution's Collections Acquisition, Scholarly Studies and Educational Outreach Program and Research Opportunities Fund for training in tropical

biology, fellowships, field research, and environmental research education in the tropics. Expenditures under this Program and the Research Opportunities Fund, totaled \$145,000 in FY 1986.

Restricted Funds - Funds are in the form of restricted endowments which specify the use of the donation or bequest and gifts and grants from individuals, foundations, organizations, or corporations for specific purposes. These are used to support scientific research related to the biological, ecological and behavioral processes on which tropical ecosystems are organized; research related to geophysical events; publication and distribution of research results; and studies relating to endangered tropical environments.

Continuing support from the Exxon Corporation will be used to provide short-term tropical biology fellowships and assistance to 30 students from developing Latin American countries (estimated expenditures of \$47,000 in FY 1987 and in FY 1988), and a grant from Noyes Foundation for support of longer term fellowships for students from the developing world.

A grant awarded by the W. Alton Jones Foundation, Inc., has supported the research projects on the management of the green iguana for human consumption; and domestication of the paca as a food source. These projects are designed to develop alternatives to the destruction of tropical forests for conventional agriculture (particularly extensive cattle rearings) and have been conducted over a five-year period in the vicinity of the Barro Colorado Nature Monument (estimated expenditures of \$315,000 in FY 1987 and \$164,000 in FY 1988).

Federal Grants and Contracts - As a result of the April 1986 catastrophic oil spill in the bay adjacent to STRI's Galeta facility, STRI was authorized by the Mineral Management Services of the Department of the Interior to spend \$200,000. STRI is awaiting formal approval of additional funds to support a comprehensive five year study of post-spill recovery (estimated expenditures of \$573,000 in FY 1987 and \$591,000 in FY 1988).

SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**		FTP**	
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	53	3,175	1	75	-	97	-	43	2	483
FY 1987 Base	40	2,953	1	84	-	115	-	17	2	462
FY 1988 Estimate	28	1,376	1	89	-	114	-	17	2	472

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	40	-12	28
11 Personnel Compensation.....	725	-65	660
12 Personnel Benefits.....	89	-9	80
21 Travel.....	11	-1	10
22 Transportation of Things.....	12	-10	2
23 Rent, Communications & Utilities.....	83	-73	10
24 Printing & Reproduction.....	6	-	6
25 Other Services.....	1,542 /1	-1,412	130
26 Supplies & Materials.....	198	-4	194
31 Equipment.....	287	-3	284
Total	<u>2,953</u>	<u>-1,577</u>	<u>1,376</u>

Analysis of Increase

Necessary Pay.....	23
Program Funds.....	-1,600

1/Adjusted to include \$862,000 transferred from Salaries and Expenses to the Restoration and Renovation of Buildings account in the FY 1987 appropriation process for construction to accommodate SERC-Rockville activities transferred to SERC-Edgewater.

ABSTRACT - At its Edgewater, Maryland facilities, the Smithsonian Environmental Research Center (SERC) performs basic scientific research in environmental biology--the study of plants and animals in natural environments and in simulated laboratory conditions to understand the growth, development and succession of whole environmental systems. At the Rockville, Maryland site, research was focused on regulatory biology--the study of mechanisms that regulate the growth and development of whole organisms down to their cellular and subcellular levels. The Institution has closed the Rockville laboratory, although a few high priority activities previously conducted at Rockville will be continued under other arrangements. For FY 1988, it is requested that the remaining \$1.6 million associated with activities being discontinued be redirected to

strengthen existing Smithsonian biological activities consistent with Institutional expertise and the directions of modern biology. Complete justifications for the use of the \$1.6 million redirection are contained in the budget statements of the Tropical Research Institute, the National Zoological Park, the National Museum of Natural History/Museum of Man, and the Office of Fellowships and Grants. Necessary pay in the amount of \$23,000 is required for existing staff at the Edgewater facility.

PROGRAM - Closure of Rockville Facility - The decision to close the SERC facility at Rockville followed a series of external and internal reviews held to assess the scientific direction of the research program at Rockville and its place and future direction within the framework of the Institution's overall biological research programs. The reviews generally upheld the scientific quality of the research being done, but pointed out that the laboratory was relatively isolated in the context of the broader biological sciences and could be best served by integration into other existing research settings. The reviews also stressed that such long-term data collecting as solar and CO₂ monitoring, including research on CO₂ effects on marsh grasses, be continued by the Smithsonian, with the attendant technical support units which were available at Rockville.

Following the recommendations of the reviewers, the CO₂ monitoring program and the research on saltgrass marsh have been administratively reassigned from Rockville to Edgewater. The third program, SERC's solar monitoring program, has provided a unique source of continuing data for scientists throughout the world. Retention of the solar monitoring unit in the Office of the Assistant Secretary for Research allows this activity of high national priority to continue. The National Oceanic and Atmospheric Administration, as a cooperating institution, is providing space and support services for this program.

Because of the abolishment of the activities at SERC-Rockville, the Institution is losing its carbon dating capability. Without the laboratory, the Smithsonian will purchase carbon dating services from commercial laboratories. To finance this important need, the Smithsonian has established a separate account within the Office of the Assistant Secretary for Research to provide carbon dating services to Smithsonian staff.

Research at Edgewater Facilities - SERC research at Edgewater is directed toward understanding how coastal land/water environmental systems function. Research staff address a wide variety of ecological questions while conducting a long-term interdisciplinary study of a tidal subestuary of the Chesapeake Bay (Rhode River) and its watershed. This watershed contains a mosaic of upland and floodplain forests, marshlands, cropland, pasture, abandoned fields and residential areas typical of the mid-Atlantic Coastal Plain. The land/water system is used as a testing ground for theories that have broad applicability and for environmentally relevant issues. Areas of study have been the effects of herbicides on plants in the Chesapeake Bay; acid rain effects upon deciduous forest and fish reproduction; and the role of riparian forests in alleviating pollution from agriculture.

Research Results - Overenrichment of the Chesapeake Bay with nitrogen and phosphorus, which limits algal growth, has been recognized as a major regional problem. SERC staff have examined this problem from an overall landscape perspective by constructing a systems analysis based on the results of a series of more restricted studies. The annual movements of nitrogen and phosphorus through the watershed and estuarine receiving waters of the Rhode River study site were measured at automated sampling stations and arrays of ground and surface water sampling collectors. Croplands discharged far more nutrients per acre than did pastures or forests. Most of the phosphorus was discharged as suspended sediment in overland flows during major storms in the growing season, while most of the nitrogen was discharged as nitrate in groundwater

year-round between storms. Most of the nitrogen and much of the phosphorus released by croplands were absorbed by riparian forests along primary streams before the nutrients reached these channels. However, nutrient discharges from these primary streams still exceeded discharges from primary streams which drained pastures or forests. A freshwater forested swamp and tidal estuarine headwater shallows were also major traps for phosphorus due to settling of suspended sediments. Of the total nitrogen inputs to the landscape, 31 percent was from precipitation and 69 percent was from farm management. One percent entered the Rhode River. Of the total phosphorus inputs to the landscape, seven percent was from precipitation and 93 percent was from farming. Seven percent entered the Rhode River. The tidal Rhode River, which has no point sources of nutrients, is seriously overenriched. Therefore, from this landscape perspective, improved Chesapeake Bay watershed management must strive to further reduce these seemingly low nutrient releases.

Atlantic White Cedar wetlands are widely distributed along the Atlantic Coast yet there is very little information on their structure and function. A study of one of the last remaining White Cedar stands on the inner coastal plain of Maryland compared its vegetation patterns, soils and vegetational nutrient status with other nearby wetlands and a White Cedar site in Virginia. The White Cedar wetland had high soil calcium and magnesium and low soil phosphorus content. Tree tissue composition indicated phosphorus and possibly potassium and nitrogen deficiencies as well as high tissue content of aluminum. The abundance and distribution patterns of 32 species of higher plants were recorded at this White Cedar site.

Green plants respond to visible, near infrared and near ultraviolet light of various colors in two important ways. They utilize these colors with differing efficiencies to carry out photosynthesis and, via effects upon the photoreversible pigment phytochrome, to regulate a series of other plant metabolic and morphogenic responses. SERC scientists conducted a detailed analysis to mathematically predict how any given light environment would affect plant growth and photosynthetic efficiency and development. The results of these analyses were used to quantitatively predict the effects on plants of a series of widely used artificial light sources.

In the tidal Rhode River, large populations of mummichog, a common minnow-like fish, live along tidal creek shorelines and move into the marsh surfaces to feed during high tides. Along the east coast of North America they move into salt marshes during high spring tides to spawn and have been shown to have semilunar spawning cycles. In the Chesapeake Bay, where tidal changes caused by barometric pressure and wind frequently and unpredictably override lunar tidal levels, it was found that these mummichogs still had semilunar reproductive cycles which lagged the new and full moons by three to four days. These results indicate that the fish are cuing on something other than tidally mediated factors, such as turbulence, salinity or temperature.

Educational Activities - SERC provides a broad range of educational activities, including teacher-led field trips, self-guided nature trails and guided tours in which groups of students and the general public observe firsthand a variety of natural habitats. A work/learn program enables students to work with scientists, both in the field and in the laboratory. Predoctoral, postdoctoral and sabbatical programs for professionals enable visiting researchers to carry out collaborative or independent research at SERC. The results of SERC's research are disseminated through the publication of findings in scientific journals, the presentation of research findings at national and international scientific meetings and seminars, the training of scientists, and public education activities.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are provided by allotments and proceeds from the sale of educational brochures and materials. Funds support special events, work/learn and fellowship programs and the salary costs of a docent coordinator and a part-time public program director.

Restricted Funds - These are provided through donations, bequests and foundation grants that are designated for specific subjects of investigation. A grant from the World Wildlife Fund has been received to support investigations into the effects of land use changes in the Yucatan Peninsula upon migratory bird populations which nest in the Chesapeake region and winter in Mexico (estimated expenditures of \$17,000 in FY 1987 and in FY 1988).

Federal Grants and Contracts - These funds are provided by various Federal and State agencies for special projects which can be conducted at SERC because of its staff expertise and unique physical site characteristics. Grants from the Chesapeake Research Consortium and the U.S. Department of Energy are expected to total approximately \$462,000 in FY 1987 and \$472,000 in FY 1988.

NATIONAL ZOOLOGICAL PARK

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount				
FY 1986 Actual	317	11,105	1	112	-	296	1	157	-	7
FY 1987 Base	321	12,252	1	120	-	177	1	429	-	-
FY 1988 Estimate	332	13,176	1	120	-	126	1	626	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	321	11	332
11 Personnel Compensation.....	8,657	500	9,157
12 Personnel Benefits.....	1,255	66	1,321
21 Travel.....	41	-	41
22 Transportation of Things.....	10	-	10
23 Rent, Communications & Utilities.....	54	-	54
24 Printing & Reproduction.....	15	-	15
25 Other Services.....	442	-	442
26 Supplies & Materials.....	1,398	223	1,621
31 Equipment.....	375	135	510
41 Grants.....	5	-	5
Total	<u>12,252</u>	<u>924</u>	<u>13,176</u>

Analysis of Increase

Necessary Pay.....	292
Program Funds.....	632

ABSTRACT - In its 1889 charter, the mission of the National Zoological Park was defined as "the advancement of science and the instruction and recreation of the people." Today these goals are accomplished through programs that make the National Zoological Park a leading international center for animal exhibition; biological and veterinary research; and public education in conservation and in the humane care of animals. The Zoo houses its public collection on a 163-acre site at Rock Creek Park in Washington, D.C., and maintains a major conservation, captive breeding and research center on 3,150 acres in Front Royal, Virginia. The Zoo serves the public and specialized audiences in understanding animal adaptations and evolution, and the interaction of wildlife with the environment, through its programs in research, conservation, animal health and education. For FY 1988, an increase of 11 workyears and \$632,000 is requested. An amount of \$250,000 of this increase has been made available through the redirection of funding

associated with the closure of the Smithsonian Environmental Research Center's Rockville facility to establish programs in molecular genetics and the genetic management of rare and endangered species (2 workyears and \$250,000). The remainder of the increase is requested to support current programs at the National Zoological Park (9 workyears and \$382,000). Necessary pay of \$292,000 is required for existing staff.

PROGRAM - At the Rock Creek site, the National Zoological Park is responsible for the maintenance and welfare of approximately 2,300 animals comprising 430 species. The species are chosen primarily for their interest to the public and their contribution to research and conservation. The more than 770 animals, representing 43 species, housed at the Conservation and Research Center (CRC) at Front Royal have been selected because of their long-term breeding and research potential, and because of their precarious existence in the wild.

In addition to its traditional animal management practices, the Zoo plays a major role in developing new techniques for long-term sperm and embryo storage and embryo transplantation. These techniques probably will play a crucial part in future conservation objectives. Many species are endangered due to man-made disturbances to their natural habitats, which has been particularly true in the tropics. For this reason, the Zoo has an energetic program of conservation research in the natural habitats of endangered species and is conducting pioneering studies in the reintroduction of animals bred in captivity to their native habitat. The Zoo is developing programs to inform the public on the role both the public and zoos can play in animal conservation. The major programs of the National Zoo are animal exhibition; animal management; animal conservation and propagation; research; and public education and information.

Animal Exhibition - The primary objective in exhibiting animals is to interest the public in animal biology, and in the role animals play in the ecosystem. To best serve this purpose, animals must be provided with the physical conditions necessary for a complete and active life, and as natural an environment as possible. The success of the breeding program in the recently renovated Small Mammal House, which provides an esthetically pleasing and attractive setting, is strong testimony to the necessity of simulating the natural habitat while animals are held in captivity.

In January 1986, the two juvenile lowland gorillas, on loan from the Milwaukee Zoo, went on exhibit at the Great Ape House. The two animals will spend the next three years at the National Zoo and will be housed in their own enclosure equipped with tree-like climbing structures and rope swings. They will be able to see, hear and communicate with the four adult gorillas already in residence. In exchange for the two young animals, the National Zoo sent a 23-year-old female gorilla to Milwaukee to be placed with their breeding group. This program is one phase of the gorilla species survival plan coordinated through the American Association of Zoological Parks and Aquariums.

One fennec fox and four dorcas gazelles, exotic species of North Africa and the Middle East, were given to the people of the United States from the people of Israel. The animals are from the Hai-Bar (Wildlife) Society of Israel. The first animal to be received, an adult male fennec fox, was presented to the Zoo in a ceremony in May 1986 at the Zoo's Small Mammal House. Together, with the planned acquisition of additional fennec foxes, these five animals will play an important role in the Zoo's long-range plans to propagate the two species in captivity. Dorcas gazelles are already endangered in the wild, and the fennec foxes may become endangered in the near future. Successful breeding strategies developed by zoos and managed wilderness preserves are vital to ensuring a future for these species.

In 1987, the Zoo will open a new Invertebrate Exhibit, representing the first attempt by any zoo to show the diversity of form and behavior of these fascinating

creatures. Invertebrates make up 98 percent of the animal kingdom but are rarely exhibited. Marine organisms from sessile sponges to the giant Pacific octopus, and terrestrial crabs, insects, and spiders will be shown. Evolution, adaptation, and importance to humans will be primary themes. Exquisite and functional habitats, microscopic video theaters (video cameras hooked-up to microscopes), and interactive graphics will be used. Two animal keeper positions were added to the NZP base for FY 1987 to help support this new exhibit.

Further improvement to the Zoo includes the new gibbon exhibit. This innovative enclosure, for which ground was broken in the fall of 1986, is designed to allow the gibbons to demonstrate their unique gymnastic ability. This exhibit is slated for occupancy in the summer of 1987.

Animal Management - Of prime importance is the health and well-being of the animals under the Zoo's care. The Zoo attempts to provide the animals with natural and congenial conditions which contribute to the overall state of health and a general absence of stress. In addition, the National Zoo provides the most advanced techniques in health care, preventive medicine, emergency treatment, surgery, dentistry, and neonatal medicine. The medical care is reinforced by a scientifically based nutrition program and the highest standard of food preparation. Comprehensive medical and general records, the majority of which are automated, are maintained on all animals. These records are a major tool in maintaining the Zoo's health standards and in developing breeding programs.

In an average year, approximately 2,500 medical cases require attention, of which about 500 require hospitalization. In FY 1985, a new 12,000-square-foot hospital opened at the Conservation and Research Center, Front Royal. With funds appropriated in FY 1986, construction began (autumn 1986) on a 22,000-square-foot hospital building at Rock Creek. This facility will consist of a large operating room with adjoining support rooms and is scheduled to open in March 1988. In FY 1987 the Zoo received an additional \$200,000 to purchase needed medical and surgical equipment for the new hospitals. Both hospital facilities will add tremendously to the level of animal care at the Zoo.

Animal Conservation and Propagation - The Conservation and Research Center plays an important role in research and breeding programs for rare and endangered species. Significant births and hatchings during 1985 included red-footed tortoise, green tree python, Guam rail (a species now extinct in the wild), the Micronesian kingfisher (a highly endangered bird) and the tiger quoll (the first of this species born outside its Australian homeland). In addition, the Center's facilities provide a unique environment for the establishment of selected breeding programs. This has enabled the Center to breed successfully such animals as zebras, Burmese brow-antlered deer, scimitar-horned oryx, Pere David's deer, maned wolves, lesser pandas, binturong, and selected birds, especially cranes. The addition of one new animal keeper position in FY 1987 will help extend the Center's breeding programs.

The Center also is an important training ground for the wildlife management and conservation curriculum, which is taught to many nationals of developing nations. Nearly 100 students from South America, Africa and Asia have participated in this unique course at Front Royal, and a similar number of students have attended the course in Sri Lanka, Venezuela, Peru, Indonesia, and Brazil. Training is also given to United States students of veterinary medicine, pathology, animal behavior and animal management. The Zoo also will continue to play an active leadership role in a variety of national cooperative breeding programs including those for the golden lion tamarin, gorilla, orangutan, tiger and small-clawed otter.

The National Zoo is active in international programs of biological conservation. An integral part of these programs is the reintroduction to their native habitat of various

animals bred in captivity. One such study during 1984 and 1985 (partially funded with International Environmental Science Program funds), involved Zoo bred golden lion tamarins which were reintroduced to a protected forest in Brazil. This reintroduction was the ultimate step in a comprehensive and pioneering program to save this animal from extinction. To ensure the success of the reintroduction of tamarins, the Zoo instituted a thorough program of research and management. Captive horn animals had to be "educated" to fend for themselves in the wild, and become acclimated to the different foods and climate of their native habitat. This process involved training the animals to search for hidden and dispersed food and to recognize a wide range of naturally occurring edible objects. At present, reintroduced animals have raised infants and are thriving in the wild.

Conservation efforts have also entailed placing animals with other zoos. Over the years, pygmy hippopotami have been shipped to zoos in Argentina, Indonesia and Singapore. The Zoo continues to explore opportunities to place this rare species in zoos outside the United States to further captive reproduction and zoological interest in this species.

Research - The success of the programs in conservation and propagation depends largely upon the Zoo's ongoing research. The reintroduction of the golden lion tamarins to the wild would not have been possible without sophisticated and painstaking research. With little prior knowledge, Zoo researchers had to study in great detail the structure of the social and family life of tamarins before they could successfully breed them and, ultimately, re-create natural groups of animals capable of surviving in the forests of Brazil. Zoo studies are now emphasizing the development of behavior to understand how much learning is involved in the successful adaptation to different environments.

Ten golden-headed lion tamarin monkeys arrived at the National Zoological Park in the spring of 1986. It is believed that this is the first time members of this other endangered species of tamarins will be kept at a zoo in the United States. The golden-headed lion tamarins, sent to Washington by way of a circuitous route were part of a large group of animals that were illegally smuggled out of the eastern coastal forest of Brazil in 1983. The existence of these monkeys in Europe came to light when they were first advertised for sale by an animal dealer in Belgium. Other illegally held golden-headed lion tamarins were simultaneously reported from France and Japan. As a result of two years of painstaking negotiations initiated by the Brazilian government, and pressure from several international conservation organizations, most of the monkeys were returned to Brazil where they were temporarily housed at the Rio de Janeiro Primate Center while plans for their future could be developed. An international committee consisting of conservationists and zoologists from Brazil, Great Britain, Belgium, and the United States was formed to provide advice on the tamarin situation to the Brazilian government, which maintains strict control over its endangered wildlife. This body, called the International Recovery and Management Committee for the Golden-headed Lion Tamarin, decided it was not in the animals' best interest to attempt to return them to nature, especially since many of the monkeys suffered permanent injury while in the hands of animal traders. The tamarins, instead, were dispersed to institutions with a proven record for success in breeding South American marmoset and tamarin monkeys. Zoologists at the National Zoo will study the primates' behavior and develop techniques for its long-term propagation in captivity. Success has also been achieved by the birth of a tamarin in August 1986.

Basic research at the Zoo concentrates on understanding the factors which influence the daily lives of animals. The Zoo has recently been active in studying the relationship between animal diets, successful reintroduction, and the energetic constraints. The results of these studies are published in reports and delivered at various scientific congresses. In FY 1986, the Zoo staff published over 164 scientific articles.

Another major focus of research at the National Zoo is genetic studies. Various studies are being conducted, in conjunction with other zoos around the world and with the

National Cancer Institute, and are expected to contribute to the long-term viability of captive populations of critically endangered species. Automated demographic models and long-term breeding plans are being developed for captive tigers, Asiatic lions, and golden lion tamarins. Efforts to determine the pedigrees of several hundred captive endangered Bali mynahs were initiated prior to establishing discussions concerning the potential for a reintroduction program for this bird in Bali, Indonesia. New biochemical studies resulted in the finding that cheetahs in captivity show little genetic variation, a possible partial explanation for their poor captive breeding record.

Several new research projects were started on a species completely new to the Zoo's collection. In collaboration with the Duke University Primate Center, the Zoo successfully reproduced, for the first time, western tarsiers acquired from Malaysia. Tarsiers have been little maintained or exhibited in zoos due to their delicate and nocturnal nature. The Zoo is currently cooperating with several other zoos and governmental agencies to breed the Guam rail and Micronesian kingfisher in captivity. Although both of these species are now extinct in the wild, the captive breeding programs will eventually enable their reintroduction into native habitat on Guam.

Public Education and Information - The Zoo seeks to inform and educate the large and diverse audience that it serves through a wide range of creative programs and materials. During 1985-1986, the Office of Education introduced The National Zoo News, a widely acclaimed newspaper for area teachers, as well as three hands-on outreach kits (on reptiles, birds and mammals) for lower elementary school students. For high school students and teachers, the Office sponsored a two-day symposium on "Research and Conservation at the National Zoo," designed to interest students in careers in biology. The Zoo's three learning labs--Zoolab, BIRDlab, and HERPlab--continue to attract visitors from around the world. Recent visitors include Mrs. Mubarak, wife of the President of Egypt, and educators from Japan, Australia and India. As a result, Indian environmental educators established a model learning lab based on the HERPlab model.

In all its programs, the Zoo is placing increasing emphasis on conservation awareness in education. For example, an intensive six-week educational program, attended by fourth-grade students from Washington, D.C., focused on the Zoo's golden lion tamarin reintroduction project. In 1985, the public was invited to participate in a Tropical Forest Festival, a weekend event consisting of multimedia activities that celebrated the richness of the world's tropical forests, addressed the serious problems facing these forests and their wildlife, and showed visitors ways they could help save these forests. A new participatory exhibit, ZooArk, opened in August 1986. Located at six sites in the Zoo, the exhibition features quizzes, computer games, and other activities that acquaint visitors with worldwide conservation problems, modern solutions to these problems, and ways visitors can contribute.

People across the United States are able to share in the benefits provided by the Zoo through print, television, symposia, and film stories. Nationally broadcast programs, such as PBS' "Saving the Wildlife," have underscored the Zoo's role in preserving endangered species. The World Environment Day program in June underscored humanity's responsibility to the environment. Other events, like the Sunset Serenades series, featuring folk and jazz concerts, reach out to new audiences to bring them to the Park in the under utilized early evening hours during the summer months. The "Symposia for the Public" series introduces serious biological topics to the public through illustrated lectures and discussions. The fifth symposium, held in November 1985, explored "Wildlife in the Human Niche."

Additional lectures held throughout the year focus on a variety of wildlife and environmental topics. The most recent lecture presented an exploration of creative methods for preserving tropical forests using an example of a successful project in Costa Rica.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 11 workyears and \$632,000 is requested. An amount of \$250,000 of this increase has been made available through the redirection of funding associated with the closure of the Smithsonian Environmental Research Center's Rockville facility to establish programs in molecular genetics and the genetic management of rare and endangered species (2 workyears and \$250,000). The remainder of the increase is requested to support current programs at the National Zoological Park (9 workyears and \$382,000).

Genetic Management of Rare and Endangered Species (2 workyears and \$250,000) - Resources made available through the redirection of funding associated with the closure of the Smithsonian Environmental Research Center's Rockville facility are sought in FY 1988 to establish the Zoo's programs in molecular genetics and the genetic management of rare and endangered species. Researchers at the Zoo have played, and continue to play, a key role in the development of genetic management strategies for small, captive animal populations at the national and international levels. Very little genetic information is available on most of these species. The NZP approach, which has proven very fruitful, has combined techniques from population and molecular genetics. Much information has been derived from analyzing the pedigrees of captive populations in the light of population genetics theory and inbreeding has been linked to high juvenile mortality in many species.

It is now agreed that the goal of most captive breeding programs should be to slow the loss of genetic diversity and a number of strategies have been developed that should theoretically achieve this aim. Theory, however, must be constantly tested against reality, and for this it is necessary to turn to molecular genetics. Basic information is needed on the nature of and amount of genetic variation in the various species under the Zoo's care, and the degree to which its breeding programs are successful in retaining this variation. In order to devise breeding plans with a rational, scientific basis, it will be necessary to characterize the genetic nature of captive populations as completely as possible. Ideally, this would be accomplished by applying a variety of molecular genetic techniques, as seems appropriate, to various species according to the particular questions that need to be answered. The techniques that seem most promising include electrophoretic surveys of enzymes and other gene products, direct investigation of DNA itself, for example, by documenting restriction-fragment-length polymorphisms, and refined chromosome-banding methods.

In order to expand knowledge in these areas, the Zoo proposes to establish a genetics laboratory. The lab will be staffed by a senior research level position (\$51,000) and a technical support position (\$25,000). The senior researcher will assist Zoo staff in designing genetic research, and will be responsible for experimentation with buffer systems and protein stains to accommodate specific research needs. The individual will also act as collections manager for the growing collection of frozen tissue, including preparation of tissue specimens, cataloging and data capture for all incoming tissue samples for effective and accurate data and specimen retrieval. The technician will run gels, make stains, and prepare buffer solutions. The remaining funds (\$174,000) will be used to purchase needed supplies and equipment for the lab and to support an exchange program with scientists engaged in similar research. Some of the items that need to be purchased include two ultra-cool freezers, pH meters, U.V. transilluminator - MP4 camera system, refrigerators, electrophoretic apparatus, incubators, water purification system, ultracentrifuge, balances, and other supplies and equipment to support the day to day operation for the laboratory.

Support for Current Programs (9 workyears and \$382,000) - Over the years, support in the form of animal keepers, facilities personnel and general maintenance support costs have not kept pace with new facilities, and the growing disparity is now causing very serious safety concerns. The Zoo cannot support existing aquatic facilities and new facilities such as the Gibbon Facility and the Amazon/Orinoco River Exhibit and maintain

safe working conditions without an increase in staff. Therefore, for FY 1988, the Zoo is requesting 9 workyears and \$382,000 for seven animal keeper positions, two water quality positions, and routine maintenance support.

Two animal keeper positions (\$40,000) are needed to support the Invertebrate Exhibit, located in the basement of the Reptile House. This exhibit will open to the public in early 1987 and will be staffed with two animal keeper positions provided in FY 1987. By FY 1988, the exhibit will have advanced to the point where the support of two additional full-time keepers will be essential for the health and safety of the collection. Two additional keeper positions (\$40,000) will be needed in FY 1988 to staff exhibits previously opened, which are now staffed by personnel working overtime. New permanent positions will provide an economically efficient means to meet the current deficiencies. The remaining three animal keeper positions (\$60,000) are needed at the Conservation and Research Center at Front Royal. At the Center there are a number of new facilities (Small Animal Facility, Hardy Bird Complex, Veterinary Hospital, three new animal barns and 1,400 acres of hoofstock pastures) that require additional keeper support. The keeper staff is currently supplemented by volunteers and research assistants, but this practice should not continue in the future.

Two water quality specialists (\$58,000) are needed to monitor, operate and maintain all life support systems within the Aquatic Exhibits at the Park. The Zoo currently has seven exhibits (Seals; Sea Lions; Polar Bears; River Otter; Beaver; Lion/Tiger; and Monkey Island) that have a total capacity of 1,600,000 gallons of water. Each exhibit must be tested for water quality at least once each month (some pools are tested each day) and maintained for proper chemical balance. With new aquatic exhibits under construction over the planning period, the Zoo will need the two additional water quality positions.

An additional \$184,000 is needed in support funds to provide for the maintenance of the facilities at Rock Creek and Front Royal. The funds will be used to purchase supplies and materials for essential, routine maintenance programs. The Zoo has a base of approximately \$350,000 to support the day-to-day maintenance at the Park. The Zoo's organizational emphasis has been to increase productivity through establishing a satisfactory level of maintenance for the upkeep of real property. To continue this level of support and incorporate the new and renovated facilities into this program, the labor-to-material ratio must be maintained. This increase of \$184,000 is vital to provide the essential support for both animal and public areas of the Zoo.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are derived from a variety of sources including fees for providing services and general use of the facilities. Expenditures are made for the support and maintenance of these facilities, for the purchase of animals for the collection, and for salary and support costs for the director.

In FY 1986, funding from the Institution's Collections Acquisition, Scholarly Studies and Educational Outreach Programs, Research Opportunities Fund and Special Exhibition Fund amounted to \$133,000 and included support for a reference guide and Spanish translation of successful tropical forest conservation efforts, primate social behavior studies, and behavioral and nutritional correlates to slow growth.

Restricted Funds - These are provided through gifts and foundation grants and are used to support specific research projects and education programs. For example, funds provided by a grant from the Packard Foundation are being used to train foreign nationals from developing nations in animal management techniques.

The New Opportunities in Animal Health Sciences Center was established to build upon the present nascent effort at the Zoo to undertake fundamental investigations in biology and medicine in relationship to exotic animals. Tremendous advances have been made over the last two decades in veterinary medicine, reproductive physiology and biotechnology which are now only being applied to animals in a zoo setting. These monies will be utilized to capitalize and expand on these opportunities by hiring new staff, and purchasing necessary equipment and supplies. New research programs hold hope for improving the quality of care of exotic animals both in captivity and in the wild, and also for increasing species survival through new reproductive techniques (estimated expenditures of \$285,000 in FY 1987 and \$525,000 in FY 1988).

SMITHSONIAN INSTITUTION ARCHIVES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	14	518	6	173	-	1	-	1	-	-
FY 1987 Base	15	564	6	188	-	-	-	-	-	-
FY 1988 Estimate	15	579	6	194	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	15	-	15
11 Personnel Compensation.....	428	14	442
12 Personnel Benefits.....	53	1	54
21 Travel.....	4	-	4
23 Rent, Communications & Utilities.....	4	-	4
24 Printing and Reproduction.....	1	-	1
25 Other Services.....	50	-	50
26 Supplies & Materials.....	20	-	20
31 Equipment.....	4	-	4
Total	<u>564</u>	<u>15</u>	<u>579</u>

Analysis of Increase

Necessary Pay..... 15

ABSTRACT - The Smithsonian Institution Archives keeps and administers official records and other historical documentation needed by Institution staff, the public, and by scholars of American history and culture. Its offices, reading room, and the documents are located in the Arts and Industries Building on The Mall. The Archives manages a records center at 1111 North Capitol Street, where inactive records are kept pending their disposal. Archives holdings are increasing by more than 500 cubic feet per year. This, and new demands of electronic and audio-visual documentation, require growth and diversification in Archives facilities, staff, and equipment to maintain effective service to the Institution, the scholarly community, and the general public. No program increase is requested for FY 1988. Necessary pay of \$15,000 is required for existing staff.

PROGRAM - The Smithsonian Archives consists of five program areas: records management, acquisition of documentation, archives management, research, and outreach. These functions involve all Smithsonian activities in all bureaus and offices of the Institution.

Records Management - This area includes onsite surveys of records and records practices in museums, research bureaus, public service bureaus, and central policy and administrative offices; advice on records practices and obligations, appraisal of legal, administrative, and historical value of records; recommendation of periodic records transfers to the Archives or disposal, depending on appraisals; and assistance to operating offices in carrying out discards and transfers.

Acquisition of Documentation - The transferral of records to the Archives is done on a schedule; and donations of personal papers of research associates and other Institution leaders are solicited. In addition, interviews with noted Smithsonian leaders are tape-recorded for use as part of the rich reference resources of the Archives.

Archives Management - Archival management involves arrangement, preservation, and description of material accessioned into the Archives, and documentation of its provenance, legal and access status, processing, and reference use.

Research - Archives staff conducts research in preparing narratives and descriptive essays on historical topics related to Smithsonian events and development; in answering specific reference inquiries from staff, scholars, and the general public; and in assisting scholars and Institution staff to search large masses of documentation for information needed to complete historical research.

Outreach - The outreach program includes publication and dissemination of information about holdings to the Institution, the worldwide scholarly community, and the general public; provides advice and assistance to other museums and organizations about effective archival and records management practices; and implements new procedures and developments known to archivists by discussion in professional meetings and articles in professional journals.

Staff and Facilities - The Archives program is staffed by historians, archivists, technicians and clerical personnel. The Archives occupies space in the Arts and Industries Building, where the permanent collections are kept and administered for the convenience of staff, scholars, and the public. The Archives also manages a records center which occupies space in the Smithsonian Institution Service Center on North Capitol Street.

With the acquisition of a number of personal computers during the past two years, standard automated word processing and data processing software programs have been applied to archival work. Equipment and programs are being developed jointly with the Office of Information Resource Management (OIRM) to integrate individual workstations into effective interaction with the Smithsonian Institution Bibliographic Information System (SIBIS). The Smithsonian Archives also has been cooperating with OIRM to develop automated office systems for the central leadership of the Institution and at the same time to assure preservation and access to an adequate record of Institutional activities.

Program Accomplishments - In FY 1985, total holdings grew to more than 12,000 cubic feet, exceeding for the first time the shelf capacity of the present Archives space and requiring that records be stored on aisle floors and on the balcony of the Arts and Industries Building. By September 1986, another 646 cubic feet had been added. Beginning in FY 1986, lack of storage space forced the Archives to suspend its service of temporary storage of records scheduled for disposal, forcing operating offices to assume

the burden of that storage until they may be discarded. Reference requests in FY 1985, evenly divided between Smithsonian staff and outsider inquiries, amounted to over 1,800, the highest recorded total. More than 27,000 pages of copy from archival holdings were provided to researchers free of charge in FY 1985, and more than 7,000 boxes of documents were searched by scholars in the Archives reading room that year. FY 1986 totals are 1,520 reference requests, 5,552 boxes searched, and over 25,500 pages of copy.

In FY 1986, the Archives published a "Smithsonian Staff Handbook" containing general records disposition schedules and guidance on handling and disposition of general issuances and records common to offices throughout the Institution. Specific records disposition guidance was provided following records surveys in the National Portrait Gallery, the National Museum of American Art, the National Museum of Natural History, the National Museum of American History, the Smithsonian Astrophysical Observatory, the Smithsonian Tropical Research Institute, the Freer Gallery of Art, and the National Zoological Park, as well as several central administrative offices.

Advice on establishing or improving museum archives or oral history programs was supplied to the following institutions and organizations by Smithsonian Archives staff in FY 1985 and FY 1986: the American Museum of Natural History in New York; the Field Museum of Natural History in Illinois; the Academy of Natural Sciences of Pennsylvania; the Los Angeles County Museum of Natural History in California; the California Academy of Sciences; the Phillips Collection of Washington, D.C.; the Essex Institute of Massachusetts; the Adirondack Museum in New York; the Chicago Institute of Art in Illinois; the National Afro-American Museum and Cultural Center in Ohio; the University Museum of the University of Arkansas; the American Alliance Museum in Virginia; the Ringling Museum of Art in Florida; the Anchorage Municipal Libraries in Alaska; the American Association of University Women; and the National Council of Senior Citizens. In addition, Smithsonian archivists were speakers or instructors at a number of museum archives workshops including one in Denver, sponsored by the Colorado Historical Society and the Colorado-Wyoming Association of Museums.

Integration of oral narration and silent color film footage of the 1940 Smithsonian-Firestone Expedition to Liberia in high quality videotape was completed in FY 1986. Copies were made for the United States Information Service office in Monrovia, where Liberians viewing the tape were able to see their village homes as they existed more than 40 years ago. This excellent product came out of a marriage of archival film stock and the oral history work of the Smithsonian Archives.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are provided by annual allotments and are used to cover the salaries of an archivist, an archives technician and various support costs (estimated expenditures of \$68,000 in FY 1987 and \$71,000 in FY 1988). Funding also has been provided for four positions and support costs for a project to survey the photographic collections of the Smithsonian, to enter the collected information into a data base for on-line automated cataloguing, and to produce the Finder's Guide to the Photographic Collections of the Smithsonian Institution (estimated expenditures of \$120,000 in FY 1987 and \$123,000 in FY 1988).

SMITHSONIAN INSTITUTION LIBRARIES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**		Amount	
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	98	4,406	10	331	-	49	-	85	-	-
FY 1987 Base	96	4,898	10	390	-	108	-	6	-	-
FY 1988 Estimate	98	5,039	10	436	-	2	-	5	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	96	2	98
11 Personnel Compensation.....	2,626	123	2,749
12 Personnel Benefits.....	325	18	343
21 Travel.....	24	-	24
22 Transportation of Things.....	9	-	9
23 Rent, Communications & Utilities.....	53	-	53
24 Printing & Reproduction.....	130	-	130
25 Other Services.....	711	-	711
26 Supplies & Materials.....	462	-	462
31 Equipment.....	558	-	558
Total	<u>4,898</u>	<u>141</u>	<u>5,039</u>

Analysis of Increase

Necessary Pay.....	109
Program Funds.....	32

ABSTRACT - The Smithsonian Institution Libraries (SIL) serves the Institution and the public by providing information services to support Smithsonian research, curatorial, publication, and administrative activities; through direct participation in the creation of a national bibliographic data base; and through programs for publications, exhibitions, loan and information services. Its collections of approximately 980,000 volumes, including over 20,000 serial subscriptions, are available to Smithsonian and outside scholars through a system of 14 branch libraries in 36 locations in the Washington, D.C. area, at the Smithsonian Astrophysical Observatory (Massachusetts and Arizona), the Cooper-Hewitt Museum (New York City), and the Smithsonian Tropical Research Institute (Panama). SIL also is responsible for purchasing all books for the Smithsonian and coordinating all requests for automated information sources; these services help to avoid duplicate procedures and expense within the Institution. For FY 1988, an increase of 2 workyears and \$232,000 is requested to accelerate the cataloguing of uncatalogued

materials in the Libraries' collections (\$200,000); and to hire 2 library technicians to support the expanded collections of the Museum of African Art branch library (2 workyears and \$32,000). These increases are offset by a reduction of \$200,000 in the Libraries' base funding associated with the completion of the retrospective conversion of manual bibliographic records to machine-readable form in FY 1987. Necessary pay of \$109,000 is required for existing staff.

PROGRAM - The Smithsonian Institution Libraries (SIL) provides both centralized Institution-wide support and branch libraries with specialized subject research collections to serve the research, curatorial and other bibliographic needs of Smithsonian programs. The central collections emphasize multidisciplinary research journals, proceedings of academies of science, and interdisciplinary topics such as ecology, exploration and travel, and museology. The specialized collections in the branch libraries are outstanding in natural history, American ethnology and culture, tropical biology, decorative arts and design, astrophysics and the history of science and technology. Rapidly developing collections include aeronautics and astronautics, African art, conservation research, and horticulture. SIL's collections include approximately 35,000 rare books, primarily in the fields of science, technology, applied art, aerospace, and natural history. The largest of these rare book collections is the Dibner Collection in the History of Science and Technology, consisting of 19,000 volumes and manuscripts.

The Libraries is composed of three operational divisions: Automated Systems, responsible for managing the SIL bibliographic data bases, cataloguing and other automated inventory control of SIL collections, and the application of automation to other aspects of the Libraries' operations; Collections Management, responsible for the selection, acquisition, preservation, and housing of library collections; and Research Services, charged with direct, individual reference assistance and literature search and interpretation for the scholarly clientele of the central and branch libraries. Through centralization of certain operations, including an interdisciplinary reference/information center, acquisitions and cataloguing units, a consolidated administrative staff, and a conservation laboratory, SIL has achieved system and cost efficiencies.

Automated Systems - The Libraries continues to employ electronic technologies in the areas of information transfer, resource sharing and, increasingly, in routine processing. Since FY 1974, SIL has participated in a national bibliographic data base, the Online Computer Library Center, Inc. (OCLC), with 6,000 member libraries, which is used as a source for creation of its bibliographic records and for interlibrary loans. In 1984, the Libraries implemented its on-line sophisticated automated system, the Smithsonian Institution Bibliographic Information System (SIBIS). It allows the Libraries to create a single on-line system with a central data base of bibliographic information, thus eliminating the need for multiple keyboarding and manual processes. SIBIS is gradually replacing nearly all card catalogues, microfiche catalogues, circulation files, and other paper files with a single source of bibliographic information that can be updated continuously and accessed by computer from locations anywhere in the Institution. Its acquisition module permits on-line ordering, processing of orders, account maintenance, exchange of information with the Office of Accounting and Financial Services, and ready on-line access to order information. Researchers in the field are now able to dial into the SIL catalogue for information and will eventually relay requests from their offices or wherever there is a computer/telecommunication link. The on-line catalogue provides more and better access to the collections including key word searching and a Boolean logic-based search (to be implemented shortly).

At the close of FY 1986, SIL implemented an electronic mail system linking all of its staff through quick electronic communication. Early in FY 1987, a tape of all SIL holdings was sent to a major library support company for matching with Library of Congress authorized names and subjects. This will enhance access to the collection allowing cross references in the on-line catalogue. A tape of SIL museology holdings was produced for loading on the International Council of Museums (ICOM) computer in Paris.

Management, processing, and user requested reports continue to be programmed from the automated library system. Planning for a fully upgraded office automated system began in early FY 1987.

Barcodes were automatically assigned to all of the machine-readable records of the SIL and barcode labels were produced. These are now being applied to over 450,000 volumes.

During FY 1986, the Libraries also continued to make measured progress in the cataloguing of previously uncatalogued gift and trade literature collections. Contracts for retrospective conversion and cataloguing, plus increased use of volunteers and new technologies afforded by the automated system, have reduced the number of items left uninventoried to approximately 300,000. A vast part of the remainder consists of the trade literature collection for which SIL has developed an indexing method which may serve as a model for trade literature in other libraries. In all, 36,000 of the more than 230,000 pieces of trade literature have been placed under bibliographic control and made accessible in the SIBIS data base.

Collections Management - This function includes selection, acquisition, deaccession, preservation, and determination of collections management policies for SIL. A materials selection committee advises management on collection policies and recommends books and journals for acquisition. During FY 1986, SIL book selectors also reviewed gift collections and transfers of valuable materials from government agencies. The preparation of specific collection development policies also continued throughout the year.

The Libraries' conservation program, implemented by a Book Conservation Laboratory, currently focuses on repair and restoration of SIL's most rare and valuable materials housed in Special Collection facilities. In May 1986, the Libraries concluded an 11-month Preservation Planning Study to review the condition of the general book and journal collections in all branches, to outline the specific activities needed to rescue endangered materials, and to establish priorities for treatment. SIL was one of ten North American research libraries selected for the program by the Association of Research Libraries. The program's study team surveyed library collections in the National Museum of Natural History, the National Museum of American History, and the National Air and Space Museum. The results are contained in the report, Physical Conditions of the Collections (May 1986). Using a sample of 1,088 volumes, the survey team discovered that the most serious and pervasive problem is the growing number of volumes that are too brittle to use without damage. Nearly one-third of the volumes sampled were in this condition, including over 90 percent of those published between 1870 and 1930. Extrapolated to SIL's entire collection, it is possible that 300,000 volumes are now in a seriously deteriorated condition. Since brittle paper cannot be restored, SIL will have no choice but to replace the volumes by converting them to another format, such as microfilm. To make progress with a problem of this size will require the development of a major systematic replacement program. It is anticipated that increased funding for this program will be requested in future years to cover the costs of the conversion of brittle books to a more stable medium.

The Final Report of the Preservation Program (May 1986) contained 36 other recommendations for improvements to SIL's preservation efforts. SIL is moving to implement those that do not require substantial additional resources or staff. As of November 1986, these improvements included installing ultraviolet light filters on all lights in book stack areas (ultraviolet radiation is a serious threat to paper and bindings) and establishing the Libraries Emergency Action Program (LEAP) designed to prepare SIL staff and users to respond effectively to emergencies, such as water leaks.

An SIL Optical Disk Working Group, which included members from several Smithsonian archival units and the Institution's Office of Information Resource Management (OIRM),

completed a study in April 1986 on the possibilities of using this new technology for preservation.

To solve the critical need for sufficient and adequate space for its overflow collections, and to provide a processing staging area and preservation facility, SIL is exploring several options, including a possible library/archives facility at the Institution's Suitland facility.

Research Services - The Research Services Division of SIL provides a full range of reference support for scholars in all fields of interest, researchers and other staff of the Institution. The Libraries' 20 professional librarians and 30 library technicians provide support for the collections in 14 branches located in Washington, D.C.; Cambridge, Massachusetts; New York City; and Panama. Using their own knowledge of specialized fields and professional expertise, the Libraries' strong reference collections and automated systems, SIL research staff extend the resources of the collections in their own branches or even in the system as a whole to find the information needed by Smithsonian researchers working on a wide range of topics. In FY 1986, Smithsonian staff borrowed more than 33,500 items from the SIL collections and photocopied 18,000 more to take back to their offices. In addition, using printed catalogues and on-line data bases to identify and locate works on particular topics, the SIL staff borrowed another 29,000 volumes or photocopies from other libraries for the use of Smithsonian staff.

The Libraries' professional staff is trained to help researchers find the particular pieces of information necessary to complete the research puzzle on which they are working. To that end, the staff answered some 120,000 reference questions in the course of the year, ranging from simple queries for names, dates and places to complex questions requiring several hours, if not days, of investigation. In addition, in order to serve both on-site users and the broader public interested in the subjects in which the SIL branches specialize, many of them produce research aids for distribution. For example, the current acquisitions lists of the Museum of African Art branch library, the National Zoological Park branch library and the Museum Reference Center provide unique access to resources in those fields and are requested by hundreds of scholars and libraries both in this country and around the world. Similarly, branch staff compile bibliographies on specialized topics for both internal and external use. One of these, "Book Collecting and the Care of Books," which was prepared by staff of the Special Collections branch, has proven so popular that it has gone into a second edition, with 700 copies to date mailed to colleges, schools and public libraries as well as interested individuals.

The libraries of the Center for Asian Art, Hirshhorn Museum and the National Museum of American Art/National Portrait Gallery are administered independently by these museums. However, SIL provides administrative support for these libraries, as needed, including processing requests for acquisition of materials and funding serials/binding purchases for the American Art/Portrait Gallery library and binding preparation for the American Art/Portrait Gallery and Hirshhorn libraries.

Outreach - The Libraries continues its commitment to national and international responsibilities in the areas of exhibitions, seminars, lectures, publications, translations, and participation in national and international forums.

The Libraries produces a variety of publications to serve Smithsonian staff, members of the international scholarly and library communities, and the general public. One recent example of the publications activity was the SIL Research Guide, Manuscripts of the Dibner Collection, an illustrated catalogue featuring 1,614 manuscripts collected by Dr. Bern Dibner. Three other books in the SIL Research Guide series are in preparation. Timeless Sources: Rare Books in the Cooper-Hewitt Museum was based on an exhibition of the same title, prepared by the chief librarian at the Cooper-Hewitt branch.

With funding provided through the Institution's Special Foreign Currency Program, the Libraries administers the Science Information Program for Translations. Since 1959, through this program, 260 scholarly articles and monographs on the natural sciences and cultural history originally published in foreign languages have been published and made available to American scholars in English translation. The Libraries registers these publications with the National Technical Information Service and the National Translations Center to ensure their wide-spread availability to scholars. Approximately 200 copies of each work translated are distributed gratis to libraries in the United States and throughout the world. Funding for this program is anticipated to be continued through the U.S.-India Fund for Cultural, Educational and Scientific Cooperation.

In November 1985, the Libraries sponsored the Ramsbottom Lecture of the Society for the History of Natural History in conjunction with the opening of "Magnificent Voyagers" at the National Museum of Natural History/Museum of Man (NMNH). SIL continued to host visitors and train interns from around the world at the Book Conservation Laboratory and in other units of the Libraries.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 2 workyears and \$232,000 is requested to accelerate the cataloguing of uncatalogued materials in the Libraries' collections (\$200,000); and to hire two library technicians to support the expanded collections of the Museum of African Art branch library (2 workyears and \$32,000). These increases are offset by a reduction of \$200,000 in the Libraries' base funding associated with the completion of the retrospective conversion of manual bibliographic records to machine-readable form in FY 1987.

Acceleration of the Cataloguing of Uncatalogued Materials (\$200,000) - With funding provided in FY 1985, the Libraries began a long-range process to identify and catalogue the accumulated backlog of uncatalogued material in its collections. During FY 1986 and FY 1987, the Libraries has continued to make measured progress toward the achievement of this goal. However, approximately 300,000 uncatalogued items still remain in the collections. With current funding of \$95,000, the Libraries will be able to deal with only a very small percentage of these materials in a timely manner. The infusion of additional resources will allow the Libraries to accelerate this cataloguing and ensure the accessibility of all of the Libraries' collections through SIBIS.

In the first phase of this effort, SIL will catalogue/inventory the 8,650 totally uncatalogued gift items stored at the Institution's Service Center at 1111 North Capitol Street. These items are currently completely inaccessible by any index or catalogue--automated or manual. Some 29,000 uncatalogued volumes presently located in offices and libraries throughout the Institution must be incorporated into the SIL bibliographic records. While these volumes remain uncatalogued, the Libraries can not ensure full bibliographic or inventory control over its collections, nor be able to serve researchers efficiently. The cost of contractual services for cataloguing these volumes is estimated to be \$20 per item, resulting in total funding of \$760,000 required to catalogue the approximately 38,000 volumes contained in these two backlogs.

In addition, as indicated by the findings of several audit reports on the Libraries' collections conducted by the internal auditors, there are approximately 9,000 rare books in the SIL's Special Collections that have not been catalogued. Only brief checklists have been maintained for security purposes. The cataloguing process for rare books is particularly complex because it involves not only the identification of title and subject and other basic publishing information, but also the total collation of the book to determine its bibliographic history and the specific unique characteristics of the particular copy of the book. Complete cataloguing of these rare books is necessary not only to allow scholars access to these volumes, but also to document how the state of each copy of a rare book differs from the state of other copies of the same work. Cost estimates for contracting the cataloguing of these rare books average about \$40 per book.

The total cost of cataloguing these rare books, therefore, is estimated to be around \$360,000.

The Libraries' trade catalogue collection, consisting of a minimum of 230,200 pieces of trade literature (such as Burpee seed catalogues, Ford auto parts, and Saks Fifth Avenue furs), is also mostly uncatalogued. This collection is the largest collection of its kind in existence and represents a very important primary source for research on the history of American commerce. Through the use of minimal identifying information and the assistance of volunteers, the Libraries has developed a cataloguing process that can produce an on-line catalogue of the collection at the cost of \$4 per item. Total funding of approximately \$921,000 will be required to catalogue all the literature in this collection.

With the expanded base funding of \$295,000, the Libraries projects that (at current prices) it will take at least seven years to catalogue all of its previously uncatalogued material in its collections. This program to eliminate its cataloguing backlogs will remain a high priority in future SIL budgets.

African Art branch library (2 workyears and \$32,000) - The African Art branch library moved to its new facilities in the Quadrangle in December 1986. With funding provided in FY 1985 and FY 1986, SIL embarked on a multi-year special acquisition program to develop a comprehensive collection to support the expanded level of research required by the Museum of African Art in its new location. The branch has doubled in size, now standing at more than 10,000 volumes. Although it is reasonably comprehensive in the core area of African visual arts, support material consisting of travel and exploration accounts, early ethnographies, African imprints, and specialized serials are still being sought. Much of this material is also of interest to other Smithsonian scholars and curators, such as those in the NMNH Department of Anthropology, who specialize in African subjects. A selective bibliography entitled African Art: A Bibliographic Guide was published in 1985 as part of the SIL Research Guide series.

The African Art branch library, which is the only center in Washington, D.C., to collect in the field of African art and culture to any great extent, will be expected to offer a much wider range of research and reference services than it is currently able to handle with existing staff. For FY 1988, two library technician positions (2 workyears and \$32,000) are requested to augment the level of centralized processing support and bibliographic services at the African Art branch. With the addition of these two new positions (originally sought in the FY 1986 and FY 1987 budgets), the Libraries will be able to offer the full range of reference and central support services to scholars throughout the Smithsonian and from other institutions who will use the African Art branch collections.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Funds supplied by allotment are used primarily to support ten full-time positions and related support costs including travel, training, and supplies (estimated expenditures of \$388,000 in FY 1987 and \$434,000 in FY 1988). In addition, Special Purpose funds support dissemination of information about the collections and services of SIL, and preservation of library materials through binding and other restoration programs (estimated expenditures of \$108,000 in FY 1987).

Restricted Funds - These are provided through gifts and grants from individuals, foundations, endowments, organizations and corporations for specific purposes. These funds will support the preparation costs for a future publication on international exhibitions and provide for the purchase of rare volumes on the history of science.

OFFICE OF THE ASSISTANT SECRETARY FOR MUSEUMS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	19	865	1	155	-	115	3	379	-	5
FY 1987 Base	24	1,062	1	134	-	60	3	262	-	-
FY 1988 Estimate	24	1,086	1	140	-	59	2	151	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	24	-	24
11 Personnel Compensation.....	681	21	702
12 Personnel Benefits.....	93	3	96
21 Travel.....	22	-	22
22 Transportation of Things.....	3	-	3
23 Rent, Communications & Utilities.....	13	-	13
24 Printing & Reproduction.....	12	-	12
25 Other Services.....	87	-	87
26 Supplies & Materials.....	43	-	43
31 Equipment.....	108	-	108
Total	<u>1,062</u>	<u>24</u>	<u>1,086</u>

Analysis of Increase

Necessary Pay..... 24

ABSTRACT - The Office of the Assistant Secretary for Museums coordinates and provides direction to the Institution's museum-related activities, maintains a liaison with national and international museum organizations and undertakes special studies for museum operations and methodologies. During FY 1986, the Office of the Assistant Secretary for Museum Programs and the Office of the Assistant Secretary for History and Art were merged to create the Office of the Assistant Secretary for Museums. The Office of Museum Programs and the Office of the Registrar are contained in this line-item. No program increase is requested for FY 1988. Necessary pay of \$24,000 is required for existing staff.

PROGRAM - I. The Office of the Assistant Secretary for Museums: With base resources of 10 workyears and \$563,000, the Office superintends the museological functions of the Smithsonian museums and bureaus. The Office also administers projects, programs, exhibitions and publications commemorating significant individuals and events; the Collections Acquisition Program, which was established to facilitate the purchase of major acquisitions by the Smithsonian museums; the Special Exhibition Fund, which provides partial funding for major, temporary exhibitions; and the planning for the General Post Office Building.

In addition, the Office works closely with national and international museum organizations and professionals to enhance the scholarly, exhibition, educational and collections management functions of museums; to encourage the development and application of new techniques in museum administration and practices; and to establish and improve museum training programs, particularly in the field of conservation.

II. Office of Museum Programs - With base resources of 12 workyears and \$389,000, the Office of Museum Programs conducts specialized services and training programs for museum personnel. The Office offers special conferences, consultations, and career counseling; produces a variety of publications and audio-visual presentations; strives to expand the educational role of museums; and supervises the programs of the Museum Reference Center.

In FY 1986, the Office, in conjunction with the Afro-American Museum Association, sponsored a workshop in Chicago on "Policy and Management" for directors and trustees of Afro-American museums. In addition, the Office granted awards to 29 minority museum professionals in an on-going program to encourage minority museum staff development.

Within the Office of Museum Programs, the Museum Training Program offers employee workshops and seminars on museum practices. During the 1985-1986 series, the 30 Washington-based workshops attracted over 615 museum professionals from around the world. The Visiting Professionals Program, which sponsors short-term study visits, doubled its enrollment in 1985-1986 to over 160 museum professionals, approximately half of whom were from abroad. The Native American Museums Program, which coordinates a variety of training and educational programs for those involved in the study and preservation of Indian, Inuit, and Aleut collections, sponsored an Exhibition and Design Workshop, and practicum in FY 1986 that included on-site technical assistance. The Audiovisual Program, which produces and distributes video and slide tape presentations, completed a new video production entitled A Living Legacy: The Woodrow Wilson House Museum. Currently, the Audiovisual Program is producing a slide program on Museum Lighting and, in conjunction with the Smithsonian's Kellogg Project, a film focusing on learning in museums.

III. Office of the Registrar - With base resources of 2 workyears and \$110,000, the Office of the Registrar is responsible for the development, oversight and coordination of the Smithsonian's collections management policies. The Office of the Registrar also supervises the collections inventory and inventory-related activities of the Institution. In FY 1986, the Office of the Registrar, which assumed responsibility for developing and directing the Smithsonian's automated Collections Information System, established a steering committee to begin developing and promoting an Institution-wide interactive information environment.

The Office also coordinates the Smithsonian Registrarial Council, through which interbureau registrarial business is conducted and cooperative procedures are developed. In addition, the Council maintains contact with national and international organizations concerned with the use of computers in collections management, and with other museums involved in the development of systems similar to those used by the Smithsonian. In conjunction with the Office of Museum Programs, the Office of the Registrar conducts regular

seminars and workshops on the information management aspects of collections management and on other matters of interest to museum registrars.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are provided by annual allotments and small fees for services. The allotments support the costs associated with the Office of the Assistant Secretary and provide for the awards for minority museum professionals. The allotments also provide for memberships for the Institution in the American Council of Learned Societies and the American Crafts Council. The Office of Museum Programs has two revolving Trust funds for training and for the audio-visual loan program to accommodate small fees for services.

Restricted Funds - The Office of Museum Programs received a grant of \$1.1 million from the Kellogg Foundation in 1982 for a project to "expand the educational influence of museums." The original three-year grant expired at the end of FY 1985. The Kellogg Foundation has agreed to continue the grant through FY 1988. The purpose of the grant is to enable the Smithsonian to assume a leadership role in the establishment of a network of museums in the United States to examine issues and provide means of implementation so that museums can increase their educational impact in their communities. All aspects of museum operations are being explored with decision-makers from museums and with representatives from other educational resources.

NATIONAL MUSEUM OF NATURAL HISTORY/MUSEUM OF MAN

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	509	20,691	1	110	-	1,343	7	1,606	26	1,119
FY 1987 Base	530	22,479	1	201	-	371	7	2,598	26	1,040
FY 1988 Estimate	545	23,919	1	121	-	340	7	3,590	25	1,022

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	530	15	545
11 Personnel Compensation.....	15,532	791	16,323
12 Personnel Benefits.....	2,126	107	2,233
21 Travel.....	291	149	440
22 Transportation of Things.....	71	5	76
23 Rent, Communications & Utilities.....	85	5	90
24 Printing & Reproduction.....	369	8	377
25 Other Services.....	2,399	113	2,512
26 Supplies & Materials.....	734	92	826
31 Equipment.....	855	165	1,020
Collections Acquisition.....	8	5	13
32 Land and Structures.....	9	-	9
Total	<u>22,479</u>	<u>1,440</u>	<u>23,919</u>

Analysis of Increase

Necessary Pay.....	535
Program Funds.....	905

ABSTRACT - The National Museum of Natural History/Museum of Man (NMNH/MOM) houses one of the world's largest and most valuable aggregations of scientific collections. It is actively engaged in the care and conservation of these collections, as well as research in the natural and physical sciences, and the provision of services to the Museum's many visitors. In addition, the Museum conducts special programs designed for various groups including the young, the aged, and the disabled. The success of these programs is given ample testimony by the nearly six million visitors who enjoyed the Museum in 1986. For FY 1988, an increase of 15 workyears and \$905,000 is requested. An amount of \$450,000 of this increase has been made available through the redirection of funding associated with the closure of the Smithsonian Environmental Research Center's

Rockville facility to establish a molecular systematics laboratory at the Institution's Museum Support Center (4 workyears and \$450,000). The remainder of the increase is requested to conduct research in arctic archeology, anthropology, and biology (3 workyears and \$200,000); to establish a comprehensive program for the maintenance, timely acquisition, and upgrading and replacement of computer hardware (1 workyear and \$47,000); to strengthen the Museum's collections program activities (6 workyears and \$160,000); and to participate in the Quincentenary celebration by sponsoring several commemorative activities (1 workyear and \$48,000). Necessary pay of \$535,000 is required for existing staff.

PROGRAM - The collections of the National Museum of Natural History/Museum of Man, which contain approximately 100 million specimens of plants, animals, fossils, rocks, minerals and man's cultural artifacts have proven essential to the Nation's scientific community by providing fundamental documentation for the study of man, and the flora, fauna and geology of our planet and outer space. In FY 1986, more than a half-million specimens were added to the collections through gifts, purchases, expeditions of Museum scientists, and deposits from other government agencies. The Museum is responsible by law (20 U.S.C. 59) to serve as the ultimate repository for the collections of natural history, archeology and ethnology gathered by United States Government agencies. In addition, it provides laboratory space and research facilitation to 80 scientists in affiliated Federal agencies with natural history missions (United States Department of Agriculture, National Marine Fisheries Service, Fish and Wildlife Service, National Institutes of Health, and Geological Survey).

Research - Scientific research on the Museum's collections and the publication of scientific findings are fundamental to the mission of the Museum. In FY 1986, more than 1,000 scholars from all over the world used the collections. The Museum's own staff of 109 scientists was engaged in hundreds of collection-based and non-collection oriented research projects. To acquire new information and specimens for this work, many members of the staff conducted field research. Expeditions in FY 1986 included a biological reconnaissance of the Annapurna area of Nepal; a multidisciplinary study of a catastrophic volcanic eruption in Columbia; establishment of an experimental agricultural project in the Peruvian Amazon; a multidisciplinary study of Neotropical lowland rainforest in Brazil; and an expedition to Aldabra, a remote atoll in the Western Indian Ocean that is a sanctuary for unique plant and animal species, including the only surviving colony of the Indian Ocean giant tortoise.

Nearly 500 books, major scientific papers and articles are published every year by Museum scientists. Important FY 1986 publications include a definitive account of the U.S. Exploring Expedition of 1838-1842, the first major scientific expedition undertaken by the young United States; and the publication of "Great Basin," the seventh volume of the encyclopedic Handbook of the North American Indians. A field guide to the ferns and fern allies of the United States and Canada was also published. Treating over 400 species, with extensive illustrations, this guide is the first complete one of its kind in North America.

Major symposia are organized by the Museum as forums to stimulate and facilitate the exchange of scientific knowledge and ideas. In 1986, more than 150 leading grass specialists from around the world gathered at the Museum for an International Symposium on Grass Systematics and Evolution, the first meeting of its kind ever held. At the meeting, experts summarized and explored new findings vital to the protection of wild grasses and to the development of improved cultivated species, on which the world so heavily depends for food.

In early FY 1986, one of the Museum's invertebrate zoologists convened the Third International Conference on the Biology of Sponges held in Woods Hole, Massachusetts. The conference gathered 100 sponge biologists from over 20 countries and provided a much

needed forum for data exchange and the synthesis of a wide-range of advances in the field. Seventy-eight conference papers are being prepared for publication in a single volume by the Smithsonian Institution Press.

Museum researchers also provide important assistance to the international scientific community. For example, erosion of the Nile Delta has increased alarmingly since the construction of the Aswan High Dam. This bodes ill for Egyptian agricultural and fishery production and for operation of the Suez Canal. In FY 1986, a Museum oceanographer, in cooperation with the Egyptian Coastal Research Institute, took soil borings in the Lake Manzaleh and the eastern Delta area to measure past coastal change. More borings are planned in FY 1987. The data amassed will be utilized by the Egyptian government to intervene and minimize future damage to the coast.

Additional funds were received in FY 1986 to continue a long-term program of upgrading and replacing critically needed scientific equipment. In FY 1986, NMNH/MOM replaced many old microscopes and stereomicroscopes; a vacuum evaporator/sputter coater, used to prepare specimens for viewing with the scanning electron microscope; a water purifying system; and a fiber optic system. In FY 1987, these funds supported the purchase of an analytical scanning electron microscope, a new device which allows imaging of very small objects and quantitatively analyzing their chemical composition. In addition, many less expensive pieces of equipment have been purchased under this program.

In FY 1986, an increase of \$250,000 was provided to expand the Museum's research on biological diversity and on the roots of human culture west and north of the Amazon Basin in South America, along the flank of the Andes and eastward into the Guianas. A major new program of interdisciplinary fieldwork is being initiated to collect and study the thousands of insect, plant, and other organisms of this region not yet known to science and to explore the origins and evolution of human culture in this vast tropical region. Toward this end, an international conference is being organized to coordinate the Smithsonian's efforts with the work of other organizations, and a training program is being planned for graduate students.

Collections Management - Collections management underlies the entire Museum and its functions. New acquisitions and conservation of existing material insure the increasing importance of collections. Among the additions to the collection in FY 1986 was an important algal herbarium, consisting of about 8,000 specimens, most of them from the Bahamas and Florida Keys, a region where museum scientists are currently engaged in research; a historically important collection of thousands of uranium samples, representing classic deposits of this ore in the United States, was donated by Temple University; and a valuable collection of 10,000 Scandinavian moths and butterflies was acquired through the generosity of Swedish scientists. The study of this collection should provide many new insights into insect evolution. Integrating this material, and the more than 500,000 other specimens acquired in 1986 into the main body of the Museum collection will be one of the major tasks of the Museum's collections management staff.

As the irreplaceable collections of the Museum age, attention is being devoted to managing and conserving these collections to forestall any diminution in their scientific or exhibition value. This process is being greatly facilitated by the inventory of Museum holdings and the pending move of major portions of the collections to the Museum Support Center in Suitland, Maryland. Work is under way in each of the Museum's seven scientific departments to document materials for the move, to reconcile move records with the inventory records, and to clean and prepare specimens for relocation.

Outreach - "The Magnificent Voyagers," one of the largest exhibitions ever mounted by the Smithsonian, drew hundreds of thousands of visitors to the Museum's Evans Gallery in 1986. Acclaimed by critics, the show told the story of the United States Exploring Expedition of 1838-1842, a landmark in the annals of science and U.S. naval history.

Led by Lieutenant Charles Wilkes, the expedition mapped and surveyed the South Pacific and confirmed, for the first time, the existence of Anarctica as a continent. The samples of the world's flora and fauna and the anthropological specimens gathered by the scientists on the expedition formed the foundation of the Smithsonian's research collections.

To supplement the year-long exhibition, the Museum's Office of Education presented a variety of related activities, including a symposium, scholarly and popular lectures, films, and dance performances. Having closed in Washington, D.C., in November 1986, the exhibition is now on a three-year tour of major museums and historical societies across the United States. An educational packet containing information about the exploring expedition is being distributed for nationwide classroom use.

Among the longterm new exhibitions opened to the public in 1986 were:

"Hydrolab," a stationary underwater laboratory operated for many years off the coast of St. Croix, U.S. Virgin Islands, by the National Oceanographic and Atmospheric Administration, is a 16-foot-long "habitat," which revolutionized oceanographic research by permitting scientists to live and work in the depths of the sea for lengthy periods. It is the largest man-made object ever displayed in the Museum.

"Earliest Traces of Life," an extensive collection of the most ancient known relics on record, was placed on exhibition. Highlighted is the oldest direct evidence of life on earth, a 3.5 billion year-old colony of algae that grew on tidal flats in western Australia.

Among the exhibitions scheduled for early 1987 are:

"Portraits of Nature: Paintings by Robert Bateman," a major retrospective exhibition of works by a Canadian painter regarded by many as one of the world's foremost wildlife artists. In conjunction with the exhibition, a Museum book about Bateman and his art and how his portraits of nature tell a larger story of the diversity of life on earth was published by the Smithsonian Institution Press.

"From Mud to Museum: The Making of a Dinosaur," will give visitors--over a period of more than a year--the unique opportunity to watch museum fossil preparators at work. They will slowly and carefully remove the bones of a ten-foot long, 250-million-year-old dinosaur from a slab of sedimentary rock, that was excavated by scientists in New Mexico. Plans call for the skeleton of the dinosaur to be reconstructed and placed on permanent display in the Museum's dinosaur hall.

The fourth in a new series of instructional charts on plant and animal identification, initiated by the Museum's Office of Education, was published in FY 1986. The series is of great value in classrooms, clubs, nature centers, libraries and homes. During 1986, Office of Education staff held a series of programs and workshops designed to assist teachers in using the Museum as a natural resource in Washington, D.C.; Richmond, Virginia; New Orleans, Louisiana; Albuquerque, New Mexico; Austin, Texas; Charleston, West Virginia; and Aikin, South Carolina.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 15 workyears and \$905,000 is requested. An amount of \$450,000 of this increase has been made available through the redirection of funding associated with the closure of the Smithsonian Environmental Research Center's Rockville facility to establish a molecular systematics laboratory at the Institution's Museum Support Center (4 workyears and \$450,000). The remainder of the increase is requested to conduct research in arctic archeology, anthropology, and biology (3 workyears and \$200,000); to establish a comprehensive program for the maintenance, timely acquisition, and the upgrading and replacement of computer hard-

ware (1 workyear and \$47,000); to strengthen the Museum's collections program activities (6 workyears and \$160,000); and to participate in the Quincentenary celebration by sponsoring several commemorative activities (1 workyear and \$48,000).

Molecular Systematics Laboratory (4 workyears and \$450,000) - Research in biological sciences at NMNH/MOM has traditionally emphasized systematics, evolution, and biogeography, based on the Museum's large and diverse collections of specimens. Scientists throughout the world depend upon the research conducted at the Museum of Natural History to provide the fundamental taxonomic studies on which their own research in part depends. However, in recent years the field of systematics has shown rapid growth and has expanded into new areas of evolution and ecological investigations. Together with analyses of more traditional systematic data on the shape and structure of organisms, biochemical data are proving increasingly useful in constructing and testing scientific hypotheses of evolutionary relationships in modern systematics. Several types of biochemical techniques, such as studies of relative mobilities of protein molecules (electrophoresis), of the chemistry of natural products, and macromolecular studies of nucleic acids, including the most recent techniques of determining the unique sequences of nucleic acid molecules, are now available to provide estimates of how organisms are related to one another and how recently they have evolved from a common ancestor.

The proposed program establishes a permanent, sustainable capability for research in the rapidly developing field of molecular systematics, building upon NMNH's broad expertise in systematic biology that incorporates both historical and ecological perspectives. This request to staff, with a small but critical nucleus of scientists and technicians, and to equip a modest molecular systematics laboratory at the Institution's Museum Support Center will facilitate the introduction of "state-of-art" macromolecular techniques and methodologies to the largest single group of systematic biologists in the world. In developing such a new capability, it is necessary to have such a modest beginning, in order to work through an initial learning phase, before beginning to employ these complex techniques on a larger scale. However, it is imperative that the NMNH start now, in order to remain abreast of modern thought in systematic biology. To fail to do so would be to leave NMNH scientists in a very disadvantageous position.

Of the \$450,000 requested, \$131,000 will support four permanent positions: one scientist/lab supervisor, one scientist, and two technicians; \$200,000 for equipment and supplies; and \$119,000 for travel and related expenses of exchanging scientists between NMNH/MOM and other research laboratories who also are working in this field.

Arctic Archeology, Anthropology and Biology (3 workyears and \$200,000) - A century of pioneering fieldwork, publication, and collection established the Smithsonian as the pre-eminent institution in arctic studies. However, failure to develop a sustained funding base has left the Smithsonian today with little capability for maintaining an active role as an arctic studies center. The need for such a center is evident in the fragmentation of today's arctic research institutions. This condition prompted passage of the Arctic Research and Policy Act of 1984 (ARPA) which mandates a coordinated national policy for arctic research. As a participant in the ARPA process, the Smithsonian has been recognized as a major entity having purview of basic research in anthropological, cultural, and biological studies within the Federal establishment.

The proposed program establishes a permanent, sustained capability for basic research in anthropological studies with a broad ecological perspective. Secondary goals include studies of arctic biota, zooarcheology, and paleoecology; collection enhancement and documentation; international collaboration; research training; and museum training for Native Americans.

The requested increase of \$200,000 in continuing support will establish the core of a National Arctic Studies Center. Of this amount, \$77,000 would support three permanent

positions: one scientist, one technician and one administrative assistant; \$5,000 for collections acquisition; \$22,000 for research-related travel and conferences; \$51,000 for equipment and supplies; and \$45,000 for other services and related costs.

Computer Hardware Maintenance and Replacement (1 workyear and \$47,000) - Computer usage has assumed a cardinal role in the research, collections management and administration of the National Museum of Natural History/Museum of Man. The trend toward automation has greatly facilitated the operations of the Museum, but the expense of maintaining and replacing defunct and obsolete equipment has been staggering. It is imperative that the Museum with its manifold pursuits have access to state-of-the-art computer equipment, and that the computer equipment be in good repair. For these reasons, the National Museum of Natural History requests funding to hire an equipment technician (1 workyear and \$21,000) to care for the computer equipment and perform minor repairs. Funding also is sought to contract services (\$26,000) for major repairs. Provision of these funds would allow the Museum of Natural History to provide more efficient and cost effective Museum-wide support for computer services.

Collections Management (6 workyears and \$160,000) - To assure effective control and accountability over the approximately 100 million objects in the National Museum of Natural History's collections, 6 workyears and \$121,000 are requested for six collections management technicians to aid in the processing of large backlogs of uncatalogued materials, to assist the Registrar in loans and acquisitions documentation, to routinely spot-check collections of high commercial value, and to assist in the conversion of NMNH's 3.5 million inventory records to the Collections Reference System on the Smithsonian's IBM mainframe computer. An additional \$5,000 will be used to purchase a computer terminal for the collections staff. Computers continue to be integral to the collections management activities of the Museum. However, the increasing use of mainframe computer time and the attendant rising computer usage costs reduces funds for other collections activities, precluding the Museum from maintaining effective control and accountability over the collections. Therefore, the Museum requests \$34,000 for these computer costs. The increased base funding and additional staff will greatly strengthen the National Museum of Natural History/Museum of Man's ongoing collections management program activities.

Quincentenary Activities (1 workyear and \$48,000) - Coordinated through the Directorate of International Activities, the Quincentenary Planning Committee for the Museum of Natural History has recommended a number of program activities for which funds are being requested for FY 1988. Funds totaling \$90,000 (an increase of \$48,000 over the FY 1987 base) are required for these programs. A program manager (1 workyear and \$39,000) will coordinate the following activities.

First, the National Museum of Natural History will host a series of symposia focusing on topics relevant to the disciplines represented in the Museum's staff. These public symposia will bring together specialists from the Museum and those scholars considered the most eminent in their fields. Each symposium will be followed by a publication of the papers and relevant discussions. The symposium volumes, to be published by the Smithsonian Institution Press, will form a series of their own, tentatively entitled, "Smithsonian Quincentenary Contributions." The first symposium to be held in the fall of 1987 in collaboration with the Directorate of International Activities, is titled "Americans Before Columbus: Ice Age Origins." The topics of the others are: 1988--South American native cultures--trans-Pacific contacts; 1989--North American native cultures--trans-Atlantic contacts; 1990--effects of cultures on indigenous biotas; 1991--"Seeds of Change"; and, in 1992, a symposium on what the next 500 years might augur for the flora and fauna of North and South America. An increase of \$11,000 is requested for travel expenses, honoraria, and related expenses.

In addition, an exhibition on the theme "seeds of change" is planned to be housed in

the Evans Gallery of the National Museum of Natural History before it begins its travel throughout the United States. This exhibition, involving as many disciplines within the Museum as possible, as well as outside advisors and experts, will look at the environment of the Americas before Columbus, and the impact of Columbus on the Americas through the transmission of certain important crops that changed the "New World" forever. Funds totaling \$30,000 are needed for research work on original source materials; identifying artifacts in the United States, the Caribbean and Europe; travel; for design consultant services; and to work with several outside authorities in the field.

Funds for FY 1988 are also being sought to excavate a major pre-Columbian archeological site in Wyoming. The site appears to be extremely old perhaps the oldest one on the Great Plains. Preliminary surveys indicate that it contains every known cultural horizon, including Folsom and Clovis, as well as several that were previously unknown. Among the ideas under discussion are a major request for funding that will enable the site to be excavated thoroughly, its contents properly analyzed and described, and its materials used to form the basis of publications, exhibitions, and educational programs. Funds totaling \$10,000 will fund preparation work, site surveys, and travel to begin excavation at the appropriate site.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are derived from a variety of sources, including annual allotments for specific purposes. The Museum's share of net proceeds from the Museum shop, cafeterias and other receipts, such as sale of exhibit brochures, the "By-Word" exhibition explanation system, and tuition reimbursement grants from local universities for courses taught by Museum staff. Program allotments provide support for events related to the opening of new exhibitions, as well as salary and benefit costs for the Director of the National Museum of Natural History (estimated expenditures of \$118,000 in FY 1987 and \$121,000 in FY 1988). In FY 1987, an allotment provided partial support toward the purchase of an analytical scanning electron microscope for the Department of Mineral Sciences (\$33,000). Special Purpose funds are used to help finance exhibit hall brochures, field research, docent travel costs, duplication of human studies films, training of anthropology students, and support for the Anthropological Archives.

In addition, funds from the Institution's Collections Acquisition, Scholarly Studies and Educational Outreach Program, Research Opportunities Fund, Smithsonian Society, and the Special Exhibition Fund support research, education and exhibition projects. In FY 1986, the total funding from these programs amounted to \$1,020,000, providing various levels of support for over 100 projects. Expenditures under these programs have not been recorded for FY 1987 and FY 1988 which explains the variance in totals shown between FY 1986 and the subsequent two years.

Restricted Funds - These funds are in the form of restricted endowments which specify the use of the donation or bequest and of gifts and grants provided by individuals, foundations and corporations for specific purposes. Generally, the funds provide support for a particular exhibition or research project. Among these restricted funds are field-based and laboratory research on the physical and chemical mechanisms underlying geologic and cosmologic processes (estimated expenditures of \$30,000 in FY 1987), and biological studies of mangrove swamps (estimated expenditures of \$25,000 in FY 1987 and in FY 1988). Other funding is available for ethnological research among the Canela Indians of Brazil (estimated expenditures of \$39,000 in FY 1987 and \$38,000 in FY 1988); and support for threatened Latin American plants (estimated expenditures of \$31,000 in FY 1987 and \$33,000 in FY 1988). Gifts have been received and continue to be sought for upgrading the Gem and Mineral Hall. The Museum received funds for the "Man Makes Culture Makes Man" exhibition (estimated expenditures of \$31,000 in FY 1987 and \$222,000 in FY 1988). Funds were received toward production of "The Nature Paintings of Robert Bateman" exhibi-

tion (estimated expenditures of \$152,000 in FY 1987). The Museum continues to seek support from private sources for its planned exhibitions and outreach programs. Currently, funds are being sought for four temporary shows: "Crossroads of Continents" (estimated expenditures of \$52,000 in FY 1987 and \$1,689,000 in FY 1988); "Ebla to Damascus" (estimated expenditures of \$314,000 in FY 1987); "Man, Music and Motion" (estimated expenditure of \$42,000 in FY 1987); and "Caesarea by the Sea" (estimated expenditures of \$100,000 in FY 1987 and \$104,000 in FY 1988), all to be installed in the Evans Gallery. Funding continues to be sought for the renovation of the Insect Zoo (estimated expenditures of \$106,000 in FY 1987).

In FY 1982, the Museum undertook the management of the Smithsonian Marine Station at Link Port, Florida (formerly called the Fort Pierce Bureau), as an integral part of its marine research program. The Hunterdon Endowment supports oceanographic research at this facility which offers an unique environment in which to study an oceanographic transitional zone between temperate and tropical biota. Research focuses on the life history, systematics and ecology of a wide spectrum of plant and animal marine life. Contributing to the research efforts are a resident scientist, Smithsonian visiting scientists, postdoctoral fellows and numerous national and international visiting investigators (estimated expenditures of \$525,000 in FY 1987 and in FY 1988). Support is also provided by the Seward Johnson Endowment Fund for operation and maintenance of the Johnson-Sea-Link submersible program conducted at the facility by the Harbor Branch Oceanographic Institution Foundation (estimated expenditures of \$598,000 in FY 1987 and in FY 1988).

Federal Grants and Contracts - These funds are provided by various Federal agencies and departments for special projects which can be conducted at the Museum because of its unique scientific expertise in certain fields. Examples of Federal contract support are projects funded by the United States Army to conduct basic biosystematic research on mosquitoes that are of medical significance overseas (estimated expenditures of \$88,000 in FY 1987 and \$92,000 in FY 1988); creation of a computer data file on the medical importance, distribution, ecology and collection of mosquitoes (estimated expenditures of \$57,000 in FY 1987 and \$62,000 in FY 1988); the "Tumor Registry in Lower Animals" project funded by the National Cancer Institute, facilitates the study of neoplasia and related disorders in invertebrate and cold-blooded vertebrate animals important in human biomedical research (estimated expenditures of \$385,000 in FY 1987 and \$402,000 in FY 1988); a project funded by the National Science Foundation to process and distribute polar biological specimens and data (estimated expenditures of \$233,000 in FY 1987 and \$244,000 in FY 1988); and funds to curate material collected during the Bureau of Land Management's outer continental shelf biological sampling program in the Atlantic and Gulf regions (estimated expenditures of \$178,000 in FY 1987 and \$188,000 in FY 1988).

NATIONAL AIR AND SPACE MUSEUM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**		Amount	
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	228	8,143	-	8	31	2,646	-	369	3	346
FY 1987 Base	211	8,813	-	61	29	3,291	-	622	3	246
FY 1988 Estimate	212	9,037	-	37	28	3,241	-	506	3	289

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	211	1	212
11 Personnel Compensation.....	6,102	197	6,299
12 Personnel Benefits.....	875	28	903
21 Travel.....	73	5	78
22 Transportation of Things.....	49	-	49
23 Rent, Communications & Utilities.....	20	-	20
24 Printing & Reproduction.....	152	-	152
25 Other Services.....	650	-11	639
26 Supplies & Materials.....	408	1	409
31 Equipment.....	484	4	488
Total	<u>8,813</u>	<u>224</u>	<u>9,037</u>

Analysis of Increase

Necessary Pay.....	200
Program Funds.....	24

ABSTRACT - The National Air and Space Museum (NASM) serves as an international repository for artifacts and documentation related to the development of aviation, space flight and space science. NASM's programs encompass exhibitions, research, preservation/restoration, and education. The Museum serves a wide public and scholarly audience interested in the history and technological achievements of aviation and space flight. In addition to its Mall location, NASM maintains a facility for the preservation and restoration of artifacts at the Paul E. Garber Preservation, Restoration and Storage Facility in Suitland, Maryland. For FY 1988, an increase of 1 workyear and \$24,000 is requested to continue the development of a World Atlas composed of satellite images in commemoration of the Columbus Quincentenary. Necessary pay of \$200,000 is required for existing staff.

PROGRAM - During FY 1986, the National Air and Space Museum celebrated two important anniversaries: the 40th anniversary of the establishment of the Museum and the 10th anniversary of the Museum building. Established by law on August 12, 1946, NASM's role as a national resource for public and scholarly interest in the air and space fields was greatly strengthened by the completion of the current museum building on the Mall in 1976. More than 110 million people have visited the Museum since it opened, making it the most popular museum in the world. NASM's collections consist of more than 300 historic aircraft, 250 spacecraft and extensive holdings of artifacts, papers, photographs, films, microfiche, video disc and technical drawings, which are available for study by interested scholars throughout the United States and abroad. The exhibition program uses state-of-the-art techniques in exhibit design, presentation and equipment to convey the excitement of the subject matter to the visitor. An active scientific program, aimed at understanding both Earth and planetary geology, continues as an important endeavor of the Museum. Active programs in collections management, preservation and restoration of artifacts remain a centerpiece of the Museum's curatorial efforts. As a public institution, considerable emphasis is placed on the education and outreach activities through lectures, films, planetarium presentations, docent tours and written materials for schools and visitors to the Museum.

NASM maintains exhibits preparation, collections storage and management and preservation and restoration programs at the Paul E. Garber Facility in Suitland, Maryland. The Museum has restored more than 60 historic aircraft and spacecraft from its collection at the Garber Facility, with the restoration of at least two more each year planned over the next several years. The Garber Facility also presents to the public approximately 90 aircraft, numerous spacecraft and other flight-related objects. In 1986, approximately 30,000 people visited the Garber Facility, the largest number of visitors since it was opened to the public.

Research - Research provides the foundation of the Museum's efforts as a primary center for the study of the science and technology of aviation, space, and geophysical science. The results of research projects also support the exhibitions, publications, educational, historic restoration, and archival preservation programs. The areas of research undertaken by the Museum staff include the history of space science and exploration; the history of aeronautics; contemporary developments in these fields; and comparative studies of the Earth and other planets using satellite images and data. In addition, the Museum supports two applied research and development programs: the historic preservation of aircraft and spacecraft; and the storage and retrieval of archival and photographic information. The annual Research Report, which contains information on the many research projects currently being conducted, is published by the Museum.

Earth and Planetary Studies: The Center for Earth and Planetary Studies was established in 1973 to conduct research in comparative planetology and in the development of the Earth's land forms and surface composition by analyzing remote-sensing data obtained from satellites. Research analysis of remote-sensing data uses scientific information gathered by satellites and analyzed by computer to produce geological and topographical studies of areas on the surface of the Earth, the Moon, and other planets. Research projects on satellite remote-sensing of desert fringe regions are geared towards the understanding of the effects of climatic change on surface materials in the Sahelian zone of Africa. Field work has been done in the inland Niger delta of Mali, in western Egypt, and in northern Sudan. By combining recent satellite images with those taken 14 years earlier, researchers are better able to assess the movement of sand and soil degradation that has taken place due to the recent period of drought. Research in mapping and analyzing the origin of surface features on the Moon and Mars continued throughout FY 1986, with funding by the National Aeronautics and Space Administration (NASA).

In FY 1983, NASA designated the Center for Earth and Planetary Studies as a Planetary Image Facility, a repository allowing researchers access to the collections of

images of the planets taken by NASA space probes. During FY 1986, researchers from the Smithsonian and other institutions continued to make great use of this facility. Plans are now under way to link the Planetary Image Facilities across the country beginning in FY 1988 so that this valuable information can be easily shared.

Space Science and Exploration: The Museum's joint program of research and documentation of the Hubble Space Telescope with The Johns Hopkins University History of Science Department will serve as a rich source of research material for historians in the future, and will provide a valuable current record of space technology. Research is also being conducted on the history of scientific research using satellites, the history of the interaction of aerospace and computing technologies, the history of spacesuit technology, weather satellites, and the history of the Soviet space program. The continuing Space Astronomy Oral History Project (SAOHP) within the department has published a catalogue and continues to augment that collection with new interviews. To date, over 200 copies of the SAOHP catalogue have been sent upon request to outside scholars from many different institutions and the interest in the program has resulted in requests to conduct colloquial and instructional sessions on oral history techniques for outside groups. The subject matter of the SAOHP is being expanded to cover other aspects of space science. The success of the oral history program has stimulated interest in experimenting with video histories, and has led to the funding of a pilot video history program by the Sloan Foundation. The planned four-year, pan-Institutional program began in FY 1986 with the establishment of a framework outlining the goals of the program. Also established during FY 1986 was the Glennan-Webb-Seamans Fund for Research in Space History to support a broad program in historical preservation and scholarship through recognition of important contributions to the Nation's space program.

Aeronautics: A new series of quality scholarly monographs treating various aspects of aeronautical history will begin in FY 1987. The goal will be to attract to the Museum and the Smithsonian Institution Press the highest quality manuscripts produced by scholars working with the Institution.

The Air and Space Bibliography project represents an important joint program with the Space Science and Exploration Department. When published in FY 1987, this bibliography will become a major source for annotated reference dealing with aerospace history.

Research and writing continue on a number of books to be published in the upcoming fiscal years. These include Edward Steichen and The Birth of Aerial Photography, Igor Sikorsky's Giant Aircraft, U.S. Women In Aviation 1940 - Present, The Boeing 247 and The Wright Flyer.

Among the exhibits in the research and planning stage for FY 1987 are "Women in Aerospace," which will highlight the many contributions of women to the aerospace field; and an exhibit dedicated to the United States Customs Service, which will emphasize the vital role played by aircraft in contemporary law enforcement efforts of the Customs Service. Also in the research stage is a revision of the Sea-Air Operations gallery which will highlight the six major aircraft carrier battles in the Pacific during World War II with a special tribute to the USS Enterprise, the most decorated carrier of the War in the Pacific.

Exhibitions - In FY 1986, the major gallery "Looking at Earth" opened. This gallery explores efforts to see the Earth from higher vantage points, starting with early attempts using birds and kites, continuing with balloons, aircraft, spacecraft and finally satellites, to study the Earth's changing surface. A U-2 reconnaissance aircraft and numerous Landsat photographs are on display, along with a weather satellite depicting the advanced technologies used to look at the Earth. The opening of this gallery marked the first use of interactive video technology for exhibition purposes at the Smithsonian.

By touching the screen and picking out an area within the United States, the visitor can view a Landsat photo of their hometown area. The ever popular art gallery in the Museum opened a companion exhibition to "Looking at Earth" that included an art contest: "Earth Views."

NASM celebrated the 75th anniversary of United States Naval Aviation in FY 1986, with the opening of a major exhibit dedicated to the many professional accomplishments of aircraft designer and builder Leroy Grumman. Air Traffic Control (ATC) was the subject of another major exhibit which opened in July 1986 to commemorate the 50th anniversary of ATC in the United States. In anticipation of a record-breaking around-the-world flight in late 1986 by the aircraft Voyager, an exhibit was prepared as a tribute to this radically designed aircraft and its two intrepid pilots, Jeana Yeager and Dick Rutan. Other small exhibits during FY 1986 included the XV-22 Osprey Tiltrotor, General Electric T/00 Engine, Flying Boats and Seaplane Models, and United States Military Aerial Demonstration Teams.

Another new exhibition entitled "Fire and Ice, a History of Comets in Art," also opened in FY 1986. This exciting exhibition included paintings, jewelry, furniture, books and other objects relating to comets and their influence throughout history.

In January 1986, the Museum presented to the public live coverage of the continual slow scan video transmitted during NASA's Voyager-Uranus encounter--the first close-up view of this faraway planet. The encounter and related exhibition revealed a vast amount of new and exciting information about this distant planet.

In January 1986, the Museum erected a memorial to the crew of the space shuttle Challenger. Immediately, the public was drawn to the memorial, leaving cards, poems and flowers daily. The employees of NASA also held a memorial service at the Museum for the Challenger crew.

The spectacular full-scale replica of the Tracking and Data Relay Satellite (TDRS) was suspended in the Space Hall in early FY 1987. The TDRS system, consisting of three like satellites and ground station, has served as NASA's world-wide space communications network since 1983. The Caproni CA9, the first Italian Air Force airplane, went on display in the Early Flight gallery. Smaller exhibitions planned for FY 1987 include "U.S. Customs Service," "Women in Helicopter Aviation," "Aviation Art of Bill Phillips," and an update of the "Friendship 7" exhibit for the upcoming 25th anniversary of the history-making flight of this spacecraft.

During FY 1988, the "Aerospace Computing" gallery will open. This major gallery, which will trace the development and use of computers in aviation and space, will include such features as hands-on displays for the public to experience, interactive video units, a state-of-the-art theater and a working robotic arm. Smaller exhibitions planned include "Women in Aviation" and the display of the Hubble Space Telescope Structural Dynamic Test Vehicle. This authentic artifact was used for full-scale testing under varying conditions to simulate the effects of space conditions on the space telescope in preparation for its launch aboard the space shuttle.

Exhibitions are complemented by film presentations related to air and space travel in a specially equipped theater which uses an innovative, high-resolution projection system (IMAX) and a giant screen for extraordinarily realistic effects. A new IMAX film, "On the Wing," which premiered in June 1986, presents a comparison of natural and mechanical flight featuring a mechanical replica of the flying reptile Quetzalcoatlus northropi. Another recent IMAX film, "The Dream is Alive," featured actual film footage shot by the astronauts on three Shuttle missions. Additional film projects are now being studied for future fiscal years.

"Summertime," a planetarium show presented from May through October 1986, showed visitors the constellations and deep sky objects that are visible in the summer night sky. The new planetarium show for FY 1987, "State of the Universe," portrays what we know about the world beyond, from ancient beliefs and superstitions to the latest predictions based on scientific theory. This show uses state-of-the-art computer-generated graphics to enhance the viewer's perception of the universe.

Development of Collections - In FY 1986, the Museum acquired a North American B-25 United States Army bomber used throughout World War II; a Kreider-Reisner KR-34C, an airplane representative of the new aircraft factories begun in the late 1920s; the Rutan VariEze, a very popular home-built design made of composite materials; a Cascade Kasperwing 180B, an ultralight of a flying wing design; and a MiG-15, a Soviet designed fighter aircraft encountered by United States forces during the Korean War.

On December 13, 1985, the space shuttle Enterprise was acquired by the Museum. The shuttle has become a permanent part of the collection, housed at Washington-Dulles Airport in Virginia. In FY 1986, other important acquisitions included the Hubble Space Telescope Structural Dynamic Test Vehicle. This high quality mock-up was used from 1972 to the present to develop and evaluate the design of the Hubble Space Telescope and its handling procedures. Additional space artifacts are continually acquired from NASA missions.

In FY 1986, the Museum signed an agreement with the University of South Carolina allowing NASM to acquire up to 800,000 feet of aviation newsreel footage produced by the Movietone News Company from 1919 to 1939. This extremely valuable footage is currently on rapidly deteriorating nitrate film. Through this agreement, NASM will acquire duplicate footage for any footage that has been transferred to safety film. The goal is to save all of this historically valuable material for future generations.

Preservation and Restoration of the Collections - During FY 1986, the restoration of the Spad XIII was completed. This World War I fighter is the only original one of its kind remaining. Restored aircraft scheduled for completion in FY 1987 include the Arado 234, the first jet bomber, and the OS2U Kingfisher, which was carried on battleships and cruisers and used on aerial reconnaissance missions. The treatment program begun in FY 1983 to reduce further deterioration of aircraft not yet restored remains the heart of the restoration program.

The Space Science and Exploration Department's Artifact Preservation Group has completed its fourth year of providing information and guidance in the areas of artifact preservation, exhibition, care and handling. This program has created an awareness of the special problems related to space artifacts that were designed and constructed based on a one-time use in zero-gravity environments without oxygen and were not intended for extended storage or display on the Earth's surface. In FY 1986, a one-day workshop was conducted at the Garber Facility to learn more about the preservation materials currently available and their uses in the future. Leaders in the field of conservation responded enthusiastically to requests to both speak and provide demonstrations in their areas of expertise.

Video Disc Project and the Development of the System for Digital Display - In FY 1986, the National Air and Space Museum continued to develop two archival programs utilizing video disc and computer technology: the Video Disc Project and the System for Digital Display. Through the development and application of these systems, the Museum can greatly expand its photographic and archival collections and enhance ongoing research efforts.

Video Disc Project: This preservation program for archival photographs and other visual collections consists of filming the images on 35mm film and the transfer of this

film onto video disc format. Currently, over 450,000 images have been transferred and four discs completed. The fourth disc concludes the pre-1954 Air Force photographic collection. In FY 1987, the fifth disc containing NASA material including 70mm color photos taken from the Space Shuttle will be completed. By facilitating greater access to the collection and eliminating the loss or destruction of the originals, this project has expanded the availability of these vast collections to scholars throughout the world.

Development of the System for Digital Display: Utilizing the most advanced technological innovations in computer and video technologies, the Museum has successfully put together the first three production systems. The ability to translate any historical document into digital format and produce a printed copy of the text has already been tested. The digitizing of the Von Braun papers in Huntsville, Alabama (undertaken as the pilot project), has been successfully completed. The system is now at the Truman Library in Kansas City, Missouri, digitizing the papers of James Webb, Administrator of NASA from February 1961 to October 1968. Future projects include digitizing the papers of such notable figures in the fields of air and space as the Wright brothers and General Benjamin O. Davis. The system has received international attention with requests for production installations from England and Austria, as well as numerous United States organizations. Other government agencies already utilizing this system include the Nuclear Regulatory Commission and the National Park Service. Application has been made for a patent for this digital display system.

In FY 1986, a new system related to the System for Digital Display was developed for three-dimensional objects. The Visual Inventory Control (VIC) system is able to digitize a three-dimensional object or picture in full color with high resolution and an accompanying text. This system is extremely valuable for use in inventory management and has already been adopted by the Hirshhorn Museum, the Office of Printing and Photographic Services and the Museum of Natural History's Department of Anthropology. In FY 1987 and beyond, both systems will continue to be refined, tested and employed in many areas of the Institution and the country.

Public Education and Orientation: The Office of University Programs was created in June 1985 to support the academic focus of the Museum. In FY 1986, the cooperative program between NASM and New York University completed its second year, bringing History of Science undergraduate students to the Museum to conduct a portion of their course work and receive hands-on experience working with museum artifacts. Expansion of this program already includes liaisons with The Johns Hopkins University, Cornell University, and the Massachusetts Institute of Technology, as well as Wellesley College, with which a two-week course on the history and principles of flight for 15 Wellesley students is scheduled for January 1987. This course will be conducted at NASM's two locations by curatorial staff using the collection as a teaching tool. University cooperative programs will expand in FY 1987 and FY 1988 to encompass both national and international colleges and universities.

Air & Space/Smithsonian magazine was launched in FY 1986 as a bi-monthly publication. The magazine was founded by the Museum to fill the perceived need to provide an educational and informative forum for broad issues on aviation and space topics for the lay public. Market research over a period of months indicated a higher than average appeal for a magazine of this type, and the initial circulation has proved promising. It is planned to eventually make Air & Space/Smithsonian a monthly magazine.

The Museum's educational programs were expanded in FY 1986. They included the development of a QN (Quetzalcoatlus northropi) Family Activity Sheet for small children who visit the Museum with their families. This Activity Sheet was a cooperative venture with the Education Office of the Museum of Natural History. Each museum cross-referenced readers to visit the exhibits at both museums and the National Zoological Park.

The curriculum materials that parallel the docent-led educational tours have been updated and will be widely distributed in the 1986-1987 school year. NASM's educational program was the topic of a presentation for Washington, D.C. science teachers at a University of the District of Columbia workshop. Future educational projects include "Looking At Earth" and "On the Wing" curriculum package, a Space Shuttle activity book, curriculum materials for the Aerospace Computing gallery and numerous educational workshops for teachers.

NASM continues to present numerous series of free lectures, seminars, symposia and films to the public. These include the General Electric sponsored aviation lecture series, which in FY 1986 included Brig. Gen. Charles E. Yeager USAF (Ret.), A. Scott Crossfield, Wing Commander Geoffrey Page and Gen. Johannes Steinhoff. The Von Braun lecture in FY 1986, "Looking at Earth: From Satellites to Space Stations," was presented by Dr. John H. McElroy. The Charles Lindbergh Memorial lecture was given by Sen. Barry M. Goldwater on "Aviation and the World Today." Other highlights in FY 1986 included "Comet Quest: An International Symposium"; "Viking on Mars: 10 Years Later"; and "25 Years of Manned Space Flight" by former astronaut Alan B. Shepard, Jr. The film series continued in FY 1986 showing some very popular movies including "The Empire Strikes Back," "The Great Dictator," "Dr. Strangelove" and "Meteor." The Monthly Sky lecture and the Exploring Space with Astronomers lecture series also continued throughout the year with some very popular topics and well-known speakers.

Publications - In FY 1986, the Museum published Focus on Flight: Aviation Photography of Hans Groenhoff; Images of Flight: Aviation Photography of Rudy Arnold; the English translation of the History of French Military Aviation; the catalogue of the Space Astronomy Oral History Project; U.S. Women in Aviation 1930-39; and the second annual Research Report.

Planned publications for FY 1987 include The Wright Flyer: An Engineering Perspective; Practical Astronomy; Focke Wulf 190: Workhorse of the Luftwaffe; Congreve and Hale Rockets; The Air and Space Bibliography; Boeing 247, part of the famous aircraft series; the Directory of Aerospace Resources; and the annual Research Report. Publication projects planned for FY 1988 are the Scholars Guide to Aerospace History in Washington, D.C.; U.S. Women in Aviation: 1940 - Present; Clothing for Exploration: A History of Space Suits; The Explorer Balloon; Igor Sikorsky's Giant Aircraft; 1903 Wright Flyer, part of the famous aircraft series; Soyuz 19; Apollo 11: The Spacecraft and Its Mission, beginning the space artifact series; and the annual Research Report.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 1 workyear and \$24,000 is requested to continue the development of a World Atlas composed of satellite images in commemoration of the Columbus Quincentenary. With funding of \$12,000 provided in FY 1987, the National Air and Space Museum began the background research and planning to produce a World Atlas composed of satellite images to commemorate the Columbus Quincentenary. For FY 1988, a total of 1 workyear and \$36,000 (an increase of 1 workyear and \$24,000 over the FY 1987 base) is requested to continue this project. Total funding requirements for this project from FY 1987 through FY 1991 are currently estimated to be \$212,000.

Using remote-sensing information from Landsat satellite photographs, the atlas will provide an unparalleled reference for research by providing the synoptic view of geologic and environmental features that only satellite images can provide. Publication of such an atlas will enhance the public understanding of satellite remote sensing and provide a major reference work on world physiography and natural features. The production of this atlas as a Quincentenary program underscores the important role that advances on the science of cartography played during the age of exploration and the way that current advances in state-of-the-art technology continue the search to expand knowledge of the geographic world.

During FY 1988, the Museum plans to hire a project coordinator (1 workyear and \$25,000) to continue background research and provide liaison with other agencies involved in research in satellite remote-sensing, including NASA, the National Oceanic and Atmospheric Administration, the European Space Agency, EOSAT Corporation, and SPOT Image Corporation, as well as both satellite remote groups and other international organizations. A sum of \$11,000 will be needed for program support costs, including travel, supplies and materials, and equipment. The primary scope of work planned for FY 1988 will include the determination of satellite images and maps for inclusion in the atlas, the assessment of outside agency interest, and the development of support and coordination with various user groups.

In addition to the primary atlas, a second volume is planned that would consist of a user's guide and information about the various types of remote sensing information available, as well as a description of the sensor characteristics (multispectral, radar, film, camera systems, etc.). At present this information is scattered throughout the scientific literature, with no single source or coherent explanation that is widely available to the public.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are derived from a variety of sources including the Museum's share of the net proceeds from the shops and restaurant, the net proceeds resulting from bureau activities (such as the Theater and Planetarium) and small allotments. In addition to meeting expenses of the Theater and Planetarium, these funds are used to finance fellowships, guest lecturers, symposia and special events. A portion of the proceeds from the Theater and Planetarium provide partial support for the production of new IMAX films including "The Dream is Alive" and "On the Wing," as well as other Institution programs. Supplemental outside funding was received for both new films. In the Albert Einstein Planetarium, the Museum premiered one new show, "Summertime," in FY 1986, and plans to premier "State of the Universe" in FY 1987. Continuing support also is provided for distinguished scholars to study at the Museum through the Lindbergh Chair of Aerospace History, and the International Fellowship. Other fellowship programs include Guggenheim and Verville, which support pre- or post-doctoral students and other distinguished scholars in aviation and space science.

Restricted Funds - Funds provided here are in the form of restricted endowments which specify the use of the donation or bequest, and of gifts and foundation grants by individuals, organizations or corporations for specific purposes. Examples of these funds are the Ramsey Endowment, used to finance research relating to naval flight history (estimated expenditures of \$27,000 in FY 1987 and \$32,000 in FY 1988); the Guggenheim Endowment, which is used for lectures and stipends (estimated expenditures of \$8,000 in FY 1987 and \$28,000 in FY 1988); the Martin Marietta Chair in Space History which supports research by distinguished scholars in the space sciences (estimated expenditures of \$52,000 in FY 1987 and \$57,000 in FY 1988); and the NASM Educational Fund (estimated expenditures of \$29,000 in FY 1987 and \$23,000 in FY 1988). Support also has been received from the Kodak Company for the exhibition "Looking at Earth" (estimated expenditures of \$173,000 in FY 1987 and \$85,000 in FY 1988). The Sloan Foundation provided a grant of \$131,000 in FY 1986 to support a four-year videohistory program, as well as \$100,000 in FY 1987 to support a workshop, videodisc and curriculum package on aviation history. Numerous corporate donations, both monetary and hardware, to support the "Aerospace Computing" gallery, were received in FY 1986 and have been pledged for FY 1987 and FY 1988. Seed money for the newly-established Glennan-Webb-Seamans Fund for Research in Space History was pledged for FY 1987 by corporate sources. Estimated expenditures include \$273,000 in FY 1987 and \$276,000 in FY 1988 to preserve and copy Movietone films. However, outside funding has not been secured.

Federal Grants and Contracts - These are provided by various agencies and departments for special projects which can be conducted at NASM because of its expertise in a given area. Continued funding from the National Aeronautics and Space Administration grant program supports the following research activity in planetary geology by the Museum's Center for Earth and Planetary Studies: photogeologic investigation of planetary tectonic features (estimated expenditures of \$98,000 in FY 1987 and \$103,000 in FY 1988). Additional support from NASA continues efforts in studying the structural geology of the Basalt Plains (estimated expenditures of \$31,000 in FY 1987 and \$33,000 in FY 1988) and the Planetary Image Facility (estimated expenditures of \$15,000 in FY 1987 and \$18,000 in FY 1988). The research project on satellite remote-sensing of central Mali, which was begun in FY 1984, continues to determine the long-term effects of climate change on the fragile environment of the inland Niger delta region. This research was expanded in FY 1985 to cover fringe areas of the world's deserts and will receive continued financial support (estimated expenditures \$74,000 in FY 1987 and of \$90,000 in FY 1988). The Space Telescope Historical Project, a joint effort between The Johns Hopkins University and NASM, also is partially funded by NASA (estimated expenditures of \$13,000 in FY 1987).

NATIONAL MUSEUM OF AMERICAN HISTORY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	325	12,023	2	295	3	831	9	743	2	50
FY 1987 Base	316	13,373	1	191	2	683	10	1,572	1	6
FY 1988 Estimate	330	13,648	1	185	2	565	9	1,183	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	316	14	330
11 Personnel Compensation.....	9,244	537	9,781
12 Personnel Benefits.....	1,346	72	1,418
21 Travel.....	70	11	81
22 Transportation of Things.....	32	-8	24
23 Rent, Communications & Utilities.....	50	-	50
24 Printing & Reproduction.....	88	-69	19
25 Other Services.....	1,510	-113	1,397
26 Supplies & Materials.....	490	95	585
31 Equipment.....	213	-	213
Collections Acquisition.....	330	-250	80
Total	<u>13,373</u>	<u>275</u>	<u>13,648</u>

Analysis of Increase

Necessary Pay.....	324
Program Funds.....	-49

ABSTRACT - The National Museum of American History (NMAH) collects and preserves the Nation's material culture, the artifacts that embody the national heritage of the United States. By carefully enlarging and preserving its collections and using them as a basis for exhibitions, educational programs, research, and publications, the Museum offers scholars and the public the opportunity to understand the history of the United States. In addition to the Mall building, the Museum maintains the exhibition "1876 Centennial," located in the Arts and Industries Building, and supervises the movement and care of objects stored in six buildings in Suitland, Maryland. For FY 1988, an increase of 14 workyears and \$601,000 is requested to reinforce the Museum's long-range Exhibition Reinstallation Program (\$227,000); support the program-related costs incurred in the

implementation of the Museum's Master Plan (6 workyears and \$147,000); help eliminate the growing backlog of accessions to be inventoried and provide basic refinement of inventory records (5 workyears and \$93,000); continue planning and research for the programs, exhibitions and publications to commemorate the Columbus Quincentenary (1 workyear and \$58,000); and provide program administration for the new research center for the study of American history (2 workyears and \$76,000). These increases are offset by a reduction of \$450,000 in the Museum's base funding associated with an exhibition to commemorate the Bicentennial of the Constitution and a reduction of \$200,000 associated with the purchase and conservation of the Duke Ellington Collection in FY 1987. A sum of \$300,000 is requested to be retained in the Museum's base for the Duke Ellington Collection to allow the completion of the cataloguing of the music and other portions of the collection; the continuation of conservation efforts for fragile, damaged, and deteriorating items; and the development of a modest exhibition and performance program related to the collection. Necessary pay of \$324,000 is required for existing staff.

PROGRAM - The National Museum of American History possesses the largest and most diverse collection documenting the political, cultural, scientific, industrial, and military development of the United States. Covering a wide spectrum of materials, sizes, and descriptions, these museum objects include railroad trains, automobiles, textiles, photographs, paintings, sculpture, paper materials, clothing and costumes, tools, power machinery, clocks, weapons, ceramics and glass, musical instruments, scientific instruments of all kinds, one million numismatic specimens, and 14 million stamps. The Museum preserves and protects this irreplaceable "history book of objects" through a strong ongoing collections management program of conservation, registration, archival, and object storage functions.

The Museum is now engaged in a dynamic ten-year Exhibition Reinstallation Program, which will reshape the way in which these collections are interpreted and presented in NMAH's exhibition halls. Through exhibitions, research publications, and an exciting array of lectures, symposia, concerts, tours and demonstrations, and film and broadcast features, NMAH presents the unique cultural and scientific heritage of the United States to more than five million visitors per year.

Exhibitions - In November of 1986, the Museum opened its second major reinstallation of a permanent exhibition. "Engines of Change: The Industrial Revolution in America, 1790-1860" presents the story of America's transformation from an agricultural society to an industrial giant. This exhibition documents how the United States was able to industrialize so rapidly by examining the human and natural resources, social and economic conditions, new technologies and entrepreneurial spirit which fostered the dramatic changes of industrialization. It highlights both the human and the technological side of the Industrial Revolution by focusing on the machines and the people who invented and worked them. In this way it attempts to give visitors a greater understanding of the lives of Americans in that era and how our lives have changed today because of them.

The Museum's third permanent exhibit hall reinstallation is "Made in America," scheduled to open in April 1988. This exhibit will explore the vast range of natural and synthetic materials as well as the social and economic consequences of their distribution and manufacture within the United States. The next major exhibit reinstallation, "Great Expectations: Everyday Life in 19th century America," will open in 1990.

During FY 1986, new temporary exhibits included: "Beyond the City Lights: American Domestic Gas Lighting Systems"; "At Home on the Road," which examined the enduring American urge to take to the highway; and "Reaching Rural America," which highlighted the growth and importance of rural free mail delivery in America. Two exhibits which opened in the summer of 1986 "Graphic Arts: 100 Years" and "Domestic Interiors" depict the major changes that occurred in the way Americans furnished their houses during the 1700s. "Patent Pending: Models of Invention" and a companion exhibit "Invention in America" commemorated the 150th anniversary of the U.S. Patent Office.

During FY 1987, several new temporary exhibitions will open. One of the most important is "With Justice For All, the Constitution and the Japanese-American Experience in World War II." Developed as the Museum's contribution to the celebration of the 200th anniversary of the Constitution in 1987, it deals with the struggle of national and state decision-makers during World War II to balance constitutional guarantees of civil rights against the perceived requirements for military security. The exhibition will particularly focus on issues of civil rights for Japanese-Americans and on their patriotic contributions during World War II. Three audiovisual programs will portray the achievements of the 442nd Japanese-American Regimental Combat Team, as well as the internment of other Japanese-American civilians for reasons of national security. Another major upcoming temporary exhibit is "Field To Factory," which portrays the movement of hundreds of thousands of Afro-Americans from southern states to northern urban centers during and after World War I.

Master Space Planning Program for NMAH - In FY 1986, the Museum continued its collaboration with the Smithsonian's Office of Design and Construction (ODC) in developing its master space planning program, designed to document space requirements of the Museum both short- and long-term (the next 20 years). The Master Coordination plan addresses two main categories: program and support. The program needs under study include spaces for offices, exhibitions, storage, and other working spaces from which a variety of plans can be drawn. Documenting program needs over the long-term should enable the Museum to define future space needs, put forward design options, and identify needed structures as far in advance as possible. The museum completed its major study of these space needs in December 1986. Support plans have been drawn up also for utilities, heating, ventilation and air conditioning (HVAC) systems, security, fire protection, and other environmental improvements. The master plan will permit the Museum to integrate support improvements already projected by ODC with the Museum's reinstallation plans and other ongoing programs. The master plan will also include estimates of future long-term program and support funding. At this time, the Museum has begun to incorporate its master plan data and projections into the Smithsonian Master Planning Program for Suitland.

Collections Management - In FY 1986, the Museum made progress on the maintenance of automated and manual documentation regarding its collections. This project will prove invaluable in responding to the over 100,000 requests made by the public for information about the collections, as well as improving management control over the Museum's holdings. Two new integrated programs--the Object Movement Tracking and the Registration Transaction Tracking Systems--will improve additions, deletions, and changes to the inventory master file. The Museum continued its active loan program, borrowing approximately 1,800 and lending 2,400 objects from the collections, for an insured value of over \$17 million. Efforts were made to begin a survey of the 3,700 outstanding older loans files needing updating, as well as to analyze, monitor and reduce backlogs of close to 1,000 new accessions and temporary loans.

NMAH's Division of Conservation placed its highest priority in FY 1986 on projects to reduce the immense backlog of conservation problems found in the collections due to poor storage and environmental conditions as well as the inherently fragile and deteriorated conditions of the artifacts. During FY 1986, more than 3,500 objects had been treated or rehoused while projects were initiated to systematically survey collections in storage and develop long-range plans for their treatment.

Automation of collections management functions continued at an accelerated rate, while funding in FY 1986 enabled the Museum to hire a much needed computer specialist to improve the Museum's automation in other areas, such as visitor information systems, financial management programs and project management systems.

In FY 1987, the Museum will continue to reduce backlogs of recordkeeping while

planning for the migration of automated data to the new IBM/INQUIRE system. The Registration Transaction Tracking System will be fully operational for updating the master file, and will be expanded to include production of special reports, registration forms and catalogue cards.

In FY 1986, the Archives Center of NMAH saw the completion of its long-awaited remodeling project, which has dramatically improved facilities for researchers, staff, and collections. Major accomplishments in FY 1986 included publishing, on microfiche cards, 109 volumes of scrapbooks documenting Joe Louis' greatest years as a fighter, 1935-1944, and completing a project to organize and index the Donald Sultner Welles photographic collection. In FY 1987, the Archives Center hopes to complete the entry of basic descriptions of all Center collections into the Smithsonian Institution Bibliographic Information System. The Center also looks forward to accepting the Cy Trobbe Collection of 20th century popular music.

Suitland Facility - In FY 1986, the Museum continued the asbestos cleanup program begun in FY 1985, in order to make accessible the more than 1,000,000 objects from the Museum's collections stored at the Institution's Suitland Facility. One of four buildings scheduled to be cleaned was completed and its contents were cleaned as well. Work continued on rehousing and upgrading collections storage in other uncontaminated spaces. Unneeded non-collections items have been systematically disposed of and selected objects are undergoing deaccession review in order to relieve overcrowded storage conditions. The renovation of Building 19 was begun and will be completed in late FY 1987. In FY 1987, the staff will begin cleaning two more buildings; reoccupy the renovated Building 19; begin to identify and clean historic architectural elements; initiate verification of inventory printouts; and move some objects to the Museum Support Center. Plans will be developed to allow limited touring of Building 28, which contains vehicles and other large collection items.

Museum Support Center - In FY 1986, the Museum began formal planning for the move of collections from several of its curatorial divisions to the Museum Support Center (MSC). Museum staff were assigned to direct and coordinate the effort, a staging area has been established and communications to the MSC computer system installed. Work on conservation surveys and inventory updates will begin in FY 1987 as well as actual packing and transfer of a portion of the estimated 100,000 objects to be moved.

Research - Staff at NMAH conduct research in the full range of issues and objects relating to the cultural and scientific history of America. Research resulted in important publications in FY 1986, including The San Antonio Missions: Edward Everett and the American Occupation, 1847; After the Revolution, The Smithsonian History of Everyday Life in the 18th Century; The Great Yellow Fleet: A History of American Railroad Refrigerator Cars; The Great Rifle Controversy; and Standing at the Crossroads, an interpretive survey of 20th-century Southern culture. Ongoing research in connection with the following major exhibitions will also produce publications in FY 1987 and FY 1988: "Men and Women: Dressing the Part"; "Made in America"; and "Field to Factory."

In FY 1986, the Museum began its new Native American Indian Program with support from outside, as well as the conversion of an existing position to hire a program director. The Native American Indian Program has organized a conference on Indian history for 200 college history teachers; mounted a major section on the 18th century Seneca-Iroquois in the exhibition, "After the Revolution"; and produced a number of publications, public programs, and other outreach efforts to Indian and non-Indian cultural institutions. NMAH, in collaboration with National Museum of Natural History established an interbureau committee for the planning, coordination, and review of activities of mutual interest between the two museums and other Smithsonian programs. In FY 1987, the Native American Indian Program will sponsor symposia and publications on ethnohistory and technology.

The Museum continues to provide support staff and space for the scholarly publication, Technology and Culture, the official journal of the Society for the History of Technology. The Museum's Afro-American Communities Project continues to develop a data base of social and economic information dealing with the structure and development of free black communities in ten United States cities prior to the Civil War.

Collections Acquisition - In FY 1986, the Museum received a number of significant collections through purchase or gift. These acquisitions include: a rare 19th century stencilled New England bedcover and dust ruffle; an unusual Astronomical Regulator made by Wm. Bond & Son, 1850; a 1936 Steinway premier parlor grand piano in superb condition; 20 pieces of clothing designed by Rudi Gernreich in the 1950s and 1960s; three early German typesetting machines from the late 1800s; a collection of Navy uniform items, equipment, medals and manuals from 1918-1922; 58 Ancient Greek coins from the 5th through 3rd centuries B.C. (extremely rare and in very fine condition); a Holofacet laser scanner from the 1960s; an Odex I Robot; a Nuclear Magnetic Resonance Scanner, "The Indomitable," used for whole body scanning of a human subject for early cancer detection; a 1923 Indian Chief motorcycle and Princess sidecar; two tall case clocks--one an example of the earliest clocks made in the United States and the other made by Rittenhouse, a leading American clock maker, instrument maker and astronomer of the 18th century; an orrery made by Aaron Willard, Jr., of Boston in 1825; and 98 American pewter objects from the 17th through 19th centuries in exceptionally fine condition.

With funding provided in FY 1987, the Museum will purchase the collection of personal papers and the music archive of Duke Ellington, an important 20th Century American composer, big-band leader, and a native of Washington, D.C. In FY 1987 and following years, the Museum will conserve and catalogue this major collection and make it available to scholars and the general public through exhibition, performance, and publication programs.

Public Programs - The past year saw an invigorated Department of Public Programs, active on many fronts, gaining increased national attention for its creativity and excellence. This resulted from the integration of performing arts units into the museum mainstream, and the consolidation of interpretive and educational programs under a new assistant director for public programs. With the completed installation of "After the Revolution: Everyday Life in America 1780-1800," NMAH now offers the visitor a dynamic and multi-dimensional understanding of the past -- and these programs are becoming models for museums around the nation.

Highlights from FY 1986 include the following:

- The "Hands on History Room" in "After the Revolution" opened. Over 32,000 visitors have been served by this center (through December 1986), where visitors are urged to "please touch."
- Under the auspices of the Program in Black American Culture, the Museum sponsored a symposium and series of concerts devoted to Black American Popular Music.
- Chamber music programs, utilizing restored instruments from the collection, have emerged as one of the Institution's most unique examples of its "collection-preservation-exhibition-education" mandate. According to the Washington Post, the Smithsonian Chamber Players have "made themselves something of an indispensable factor in the musical life of Washington" and have earned national acclaim through broadcasts heard by over 10 million people on the National Public Radio and American Public Radio Networks.
- Efforts which garnered awards included "GO," a self-guided tour for pre-schoolers, and a Grammy nominee, "American Popular Song."

New programs have been created to celebrate important historic events such as the 50th Anniversary of the Social Security Act, the founding of a Free Press, Martin Luther King's Birthday, as well as the contributions of ethnic Americans to our national heritage.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 14 workyears and \$601,000 is requested to reinforce the Museum's long-range Exhibition Reinstallation Program (\$227,000); support the program-related costs incurred in the implementation of the Museum's Master Plan (6 workyears and \$147,000); help eliminate the growing backlog of accessions to be inventoried and provide basic refinement of inventory records (5 workyears and \$93,000); continue planning and research for the programs, exhibitions and publications to commemorate the Columbus Quincentenary (1 workyear and \$58,000); and provide program administration for the new research center for the study of American history (2 workyears and \$76,000). These increases are offset by a reduction of \$450,000 in the Museum's base funding associated with an exhibition to commemorate the Bicentennial of the Constitution and a reduction of \$200,000 associated with the purchase and conservation of the Duke Ellington Collection in FY 1987. A sum of \$300,000 is requested to be retained in the Museum's base for the Duke Ellington Collection to allow the completion of the cataloguing of the music and other portions of the collection; the continuation of conservation efforts for fragile, damaged, and deteriorating items; and the development of a modest exhibition and performance program related to the collection.

Exhibition Reinstallation Program (\$227,000) - The Museum of American History initiated a long-term program to reinstall its major permanent exhibitions in FY 1982. This Program, which has continued to be the highest priority of the Museum, will allow the Museum to complete the reinstallation of the permanent installations currently in place, which are now 23 years old and occupy roughly two-thirds, or 200,000 square feet, of the Museum's exhibition space.

The first major reinstallation accomplished through this Program, "After the Revolution: Everyday Life in America, 1780-1800," a new interpretation of the diversity of the American people at our Nation's beginning, opened in November 1985. The second major reinstallation, "Engines of Change: The Industrial Revolution in America, 1790-1860," which opened in November 1986, shows how the Industrial Revolution in America brought new tools for transforming energy, new ways of organizing work, and a new entrepreneurial spirit to the United States. Future reinstallations will include "Great Expectations: Everyday Life in 19th-Century America," which will focus on westward migration and its consequences for Native Americans, Immigration, and the emergence of an urban, industrial nation; and "Made in America," which will describe the vast range of natural and synthetic materials as well as the social and economic consequences of their distribution and manufacture within the United States. These new installations, in addition to replacing the older exhibitions which are physically in poor condition, thematically out of date, and much in need of a coherent layout with improved visitor orientation, will allow the incorporation of recent scholarship in American history to reinterpret the Nation's experience for a new generation of museum visitors.

The reinstallation schedule has been developed in conjunction with the Museum's comprehensive Master Coordination Plan to coordinate the exhibition reinstallation work with the major facilities renovation of the building and its mechanical, electrical, and fire protection systems. The coordination of both of these major programs will help to minimize the disruption to the staff, the collections, and the public during the next several years.

Between FY 1982 and FY 1985, funding for the major reinstallation program averaged approximately \$500,000 per year. During FY 1986, the Museum was only able to provide half this funding. It is anticipated that the level of funding for FY 1987 will be restored to \$500,000. For FY 1988 and following years, additional funding of \$227,000 is

requested to enable the Museum to continue the reinstallation program with sufficient funding to meet the scheduled timetable of exhibition work in coordination with the scheduled timetable of the building renovation work.

Implementation of the NMAH Master Plan (6 workyears and \$147,000) - In FY 1987, the Museum will begin a ten-year project for the major renovation of the building and its mechanical, electrical, and fire protection systems. This renovation work will affect the movement, security, storage, and record keeping of thousands of collection items. Funding is requested to cover the program-related costs of implementing this building renovation. Of particular concern are the funding requirements for three areas: staffing to handle, move and pack objects; storage equipment to house objects from the collections that have been temporarily displaced by the renovation; and crating to protect objects at off-site locations during the duration of the work.

The requested funding will allow the Museum to hire six museum technicians (6 workyears and \$102,000) to remove, store or otherwise protect displaced objects, and make required location changes in collections records to maintain an up-to-date inventory. These technicians will also perform minor conservation cleaning work on these objects, as needed. A sum of \$45,000 is also required to purchase racking and cabinets to store the objects dislocated by the renovation work (\$20,000) and to crate those objects that require more protection than possible on an open rack or in an enclosed cabinet (\$25,000). It is estimated that this level of support will be needed for the duration of the renovation program.

Collections Inventory Support (5 workyears and \$93,000) - In June 1983, the Museum completed the first base line inventory of its collections. The inventory was an integral part of the Institution's collections management program established in 1978. Efforts to improve the collections management program, including collections inventory, have been pursued actively since the initial inventory cycle was completed.

Since the initial inventory, the Museum has concentrated on maintaining its inventory records as the locations of objects change; verifying and refining the computer and manual inventory records; and adding information on new acquisitions to the inventory records. A major goal of the Museum has been to incorporate the inventory function into a more comprehensive collections information system which includes object accessioning, cataloguing, loan records, movement of collections and deaccessioning. As part of this objective, the Museum has developed an automated Registration Transaction Tracking System to permit information to be entered into the record at several points as the objects are processed by the Office of the Registrar and curatorial units. The System ultimately will enable the Museum to produce catalogue cards, accession memoranda and other collections management documents without duplication of effort.

The Museum, however, has not been able to keep up with the increasing amount of inventory data that must be processed. For FY 1988, an increase of 5 workyears and \$93,000 is requested to hire five museum technicians (5 workyears and \$93,000) to help eliminate the growing backlog of accessions to be inventoried, to provide the most basic refinement of inventory records for the move to the Museum Support Center and to assist in the conversion of inventory data to the Collections Reference System on the Smithsonian's IBM mainframe.

A backlog in accessioning objects into the permanent collections exists at the divisional level of the Museum and in the Museum's Office of the Registrar. Backlogs of new automated master file records often go back several years. During the past two years, the Museum has worked strenuously to keep these backlogs to a minimum, including imposing moratoria on collecting. Insufficient funding to complete an integrated automated registration system and the lack of a full staff have hampered the progress of correcting these deficiencies. The unprecedented movement of the collections within the Museum over

the past two years also has contributed to the delay in documenting object location changes. In FY 1988, technicians also will provide some limited assistance to curatorial and registration staff in refining automated collections data by selective debatching; correcting records, such as category designations; documenting more specific item locations, such as shelf and drawer sites; and providing certain records with more data to better assure item differentiation. The foregoing tasks are central to the Museum's preparation for the automated changeover to the IBM mainframe.

Columbus Quincentenary Program (1 workyear and \$58,000) - With funding of \$53,000 provided in FY 1987, the Museum of American History began to plan and research a major exhibition to commemorate the Columbus Quincentenary, focusing upon five centuries of interaction among Native Americans and Europeans in North America with special attention paid to the Spanish influence from the earliest colonial days. For FY 1988, a total of 1 workyear and \$111,000 is requested (an increase of 1 workyear and \$58,000 over the FY 1987 level of funding) to continue the research necessary to develop this exhibition. Total funding for this exhibition and related programs from FY 1987 through FY 1992 are currently estimated to be \$1,276,000.

The Museum has already launched several initiatives designed to accelerate and broaden the Quincentennial planning process. With the support of the Office of Fellowships and Grants, the Museum convened a conference of distinguished scholars in the field of Anglo-Indian-Hispanic relations to discuss exhibit possibilities related to ongoing archeological work and to create a conceptual framework for Quincentennial exhibits at the Museum.

During FY 1988, the emphasis will begin to shift from content to presentation planning. The Museum will hire a historian (1 workyear and \$37,000) to coordinate the research and development of its Quincentenary programs. In addition, the Museum will contract with film production and interactive video disc experts to develop pilot projects for research-based public programs to relate the Quincentenary exhibition to living cultures and reach wider audiences (\$51,000). A sum of \$23,000 is also requested to cover program support costs, including travel and supplies and materials.

Center for the Study of American History (2 workyears and \$76,000) - In order to promote basic research in American history, the Museum seeks to establish a research center for the study of American history. This research center would combine, in a more structured way, the existing research centers of the Museum -- the Eisenhower Institute, the Afro-American Research Project, the NMAH Archives Center, and the journal "Technology and Culture" -- with the relationships already established on an ad hoc basis with several universities. The new center would promote new affiliations, and provide encouragement and opportunity for intramural research. The research center will be geared to the strengths of the Museum: the social history of science and technology; the intersections among political, social and cultural history; and material culture. An active program of undergraduate and graduate seminars will be offered. Its attraction to outside faculty will be the opportunity to teach, research and write in a new setting; to university administrators, the opportunity to attract more students; and to the Museum, the opportunity to cultivate and enrich its research capacity. For the operation of this research center, the Museum requests two new positions to hire a director and secretary (2 workyears and \$61,000) and funding for support costs including travel and other services (\$15,000).

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - This income is derived from a variety of sources including the Museum's share of sales in the museum shop, cafeteria concession, product development activities, and publication royalties. These funds, combined with an annual allotment, will be used to support the salary and benefits costs for the positions of museum director, special assistant, and graphic designer, as well as cultural history collections acquisition, special events and a program on Black Americans. Funds will continue to be provided in FY 1987 for the Museum's Chamber Music Players to support a performance and recordings program.

Special purpose funds include those from the Institution's Collections Acquisition, Scholarly Studies and Educational Outreach Program, the Research Opportunities Fund and the Special Exhibition Fund. Of special note is support for the exhibition "Men and Women: Dressing the Part" which will explore how conventions of masculinity and femininity have been expressed through clothing and appearance, how these gender conventions have changed over time and how they have influenced behavior within the society. Expenditures under this Program, the Research Opportunities Fund, and the Special Exhibition Fund, totaling \$242,000 in FY 1986, have not been recorded for FY 1987 and FY 1988 which explains the variance in totals shown for these years.

Restricted Funds - Individual or corporate gifts and foundation grants are the principal sources of income under these funds. In FY 1986, the gifts for exhibition and special projects support included IBM and Northern Telecom, Inc., for "Information Revolution" (estimated expenditures of \$568,000 in FY 1987 and \$317,000 in FY 1988); I.E. Dupont, Nemours and Company for "Materials and America" (estimated expenditures of \$227,000 in FY 1987 and \$292,000 in FY 1988); Phillip Morris Company for an oral history advertising project (estimated expenditures of \$33,000 in FY 1987); the Indiana Historical Society for the Hoagy Carmichael manuscript project (estimated expenditures of \$21,000 in FY 1987); the American Postal Workers Union for restoration of the first highway Post Office vehicle (estimated expenditures of \$21,000 in FY 1987); and Miles Laboratories, Inc., for initiation of an Alka-Seltzer oral history advertising project (estimated expenditures of \$31,000 in FY 1987). In addition, a grant from the Jimmy Carter Inaugural Trust supports the production of two traveling exhibitions dealing with the Office of the Presidency and, as well, the exhibition "Life in America" (estimated expenditures of \$102,000 in FY 1987 and \$126,000 in FY 1988). The Museum also has received funds to help support the reinstallation of the permanent exhibition "Engines of Change" (estimated expenditures of \$78,000 in FY 1987).

Federal Grants and Contracts - The Museum has received a grant from the National Historical Publications and Records Commission of \$47,000 to fund the Robert Mills Project, a research and publications endeavor focused on assembling and publishing the complete papers and drawings of Robert Mills, the Nation's first native-born and native-trained professional architect. This project will be completed during FY 1987.

NATIONAL MUSEUM OF AMERICAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount				
FY 1986 Actual	115	4,692	-	46	4	273	2	976	-	-
FY 1987 Base	118	4,944	-	62	4	230	1	422	-	-
FY 1988 Estimate	118	5,050	-	49	4	204	1	114	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	118	-	118
11 Personnel Compensation.....	3,070	93	3,163
12 Personnel Benefits.....	435	13	448
21 Travel.....	51	-	51
22 Transportation of Things.....	60	-	60
23 Rent, Communications & Utilities.....	40	-	40
24 Printing & Reproduction.....	120	-	120
25 Other Services.....	393	-	393
26 Supplies & Materials.....	283	-	283
31 Equipment.....	142	-	142
Collections Acquisition.....	350	-	350
Total	<u>4,944</u>	<u>106</u>	<u>5,050</u>

Analysis of Increase

Necessary Pay..... 106

ABSTRACT - The National Museum of American Art (NMAA) is devoted to the acquisition, preservation, study, and exhibition of American painting, sculpture, graphic arts, and crafts. The Renwick Gallery, which operates under the purview of the National Museum of American Art, exhibits American crafts, as well as decorative arts and design objects. The Barney Studio House is also maintained by the Museum as a period home open for tours and for special interpretive programs. No program increase is requested for FY 1988. Necessary pay of \$106,000 is required for existing staff.

PROGRAM - The National Museum of American Art's collection represents American art from its beginning to the present and serves as the basis for active programs of research, exhibition, and public education. The permanent collection includes approximately 33,000 objects and continues to grow at a rate of approximately 1,000 new acquisitions each year. A portion of the permanent collection is on view to the public on a

rotating basis in the Museum's galleries. The balance is available in storage for study or loan to selected museums and university galleries throughout the country. Preservation and restoration of irreplaceable American art works also are important features of the Museum's mission. Scholarly research performed by the professional staff results in publications, exhibitions, and educational programs which further the understanding of American art and artists.

The Museum's reference materials are used by both lay and scholarly researchers from a wide variety of disciplines. Unique among the Museum's research resources are the Inventory of American Paintings Executed Before 1914; the Smithsonian Art Index, which lists art works housed in the Institution's non-art museums; and the Index of Pre-1877 American Art Exhibition Catalogues, which documents artistic activities in this country and Canada. These inventories comprise more than 500,000 computer entries, and constitute the most complete data base on the subject of American art in existence.

Collections - In FY 1986, the Museum received, as a transfer from the National Museum of Natural History/Museum of Man over 1,000 works of art primarily having American Indians as their subjects, including a body of more than 400 paintings by George Catlin. NMAA began cataloguing these works during FY 1986, and will continue this process into FY 1987. The Museum completed cataloguing two large and important collections of 20th-century art previously donated, consisting of the Container Corporation of America's gift of 311 paintings, sculptures, and graphics, and the Sara Roby Foundation Collection's gift of 173 paintings, sculptures, and graphics. As in the past, the Museum benefited in FY 1986 from the transfer of contemporary works on paper and sculpture maquettes from the National Endowment for the Arts and the General Services Administration, respectively.

In January 1986, the Museum accessioned William Rush's Model by Thomas C. Eakins, an acquisition made possible by a gift from Mr. and Mrs. R. Crosby Kemper, Jr. NMAA also received as gifts paintings by Thomas Rossiter, Mark Rothko, Fairfield Porter, and a group of ten works by William Scharf; sculptures by Joseph Cornell, Elijah Pierce, Patrocino Barela (ten works), and Isaac Witkin; watercolors and drawings by Henry Farny, Maurice Prendergast, Morton Schamberg, and a group of 29 works by William Zorach; and groups of photographs by William Eggleston, Charles Pratt, and others.

During FY 1986, the Museum purchased significant individual works. Among these are Tom Wesselman's Still Life #12, which greatly enhances the Museum's holdings of 1960s Pop Art works, and a unique portfolio of 11 Diane Arbus photographs, each inscribed by the artist. Other important purchases included paintings by John White Alexander, William Christenberry, J. Alden Weir, and Arthur B. Davies; works on paper, such as self portraits by John Steuart Curry and Marsden Hartley; and a work in glass by Harvey Littleton, a pioneer in the medium. During FY 1987, the Museum will continue to seek major works by artists not now or inadequately represented in the collection and will maintain its tradition of acquiring high-quality works by artists who have had a significant effect on the development of American art.

The preservation, management, and security of the collections remain central concerns of the Museum, particularly with respect to its sculpture collection, which has long languished in scattered warehouses and storerooms pending the arrival of a sculpture curator, who was hired in FY 1986. More than 350 objects were treated by the conservation staff during FY 1986, and an equal number are designated for attention in FY 1987. The Museum staff also attended professional workshops on the care and protection of its objects and is continuing a long-range program to increase the protection of objects in storage and on exhibition.

Publications - The publications program at the National Museum of American Art has been very active this past year producing two books, Treasures from the National Museum

of American Art and Art in New Mexico, 1900-1945, and four catalogues: Art, Design and the Modern Corporation: The Collection of Container Corporation of America, a Gift to the National Museum of American Art; Romaine Brooks in the National Museum of American Art; Patrick Ireland: Drawings 1965-1985; and Figure Prints: the Washington Print Club 11th Biennial Members' Exhibition. The caliber of the Museum's projects enabled NMAA to secure outside funding for both Treasures (underwritten by United Technologies, distributed by the Smithsonian Institution Press) and Art in New Mexico (underwritten by Stark Foundation, co-published with Abbeville Press). These publications, which are best sellers and now in their second printing, each won American Association of Museums Awards of Distinction.

The prospects for FY 1987 are equally impressive. The Museum received a major donation in 1984 from the late Sara Roby. The catalogue of the Sara Roby Foundation Collection will document this gift, reproducing approximately 100 of the collection's 173 works which were created by some of the 20th century's major masters (Edward Hopper, Stuart Davis, Philip Evergood, Charles Burchfield, Reginald Marsh, among others). Gene Davis, 1920-1985 will be published in conjunction with a retrospective exhibition that NMAA is mounting on the career of this outstanding member of the Washington Color School. The exhibition is supported by a generous grant from the Washington Post Company.

The Museum has already received several expressions of interest from commercial publishers for its future (1988) publication, Perpetual Motif: The Art of Man Ray, which will be authored by seven authorities on the work of Man Ray and will encompass the entire oeuvre of this multimedia artist. Research and publications projects now in progress also include a catalogue raisonne on the art of Joseph Cornell; books on the sculpture of Paul Manship and the paintings of Albert Pinkham Ryder and Thomas Cole; and a study of the experience of American artists who studied in the French academies during the 19th century.

As part of its continued commitment to the study of American art, the National Museum of American Art is also launching Smithsonian Studies in American Art, a biannual periodical published in conjunction with the Oxford University Press. This publication will provide an understanding not only of specific artists and art objects, but also of the cultural factors that have shaped American art. This publication series will provide articles of lasting research value and bring additional exposure to the American holdings of the whole Smithsonian Institution.

Research - Research opportunities for scholars in American art were improved by the significant growth and refinement that characterized the research resources at the Museum during FY 1986. The pilot project, initiated in FY 1985, to automate the University of Delaware's Index of American Sculpture, added 14,000 records in the past year. By automating this substantial repository of information on public sculpture and works in museum and private collections, the Museum has developed critical formats and standards for handling research information on sculpture in preparation for a national Inventory of American Sculpture and will continue to seek and record sculpture in public and private collections throughout the United States.

Activity in other research resource areas was equally productive. The Inventory of American Paintings, the only existing national census of paintings and the model for the Inventory of American Sculpture, added 2,000 new entries for a total of 252,000 records. Some 1,600 requests, ranging from interdisciplinary queries to art publication and exhibition research, were answered by the paintings' inventory data base. Over 1,200 nitrate negatives from the Museum's Peter A. Juley and Son Collection were converted to stable film and approximately 7,500 slides and 8,000 prints were added to the Slide and Photograph Archives. Preliminary work to develop and to coordinate an artist name authority file for the seven art research data projects was begun.

NMAA continued to support research through its fellowship program. In FY 1986, 19 pre-doctoral and 15 post-doctoral fellows were in residence. The Museum's first Regent's Fellow will begin residency in FY 1987.

Exhibitions - Exhibition programming during FY 1986 featured works from the Museum's collections, exhibitions focusing on the work of specific artists, and thematic topics pertaining to the history of American art. The following shows organized by the Museum, which opened in FY 1986, are circulating to other museums across the United States: "Art, Design, and the Modern Corporation: The Collection of Container Corporation of America, A Gift to the National Museum of American Art" (Tennessee, Texas, Colorado); "Art in New Mexico, 1900-1945: Paths to Taos and Santa Fe" (Ohio, Texas, Colorado); and "Treasures of the National Museum of American Art." "Treasures" opened in Seattle, Washington, in February 1986 and will have traveled to four other major cities by the end of FY 1987, affording exposure to the Museum's collections in areas of the country where it is relatively unknown (Minneapolis/St. Paul, Cleveland, Fort Worth/Dallas, Atlanta). All costs of that exhibition's organization and travel were underwritten by United Technologies Corporation. Exhibitions previously organized by the Museum and still on tour are: "Sharing Traditions: Five Black Artists in Nineteenth-Century America"; "The Woven and Graphic Art of Anni Albers"; and "Exposed and Developed: Photography Sponsored by the National Endowment for the Arts."

Exhibitions organized by the Museum in FY 1986 which did not tour include "The Graphic Art of George Elbert Burr (1859-1939)"; "Symbols and Ceremonies: Pueblo Indian Watercolors"; "Figure Prints: The Washington Print Club 11th Biennial Members' Exhibition"; and "Still Lives by Henry Lee McFee." Special Collections within the Museum are featured in "Focusing on Art: Peter A. Juley & Son" (Juley Photographic Archives); and "Pastel Portraits from Studio House" (Alice Pike Barney Collection). The newly designed Doris M. Magowan Gallery of American Portrait Miniatures opened with a survey exhibition in August 1986. Temporary exhibitions organized by other museums on view during FY 1986 include "Treasures from the Land: Twelve New Zealand Craftsmen and Their Native Materials"; "Masterpieces of Time: Clocks by Wendell Castle"; "The Art of Turned Wood Bowls: The Edward Jacobson Collection"; "Frank Lloyd Wright and the Johnson Wax Buildings: Creating a Corporate Cathedral" (all shown at the Renwick Gallery); and "Unknown Territory: Photographs by Ray K. Metzker" (shown at NMAA).

Exhibitions scheduled to open in FY 1987 include the unveiling of a major portion of works from the Sara Roby Foundation Collection, a gift of 173 paintings, sculptures and works on paper, donated to the Museum in FY 1985; "Gene Davis 1920-1985"; "American Art Deco"; the return and in-house showing of "Treasures of the National Museum of American Art"; and "The Art of John La Farge," cosponsored with The Carnegie Museum of Art, Pittsburgh. Temporary exhibitions organized by others include "James Rosenquist: Paintings 1961-1985" (Denver Art Museum); "American Traditions in Watercolor" (Worcester Art Museum), and "Russia: The Land, The People, 1840-1910" (Smithsonian Institution Traveling Exhibition Service). Special Collections will be given attention in "Alice Pike Barney: The Paris Years" at Barney Studio House; the reinstallation of the permanent collection on the second floor of the Renwick Gallery; and continuing and changing exhibitions of American portrait miniatures and graphics at the Museum.

Also in FY 1986, in addition to touring exhibitions drawn from its holdings, the National Museum of American Art has lent more than 200 individual artworks to other museums and organizations in the United States and abroad for temporary exhibition and display. It continues its policy of placing European works on long-term loan to educational institutions and small museums across the Nation.

Interpretive Programs - The Museum presents scholarly programs coincident with current exhibitions, such as the symposium this past year associated with Art, Design, and the Modern Corporation: the Collection of Container Corporation, a Gift to the

National Museum of American Art. These scholarly symposia are in addition to diverse educational activities such as lectures, performances, films, and related programs which complement exhibitions and enrich the learning experience of the Museum's visitors. Although this year budgetary restrictions hampered a number of these activities, the Museum did undertake a new series of interpretive programs at Barney Studio House featuring "conversations" with living American artists whose work is represented in the Museum's permanent collection. Additionally, NMAA organized a support group of major donors from throughout the country. Named the "American Art Forum," the group held its first meeting in May, 1986 in Washington, D.C., where a spectrum of programs, including scholarly lectures, and visits to artists' studios and to private collections, provided important instruction for the members of the group.

During FY 1987, the Museum will be able to undertake a greater range of interpretive programs through monies provided by outside funding sources. For example, for the Gene Davis memorial exhibition, supported by a grant from the Washington Post Company, major educational and outreach efforts are planned that will encompass public programs and activities for the interested lay person as well as the scholar.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are derived from a variety of sources including the Museum's share of sales in the restaurant and museum shop; royalties from publications; sales of slides and photographs; honoraria received by staff while on official duty; participation fees from museums to which National Museum of American Art exhibitions are lent; tuition reimbursement from universities for NMAA interns; and sales of deaccessioned works of art. (Income from sales of deaccessioned works is used only for new acquisitions.) Funds are used to support publications, traveling exhibitions, and public programs; curatorial research and travel; stipends for summer interns; purchase of photographic supplies; travel costs for meetings of the National Museum of American Art Commission; repairs to the Barney Studio House; special events for the opening of new exhibitions; and purchases of works of art for the collection. Through an agreement with the J. Paul Getty Center for the History of Art and the Humanities, funds have been made available to continue the preservation project of the Juley Collection until its anticipated completion in FY 1995 (estimated expenditures of \$65,000 in FY 1987, and \$70,000 in FY 1988). Although not included in these figures, an allotment for \$250,000 toward the \$1 million purchase of Eastman Johnson's The Girl I Left Behind Me has been established with the balance anticipated from the Federal funds and private gifts. In addition, funds from the Institution's Scholarly Studies and Educational Outreach Program, Research Opportunities Fund, Smithsonian Society, and the Special Exhibition Fund supported research costs for the exhibition "Perpetual Motif: The Art of Man Ray," as well as partial costs associated with the exhibition "The Art of John La Farge" and "Gene Davis 1920-1985" (expenditure of \$118,000 in FY 1986).

Restricted Funds - These funds are contributed for specific purposes in the form of gifts and grants from individuals, foundations, or corporations. With support from the Robert Tyler Davis Bequest, prints and drawings continue to be purchased for the permanent collection (estimated expenditures of \$10,000 in FY 1987 and in FY 1988). Other significant uses of restricted grants and gifts are for the continuation of the Inventory of American Sculpture pilot project supported by the Henry A. Luce Foundation (estimated expenditures of \$29,000 in FY 1987 and \$45,000 in FY 1988); the purchase of artworks and costs of annual meetings of the American Art Forum supported by various donors (estimated expenditures of \$21,000 in FY 1987 and in FY 1988); the "Treasures of the National Museum of American Art" exhibition supported by United Technologies Corporation (estimated expenditures of \$129,000 in FY 1987); the "Art of New Mexico" exhibition supported by the Nelda C. and H. J. Lutcher Stark Foundation (estimated expenditures of \$21,000 in FY 1987); and the "Gene Davis 1920-1985" exhibition supported by the Washington Post Company (estimated expenditure of \$63,000 in FY 1987). In addition, in FY 1986, the Museum was

able to acquire William Rush's Model by Thomas C. Eakins through a very generous gift from Mr. and Mrs. R. Crosby Kemper, Jr. (expenditure of \$500,000 in FY 1986).

NATIONAL PORTRAIT GALLERY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		Funds		& Contracts	
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	82	3,517	-	23	-	127	-	150	-	14
FY 1987 Base	83	3,834	-	18	-	76	-	218	-	-
FY 1988 Estimate	86	4,069	-	18	-	110	-	336	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	83	3	86
11 Personnel Compensation.....	2,375	138	2,513
12 Personnel Benefits.....	287	19	306
21 Travel.....	28	4	32
22 Transportation of Things.....	50	10	60
23 Rent, Communications & Utilities.....	25	-	25
24 Printing & Reproduction.....	70	20	90
25 Other Services.....	385	33	418
26 Supplies & Materials.....	176	6	182
31 Equipment.....	75	5	80
Collections Acquisition.....	363	-	363
Total	<u>3,834</u>	<u>235</u>	<u>4,069</u>

Analysis of Increase

Necessary Pay.....	90
Program Funds.....	145

ABSTRACT - The National Portrait Gallery (NPG) is dedicated to the exhibition and study of portraits of people who have made significant contributions to American history, development and culture, and of the artists who created such portraiture. For FY 1988, an increase of 3 workyears and \$145,000 is requested to provide for an additional conservator (1 workyear and \$25,000); and to support exhibitions in commemoration of the Bicentennial of the United States Constitution (2 workyears and \$111,000), and the Columbus Quincentenary (\$9,000). Necessary pay of \$90,000 is required for existing staff.

PROGRAM - The arts of portraiture and biography are the means by which the Gallery offers a continuing exploration of the heritage and accomplishments of the American people. The Gallery collects, studies, preserves, and exhibits portraits in all media as both historical and artistic documents.

The development of NPG's collections engenders substantial and ongoing research into American political, social, and intellectual history, and the history of American art. Research results are published by curators and historians in scholarly articles and monographs and are shared with the public in substantial exhibitions and their attendant catalogues. Temporary exhibitions in the Gallery frequently deal with subjects or artists never before explored, bringing together works from public and private collections to be shown with objects in the Gallery's permanent collections, and the resulting publications constitute a growing body of books of permanent research value.

The collections of the National Portrait Gallery, which are exhibited continuously in a series of galleries, are cared for by professional conservators on the Gallery's staff. Maintenance of the physical condition of the collections requires much staff time and considerable expertise; the Gallery possesses objects in a variety of media, and many of the works acquired have come to the museum from owners who have been unable to store the objects in a healthy environment. Since the Gallery is of recent origin, it is essential that it continue to seek works to represent significant subjects from all areas of the American experience.

Collections - In FY 1986, the Gallery purchased more than 200 works and received approximately 60 gifts. Among the notable painted portraits acquired during the year are the Gallery's first portrait by the noted Philadelphia artist Thomas Eakins of Talcott Williams, journalist, essayist, and educator; the self-portrait painted by Alice Neel shortly before her death; and a remarkable portrait of the renowned poet Thomas Stearns Eliot by Sir Gerald F. Kelly. Two busts by Jo Davidson of artist John Marin and labor leader Andrew Furuseth, add to the substantial holdings of work by this sculptor. Major prints include the first mezzotint engraving made in America, Peter Pelham's portrait of Cotton Mather; posters of dancers Katherine Dunham and Josephine Baker; Anders Zorn's etching of collector Charles Deering; Mabel Dwight's lithograph of print curator Carl Zigrosser; and Robert Rauschenberg's lithograph of printer and dealer Tatyana Grosman. NPG also acquired a substantial number of drawings by 20th-century caricaturists Henry Major and Herman Perlman. Major photographs include the only authenticated daguerreotype portrait of Mathew Brady, and Man Ray's portrait of Gertrude Stein. Other major objects were acquired by gift, the most important being an extremely rare waxed-platinum print portrait of the artist Katharine Rhoades by Alfred Stieglitz; and family archives of Charles and Henry Meade, two major figures in the early history of American photography. This latter gift includes daguerreotype and other photographic likenesses of the Meade brothers and their family, a daguerreotype view of their studio on Broadway (the only daguerreotype view of New York known to exist), examples of early experimental photographic processes on glass, and the manuscript journal of the Meades' European travels.

A major reinstallation and reorganization of the prints and photographs collection storage was initiated and is now almost finished. The installation of a new storage cabinet system has virtually doubled the collection's storage capacity, while its archivally safe design and construction (the units are chrome-plated heavy gauge steel wire mesh that maximizes air circulation around the objects) will promote the long-term preservation of the Gallery's works on paper. As this process is completed, the print storage will be expanded into new boxes and will be reinventoried in the process.

The new storage system has enabled NPG to transfer the storage location and responsibility of its drawings Collection from the Registrar's Office to the Print Department. Approximately three hundred curatorial files have been duplicated; unframed drawings have

already been transferred; and framed drawings have been surveyed and are in the process of transfer. With the help of an intern, planning for the conservation, matting, and storage of these items has begun. A complete inventory of this collection also will be done.

In FY 1986, the Department of Photographs acquired a densitometer, the most effective instrument for monitoring changes in the physical condition of photographic images and other light sensitive media, and a systematic procedure is being developed to measure and record density changes of objects in the collection at regular intervals as documentation of any deterioration that might occur. Seven totally tarnish-obscured daguerreotypes from the Meade Collection were successfully cleaned by a photographic conservator on contract using a new electrolytic technique, which proved to be a spectacular demonstration of the effectiveness of this new, archivally safe method. Additional plates will be cleaned as their condition warrants and funds allow. Finally, cased object storage will be reorganized by the end of FY 1986, so that each daguerreotype and ambrotype in the collection will have its own assigned compartment.

Improvements in both storage and record keeping have increased accessibility to objects in the permanent and study collections. The installation of a microcomputer in the prints and photographs office area will make it possible to organize, catalogue and index the Meserve Collection negatives, an enormous project that was deliberately postponed until a computer could be obtained. It is hoped that this can be completed by the end of FY 1987.

Exhibitions - The exhibition schedule in FY 1986 was especially full, beginning in November 1985 with "Gaston Lachaise: Portrait Sculpture." Although the work of this French-born sculptor is well known, this was the first exhibition ever to deal exclusively with his portraits. During the 1920s and 1930s, Lachaise sculpted memorable images of such notable personalities as painters John Marin and Georgia O'Keeffe, poets Marianne Moore and E. E. Cummings, and arts patron Lincoln Kirstein.

In April 1986, "John Frazee, Sculptor" opened. Never before shown as a group, the works in this exhibition set forth the career of a remarkable but little-known artist. John Frazee was the first American to fashion a portrait in marble and the first to receive a commission from Congress to create a sculpture for the United States Capitol. This exhibition was co-organized with the Boston Athenaeum and was shown in Boston after it closed at the Gallery.

"Davy Crockett: Gentleman from the Cane" opened in June 1986, to commemorate the 200th anniversary of the birth of folk hero Davy Crockett. While Crockett lives in the popular memory as a frontiersman, in fact he was an effective local politician, a justice of the peace, and a member of the United States Congress from Tennessee. The exhibition included Crockett memorabilia relating to both the man and the myth, first editions of his writings, and the portrait of him by Chester Harding. Jointly organized by the National Portrait Gallery and the Tennessee State Museum, the exhibition moved to Nashville after its Washington, D.C., showing.

During FY 1986, the Department of Photographs contributed to two installations of recent acquisitions, organized and mounted two original exhibitions, and collaborated on a third. "Portraits by Brady: Imperial Prints from the Harvard College Library," was the first museum exhibition devoted to the large format salt and albumen portrait prints that represented the premier product of Mathew Brady's galleries during the Civil War era. The 60 prints exhibited were selected from a collection of almost 500 donated by an alumnus to the Harvard College Library several decades ago. "Through Shadow and Light: Photographs by Clara Sipprell" was an exhibition of 29 portraits selected from some 600 Sipprell photographs donated to the National Portrait Gallery several years ago by the estate of Phyllis Fenner, the photographer's long-time companion. The exhibition sur-

veyed the 40 years of Sipprell's career, throughout which she remained committed to the visual vocabulary of the pictorialist school that dominated art photography in the first two decades of this century. The Print and Photograph Departments collaborated in organizing "Artists on Paper," which displayed portraits of American artists selected from the National Portrait Gallery's collections of prints, drawings, and photographs.

The Print Department, which was formally established in 1975, produced two additional exhibitions in FY 1986. "A Decade of Print Collecting: The Highlights," which opened in January 1986, includes some of the most significant prints acquired during the last ten years. Portraits acquired by the Gallery during 1985 and 1986 were displayed in "Recent Acquisitions" in July 1986.

In the late spring of 1986, the American Art/Portrait Gallery Library participated in the Albert Bierstadt "Cholooke, The Yosemite Fall" exhibition organized by the Timken Art Gallery, San Diego, by lending the 1872 edition of Picturesque America, edited by William Cullen Bryant. The exhibition was popular with the public and received scholarly and critical acclaim.

In April 1986, the "Edgehill" portrait of Thomas Jefferson by Gilbert Stuart left the Gallery for its three-year stay with its co-owners, the Thomas Jefferson Foundation at Monticello. In May, the "Athenaeum" portraits of George and Martha Washington returned to the National Portrait Gallery from Boston and began their three-year residence in Washington, D.C.

Proposed for FY 1987 is a substantial reinstallation of the permanent collection of the Portrait Gallery. This has long been in the planning stages. The present configuration of the permanent collection has not been changed for many years, and a number of major acquisitions await formal display within the Gallery.

Among the temporary exhibitions scheduled for FY 1987, perhaps the most ambitious is "The Art of Henry Inman," organized by guest curator William Gerdtz and scheduled to open in April 1987. Inman (1801-1846) was a prolific and popular artist who painted many of the notables of his day. A cofounder of the National Academy of Design, he was renowned for his landscapes and genre paintings, and examples of these will be included in the show.

The original works of art depicting the "Man of the Year" shown on the covers of TIME Magazine are the subject of an exhibition which opened on January 1, 1987. This is the latest in an ongoing series of shows drawn from the works of art donated to the Gallery by Time, Inc., and the exhibition is supplemented with works borrowed from private collectors--in this case the subjects of the portraits, or their descendants.

Selections from the portrait collection of the American Academy and Institute of Arts and Letters in New York City, will go on view at the Gallery from May 29 to September 20, 1987, and then will be shown at the Academy/Institute. Until now, this collection has been little known, even to members of the Academy, since only a few of the portraits commissioned by or given to the Academy have been placed on view at any one time. Among the subjects will be some of the most notable American writers, painters, architects, sculptors, and musicians of the 20th century.

Looking ahead to FY 1988, several exhibitions of uncommon interest are in prospect. Opening the Gallery's series of exhibitions in observance of the Bicentennial of the Constitution of the United States will be a showing of "The Portrait in America: 1700 - 1776," which will track the beginnings of portraiture in the colonies, show the impact of artists from Europe, and display the works of the first native-born portraitists in the Nation. Continuing the series of exhibitions of masterworks from European national portrait collections, NPG will bring a selection of notable works from the Swedish

National Museum to Washington, D.C., in April 1988 (which, not coincidentally, is the 350th anniversary of the first Swedish settlement in the New World). The first major exhibition devoted to the work of Winold Reiss, whose portraits of black Americans have long been popular with National Portrait Gallery visitors is planned for July 1988. Reiss, who came to the United States from Europe early in the 20th century, also drew and painted notable American Indians, Asian-Americans, and others of diverse ethnic backgrounds.

Publications - Publications of FY 1986 produced in connection with Gallery exhibitions were "Gaston Lachaise: Portrait Sculpture" (published by the Gallery in association with the Smithsonian Press), "John Frazee, Sculptor" (published jointly by the Gallery and the Boston Athenaeum), "Davy Crockett: Gentleman from the Cane" (a joint publication of NPG and the Tennessee State Museum), and a brochure for "Through Light and Shadow: Photographs by Clara Sipprell." NPG's general information brochure was redesigned and reprinted this year with funds provided by the T. M. Evans Foundation, Inc. The manuscript for the book and catalogue of Saint Memin was completed and is being edited by the publisher. Work is progressing on the manuscripts for a book on the framers of the United States Constitution and an exhibition catalogue of portrait painting in America prior to 1776. The Checklist of the Permanent Collection has been revised and updated and is soon to be published. A number of staff members are engaged in writing artists' biographies for the new Dictionary of Art being published by Macmillan.

Education - The National Portrait Gallery's public education program combines a daily schedule of docent-led tours and an array of intensive school and senior citizen outreach programs (such as a musical tribute to Cole Porter) conducted by trained education aides and docents. The Education Department's highly popular performance series, "Portraits in Motion," continues to grow, change, and strengthen intellectually. Collaborative productions have been undertaken or planned with the National Museum of American Art and the Office of Elementary and Secondary Education, the Anacostia Neighborhood Museum, the Resident Associate Program, the National Museum of Natural History, and the National Zoological Park. An offshoot of "Portraits in Motion," a festival of the History of American Jazz, was held in early fall of 1986, under private sponsorship.

The Department's "Lunchtime Lecture" series has also continued to grow in popularity and depth, attracting a broadening regular audience as well as visitors with particular subject matter interests. Recent attention has been focused on increasing programming for special exhibitions, particularly college level and secondary school programs in conjunction with "The Portrait in America: 1700-1776" and the upcoming exhibitions coinciding with the Bicentennial of the framing of the Constitution. Special lecture series and other adult programs are being planned for these exhibitions as well.

Other forms of experimentation continue: "Only Yesterday II," for example, offers another innovative outreach program to senior adults. Staff reorganization and additional emphasis on training procedures have ensured maintenance of high quality performance. "Private Lives of Public Figures," a curriculum kit developed by the Education Department and the curator of prints, has been produced by the Chesebrough-Pond's, Inc. and distributed to thousands of secondary school teachers around the country. Smithsonian's Office of Elementary and Secondary Education and Columbia University Teachers College have conducted a formative evaluation of the project to help guide the development of future curriculum materials. The Department continues to explore ways of making more effective use of audio-visual materials. Finally, visitor studies have been undertaken in an effort to understand better the public's needs, attitudes, and preferences.

Research - Field survey work for the Catalog of American Portraits was completed in Texas, New Mexico, and Oklahoma in FY 1986. Also, major collections in the University of

Pennsylvania and the United States Naval Academy were added to the files. In addition, approximately 3,600 portrait records were added to the computer, and print-outs (with negatives when applicable) were sent to approximately 50 institutions during FY 1986. Personnel from this office have played an important role in coordinating the migration of data from the Smithsonian's old SELGEM system to the new INQUIRE system.

The processing of collected portrait data will continue to the extent that time and funds will permit. Efforts are being made to secure funding for survey work in the West and Northwest--a large and important area that is virtually untouched in terms of portrait research. It is hoped that means will be found to computerize the earlier "Southern States Survey" of some 12,000 portrait records and to put approximately 8,000 artist records in machine-retrievable form.

The American Art/Portrait Gallery Library has been participating in the Smithsonian Institution Bibliographic Information System (SIBIS) since its beginning. Efforts will be made to upgrade records in the photography section by separating all material on photographers from the general artists classification scheme to a more specific general photography classification. The cataloguer often finds difficulty in assigning artists "Cutter" numbers because of the overcrowding in this classification scheme. In addition, NPG intends to strengthen the Library's research material in both contemporary American photography and American historical photographic portraiture.

In FY 1986, the Library acquired an external expansion unit to connect with the existing hardware. This has permitted the Library to build up its acquisition want list and to consolidate its exchange programs activities and other research bibliographies.

During FY 1986, the Peale Family Papers staff continued its work of transcribing, researching, and annotating selected letters and documents of Charles Willson Peale and his artist-sons Raphaelle and Rembrandt. Yale University Press has scheduled for the summer of 1987 publication of volume 2 of the Selected Papers, subtitled The Artist as Museum Keeper, 1791-1810--a large volume to be published in two parts. The staff continues its work on volume 3, The Artist in Retirement, 1810-1820, which is now scheduled to go to Yale in the fall of 1987.

The staff of the Peale Family Papers project has trained and supervised the work of three undergraduate interns, three predoctoral fellows, and one postdoctoral fellow, all working in American cultural history. The members of the staff have also cooperated with the Historical Society of Pennsylvania in mounting an exhibition on the life and work of Rembrandt Peale. In collaboration with National Portrait Gallery curators, they have examined numerous paintings brought to the Gallery or sent by individuals and institutions which are either by, or purported to be by, members of the Peale family. For FY 1987, the staff is preparing preliminary plans for organizing and developing funding for a collaborative effort with the American Philosophical Society in Philadelphia to assemble and publish an annotated and complete catalogue raisonne of the paintings of Rembrandt Peale, 1778-1860.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 3 workyears and \$145,000 is requested to provide an additional conservator (1 workyear and \$25,000); and to support exhibitions commemorating the Bicentennial of the United States Constitution (2 workyears and \$111,000) and the Columbus Quincentenary (\$9,000).

Conservator (1 workyear and \$25,000) - Conservation is a critical area of concern. It is no longer possible for the one paintings conservator and the one paper conservator currently employed by the Gallery to keep pace with the growing collections and expanded exhibition schedule. These two conservators are responsible not only for the treatment of works of art, but they also must give condition reports on all works of art loaned

from the Gallery, a number which totaled more than 300. Additionally, they are often called upon to recommend treatment of works that are loaned to the Gallery. Many items in the collections need treatment and remain in danger of deterioration due to lack of staff and funds. One workyear and funds for an additional conservator are requested (\$25,000).

Bicentennial of the United States Constitution (2 workyears and \$111,000) - The National Portrait Gallery is planning to produce three major exhibitions during FY 1987 and FY 1988 in commemoration of the Bicentennial of the United States Constitution. The development and installation of two of these--"Portraits in America: 1700-1776," scheduled for October 1987, and "The First Federal Congress," scheduled to open March 1988--will be funded with Trust funds. The third exhibition, "Lawyers in America," is scheduled to open in the fall of 1988. This exhibition will feature a selection of the most historically enlightening portraits of distinguished American jurists that can be located from the years of the early Republic to the present. The show will also include some of the more notable courtroom genre paintings in American art, depicting how legal processes have worked in this country in various periods of American history and in different parts of the country. While its primary purpose is to highlight images of individuals who have been pivotal interpreters and shapers of our legal institutions, the exhibition also will attempt to capture some sense of the backdrop against which the jurists acted and the circumstances surrounding the evolution of this country's legal processes and institutions. An amount of \$80,000 was appropriated for FY 1987 to begin the necessary research. The addition of \$59,000 in FY 1988 will cover the development and installation of this exhibition.

The Gallery needs to expand its staff and resources in two areas to manage these three Bicentennial exhibitions and still keep abreast of the collections management activities required in the Gallery. The additional burdens of borrowing works for these Bicentennial exhibitions put a great strain on the NPG Registrar's Office. The need to put works in good physical condition for these exhibitions is beyond the capacities of the current conservation staff. Accordingly, resources targeted for Bicentennial activities are sought to hire a registrar technician and a conservator (2 workyears and \$42,000) for the period between 1988 and 1990 (when borrowed works would be returned). An amount of \$10,000 is also needed each year for equipment and supplies related to these positions.

Columbus Quincentenary (\$9,000) - A major exhibition of Spanish portraiture is planned in conjunction with the Institution's celebration of the Quincentenary of the voyage of Columbus. It is anticipated that this exhibition would be comprised largely from public and private collections in Spain. Discussions have already been held with the Embassy of Spain, and the Embassy reports that the Ministry of Culture in Madrid views the plan with favor. The services of a guest curator should be engaged in FY 1988 to begin making selections for the exhibition. Funds are requested for consultant fees for the guest curator and others who may need to be engaged in the planning process and to confer with museum colleagues about the selection of works for the exhibition, as well as to purchase research materials and photographs of the selected works. Base funds totaling \$11,000 appropriated in FY 1987 will supplement this request in FY 1988 by funding the required consultant services and travel expenses.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are derived from several sources including the Gallery's share of sales in the restaurant and museum shop, sales of photographic reproductions of portraits in the collection, staff honoraria, and participation fees from museums to which National Portrait Gallery exhibitions are loaned. These funds are used to help defray the expenses of public lectures, symposia and special events in coordination with the opening of exhibitions; associated costs of loan exhibi-

tion development and management; and for the research expenses of staff who are preparing special publications or lectures. In addition, funds from the Institution's Collections Acquisition, Scholarly Studies and Educational Outreach Programs, Research Opportunities Fund, Smithsonian Society, and Special Exhibition Fund support research, education and exhibition projects. In FY 1986, the total funding from these programs amounted to \$77,000. Expenditures under these programs have not been recorded for FY 1987 and FY 1988 which explains the variance in totals shown between FY 1986 and the subsequent two years.

Restricted Funds - These are funds that are designated for specific purposes in the form of gifts and grants from individuals, foundations, organizations and corporations. The Gallery has recently received a number of generous contributions toward the purchase of the portrait of T. S. Eliot by Sir Gerald F. Kelly. The portrait was purchased in memory of Donald Klopfer, the late husband of one of NPG's most faithful Commissioners, and who, like Mr. Eliot, was a distinguished publisher and encouraged many writers in his long career. Contributions were received from The Barra Foundation, Inc., Barry Bingham, Sr., W. John Kenney, and other Commissioners and senior staff members of the Gallery. Other acquisitions were made possible this year by contributions from several NPG Commissioners and the Westinghouse Electric Corporation. Among them were the portrait of George Jean Nathan by Luis Quintanilla, a photographic portrait of industrialist George Westinghouse, and a photograph of Bertolt Brecht by Grete Stern.

In FY 1986, the Gallery received the second and third installments of a grant from the Lachaise Foundation in support of the exhibition and catalogue on the portrait sculpture of Gaston Lachaise. Stephen C. Millett provided support for the Gallery's John Frazee exhibition. The Lyndon Baines Johnson Foundation provided funds needed to produce the Ulysses S. Grant exhibition catalogue, and the T. M. Evans Foundation provided a contribution in support of the Gallery's future publications. In support of the "Living Self Portrait" series, The Washington Post Company provided funds for the program featuring Katherine Dunham, the renowned dancer and cultural historian. In support of the January 1987 opening of an exhibition of the work of two newspaper caricature artists, NPG received a contribution from Herman Perlman. Chesebrough-Pond's, Inc. has contributed funds in recognition of the Gallery's contribution to the 1986 7th Annual National Family Arts Competition. The Gallery also received substantial contributions for future activities and general support from The New York Community Trust, Robert L. McNeil, Jr., the Clarence and Jack Himmel Foundation, and smaller gifts from a number of individual donors.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	74	2,961	-	13	-	1,253	-	495	-	-
FY 1987 Base	77	3,260	-	13	-	343	-	517	-	-
FY 1988 Estimate	78	3,351	-	13	-	230	-	450	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	77	1	78
11 Personnel Compensation.....	1,977	69	2,046
12 Personnel Benefits.....	220	9	229
21 Travel.....	53	11	64
22 Transportation of Things.....	164	-	164
23 Rent, Communications & Utilities.....	7	-	7
24 Printing & Reproduction.....	100	-	100
25 Other Services.....	244	-	244
26 Supplies & Materials.....	217	2	219
31 Equipment.....	122	-	122
Collections Acquisition.....	150	-	150
41 Grants.....	6	-	6
Total	<u>3,260</u>	<u>91</u>	<u>3,351</u>

Analysis of Increase

Necessary Pay.....	68
Program Funds.....	23

ABSTRACT - The Hirshhorn Museum and Sculpture Garden (HMSG), a museum of modern art, was established by an Act of Congress (P.L. 89-788, November 7, 1966) and opened to the public on October 4, 1974. Its collection of art, numbering more than 13,500 works, forms the basis of an active program of public exhibitions, catalogues relating to its collections and exhibitions, extensive research and a wide range of educational activities including film programs, lectures, concerts, publications and tours. For FY 1988, an increase of .5 workyear and \$23,000 is requested to support planning for an exhibition commemorating the Columbus Quincentenary. Necessary pay of \$68,000 is required for existing staff.

PROGRAM - The active programs of the Hirshhorn Museum and Sculpture Garden over the last 12 years have resulted in the Museum's attracting one of the highest visitations of

any contemporary art museum in the United States. As one of the major museums of modern and contemporary art in the United States, the Hirshhorn Museum operates active programs of research, exhibitions, collections management, acquisitions, and activities involving audiences of all ages.

Research - The Museum's resources include works of art, a curatorial file providing information on artists and works in the collection, and a library with 35,000 books and exhibition catalogues. Works of art not on display are available by appointment to scholars and students for study. Currently, the staff is heavily involved in researching the provenance of each work of art in the permanent collection, including the recently received bequest. Using a computer, a system is being developed that ultimately will allow researchers and the public to retrieve information concerning the collection.

Exhibitions - The Museum conducts an active exhibition program that draws upon works in its collection, as well as other collections. Approximately 700 works from the permanent collection are on display at any time. In FY 1986, the Museum organized four major exhibitions: "A New Romanticism: Sixteen Artists from Italy"; "Selections from the Collection of Marion and Gustave Ring"; "Directions 1986"; and "Selections from the Bequest of Joseph H. Hirshhorn." "Robert Arneson," organized by the Des Moines Art Center, was shown at the Museum in FY 1986. Exhibitions based on the permanent collection included "Fantasies and Allegories: Prints and Drawings from the Museum's Collection"; "Interiors: Prints and Drawings from the Museum's Collection"; and "Relief Sculpture: Selections from the Museum's Collection."

In FY 1987, the following are among the major exhibitions scheduled at the Hirshhorn Museum: "Recent Acquisitions (1983-1986)" and "Roger Brown," organized by HMSG. "Nancy Graves Retrospective," organized by the Fort Worth Art Museum; and "Morris Louis," organized by the Museum of Modern Art in New York will also be shown. Several small exhibitions based on the permanent collection are planned including "Bridging the Century: Image of Bridges from the HMSG Collection."

In FY 1988, the Museum will organize an exhibition of "Robert Moskowitz" and will exhibit "Lucian Freud," organized by the British Council of the Arts; "Recent British Sculpture," organized by the San Francisco Museum of Modern Art and the Museum of Contemporary Art, Chicago; and "Central European Art," organized by the Museum of 20th Century Art, Vienna.

Exhibitions organized by the Hirshhorn Museum are loaned to other museums. In FY 1986, "A New Romanticism: Sixteen Artists from Italy" was exhibited at the Akron Museum of Art. Three exhibitions based on the permanent collection were toured by the Smithsonian Institution Traveling Exhibition Service (SITES): "Artists and Models: Portraits from the Hirshhorn Museum and Sculpture Garden"; "Genre Scenes: Works on Paper from the Hirshhorn Museum and Sculpture Garden"; and "Surrealist Art: Selections from the Hirshhorn Museum and Sculpture Garden." The Museum also mounted two exhibitions in the Smithsonian Castle "Prints and Drawings from the Hirshhorn Museum's Collection." "Roger Brown," after its initial showing at the Hirshhorn, will travel to the La Jolla Museum of Contemporary Art, the Lowe Art Museum at the University of Miami, and the Des Moines Art Center.

Collections Management - The Museum inventories its entire collection on a regular cycle, with spot checks made at least annually. In FY 1986, the bequest of Mr. Hirshhorn was inventoried. The Museum has begun to deaccession works of art. Initially, African, Pre-Columbian, Eskimo, South Arabian and other "special collections" were transferred to the Freer Gallery of Art, the National Museum of African Art, and the National Museum of Natural History/Museum of Man. The Museum then auctioned duplicate sculptures and other items. This is a program that is expected to continue.

Acquisitions - The legislation establishing the Hirshhorn Museum described the Museum's function as a "museum in Washington, D.C. where modern art could be exhibited and studied...[to]...enrich the culture of the Nation." In order to carry out this mandate, it is essential that the Museum's collection always include contemporary art and that the Museum keep abreast of current developments in the visual arts. To present an accurate account of esthetic developments on an international level, an active acquisitions program is essential. In FY 1986, the Museum was able to add two works of art purchased with appropriated funds: a painting by Frank Stella titled "Ouaqua! Attaccati la!"; and a painting by John Bates, "Four Flags Trail." Purchases using nonappropriated funds include Jean Dubuffet's painting, "The Hunt of the Two-Horned Creatures"; Anselm Kiefer's painting, "The Book"; Claes Oldenburg's soft sculpture, "Soft Engine for Airflow, with Fan and Transmission"; Donald Sultan's painting, "The Plant"; "Standing Deep's L.A.," a sculpture by Christopher Wilmarth; a painting by Richard Diebenkorn, "Berkeley Number 22"; and a sculpture by Isamu Noguchi, "Cronos."

Education and Public Orientation - To increase visitor appreciation and understanding of specific exhibitions and of modern art in general, the Museum provides visitors with a variety of educational materials, including explanatory wall labels and brochures. The latter range from a single page to illustrated minicatalogues and are distributed free of charge to the public.

Several film series are offered including a lunchtime series about artists and their work, an evening series of films by artist filmmakers, and a Saturday film series for young people. Events held in the auditorium include concerts by the 20th Century Consort and lectures by artists, critics and art historians. Occasionally, symposia are organized in connection with exhibitions. An orientation center will be constructed in the lower level of the Museum in FY 1987, and the Education Department is developing a program to be shown on automatic equipment.

"Currents," two free seminars for high school juniors, was developed by the Museum as a program to familiarize students with trends and ideas represented in new works of art. Exploring the interrelationship of current history and art, the two and one-half hour program includes intensive gallery study, a slide overview and informal discussions. The comments and observations of the students will be published and made available to the public as a free exhibition handout.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of .5 workyear and \$23,000 is requested to support the initial planning of a major exhibition commemorating the Columbus Quincentenary. Public Law 98-375 established the Christopher Columbus Quincentenary Jubilee Commission, declaring that "as the Nation approaches the Quincentennial of the voyages of discovery of Christopher Columbus, it is appropriate to celebrate and commemorate this anniversary." The Hirshhorn Museum and Sculpture Garden will undertake to develop an exhibition as a part of the Smithsonian Institution's celebration of the event. Christopher Columbus' transatlantic expedition revealed a new world for 15th century Europeans to explore and develop. Throughout the 20th century, from that then-undiscovered place, other new worlds have been explored by visual artists. In order to participate in the quincentennial celebration of the discovery of the Americas in 1492, the Hirshhorn Museum and Sculpture Garden plans to mount an exhibition of international twentieth century art which will feature artists from throughout the western hemisphere whose work is principally dedicated or inspired by probe and investigation in order to identify yet unknown frontiers and new realms of information and experience. Funds are sought to research this exhibition.

Planning and organizing this exhibition is expected to cover the period FY 1988 to FY 1991, with the exhibition to take place in FY 1992. The funds requested will provide for travel to Central America, Mexico and Canada (\$11,000); for a part-time exhibition assistant (\$10,000); and for photographs (\$2,000). In addition, base funds totaling

\$4,000 appropriated for this purpose in FY 1987 will fund travel expenditures necessary for research.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are provided from several sources including the Museum's share of sales from the museum shop and plaza cafe. An allotment is provided for the expenses of the Museum's Board of Trustees (estimated expenditures of \$4,000 in FY 1987 and in FY 1988). Funds are made available to partially support the 20th Century Consort, which has been performing at the Hirshhorn Museum for over ten years (estimated expenditures of \$19,000 in FY 1987 and \$20,000 in FY 1988).

In addition, funds from the Institution's Collections Acquisition, Scholarly Studies and Education Outreach Program, Research Opportunities Fund, and Smithsonian Society support research and education projects. In FY 1986, the total funding from these programs amounted to \$622,000. Expenditures under these programs have not been recorded for FY 1987 and FY 1988 which explains the variance in totals shown between FY 1986 and the subsequent two years. Also reflected in Special Purpose funds are expenditures for acquisitions, which are discussed in the following Restricted Funds section.

Restricted Funds - In order to restore to the Hirshhorn Museum and Sculpture Garden its art acquisition funds, which with the approval of the donor, Mr. Hirshhorn, were used for construction costs in 1973 and 1974, the Smithsonian Institution in FY 1986 established a restricted endowment fund for the Museum in the amount of \$2,500,000. Concurrently, a special purpose fund also was established in the amount of \$700,000 to be used immediately for art purchases. The Museum has raised outside support from various sources to help acquire important major works for the permanent collection (estimated expenditures of \$177,000 in FY 1987 and \$150,000 in FY 1988). The Museum has established a fund for the proceeds from deaccessioned works of art sold at auction, which will be used to purchase new art works for the permanent collection.

CENTER FOR ASIAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	40	2,934	1	5,597	-	1,492	21	1,488	-	-
FY 1987 Base	63	3,935	1	164	-	5	21	1,905	-	-
FY 1988 Estimate	68	3,961	1	73	-	-	21	1,733	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	63	5	68
11 Personnel Compensation.....	1,685	150	1,835
12 Personnel Benefits.....	211	20	231
21 Travel.....	23	8	31
23 Rent, Communications & Utilities.....	53	-	53
24 Printing & Reproduction.....	199	50	249
25 Other Services.....	535	-50	485
26 Supplies & Materials.....	852	-252	600
31 Equipment.....	273	100	373
Collections Acquisition.....	104	-	104
Total	<u>3,935</u>	<u>26</u>	<u>3,961</u>

Analysis of Increase

Necessary Pay.....	57
Program Funds.....	-31

ABSTRACT - The Center for Asian Art (CAA) was established to coordinate the program activities of the Freer Gallery of Art and the Arthur M. Sackler Gallery, both of which are devoted to the acquisition, study, conservation, interpretation and exhibition of Asian art. The Freer Gallery, established in May 1906, houses one of the most distinguished collections of Asian art in the world, consisting of over 26,800 works of art from China, Japan, Korea, India and the Near East and spanning 5,000 years of art. The Freer sponsors a wide range of programs that use its collections as keys to understanding the civilizations that produced them. The Arthur M. Sackler Gallery, established in July 1982, received its initial collection through the gift of nearly 1,000 objects in the fields of Chinese, Indian, Southeast Asian, Near Eastern and Japanese art from the private collections of Dr. Arthur M. Sackler. The primary goal of the Sackler Gallery is the advancement of the scholarly appreciation and public knowledge of the arts, especially Near and Far Eastern art.

During FY 1987, the collections of the Sackler Gallery will be moved from temporary storage space at the Smithsonian's Museum Support Center in Suitland, Maryland, to the new facilities of the Sackler Gallery in the Quadrangle. The public opening of the Sackler Gallery is scheduled for September 1987.

For FY 1988, an increase of 5 workyears and \$279,000 is requested to purchase collections storage equipment for the Freer Gallery (\$100,000); to enhance the research capabilities of the Sackler Gallery (2 workyears and \$66,000); to expand publications and public information programs (2 workyears and \$88,000); and to hire a silk-screen specialist (1 workyear and \$25,000). The FY 1988 estimate reflects a decrease of \$310,000 associated with nonrecurring expenditures in the FY 1987 budget for one-time exhibition costs for the Sackler inaugural exhibition. Necessary pay of \$57,000 is required for existing staff.

FREER GALLERY OF ART

PROGRAM - The Freer Gallery of Art has achieved international distinction in its field because of the unusually high quality of its collections of Asian art and the scholarly research by members of its curatorial staff. The collection, consisting of over 26,800 works of art from China, Japan, Korea, India and the Near East, includes paintings, sculptures and other objects in stone, wood, lacquer, jade, pottery, porcelain, bronze, gold and silver, and Biblical manuscripts, spanning 5,000 years of Asian art. The Freer also has an outstanding collection of works by American artists who have been greatly influenced by Asian art, including the largest collection of art by James McNeill Whistler in the United States. Objects from the collections not currently on exhibition are available to students and scholars for study.

The Freer's unique collections in Asian art, together with its notable holdings of American art -- considered a bridge between the arts of the East and the West by Charles Lang Freer, the Gallery's founder -- have made the museum a major national center for scholars, students and the general public interested in the study of Asian art. This growing interest has been manifested in a steady increase in visitors, requests for museum tours, requests for appointments for authentication of art objects, and the number of visiting scholars and dignitaries.

Research - The Freer Gallery's collections, curatorial staff, library and technical conservation laboratories form the nucleus of its research program. Research findings are made available to the public through exhibitions, catalogues of exhibitions, published books and papers, journal articles, free gallery leaflets and public lectures at the Freer and at other similar institutions. Research on individual pieces in the collection is documented in collection research files which are available to visiting scholars and students as well as the general public.

A comprehensive review of all literature on Chinese figure painting during the past 14 years will result in the publication of a revised version of the Freer catalogue, Chinese Figure Painting, in FY 1987. Originally published in 1973, this catalogue is the only study in this field and has been out of print for seven years.

Bibliographic reference and research support for the Center for Asian Art is provided by the Center for Asian Art research library which consists of approximately 35,000 volumes, including 473 serial titles related to Asian art. The library, which is open to the public, participates in the Research Library Information Network (RLIN), a nationwide on-line bibliographic information system of libraries and art collections in the United States. During FY 1987, the CAA library plans to purchase computer equipment and software required to access a specialized system within RLIN that provides bibliographic information for Chinese, Japanese and Korean research material in the original languages.

The Center for Asian Art also maintains a photographic library, consisting of 30,000 slides and more than 8,000 noncirculating study photographs, and three major archival collections. The Herzfeld Archives contain the records of Ernst Herzfeld's field work in Near Eastern archeology. The Smith Archives document the work of Myron Bement Smith, an archeologist, architect and historian in the Near East. The Bishop Collection consists of 4,000 photographs and a study collection of 750 objects that document the journeys of Carl Whiting Bishop in China during the periods 1923 to 1927 and 1929 to 1934.

Exhibitions - The results of curatorial research are most visible in the Gallery's exhibitions. The Freer supports an active program of exhibitions in Chinese, Japanese, South and Southeast Asian, and Near Eastern art.

Specific areas of current research in Japanese art resulting in exhibitions include an ongoing study of Japanese ceramics, clan patronage of Japanese ceramics during the Edo period ("Garden Potteries and Official Kilns: Clans-sponsored Ceramics of the Edo Period"); calligraphy ("From Concepts to Context: Approaches to Asian and Islamic Calligraphy"); and paintings and prints ("Japanese Screens: Landscapes and Famous Places" and "Literary Themes in Japanese Art").

In the field of Chinese art, research on Ming and Ch'ing dynasty calligraphy and painting resulted in two exhibitions: "Ming Dynasty Calligraphy and Painting" presented comparisons of calligraphy and painting by 40 different artists of the Ming dynasty (1368-1644) through a selection of 25 hand and hanging scrolls. "Painting and Calligraphy from the Ch'ing Dynasty" exhibited approximately 30 masterpieces of the Ch'ing dynasty (1644-1911), plus new acquisitions from the same period. The calligraphy included early scripts such as clerical and seal script. The paintings featured masters of the orthodox school as well as the individual. This show provided a sequel to the exhibition of similar types of works from the Ming dynasty mentioned above.

"Bird and Flower Painting" was another exhibition discussing a particular subject matter common to Chinese painting. "Zhu Da's Influence on Qi Baishi," a paper centering on the Freer and the Sackler Chinese painting collections, was presented to the International Conference on Ba-da Shan-ren held in China in the fall of 1986.

Research in the area of the Near East involves extensive investigation of 15th-century Iranian art. Results include an article on Iskandar Sultan (a major patron of the period), a detailed analysis of two groups of over 1,000 drawings used as models for finished paintings, and the compilation of a comprehensive data base on patrons and patronage under the Timurids. Exhibitions included "Islamic Metalwork from the Freer's Collection," "Wonders of Creation, Oddities of Existence: An Exhibition in Celebration of Halley's Comet" and "Drawings from the Riza-i Abbasi Album." Riza-i Abbasi is acknowledged by art historians to have been among the greatest artists of Iran's Safavid empire (1502-1736).

An exhibition of Chinese, Japanese, and Near Eastern calligraphy was presented in the summer of 1986 in conjunction with the International Congress for the History of Art held in Washington, D.C., in August 1986. This Asian calligraphy exhibition included approximately 55 objects (16 from Japan, 20 from the Muslim world and 19 from China), accompanied by a research catalogue.

Conservation of the Collections - The Technical Laboratory of the Freer Gallery is renowned for its research activities, in addition to the ongoing conservation and restoration of objects in the collection. In the past year the staff of the Technical Laboratory has been primarily concerned with preparing the objects in the Sackler collection for the inaugural exhibition. Specific Freer research included the study of unusual copper-green pigments on Ukiyo-e paintings; "lead white" on Japanese paintings; identification of pigment samples taken from excavated objects (dated to the 5th through

8th centuries A.D.) in Korean museums; microscopic identification of paper fiber samples where the samples available are very small; analysis of high-tin bronze mirrors from Aranmula in India; and technical analysis of Japanese ceramics by the famous potter Kenzan.

Collections Acquisitions - With Federal funding provided in FY 1985, the Freer Gallery purchased a pair of 17th-century Japanese screens and a Sasanian metalwork dish. In FY 1986, Federal funds were used to purchase a 17th-century Indian painting depicting Maharana Arsi Singh in the Amar Vilas in the palace at Udaipur and set of four calligraphy scrolls by Wu T'ing-yang (Jan-chih, 1799-1879), Ch'ing dynasty entitled, "Preface of Buddhist Teaching." Recent additions to the collection, with Freer nonappropriated Trust funds, include a Japanese painting dating from the 12th century, a Chinese ceramic dating from the 17th century, a 17th-century Chinese calligraphy and a 2nd millenium B.C. Chinese bronze.

Education - The Freer Gallery carries out a wide range of research and scholarly activities which are made available to the public in a number of ways. As part of the Freer's education program during FY 1986, the Gallery offered six free public lectures on various subjects that related to the collections. Other parts of the education program include a free introductory brochure given to the visiting public and mailed to individuals and groups who write for general information on the Freer; a free introductory brochure for the visually impaired; the continuation of the highly successful free exhibition leaflets introducing various aspects of the Gallery's collections; and the tours given by docents. In FY 1986, over 20,000 visitors joined the weekday and weekend tours given twice daily.

Educational outreach continues through a new education program being developed for the elderly and the young. Currently, slide sets are available for docents to speak to community groups. Pre-visit education packets are sent to schools prior to their tours of the Freer Gallery. Tours covering specific areas of the collection are presented to school and community groups studying specific areas of Asian art.

Renovation of the Freer Building - With funding provided in FY 1986 and FY 1987 as part of the Institution's Restoration and Renovation of Buildings appropriation, the Freer will undergo a major renovation to create critically needed space, mainly for storage and conservation of the collections. During the renovation, the Freer building will be closed to the public (during FY 1988 and part of FY 1989). About half of the exhibition areas will be used to store the collections. Funding will be requested over the next several years in the Salaries and Expenses appropriation for the Center for Asian Art to furnish and equip the renovated collections storage and exhibition spaces created and the expanded conservation facilities.

ARTHUR M. SACKLER GALLERY

PROGRAM - The primary goal of the Sackler Gallery is the advancement of the scholarly appreciation and public knowledge of the arts of Asia. Extensive exhibition, research, art publications, academic and educational programs will be developed to achieve these goals. The initial collection of nearly 1,000 objects from China, South Asia, Southeast Asia, Japan and the Near East, donated by Dr. Sackler, include Chinese jades spanning a period from Neolithic times (ca. 5000 B.C. - ca. 1500 B.C.) into the 19th century; Chinese bronzes from the Shang (ca. 1523 B.C. - ca. 1028 B.C.) through the Han (206 B.C. - A.D. 220) dynasties; Chinese painting; Chinese lacquer; Near Eastern ceramics and metalwork; and sculpture from Cambodia, India and Thailand. During FY 1987, the collections and staff will be relocated to the Gallery's new facilities in the Quadrangle. The public opening of the Sackler Gallery is scheduled for September 1987.

Research - Research, which is the fundamental focus of the Sackler Gallery, provides the basis for exhibitions, publications and collections acquisition. The research program involves both visiting scholars as well as the curatorial staff. During FY 1986, curatorial research on Sackler objects began while the Sackler collection was temporarily stored at the Smithsonian's Museum Support Center in Suitland, Maryland. Exhibitions, exhibition catalogues and lectures at the Gallery will be generated from specific research projects. A journal of scholarly research devoted to Sackler Gallery exhibitions and collections will be published. It is also anticipated that the Sackler Gallery will provide research and publication support for Artibus Asiae, the Asian art history journal currently published by the Sackler Foundation. These two scholarly journals will make the Gallery a major center for research publications of Asian art history. The Gallery's publication program will also include a quarterly bulletin intended for the general public, with color plates and informative text relating to the permanent collection, recent acquisitions and special exhibitions. Free leaflets will be provided in the exhibition galleries.

Conservation - The Sackler Gallery has a responsibility to protect and conserve the art objects under its purview, including the objects in the permanent collections, in loan exhibitions held in the Gallery, in Sackler-organized traveling exhibitions, and Asian objects from other Smithsonian museums. Following the long practice of the Freer Gallery, the Sackler conservation effort will include object research to understand the origin of objects and therefore better develop the proper treatment of them. Expansion of the Center for Asian Art conservation facilities in a renovated Freer building will accommodate the requirements of the Sackler programs. In FY 1986 and FY 1987, the staff of the Technical Laboratory has been primarily concerned with preparing the objects in the Sackler collection for the inaugural exhibition. X-ray fluorescence equipment as well as x-radiography for occasional radiographs are being used for analysis of the Sackler objects.

An expanded Oriental art painting conservation program also is being planned. The Oriental art restoration studio takes a more traditional approach toward the conservation of East Asian paintings and screens than do Western conservation laboratories. In addition to the work related to the Sackler collections and exhibitions, the studio also looks forward to a future program to train Americans in order to alleviate the critical shortage in this country of persons skilled in this specialized field. There are only three facilities in the United States capable of restoring and mounting rare East Asian paintings and screens, and they are occupied fully with the works in their respective museums.

Exhibitions - An extensive exhibition program is envisioned for the Sackler Gallery. The inaugural exhibition in the new building will display the initial Sackler gift together with other major objects on loan from the private collection of Dr. Sackler. This program will include exhibitions originated by the Gallery as well as traveling exhibitions organized elsewhere, beginning with an international show of the Vever collection and an exhibition of objects lent from the People's Republic of China (co-organized with the Asia Society Galleries, New York City). Exhibitions will be drawn from international public and private collections as well as from the Sackler collection. Many Sackler Gallery-organized exhibitions will travel to other museums and institutions. Possible international traveling exhibitions include "Indus Valley Civilization," "Chinese Scholar's Studio," "Timurid Art of Iran," "Chinese Painting of the Che School," "Mughal Gardens," and "Photographs by Raghbir Singh." Under consideration for future exhibitions are Chinese mirrors, Ordos bronzes, Chinese lacquer, Indian and Southeast Asian sculpture, Chinese garment hooks, Sasanian metalwork, Chinese furniture, Near Eastern ceramics, Far Eastern ceramics, and Chinese sculpture. Research catalogues will accompany these exhibitions.

Education - The Sackler Gallery will attract a large number of research scholars and will have an active program for awarding research fellowships. Fellowship recipients

would work closely with curators on topics related to the collections. Such a program has already begun with a grant from the Rockefeller Foundation to establish a Rockefeller Foundation Residency Program in the Humanities at the Smithsonian Institution. The grant, which supports residential fellowships in Asian and African art, provides two to three post-doctoral appointments each year from 1985 through 1988. The Rockefeller Residency Program differs from existing fellowship programs in that it allows the fellows direct involvement in the plans and programs of the museums, and participation in symposia, exhibitions and publications.

Other such scholarly grant programs are being explored to further the research and education programs that will utilize the collections and exhibitions at the Sackler as well as enhance the scholarship of Asian art.

A classroom facility will be available in the Sackler Gallery to present programs in conjunction with local schools, colleges and universities. These programs will be developed to allow students at secondary, undergraduate and graduate levels to participate in symposia and seminars and come into direct contact with major works of art and distinguished scholars and curators.

Collections Acquisition - The Sackler Gallery will continue to acquire art objects in those fields of central interest to the museum, e.g., the arts of Asia in its broadest terms, from Japan to the Near East. New acquisitions for the collection will continue to be of high quality with respect to esthetic standards, cultural history and physical condition. Objects may be acquired by gift, bequest or purchase provided that they meet established acquisition criteria. Since Dr. Sackler's initial gift, several items have been added to the Sackler collection, including a Japanese palanquin (carriage), a Chinese lacquer, a Chinese bronze, and a selection of Japanese ceramics and prints. A selection of Asian objects in the collections of the Hirshhorn Museum and Sculpture Garden was transferred to the Sackler Gallery in FY 1986.

In FY 1986, the Sackler Gallery was very fortunate to acquire, with Trust funds, the Vever Collection, one of the finest collections of Near Eastern and Indian art ever assembled. The Collection consists of 39 volumes, 291 miniatures, 98 calligraphies and illuminations, 29 bookbindings, 4 textiles and examples of almost all of the classical Persian texts known.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 5 workyears and \$279,000 is requested to purchase collections storage equipment for the Freer Gallery (\$100,000); to enhance the research capabilities of the Sackler Gallery (2 workyears and \$66,000); to expand publications and public information programs (2 workyears and \$88,000); and to hire a silk-screen specialist (1 workyear and \$25,000). The FY 1988 estimate reflects a decrease of \$310,000 associated with nonrecurring expenditures in the FY 1987 budget for one-time exhibition costs for the Sackler inaugural exhibition.

Collections Storage Equipment for the Freer Gallery (\$100,000) - Under the terms of the original Freer gift and bequest, collections storage space for the works of art in the Freer's collections must be provided within the Freer Gallery building. One of the major continuing concerns for the Freer Gallery has been to provide adequate storage space for its collections within the building, while at the same time ensuring the proper environmental conditions for its unique art collections. In the course of the Gallery's 65 years, most of the collection has been housed in wood-and-glass cabinets that were built into the various storage spaces. The planned renovation of the Freer's basement will cause the destruction of these built-in wooden cases. The existing metal cabinets will be retained, wherever possible, to be reused in the new storage areas, including the original cabinets for jades and for pottery shards used to store the collections in Charles Freer's home. In addition, the storage cabinets purchased in FY 1984 to temporarily store the Sackler collection at the Museum Support Center will be used for the

Freer collection, after the Sackler collection is moved to the Quadrangle. The estimated total cost of new equipment and furnishings for the collections storage areas is \$430,000. The requested increase will allow the purchase of storage cabinets to begin during the period of renovation.

Enhancement of Sackler Gallery Research Capabilities (2 workyears and \$66,000) - In order to continue to strengthen the level of support for scholarly research in Asian art, an assistant curator and a curatorial secretary are requested (2 workyears and \$50,000). The assistant curator is expected to have particular expertise in ancient Near Eastern art history and to engage in research projects related to the ancient Near Eastern objects in the Sackler collection. These two positions (originally requested in the FY 1986 and FY 1987 budgets), will complement the research capabilities of the Freer curatorial staff in Islamic art, as well as provide research documentation required for Sackler Gallery exhibition scripts and catalogues. A sum of \$16,000 is also requested for research costs of the Sackler Gallery curatorial staff, including travel, supplies and materials, and photographic documentation.

Sackler Publications and Public Information Programs (2 workyears and \$88,000) - With funding of \$50,000 provided in FY 1987, the Sackler Gallery is developing an active publications program to promote the general public's understanding of the social and cultural context within which the art objects in the collection were created. The level of additional background knowledge required is greater for an understanding of Asian art, because for most museum visitors the Asian collections present a cultural context with few direct relationships to the more familiar American or European traditions. Moreover, publications allow the public to understand the excitement and significance of the serious study of Asian artistic traditions. For FY 1988, an increase of \$50,000 is requested to establish an expanded base of \$100,000 for these publications. The requested increase will allow the Sackler Gallery to print one additional research catalogue a year to accompany a major exhibition mounted in the Sackler Gallery (\$40,000); and to produce or reproduce five exhibition leaflets to be distributed free to the public (\$10,000).

To keep pace with the increased educational and public service programs provided by the Sackler Gallery, a public affairs assistant and an editorial assistant will be needed (2 workyears and \$38,000). With the opening of the new Gallery, public interest in the Center for Asian Art will intensify. The public affairs assistant will provide necessary support for the public affairs office, which is responsible for all press materials and events; handling public inquiries; writing articles, general brochures and gallery guides; maintaining a public information calendar; and providing other information concerning Asian art to the media. The editorial assistant will provide clerical support for the Sackler's ambitious publications program, including the development of four to six research catalogues each year, approximately a dozen brochures or gallery guides relating to specific exhibitions, and other educational materials. The addition of these two positions will allow the Center for Asian Art to support the expanded level of public education and publications requirements that will follow the opening of the Sackler Gallery.

Exhibition Support for the Sackler Gallery (1 workyear and \$25,000) - For FY 1988, the Sackler Gallery requests a silk-screen specialist (1 workyear and \$25,000) to provide necessary support for its exhibition program following the inaugural exhibition. Because of the short time available to design and install the inaugural exhibition, the initial silk-screen work for Sackler was done by contractors (as part of the one-time exhibitions costs in FY 1987) rather than by staff. Development of the extensive exhibition program planned by the Gallery, however, requires that this specialized expertise be available within the Sackler's own exhibition staff. The addition of this position will enable the Gallery to meet the needs of its planned schedule of national and international exhibitions more efficiently.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are provided from allotments and are used to defray the costs of special events associated with the opening of new exhibitions and to cover the travel costs of the Center's Visiting Committee members. These funds also support the position of coordinator for special programs in the Center.

In FY 1986, the Sackler Gallery was very fortunate to acquire the Vever Collection, one of the finest collections of Persian art ever assembled. Funds allotted for the purchase of this collection include \$5,526,000 from the Institution's unrestricted Trust funds with the balance of \$1,486,000 from the Trust-funded Collections Acquisition program and a private contribution.

Restricted Funds - The major portion of the nonappropriated Trust funds used by the Center stems from the Charles Lang Freer bequest and is restricted by the conditions stipulated in that document. The funds are used to help finance the Freer's professional curatorial staff, administrative staff, acquisitions for the collection and library, the maintenance of the Freer's courtyard and the operation of the Freer museum shop (estimated expenditures of \$1,826,000 in FY 1987 and \$1,721,000 in FY 1988). Funds from the Harold P. Stern Memorial Endowment support scholarly research in the field of Japanese art (estimated expenditures of \$60,000 in FY 1987 and \$12,000 in FY 1988).

ARCHIVES OF AMERICAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	19	899	-	22	-	2	14	838	-	-
FY 1987 Base	19	1,018	-	79	-	20	14	1,013	-	-
FY 1988 Estimate	19	1,041	-	79	-	-	14	858	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	19	-	19
11 Personnel Compensation.....	655	20	675
12 Personnel Benefits.....	77	3	80
21 Travel.....	22	-	22
22 Transportation of Things.....	2	-	2
23 Rent, Communications & Utilities.....	20	-	20
24 Printing & Reproduction.....	30	-	30
25 Other Services.....	132	-	132
26 Supplies & Materials.....	32	-	32
31 Equipment.....	48	-	48
Total	<u>1,018</u>	<u>23</u>	<u>1,041</u>

Analysis of Increase

Necessary Pay..... 23

ABSTRACT - The Archives of American Art is a national research bureau with regional centers located throughout the country. The Archives, which holds more than nine million documents, 400,000 photographs, 75,000 works on paper, and approximately 3,000 tape recorded oral history interviews, is the Nation's largest repository of documentary and source materials relating to the history of the visual arts in the United States. The original material in these collections is housed in Washington, D.C., while microfilm copies of the collections are held in regional centers in Boston, New York, Detroit, San Francisco and Los Angeles. In addition, special collecting projects are active in Philadelphia and Chicago, Rhode Island and the South. No program increase is requested. Necessary pay of \$23,000 is required for existing staff.

PROGRAM - The Archives of American Art promotes the study of American art and cultural history by assembling and preserving an ever-expanding collection of letters, diaries, sketchbooks, business papers, photographs, oral history interviews, and prints. In making these resources and other forms of primary records available to researchers and the public, the Archives advances the scholarly analysis and interpretation of the arts in America.

Founded in 1954 as a private institution in Detroit, the Archives became a bureau of the Smithsonian in 1970 following adoption of a resolution by the Board of Regents of the Smithsonian and the signing of an agreement between the Archives of American Art's Board of Trustees and the Institution.

Research - During FY 1986, 3,100 research visits were made to the various regional centers and 1,750 rolls of microfilm were lent to researchers from the United States and abroad. The results of this research will be featured in more than 200 books, articles, exhibition catalogues, dissertations, and formal papers. Staff research will result in additional articles, reviews, catalogues, and symposia. In FY 1986, the Archives of American Art's quarterly Journal strengthened its role as a publishing medium for significant documentary material. The most notable of the documents published were a group of Marsden Hartley letters and some Carnegie Museum correspondence from the 1930s. Information on the holdings of the Archives is obtained from an ever-expanding catalogue, which is being converted to a computerized system; various inventories and other finding aids; descriptions published in the Archives of American Art Journal; and from talks and reports given by the staff.

Development of Collections - The Archives of American Art added some 300,000 items to its holdings in FY 1986. The largest collection acquired in FY 1986 comprised the records of the Midtown Gallery which represented the work of several of America's important mid-20th-century painters. Artists' papers received in FY 1986 included a diary kept by the early 19th-century painter John Cranch, letters written by Ralston Crawford, Alfred Stieglitz and Andrew Wyeth, and theoretical and autobiographical writings by John Graham. Also acquired were several hundred Hans Namuth photographs of contemporary artists and a microfilm copy of over a hundred Maurice Prendergast sketchbooks. In addition, the Oral History Program contributed interviews with the artists Richard Estes, Luis Jimenez, Joan Mitchell, George Rickey, and John Stephan; the collector and patron Ralph Pulitzer; and the art dealers Morton and Robert Vose, and Ivan Karp.

Surveys of art related documentary materials in Philadelphia, Rhode Island and the South proceeded throughout FY 1986, and the filming of selected record groups began. The Chicago survey is progressing and continues to enjoy a high degree of cooperation from local institutions. Funding for these projects comes from foundation grants developed by the Archives.

Exhibitions - Because it has no exhibition space of its own, the Archives exhibits its collection in cooperation with other Smithsonian bureaus and outside institutions to display its material. Three installations of Archives of American Art's drawings, prints, photographs and related items were mounted in the American Art/Portrait Gallery Library in FY 1986. Other holdings of the Archives supplemented 15 art exhibitions in museums throughout the country.

Public Education - The educational efforts of the Archives include the publication of the Archives of American Art Journal, symposia, staff lectures, participation in conferences, and museum and studio tours arranged through the regional office. A symposium entitled "The Visual Arts in Southern California, 1900-1950: A Social History" took place in October 1986, and another on the history of art collecting in Boston will be presented in 1987. The preparation of an expanded edition of From Reliable Sources, containing selected documents from the collections of the Archives, was completed in FY 1986.

Conservation and Care of Collections - Work continued in FY 1986 on the Archives' inventory of drawings, sketches, prints, and other works on paper. To date, 25,000 items have been recorded on the automated system. Work has begun to extend the inventory to the photographic collection. Professional conservation services have been contracted for work on particularly valuable items. Automation of the Archives' of American Art's collections inventory is well under way, and the entry of cataloguing information into the Smithsonian mainframe computer continues.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are provided to defray costs associated with special events and to supplement travel expenses incurred by the Archives' Board of Trustees. With partial support from a special purpose fund, the Archives will publish its new edition of From Reliable Sources, a publication which is the chief means of informing the public of the important documents in the Archives collections, the use of documentary records in historical research, and the role of the Archives in preserving the records of American cultural history.

Restricted Funds - These funds are generated through fund-raising activities, gifts, as well as foundation and corporation grants, and a membership program. A substantial portion of this income is used to support the Archives' general operating expenses, including 14 full-time employees, its Oral History Program, and the publications program.

Foundation and corporate grants have provided the principal sources of support for special projects. Development of a film on the Archives' programs to reach a wider audience through television and other visual means will be completed in FY 1987 through a grant from the Robert Wood Johnson Charitable Trust (estimated expenditures of \$28,000 in FY 1987). In FY 1984, the Archives opened the Southern California Research Center, which is housed at the Huntington Library and Art Gallery and funded entirely by local contributions (estimated expenditures of \$97,000 in FY 1987 and \$101,000 in FY 1988). Support also will be sought for the special Chicago collecting project (estimated expenditure of \$100,000 in FY 1987). In FY 1986, the Archives of American Art Board of Trustees established the Wellin-Taubman Reserve Fund to supplement income for the general operations of the Archives.

COOPER-HEWITT MUSEUM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General FTP**	Amount	Special Purpose FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	30	1,012	18	773	4	1,434	1	434	-	41
FY 1987 Base	30	1,051	19	820	4	1,024	1	586	-	50
FY 1988 Estimate	30	1,076	19	844	4	1,017	1	641	-	50

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	30	-	30
11 Personnel Compensation.....	796	22	818
12 Personnel Benefits.....	109	3	112
21 Travel.....	4	-	4
23 Rent, Communications & Utilities.....	17	-	17
25 Other Services.....	74	-	74
26 Supplies & Materials.....	50	-	50
31 Equipment.....	1	-	1
Total	<u>1,051</u>	<u>25</u>	<u>1,076</u>

Analysis of Increase

Necessary Pay..... 25

ABSTRACT - The Cooper-Hewitt Museum opened its doors to the public in October 1976 as the Smithsonian Institution's National Museum of Design. The Cooper-Hewitt has world renowned collections that include drawings, prints, textiles, wallcoverings, furniture, jewelry, glass, ceramics, metalwork and other examples of decorative and applied arts representing three millenia and dozens of cultures. The Museum is a leading international center for the study and interpretive display of the arts of design. With over 167,000 items in its inventoried permanent collections, the Cooper-Hewitt is responsible for the third largest group of objects in any single Smithsonian museum and more than twice the number inventoried by the rest of the Smithsonian's art museums combined. No program increase is requested for FY 1988. Necessary pay of \$25,000 is required for existing staff.

PROGRAM - The Cooper-Hewitt Museum is a center for collections, exhibitions and educational activities, which explore the processes and products of historical and contemporary design. The Museum was established as the Cooper Union Museum for the Arts of Decoration in 1897, a hands-on working laboratory for the benefit of anyone interested in design. Through the generosity of several benefactors, extraordinary resources were assembled and made available for study. The Cooper-Hewitt has since been acknowledged as one of the most distinguished "working" collections of its kind in the world.

In 1967, the Museum collections and library were transferred by the Cooper Union to the Smithsonian Institution and renamed the Cooper-Hewitt Museum, the Smithsonian Institution's National Museum of Design. Today, the Museum is housed in a national and city landmark, a 1902 mansion built as the residence of philanthropist Andrew Carnegie, and in an adjacent townhouse. These properties were given to the Institution in 1972 by the Carnegie Corporation as a permanent home for the Museum.

From the earliest days of its affiliation with the Smithsonian, Cooper-Hewitt has operated the majority of its programs with privately raised funds. The major portion of Federal funds received by Cooper-Hewitt is expended for basic facilities maintenance activities. Smaller Federal amounts are also devoted to collections management. Any listing of the Museum's accomplishments and plans, however, remains largely a reflection of Trust funded activities.

Exhibitions - Special exhibitions attract the attention of the public and generate admissions revenues. They also afford the opportunity to investigate themes and patterns of design arts that are rarely presented in other museums. Twelve to sixteen different projects are programmed annually in four separate galleries comprising roughly 10,000 square feet of space on three different floors of the Mansion. From season to season, different exhibition subjects attract different groups of visitors in varying numbers. The visitor count for FY 1986 was 178,434, compared to 108,173 in FY 1985.

As Americans become more aware of the vital importance of good design to the national quality of life, the Cooper-Hewitt continues to present a colorful series of exhibitions which illustrate the international history and current status of the design arts. During FY 1986, Cooper-Hewitt visitors could survey the sophisticated shop windows and commercial architecture of Paris between the wars through photographs from the Cooper-Hewitt's Therese Bonney collection, or enjoy the toymaker's art as it flourished for generations in Nuremburg from the Renaissance to the early 20th century. Also in FY 1986, the Cooper-Hewitt premiered the first exhibition ever devoted to the life and work of one of modern ballet's most creative and underestimated women, Bronislava Nijinska. From Hungary came a spectacular collection of national treasures in gold and silver, an exhibition arranged by Cooper-Hewitt's curatorial staff with colleagues from the Hungarian National Museum in Budapest. Appropriately enough, in a year which also saw thoughtful and popular smaller exhibitions devoted to the centuries-old design history of playing cards and the 19th-century art of needlework ship portraits, two of the Museum's largest FY 1986 exhibitions were devoted to designs for travel and to the magical legends and practical techniques of America's own international fantasy capital, Hollywood. Six FY 1986 exhibitions were organized wholly by the Cooper-Hewitt; one was created by the Fine Arts Museum of San Francisco; three were organized by colleagues abroad; and three others came to the Cooper-Hewitt from outside sources.

"The Modern Spirit: Glass From Finland" was made possible in part by Kansallis-Osako-Pankki and the Finnish Ministry of Education. The curatorial functions for this beautiful exhibition were shared by leading Finnish glassmakers, the Cooper-Hewitt's curator of decorative arts, and colleagues from the Finnish Glass Museum, the Finnish Society of Crafts and Design, and Helsinki's Museum of Applied Arts.

"Golden Eye: An International Tribute to the Artisans of India" was supported by the tireless labor of hundreds of Indian craftspersons and designers and the donated talents

of several leading western designers: Sir Hugh Casson (United Kingdom); Mario Bellini and Ettore Sottsass (Italy); Frei Otto (Germany); Hans Hollein (Austria); and Jack Lenor Larsen, Bernard Rudofsky, Mary McFadden, Charles Moore, Ivan Chermayeff and Milton Glaser (all of the United States). "Toys from the Nuremburg Spielzeug Museum" was prepared by colleagues in Germany.

"Hollywood: Legend and Reality" and "Newcomb Pottery: An Enterprise for Southern Women" were sent by the Smithsonian Institution Traveling Exhibition Service (SITES). Generous grant support for "Bon Voyage: Designs for Travel" came from Louis Vuitton, Inc. "Treasures of Hungary: Gold and Silver from the Ninth to Nineteenth Century" was made possible through the assistance of the United States Information Agency, the Hungarian Ministry of Culture and Education, and Pan American World Airways, Inc.

FY 1987 marks the Museum's tenth anniversary in the Carnegie Mansion. A special exhibition intended to commemorate this milestone will highlight significant collection acquisitions of the past decade.

As did the Indians, the Finns, and the Hungarians, the Germans demonstrated the value they place upon the arts of design with generous support, in the form of funds as well as loans, for "Berlin 1900-1933: Architecture and Design" in early FY 1987. A grant from the American Consumer Reports Foundation similarly supported "Milestones: Fifty Years of Goods and Services," a unique look at classic products and services designed for the American market: air conditioners, credit cards, paperbacks and power lawnmowers, to name a few.

Later in FY 1987, special exhibitions will focus on distinguished figures in the architecture and design traditions of Paris, Barcelona, and Chicago. Siegfried Bing, one of the major European sponsors of the Art Nouveau style, will be featured in "The Paris Style 1900: Art Nouveau Bing," an exhibition organized by SITES. "Gaudi in Context: Building in Barcelona 1873-1926" is a Cooper-Hewitt project which will be the first attempt to survey the traditions from which the unorthodox master of Spanish architecture came and the influences with which he and his contemporaries contended. It has been supported in part by grants from the New York State Council on the Arts and the Joint Spanish-North American Committee for Cultural and Educational Cooperation, as well as the municipal government of Barcelona. "Louis Sullivan: The Function of Ornament" will come from the Chicago Historical Society and will be a superb opportunity to compare the vision of this American architect (a mentor of Frank Lloyd Wright and a genius in his own name) with the work of his contemporary, Gaudi. "Frank Lloyd Wright and the Johnson Wax Buildings: Creating a Corporate Cathedral" will bring Wright himself into this lively architectural dialogue.

Among numerous other projects for FY 1988, preliminary plans are being made for major surveys of the Cooper-Hewitt's rich collections of printed textiles, and, in honor of the 300th anniversary of the Glorious Revolution, the "William and Mary" style of architecture and decoration in Holland, England, and America.

Publications - Throughout FY 1986, in addition to quarterly newsletters for 5,500 members, the Museum's publications office continued its work on the fully illustrated catalogue of an important, recently donated collection of American art pottery, as well as handbooks devoted to landscape and garden designs and theatre designs in the permanent collection. Publications also were produced for "Treasures of Hungary," "Bon Voyage," and are in preparation for "Berlin 1900-1933," and "Gaudi in Context." Additional handbooks for the collections of locks and keys and fans are also in production. Celebration and Ceremony: Designs for Wine, a 1985 publication of the Museum, won one of 28 Awards of Distinction bestowed by the American Association of Museums and another award from Industrial Design magazine in 1986. Future publishing plans include

continuing the "Immovable Objects" series, a handbook on printed fabric collections, and a major volume for the William and Mary project.

Education - With the most active and diverse educational programming of any museum in the City of New York, Cooper-Hewitt welcomed over 5,969 students in FY 1986. Subjects covered in extended courses, symposia, workshops, lectures and seminars included the history of graphic design; major European designers of the late 19th century; ancient Egyptian culture and esthetics; industrial design; floor coverings from three continents; and the arts of Hapsburg Vienna. Among the distinguished individuals who shared their insights with Cooper-Hewitt students during FY 1986 were prima ballerina Maria Tallchief and designer Ettore Sottsass.

The two-year course in the history of decorative arts offered at the Museum in conjunction with the Parsons School of Design/New School for Social Research, the only Master's degree-granting program within the Institution, continues to be operated entirely with private funds, as it prepares future scholars and curators for careers in this field.

Collections Management - With collections as large and collection-related problems as diverse and numerous as Cooper-Hewitt's, collections management is a continuous process with many different aspects. Curatorial department personnel face ongoing cataloguing tasks, constantly reevaluating permanent collection records. They also must study, record, and find room to store the hundreds of items which are added to the collections annually. The continuous reinventory of the collections on a seven-year cycle remains a major task for both curatorial and registrarial personnel. As catalogue data is upgraded, objects are acquired, and collections are moved from one location to another, the records base must be manually updated. Inconsistencies identified during the first inventory cycle are resolved on a daily basis.

The Registrar's Office, as a central repository for official records, also provides a statistical index for some aspects of collections management work. In FY 1986, that Office was responsible for borrowing 5,748 objects from 182 lenders for 13 separate exhibition projects, and for lending 114 objects to 23 borrowers for 21 exhibitions in New York, Boston, Tokyo, and elsewhere.

Object conservation, like curatorial research and registrarial activity, often centers around exhibition preparations. The New York State Council on the Arts provided small grants in FY 1986 to permit the textile conservation laboratory to employ a paid intern to prepare the fans collection for a future exhibition and to assist in the publication of the fans handbook authored by the Cooper-Hewitt's textile conservator. A collection of decorative arts recently bequeathed to the Museum is being catalogued with the aid of another modest grant from the same source, and their largest grant to the Museum in FY 1986 continued to support the Conservation Consultancy Program, which is administered by the paper conservator as a service to smaller museums throughout the state. In addition, work continues daily in both the textiles and paper laboratories on objects from the permanent collection most in need of attention.

Acquisitions - During FY 1986, the Cooper-Hewitt acquired 912 gifts from 75 donors and made 77 purchases with Trust funds accumulated for this purpose. The ratio of gifts to purchases has traditionally been a large one and undoubtedly will continue to be so in years to come. No Federal funds are available for acquisitions at the Cooper-Hewitt. Among the most impressive FY 1986 acquisitions were a rare collection of 283 pieces of antique cutlery, dating from the 16th through the 19th centuries, a superb watercolor garden fantasy with neoclassical architectural compositions by Isaac de Moucheron (1677-1744), and two fine volumes of hand painted French wallpaper samples dating from the late 18th century to the mid-19th century, and a bequest of 249 objects (principally 18th- and 19th-century glass) from the late Walter Phelps Warren.

Cooper-Hewitt's curators also continue to refine the collections through a carefully controlled program of deaccessioning duplicate, insignificant or other inappropriate objects. Items are transferred to other Smithsonian museums, exchanged with other museums, and disposed of at public auction. This process reflects a Smithsonian-wide commitment to enlightened collections management and efficient administration of very limited resources for collections storage, care, and study.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are derived from a variety of sources including museum shop sales, product development, membership and admissions fees, donations, fund-raising events, and allotments. The allotments support salaries of the director, administrative officer and various staff members and help defray expenses associated with special events, such as exhibition openings. Special Purpose funds are used to support educational programs, museum shop expenses, exhibitions and publications for the Museum. In July 1986, the general admission charge was increased from \$2.00 to \$3.00 with the approval of the Smithsonian's Board of Regents. In addition, funds from the Institution's major Acquisitions, Scholarly Studies and Educational Outreach Programs, Research Opportunities Funds, and the Special Exhibition Fund support research, education and exhibition projects. In FY 1986, the total funding from these programs amounted to \$279,000 providing various levels of support which included "Golden Eye: An International Tribute to the Artisans of India." Expenditures under these programs have not been recorded for FY 1987 and FY 1988 which explains the variance in totals shown between FY 1986 and the subsequent two years.

Restricted Funds - These funds are provided for specific purposes from grants, bequests, and other donations from individuals, organizations, and corporations. In FY 1987 and FY 1988, these funds have and will support exhibitions such as the following previously described exhibitions: "Gaudi in Context: Building in Barcelona 1873-1926" (estimated expenditure of \$161,000 in FY 1987); "Milestones: Fifty Years of Goods and Services" (estimated expenditures of \$19,000 in FY 1987); "Berlin 1900-1933: Architecture and Design" (estimated expenditures of \$93,000 in FY 1987); "Frank Lloyd Wright and the Johnson Wax Buildings: Creating a Corporate Cathedral" (estimated expenditures of \$10,000 in FY 1987).

Federal Grants and Contracts - These funds are provided by various government agencies and departments for specific program support. The Museum annually seeks funding in varying amounts from the New York State Council on the Arts for exhibition support and other programs. Requests for seven separate projects were submitted for possible funding in FY 1987 (estimated expenditures of \$50,000 in FY 1987 and in FY 1988).

NATIONAL MUSEUM OF AFRICAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		Funds		& Contracts	
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	34	2,349	2	54	3	804	1	97	-	-
FY 1987 Base	51	3,129	1	121	3	994	1	261	-	-
FY 1988 Estimate	56	3,401	1	40	3	188	1	95	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	51	5	56
11 Personnel Compensation.....	1,289	166	1,455
12 Personnel Benefits.....	187	22	209
21 Travel.....	45	-	45
22 Transportation of Things.....	25	69	94
23 Rent, Communications & Utilities.....	3	-	3
24 Printing & Reproduction.....	137	-	137
25 Other Services.....	842	-	842
26 Supplies & Materials.....	417	-	417
31 Equipment.....	54	15	69
Collections Acquisition.....	130	-	130
Total	<u>3,129</u>	<u>272</u>	<u>3,401</u>

Analysis of Increase

Necessary Pay.....	42
Program Funds.....	230

ABSTRACT - The National Museum of African Art is the only museum in the United States devoted to the collection, preservation, research, exhibition, and interpretation of the visual arts of Africa. Founded in 1964 as a private non-profit institution, the Museum became a bureau of the Smithsonian Institution in August 1979 following the enactment of Public Law 95-414. In December 1986, the Museum moved from its original Capitol Hill location to the Mall as a part of the Quadrangle complex, with the public opening of the Museum in its new facilities scheduled for September 1987. For FY 1988, an increase of 2 workyears and \$134,000 is requested to hire an assistant curator for Central African art (1 workyear and \$25,000); continue the development of automated systems (1 workyear and \$40,000); and establish an expanded funding base for the packing and shipping costs of art objects loaned to the Museum for special exhibitions (\$69,000). A further amount

of 3.25 workyears and \$96,000 is required to annualize the partial-year funding of 8 positions approved in the FY 1987 budget for Quadrangle support. Necessary pay of \$42,000 is required for existing staff.

PROGRAM - As the only museum in the United States devoted to the collection, study and exhibition of African art, the National Museum of African Art (NMAfA) endeavors through the visual arts to instill an appreciation and understanding of the diverse cultures in Africa south of the Sahara. Although the Museum's primary emphasis is on the traditional cultures of the sub-Saharan region, it also studies and exhibits the ancient and contemporary arts of the entire continent. The Museum develops and implements a variety of interpretive programs including exhibitions, lectures, gallery tours, classes, workshops, audio-visual presentations, and publications. Each program endeavor is motivated by the esthetics of traditional African art, and the Museum actively cooperates and coordinates its activities with those organizations and institutions whose purposes are complementary.

During the months following the Museum's move to the Mall, all programmatic efforts will be directed toward preparations for the public opening in September 1987. Funding provided in FY 1985 through FY 1987 has enabled the Museum to strengthen its staff and to support the expanded exhibition, education and acquisition programs that will be required in its new location.

Research - The Eliot Elisofon Archives, one of the largest archives in existence on African art, culture and environment, is a major research component of the National Museum of African Art. Its holdings now number 150,000 color slides, 70,000 black and white photographs as well as 120,000 feet of unedited film footage and 50 feature films. Donations in FY 1986 included over 1,200 color slides and 1,500 black and white photographs.

Particularly noteworthy among the Archives' recent acquisitions are: 98 stereographs of African environment, rituals and daily life dating from 1902-1918 and first published by the Keystone View Co., New York; 300 duplicate color slides of traditional and contemporary architecture in South Africa; 90 original black and white negatives transferred from Northwestern University of ethnographic fieldwork photographed by Eva Meyerowitz in Dahomey (now the Republic of Benin) in 1937, further supplementing the Archives' Meyerowitz Collection holdings of 251 copy prints of photos also taken in Dahomey in the 1930s; and 400 35mm original color slides of Ethiopian ethnic groups and ceremonies taken in 1973, photographed by Joel Fogel, anthropologist. In addition, 415 35mm original color slides of African works of art in private collections in the United States, taken by Bryce Holcombe, were donated for the teaching collection.

In response to telephone and written requests, the staff of the Archives provided nearly 4,000 duplicates of slides and over 2,000 prints to students, scholars, universities, museums, and other organizations.

With funding provided in FY 1986, the Museum hired a senior curator to coordinate the program direction of the curatorial department and to maintain the highest professional standards for all research.

Scholarly publications originated by the Museum are an essential step in the development of its research program. With funding provided in FY 1986, the new positions for the curatorial staff and a writer-editor have enabled the Museum to publish scholarly materials on its collections, exhibitions and research. The publications developed for the major opening exhibitions have been conceived to convey to the scholar and general visitor a sense of the character and meaning of the works of art -- esthetically, culturally, technologically and historically. Their subject depth constitutes an important contribution to the discipline of African art studies.

A publication to accompany the exhibition, "African Art in the Cycle of Life," will illustrate the role of the arts in traditional life, demonstrating that art in Africa intersects most aspects of the life cycle. The text will not only highlight the esthetic brilliance of these works of art, but also present these objects in the context of life cycle themes, such as: human fertility and birth; religious beliefs as they express the abstract as well as the practical fulfillment of social goals; governance; judgments of human behavior, ethical and esthetic; death and the ancestors, beliefs of afterlife and renewal.

A catalogue will accompany the exhibition devoted to West African textiles, consisting primarily of selections from the Lamb textile collection, jointly acquired by the National Museum of Natural History and the National Museum of African Art. The catalogue will examine the origins of narrow-band strip weaving in West Africa. Various weaving techniques and the trade influences from outside, and within the continent, will be explored.

The catalogue to accompany the exhibition, "Royal Benin Art in the Collection of the National Museum of African Art," will be a permanent record of 22 bronze objects in the Museum's collections from the ancient Kingdom of Benin (Nigeria), dating from the 15th to the 19th centuries. These extraordinary examples of lost wax casting from the celebrated Nigerian tradition of Benin will be placed in historical perspective as well as discussed in terms of their function and iconography: objects related to the King of Benin; objects illustrative of Benin court life and regalia; and objects affected stylistically by external forces, such as other African groups or European explorers.

During FY 1986, the Museum's first post-doctoral residency fellowship was awarded. This residency fellowship program in the humanities, administered by the Smithsonian's Office of Fellowships and Grants, was made possible by a grant from the Rockefeller Foundation. The recipient of the award was Dr. Labelle Prussin, Professor, Department of Architecture, University of Washington, who conducted research on "Nomadic African Women as Placemakers: The Arts and Architecture of Nomadism in Africa." Scholarship in the field of African art and architecture has to date, with rare exception, paid slight attention to the cultural artifact in nomadic societies. Dr. Prussin's work reveals that not only are the arts and architecture of nomadism as rich and diverse as those of the more familiar sedentary groups, but even more importantly, they possess an esthetic unique to their own context. Dr. Prussin's work has been not only an invaluable contribution to the Museum's library and photographic archives, but should result in a publishable bibliography. In addition, her research constitutes a preliminary body of important data, the basis for outlining the scope and content of an exhibition on "African Women as Placemakers."

During FY 1987, a second fellow in resident, Dr. Christraud Geary, Research Associate, African Studies Center, Boston University, will conduct research on historical photographs as sources for research on African art and history. This topic has great interest not only for the Museum's curatorial staff but also for the Museum's photographic archives. Copies of all of Dr. Geary's reproductions and records will be deposited at the National Museum of African Art, thereby substantially enriching the Museum's holdings and providing visiting scholars with an opportunity to study materials which are to a large extent unknown in the United States.

Current research conducted by the Museum, based both on the expertise of the curatorial staff and the Museum's collections and the needs of the discipline of African art studies and outside scholars working on specialized research, will result in future presentations and/or publications. Research projects now under investigation include: a study leading toward a proposed exhibition and book on the Swahili and the arts of the East African coast; a working symposium to investigate the art of the Luba complex, a large and important group of related peoples in Eastern Zaire, leading toward a major

exhibition and scholarly publication; and the study of a small corpus of historically important material grouped under the rubric of the Lower Niger Bronze Industry, a temporary designation for a number of copper-alloy sculptures reflecting a variety of styles and formerly incorrectly attributed to Benin (Nigeria).

Bibliographic reference and research support for the Museum's programs is provided by the Museum of African Art branch of the Smithsonian Institution Libraries (SIL) system. With a collection totaling more than 10,000 volumes and approximately 300 periodical titles on the traditional and contemporary arts of Africa, the African Art branch library will continue its multi-year acquisition program to develop a comprehensive collection that will support the expanded level of research projected by the Museum. A selective bibliography entitled African Art: A Bibliographic Guide was published in 1985 as part of the SIL Research Guide Series.

Exhibitions - During FY 1986, the Museum of African Art presented at its Capitol Hill location "History, Context and Materials: Objects from the National Museum of African Art Permanent Collection," and concurrently, "Go Well, My Child," an exhibition and accompanying catalogue of magnificent photographs donated to the Museum by Constance Stuart Larrabee, who created this photographic portfolio in collaboration with Alan Paton based on his novel, Cry, the Beloved Country.

A major international loan exhibition organized by the University of Michigan Museum of Art premiered at the Museum of African Art in FY 1986: "The Rising of a New Moon: A Century of Tabwa Art," presenting approximately 100 Tabwa (Zaire) objects from European and American public and private collections. The final exhibition at the Capitol Hill location was "A Human Ideal in African Art, Bamana Figurative Sculpture," an exhibition of approximately 40 sculptures from the Bamana people of Mali, borrowed from museums and private collections in the United States. After the Washington, D.C. presentation, this exhibition traveled to the Metropolitan Museum of Art in New York where it will be on view through March 1987.

With funding provided in FY 1985 through FY 1987, the Museum will establish the necessary level of staffing and base exhibition support required for its expanded exhibition facilities in the Quadrangle. During FY 1986 and FY 1987, this funding will be used to design, produce and install five inaugural exhibitions for the public opening of its new facilities in the Quadrangle in September 1987. "Patterns of Life: West African Strip-Weaving Traditions" will trace the stylistic and technical development of West Africa's weaving traditions beginning with the Fulbe (Mali); proceeding to the Soninke, Djula and Ewe peoples; and concluding with the luxurious examples of Asante Kente cloth. The textiles displayed in the exhibition will be selected primarily from the Lamb textile collection, jointly acquired by the Museum of African Art and the National Museum of Natural History, in FY 1983 through FY 1985. "African Art in the Cycle of Life," containing objects from collections in the United States and abroad, will illustrate the role of the arts in traditional African life. "The Permanent Collection of the National Museum of African Art" will highlight some of the more recent acquisitions of the Museum, many of which have never before been exhibited. "Royal Benin Art in the Collection of the National Museum of African Art" will feature 22 bronze objects from the ancient kingdom of Benin (Nigeria) in the Museum's collections, the majority of which had been transferred to the Museum from the Hirshhorn Museum and Sculpture Garden in FY 1986. The exhibition will present these bronzes in historical perspective as well as in terms of their function and iconography. "Objects of Use" will illustrate artists' creative use of materials and economy of means in nonfigurative utilitarian objects.

The planning and development of substantive and varied exhibitions, which will increase public understanding of African art and culture and also generate new research in the field, is a continuous process. Planning has already begun for several future exhibitions: "African Pottery"; "Power and Play: The Art of Bamana Ritual and Theatre"; and "The Art of the Luba and Their World" (working titles).

In addition, circulating exhibitions scheduled for presentation at the National Museum of African Art include "The Essential Gourd, Art and History in Northern Nigeria," organized by the Museum of Cultural History, UCLA; "African Gold," organized by The Barbier-Mueller Museum, Geneva; and "African Musical Instruments," organized by the American Federation of Arts.

Education and Public Orientation - Programs offered by the Museum of African Art facilitate learning about African art for a broad and varied public audience both in the Museum's galleries and outside the Museum. Lectures, films, gallery talks, tours, workshops and demonstrations introduce visitors to the culture and history of Africa and to the esthetics of traditional art styles. These and other interpretive programs augment information provided by exhibitions and offer a range of opportunities and incentives for learning about Africa and its artistic heritage.

Tours and workshops engage public and school groups, challenging them to investigate and learn from art works through close observation. During FY 1986, more than 300 tours for elementary and secondary school groups were scheduled at the Capitol Hill location. A sizable increase in tours is anticipated at the new location on the Mall. A total of nearly 100 workshop programs for children, adults and family groups were presented in FY 1986.

For secondary school teachers, the Museum developed special materials and teacher training guides for each exhibition, and offered training workshops to demonstrate how the Museum can serve as a teaching resource within the curriculum.

During FY 1986, the Museum completed production of the first of a planned series of publications on African art and culture for elementary and secondary school teachers. The first publication made possible by a grant from Shell Companies Foundation, "The Art of West African Kingdoms," was distributed to 100 teachers for critical evaluation; 900 copies are being distributed to teachers nationwide upon request.

Programs of lectures, films, gallery talks, and demonstrations were presented in conjunction with special exhibitions, research programs, and the Museum's collections, through this period. Visiting Fellows presented several slide lectures to staff and the public, among them "The Origin of Weaving in Africa" and "Environmental Dimensions of Symbolic Space."

The Museum also offers a variety of outreach programs to senior citizens, schools and other audiences that cannot come to the Museum. In FY 1986, such programs reached more than 2,000 persons at over 100 sites in the Washington metropolitan area. Special programs were developed for the Lorton Prison College Program and the Florida Avenue Shelter/Coalition for the Homeless.

The Museum's Department of Education and Research revised its Outreach Program to be offered during the period that the Museum is closed to the general public prior to the opening of the Quadrangle. In addition, education department staff are involved in the production of printed materials to accompany opening programs at the Mall location, including: Teachers' Education Guides, Gallery Self-Tour Guides, Education Program and Resource Brochures, and Docent and Intern Handbooks.

The expanded educational programs planned for the Mall location will be directed toward a larger and more diverse audience. The addition to the staff of a docent coordinator in FY 1986 permitted the recruitment and training of more than 40 new docents, increasing the Museum's docent corps to almost 80, sufficient to conduct tours and present other programs at the Mall location. With the assistance of an education specialist for public programs, who joined the staff in FY 1986, the Museum is currently developing a broad selection of programs to be presented in its new location, including docent and

staff-led tours, gallery talks, films and demonstrations, and special programs to enhance visitors' understanding and appreciation of the exhibitions. Workshop and school outreach programs now being developed will focus on the Museum's collections and special exhibitions. Both are planned to link closely with curricula of the metropolitan Washington school systems, and to serve, ultimately, as model programs on which to base future educational materials. With funding provided in FY 1987, the Museum will hire an education specialist whose primary responsibility will be the implementation of these school outreach programs.

During FY 1986 and FY 1987, the public affairs office of the Museum will disseminate information (press releases, brochures, interviews) for exhibitions and related public programs occurring at the Capitol Hill location and develop printed material, mailing lists, and public service announcements related to the move to the Quadrangle.

Collections Management - In preparation for the move of the Museum to the Quadrangle location, computerized collection inventory records had been updated and refined. With funding provided in FY 1986, a photographer was hired to create an ongoing visual record of collection material required for collections management procedures and publications.

Prior to FY 1986, the Museum, without a trained conservation staff and adequate storage in its Capitol Hill facility, could not provide proper care for the textiles in its collections, exacerbating deterioration and making exhibition a hazard without appropriate conservation. During FY 1986, the Museum began a major effort to address the backlog of conservation work necessary to preserve its textile collection. As the first step in this conservation program, work was begun on those textiles which comprise the inaugural exhibition, "Patterns of Life: West African Strip-Weaving Traditions." The extreme fragility of certain cloths required that special mounting techniques be devised to support and protect the objects; other cloths were permanently mounted on a pressure mount system to prevent further damage. In order to have all work completed prior to the installation of the inaugural exhibition, a number of textiles were also sent to a private conservation workshop for treatment. With a fully equipped conservation laboratory in its new facility, the museum plans to continue its textile conservation work as a part of its ongoing collections management program.

Development of Collections - The Museum has worked steadily during the past three years to acquire objects of the finest esthetic quality to strengthen its holdings. An active acquisitions program through gifts and purchases remains one of the Museum's highest priorities. A strong collection is the impetus for sound research, public programs and exhibitions.

Particularly noteworthy gifts included a collection of East African beadwork, a rare Koro (Nigeria) headdress used in agricultural ceremonies, a Bembe figure, a Yaka initiation mask, a Kongo figure (Zaire), and a collection of 15 very fine objects from various sub-Saharan regions. In addition, with increased Federal funding provided in FY 1986, the Museum acquired three extraordinary objects. First among these is a rare bronze vessel collected in the late 19th century and attributed to a small corpus of material known to art historians as Lower Niger bronzes (Nigeria). The exact provenance and date of origin of these remarkable bronzes remain obscure. Through thermoluminescent testing, the vessel has been dated circa 1668-1733. It is a technical tour de force of lost wax casting and will be of great importance to the Museum as it considers plans to organize an exhibition of Lower Niger bronzes at a future date. A second major acquisition was a unique ivory sculpture attributed to the Vili people (Congo). It is one of the most celebrated ivory carvings from the Lower Congo region; its provenance can be traced to the 1930s. This carving appears to have been a staff top used by chiefs as an emblem of office. The third acquisition is a remarkable musical instrument, a harp, attributed to the Zande people (Zaire). In FY 1987, the Museum

acquired an extraordinary male figure from the Songye people (Zaire) associated with a magico-religious society, Bukishi. It was collected in 1912 and first exhibited in Antwerp in 1937. In addition, a group of 22 Benin bronzes (Nigeria) and a Bamana (Mali) iron staff top in the form of an equestrian figure, which were a gift of Joseph H. Hirshhorn to the Smithsonian Institution, were transferred to the National Museum of African Art from the Hirshhorn Museum and Sculpture Garden. All of these acquisitions will figure prominently in the inaugural installations planned for the Museum's opening in September 1987.

In FY 1987, the Museum will exercise the third and final option to acquire the last group of 20 of the 62 objects from a private European collection, which were purchased with Trust funds over a three-year period beginning in FY 1985.

Automation - With funding provided in FY 1986, the Museum has begun to acquire basic automation equipment needed to support its program and administrative functions, such as collections inventory control; publications and educational programming; and financial management. Funds provided in FY 1987 will allow the purchase of additional equipment to be used for curatorial research, registration, and conservation, as well as staff training and central computer usage charges.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 2 workyears and \$134,000 is requested to hire an assistant curator for Central African art (1 workyear and \$25,000); continue the development of automated systems (1 workyear and \$40,000); and establish an expanded funding base for the packing and shipping costs of art objects loaned to the Museum for special exhibitions (\$69,000). A further amount of 3.25 workyears and \$96,000 is required to annualize the partial-year funding of 8 positions approved in the FY 1987 budget for Quadrangle-related support.

Research (1 workyear and \$25,000) - In order to continue the development of the Museum's research curatorial staff, an assistant curator for Central African art is needed (1 workyear and \$25,000). The addition of this position (originally requested in FY 1987) will provide curatorial specialization for the major sub-Saharan geographic/culture regions -- West, Central, and Southern/Eastern -- that are represented in the collection. Research projects in Central African art to be conducted by this assistant curator will result in several major exhibitions, including Fang (Gabon) masks and reliquary figures, the art of the Luba (Zaire), and a major exhibition on the art of the Kwango Basin (Zaire).

Development of Automated Systems (1 workyear and \$40,000) - In order to ensure the most effective use of automation applications for the Museum's research, collections management, exhibition, education and administrative support functions, a computer specialist position is requested (1 workyear and \$25,000). This position (originally requested in FY 1987) will allow the Museum to develop automated systems to access the central collections information system; implement office automation systems for research, public information, education and publications programs; and provide more efficient administrative support in financial management, personnel services, and procurement. An increase of \$15,000 is also requested to provide an expanded base of \$90,000 for the purchase of additional hardware and software; the costs of annual maintenance, data communication, computer supplies and materials, and use of the central computer; staff training; and the establishment of a cyclical replacement program for the equipment.

Shipping Costs for Major Loan Exhibitions (\$69,000) - During the past three years, the Museum has initiated an active acquisitions program to strengthen its collections. Even with a growing collection, however, it must rely heavily on art objects borrowed from museums and private collectors in the United States, Europe and Africa to develop the major exhibitions planned for its expanded exhibition space in its new facilities in

the Quadrangle. The current base for packing and shipping (\$25,000) can not cover the current high costs, and projected increased costs, of the special handling and shipping requirements necessary for the international transportation of valuable art objects. In fact, \$100,000 of the grant provided by the Cafritz Foundation to support one of the inaugural exhibitions, "African Art in the Cycle of Life," was used to assist with the packing and shipping costs of the exhibition in FY 1987. An expanded funding base will be necessary to cover these costs for the major loan exhibitions planned after the inaugural exhibitions, especially since the availability of such support to supplement appropriated funds for these costs can not be depended upon after the inaugural exhibitions. For FY 1988 and following years, an increase of \$69,000 is requested to establish an expanded funding base of \$94,000 for these packing and shipping costs.

Without these funds, the Museum would be forced to take steps to cut back on its exhibition program, including the possible cancellation of exhibitions already planned or the inability to produce a catalogue to accompany an exhibition. In addition, it might be necessary to have periods when an exhibition space is "dark" (with no exhibition scheduled). For example, one solution available to other museums which have extensive permanent collections -- extending the run of an exhibition -- can not be used by the Museum, since the agreements with lending museums and private collectors stipulate a fixed exhibition period.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are derived from the Museum's share of sales in the museum shop, courses conducted in cooperation with Washington metropolitan area public education institutions, and allotments. They are used to provide additional support for the Museum's education and collections acquisition programs, exhibition openings, and to defray travel costs associated with meetings of the Museum's Commission. In FY 1987, allotments will be provided to support the salary costs of one employee and the costs associated with the opening of the Quadrangle facility. The Museum has been able to acquire, over a three-year period beginning in FY 1985, an extraordinary collection of 62 objects of African art assembled over the years by a European collector. The collection, the last third of which will be acquired in FY 1987, ranges in date from the 12th to 15th centuries A.D. to the mid-20th century (expenditure of \$657,000 in FY 1986 and estimated expenditure of \$735,000 in FY 1987).

Restricted Funds - These funds are contributed for special purposes in the form of grants and gifts from individuals, foundations, organizations or corporations for specific purposes. A grant from the Shell Companies Foundation provided funds to begin a publication series for the Museum's Education Department and a subsequent grant is anticipated for FY 1987 (estimated expenditures of \$9,000 in FY 1987 and \$10,000 in FY 1988). To supplement appropriated funds for planning and preparation of one of the major inaugural exhibitions, "African Art in the Cycle of Life," a three-year grant from the Cafritz Foundation was awarded in FY 1985 (estimated expenditures of \$217,000 in FY 1987). In addition, a grant of \$25,000 from Philip Morris Incorporated toward the inaugural exhibitions was awarded in FY 1986 (estimated expenditures of \$25,000 in FY 1987.) The Museum is working to secure additional funds from private sources to strengthen its permanent collection.

Gifts and grants are anticipated to continue a special publication program, the first volume of which is entitled African Art in American Collections (estimated expenditures of \$25,000 in FY 1987 and \$26,000 in FY 1988).

ANACOSTIA NEIGHBORHOOD MUSEUM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	14	772	1	28	-	23	-	-	-	-
FY 1987 Base	19	915	1	41	-	-	-	1	-	-
FY 1988 Estimate	19	931	1	44	-	-	-	1	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	19	-	19
11 Personnel Compensation.....	468	14	482
12 Personnel Benefits.....	77	2	79
21 Travel.....	4	-	4
22 Transportation of Things.....	5	-	5
23 Rent, Communications & Utilities.....	41	-35	6
24 Printing & Reproduction.....	40	28	68
25 Other Services.....	104	7	111
26 Supplies & Materials.....	157	-	157
31 Equipment.....	19	-	19
Total	<u>915</u>	<u>16</u>	<u>931</u>

Analysis of Increase

Necessary Pay..... 16

ABSTRACT - The Anacostia Neighborhood Museum, which is located in the Anacostia neighborhood in the southeast section of Washington, D.C. (approximately six miles from the Mall), serves as a national resource for exhibitions, scholarly and applied research, historical documentation, and interpretive and educational programs relating to black history and culture in America. Founded in 1967, the Museum will celebrate its 20th anniversary in 1987 with a series of special programs and events. In December 1986, the Museum closed its facilities in the Carver Theater building to relocate its public exhibition and education programs to an expanded facility at Fort Stanton Park. As a result of this relocation, the Anacostia Neighborhood Museum will be closed to the public from January through March 1987. For FY 1988, an amount of \$35,000 is required to strengthen the Museum's research and exhibition capabilities. This amount is offset by a reduction of \$35,000 in the Museum's base funding associated with the termination of the lease of the Carver Theater facility. Necessary pay of \$16,000 is required for existing staff.

PROGRAM - Presenting American history from a black perspective through its research, exhibitions and educational activities, the Anacostia Neighborhood Museum is a national prototype for scholarly and applied research, historical documentation, exhibition, and interpretive and educational programs relating to the experiences of black Americans and their contributions to science, history and the arts. The Anacostia Neighborhood Museum works with other Smithsonian units in researching and exhibiting subjects related to black history and culture. Established as a cultural resource for the people of Anacostia, the Museum also serves as a valuable source of materials on black American history for other museums and organizations and demonstrates innovative ways of introducing nontraditional museum audiences to the worlds of science, history, and the arts. The Museum is an active member in several professional museum associations, including the American Association of Museums and the African American Museums Association, and works with other museums and research institutions, universities, and archives throughout the United States to enhance the awareness and appreciation of the contributions of black history and culture to American society.

Research - In FY 1986, research continued in conjunction with the development of three exhibitions to be presented at the Museum in FY 1987 and following years. Research on the role of the black church in the black community, conducted by the Museum since FY 1984, will form the basis of a major exhibition, "Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740 - 1877," scheduled to open in late FY 1987.

Research on photographer, Prentice H. Polk, 1898-1985, who documented southern folklife through his photographs, involved the location, review and transcription of 15 hours of audiotape interviews with Polk. Five videotape interviews for television, including NBC, CBS and Metromedia News, were also obtained for inclusion in the exhibition, "P. H. Polk: The Man and His Work," scheduled to open in FY 1988. These interviews will be fundamental to the development of the exhibition and the various related audio-visual and interpretive programs that the Museum plans to sponsor.

Also during FY 1986, researchers traveled to major repositories and met with private collectors to inspect collections, working papers, patent drawings, photographs, and memorabilia for a unique project on black inventors. The development of this exhibition, which is scheduled to open in FY 1989, already has produced an important body of original research in a subject area that had languished for nearly half a century and an expanded working bibliography, including new primary source data, that will be invaluable to scholars interested in this subject.

Exhibitions at the Museum - "The Renaissance: Black Arts of the Twenties," documenting and highlighting the achievements of the black literary community during the 1920s, has been one of the most popular exhibitions ever held at the Museum. The "Renaissance" exhibition also became the last exhibition to be presented at the Museum's location in the Carver Theater building, which was closed in December 1986. Exhibitions at the Fort Stanton facility for FY 1987 and following years will continue to emphasize both black history and the accomplishments of black Americans in American art and culture.

"Contemporary Visual Expressions," an exhibition of works by four contemporary black American artists, will highlight the opening of the new exhibition gallery at the Museum's Fort Stanton Park facility in April 1987. In keeping with the broad cultural mission of the Museum, "Contemporary Visual Expressions," will be an interpretative exhibition revealing the personal and collective esthetics of these artists whose content is diversely derived from African and Caribbean visual experiences, neo-plasticism and color field painting, abstract expressionism and African American lore and religion. Working in the mediums of oil and acrylic painting, ceramics, wood and metal assemblage, artists Sam Gilliam, Martha Jackson-Jarvis, and Keith Morrison (all from Washington, D.C.) and

William T. Williams (from New York City) have created special works of art for the exhibition. A major catalogue to accompany the exhibition will be prepared by noted artist and art historian, David C. Driskell, professor of art at the University of Maryland and guest curator for the exhibition.

"Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740-1877," scheduled to open in late FY 1987, will document the importance of black churches in 19th-century urban life through the presentation of artifacts and archival materials both from active congregations and major repositories of church records in eight states. Approximately 150 artifacts ranging in size from church pews to tiny hymn books will be on display, including a pulpit belonging to Lott Carey, a Virginia slave, who became an early 19th-century missionary to West Africa (from the First African Baptist Church of Richmond, Virginia); a reed organ of rare construction dating from 1864 (from the Bethel A.M.E. Church in Baltimore -- one of the oldest black congregations in America); and an extremely rare 19th-century hymn book (from the United Library of Garrett-Seabury Theological Seminaries at Evanston, Illinois), which was the first hymn book compiled by a black American (Rev. Richard Allen) and the first hymn book compiled specifically for a black congregation (the Mother Bethel Church in Philadelphia).

"P.H. Polk: The Man and His Work," scheduled for FY 1988, will feature Prentice Polk's photographic documentation of 20th-century southern folklife. The scripting, design and production of this exhibition will begin in FY 1987. Great outside interest has already been evinced in the exhibition and its related research. The catalogue to accompany the show will include essays by Cornell Capa, the photographer and executive director of the International Center of Photography in New York, and Chester Higgins, Jr., the New York Times photographer and a former student of Polk's at Tuskegee Institute, who will assess Polk's distinguished career which spanned 50 years.

"Hidden Contributors: Black Innovators and Inventors from the Colonial Era to 1930," scheduled to open in FY 1989, will examine the contributions of black Americans to American technology, including both well-known inventors such as Lewis Latimer, who held many patents in the field of electricity; Elijah McCoy, inventor of the "Real McCoy" lubricator; and some lesser-known inventors such as Stephen Slade, who discovered a bright-leaf cure for tobacco, and Henry Boyd, creator of a new technique for constructing bedsteads. The exhibit will also examine the major social and cultural issues that determine the context within which these inventors worked, such as the educational and training opportunities available to black Americans and their struggle for recognition--both as inventors and as individuals.

Traveling Exhibitions - The Anacostia Neighborhood Museum has produced several traveling exhibitions related to the history, culture, and achievements of black Americans, including "Out of Africa"; "The Frederick Douglass Years"; "Black Women: Achievements Against the Odds"; and "Mary McLeod Bethune and Roosevelt's Black Cabinet." These traveling exhibitions, circulated by the Museum and by the Smithsonian Institution Traveling Exhibition Service (SITES), allow the Museum to reach a diverse national audience. During FY 1986, "Black Women" was exhibited at the Dallas Public Library in Texas, and "Out of Africa" was exhibited in University Park, Pennsylvania. The Museum plans to refurbish and update the exhibition, "The Fredrick Douglass Years" in FY 1987, which will then resume its tour.

Public Education and Orientation - During FY 1986, the education department continued to provide interpretive programs to supplement and support the Museum's exhibitions, including tours for elementary and secondary school groups; lectures for the general public and scholarly audiences; and special presentations and activities for the Museum's visitors. The department is currently developing an expanded education program for the Fort Stanton Park facility. Educational outreach activities for children are also very important to the Museum, and are offered in numerous locations throughout the Washington

metropolitan area, ranging from local schools to the District of Columbia Department of Corrections Youth Center.

In conjunction with "The Renaissance" exhibition, the Museum sponsored a variety of programs for children, including tours, tap dancing demonstrations, poetry readings from the works of Langston Hughes and Countee Cullen, and puppet shows relating stories of Harlem in the 1920s. The Museum also produced two educational resource publications related to "The Renaissance" exhibition.

In addition to the Museums' efforts to impart a greater awareness of black history directly to children, the Museum engages in educational activities for teachers. The education staff, in cooperation with the District of Columbia public school system, conducted a training program for social studies teachers. The staff of the Museum also conducted a staff development session for teachers at the Mary Church Terrell Elementary School in Washington, D.C. In addition, the Museum responded to a request from the Head Start teachers in Gettysburg, Pennsylvania, to provide guidance on how to teach black history to young children.

To improve the quality and effectiveness of the Museum's education programs for school children, an outside evaluation is being conducted to determine what students learn from their Museum experiences; the effects of the Museum's educational strategies; and teachers' views on the quality of the Museum's programs and their effects on students.

The Museum also continued its popular LUNCH BOX FORUM of informal lectures. These lectures have featured Washington renaissance poet and playwright May Miller Sullivan; journalist A'Lelia Bundles, who is a great-granddaughter of A'Lelia Walker, central renaissance figure; Prentiss Taylor, the Washington renaissance artist; and the historian and author, Dr. David Levering Lewis, who talked about his book, When Harlem Was in Vogue. A panel discussion on black women writers of the Renaissance brought together noted experts from the University of Maryland, Howard University, the District of Columbia Commission on the Arts and Humanities, and Montgomery College, to speak on this topic.

Museum Facilities - Scheduled to open in April 1987, the Museum's new public exhibition and education facilities at Fort Stanton Park will provide safe and environmentally controlled exhibition space adjacent to the Museum's exhibits laboratory, with an exhibit's staging area to minimize the period that the Museum must be closed while changing exhibitions. In addition to the consolidation of its facilities, the Museum's expanded facility will provide better visitor accommodations, including off-street parking. A National Park Service information booth also will be located in the lobby of the building to provide visitors with information on the historical significance of Fort Stanton Park as a Civil War fort that protected the Anacostia River and its environs.

During the next few years, the Museum plans to initiate the development of a master plan to determine the long-range space needs for its research, exhibition and public service programs. Based on the results of this master plan, the Museum will evaluate different alternatives for future facilities development, including the eventual relocation of the museum facility to National Park Service land at Poplar Point, located near the future Anacostia MetroRail Station on the Green Line.

EXPLANATION OF PROGRAM CHANGE - For FY 1988, an amount of \$35,000 is required to strengthen and expand the Museum's research and exhibition capabilities. This amount is offset by a reduction of \$35,000 in the Museum's base funding associated with the termination of the lease of the Carver Theater facility.

The expansion of research capabilities is one of the most important program priorities of the Museum. To foster greater understanding of black history and culture,

the Anacostia Neighborhood Museum frequently conducts original scholarly research on subject areas that have not been previously studied. The Museum's research efforts are further complicated by the fact that much of the primary source documentation relating to black culture and history is sporadic at best. These original materials would have been considered ephemeral at the time and much material that does still exist had not been appropriately cared for to preserve it as archival material until recently.

Since FY 1984, the Museum has been conducting research on the role of the black church in the black community. This research will support the major forthcoming exhibition, "Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740-1877." Anacostia research staff made contact with and visited individual congregations and major repositories of church records in Savannah and Augusta, Georgia; Nashville and Jackson, Tennessee; Salisbury, Raleigh and Chapel Hill, North Carolina; Charleston, South Carolina; Philadelphia, Pennsylvania; New York, New York; Boston, Massachusetts; and Richmond, Virginia. This research project, reported in the Smithsonian Institution Research Reports in 1985, has attracted enthusiastic support and interest from the academic/museum community.

For FY 1988, an amount of \$25,000 is required to enable the Museum to publish the results of this research. This publication will not only complement the exhibition, but also make the new and significant research data compiled during this project available to scholars in the fields of black history and church history. In FY 1989 and following years, the Museum will use this funding to strengthen its research and exhibitions capabilities.

For FY 1988 and following years, a sum of \$10,000 will produce graphic, photographic and audio-visual materials to enhance the Museum's exhibitions. In its new exhibition facility, Anacostia will be able to mount a larger number of exhibitions and will require greater use of these graphic materials to supplement the objects and other exhibition materials on display.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Funds are provided by an annual allotment to cover the salary costs of a woodcrafter. During FY 1987, this woodcrafter will fabricate special exhibition panels for the "Contemporary Visual Expressions" exhibition and fabricate cases, panels, backgrounds and other exhibit components for the "Climbing Jacob's Ladder" exhibition. Additional funds derived from donations and exhibition rentals are used to purchase supplies and materials to support the Museum's programs.

Restricted Funds - These are in the form of gifts from individuals and organizations and are designated for the support of specific Museum programs.

CONSERVATION ANALYTICAL LABORATORY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	34	1,993	-	-	-	33	-	2	-	-
FY 1987 Base	41	2,376	-	-	-	31	1	67	-	-
FY 1988 Estimate	41	2,418	-	-	-	22	1	14	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base <u>FY 1987</u>	Proposed <u>Adjustments</u>	Est. <u>FY 1988</u>
FTE Allocation.....	41	-	41
11 Personnel Compensation.....	1,256	37	1,293
12 Personnel Benefits.....	181	5	186
21 Travel.....	45	-	45
22 Transportation of Things.....	27	-	27
25 Other Services.....	430	-	430
26 Supplies & Materials.....	166	-	166
31 Equipment.....	<u>271</u>	<u>-</u>	<u>271</u>
Total	<u>2,376</u>	<u>42</u>	<u>2,418</u>

Analysis of Increase

Necessary Pay..... 42

ABSTRACT - The Conservation Analytical Laboratory (CAL) performs research on the conservation related properties of materials, the improvement of conservation treatment technology, and the extraction of historical information from the technical record of the materials being studied. CAL advises and assists the Smithsonian and other museums in the study, preservation, and conservation of objects of artistic, scientific, cultural, and historical importance. CAL conducts basic research in conservation and the development of treatment technology. Other research pursued at CAL seeks to establish the relationship between objects and the societies that produced them.

CAL conducts a conservation training program which includes basic and advanced conservation training, supports and organizes workshops and seminars, and provides various opportunities for the dissemination of the latest knowledge in the field of conservation to museums and research professionals throughout the United States and the world. No program increase is requested for FY 1988. Necessary pay of \$42,000 is required for existing staff.

PROGRAM - The Conservation Analytical Laboratory is the Smithsonian's specialized research facility for all aspects of the conservation and technical study of museum objects. CAL's activities are carried out in a number of interrelated programs: Conservation Treatment, Conservation Science, Archaeometry, Information and Conservation Training. The knowledge gained from state-of-the-art scientific research is applied directly to the actual treatment of objects, while the diversity of the objects treated and the wide variation in their state of preservation provide the overview needed to define directions for scientific research in conservation. Experience with a large range of materials and broad expertise in analytical and technological studies enable CAL to engage successfully in a wide spectrum of interactive and collaborative research with anthropologists and art historians. CAL's program of conservation treatment, supported by specialized scientific facilities and basic research in conservation science, is conducive to the success of its conservation training program.

Archaeometry - The field of archaeometry integrates the chemical and physical analyses of objects with their archeological, anthropological, art historical and cultural backgrounds. The analyses provide basic data concerning materials, dates, provenances, attributions and historical technologies which, in combination with contextual information and typological and stylistic analysis, serve to answer anthropological and art historical questions.

In FY 1986, CAL's archaeometry program continued its progress. An important part of the work in archeometry involved the study of ancient ceramic wares. This work attracted wide interest and requests for interinstitutional collaborative projects. A project on Hopi ceramics, which received outside funding for its continuation in FY 1987, established CAL as a center of an interinstitutional network for analytical studies in Native American archeology. Work on ceramics from the Indo-Iranian borderlands resulted in close ties with archeological centers in Rome and Paris. Work continued on materials from Mezo and Central America, Spain and North Africa. Technology studies covered such subjects as Middle Eastern neolithic ceramics and plaster, faience, Korean celadon porcelains, and Greek cements.

A collaborative program with the National Museum of American Art and the National Bureau of Standards (NBS) on neutron activated autoradiography of paintings continued to study the works of American artists Thomas W. Dewing and Albert P. Ryder. As part of a joint study with the Freer Gallery of Art and the Los Angeles County Museum of Art, CAL's program in lead isotope analysis has been collaborating with NBS in a study of the provenance of Chinese bronze objects from the Sackler Collection. Other metallurgical studies involved the role of phosphorus on the properties of historic iron music wire, the technology of Asian high tin bronze bells and the metallurgy of British iron from the Roman period. A new project applies sophisticated organic chemical analysis to characterize and identify the natural tree resins used in South East Asia.

The Smithsonian Archaeometric Research Collections and Records continued to develop. In addition to the 22,000 analytical data sets already loaded on the computer, descriptive data sets for 4,000 samples pertaining to the analytical data were entered in the electronic data base. Based on the experiences gained, the data base, which is used extensively by researchers from within the Smithsonian and outside, was restructured for more efficient storage and retrieval. Copies of selected data sets and the statistical software were distributed to other institutions.

Conservation Science - CAL's conservation science program involves a wide variety of research projects aimed at providing a better understanding of the chemical and physical processes that affect the deterioration of museum objects, and the influence of such parameters as environmental conditions, age, composition and manufacturing technology. Support services to conservators and curators Institution-wide involve chemical and physical analyses and technical examinations of objects from the Institution's collections.

During FY 1986, research continued on the interaction of architectural design and climate control in buildings. This research utilizes specially designed electronic monitoring equipment to record heat and humidity transport phenomena. The reconstruction of the facade of the Renwick Gallery occasioned the installation of these sensors in the walls of this building. The collected data will provide a means of evaluating the efficiency with which the restoration addresses the problems which had plagued the building. Work also continued on the study of the dimensional changes induced in the joints of woodwind instruments by the humidity variations during playing and the effects on the physical stability of the wood.

Agreement was reached with the Getty Conservation Institute and the Canadian Conservation Institute on a joint research program for the study of the chemical and physical effects of a number of commonly used fumigants on the materials of museum objects. This research, supported financially by the Getty Conservation Institute, started in FY 1987.

CAL has initiated a study to evaluate certain accelerated aging tests for paper and other cellulose based materials. This study has added importance because such aging tests are commonly applied in the evaluation of the efficiency of preservation treatments.

To implement a new research program in the conservation of photographic materials, for which CAL received Congressional authorization in FY 1986, consultations were held with experts in the museum community and the photographic industry. The actual research, which will draw upon the knowledge of outside experts, is expected to start in FY 1987.

CAL scientists engaged in a number of joint research projects with conservators and curators from other Smithsonian museums, including a large study of the clay formations caused by the weathering of tephra from Costa Rican volcanoes. In addition, authentication studies and materials identifications were performed on a large number of objects for the museums of the Institution. Many materials were tested for suitability in exhibiting or storing objects, including paints and sealants proposed for use in the storage equipment at the Museum Support Center.

Conservation Treatment - CAL conservators maintain an active research program in the development and testing of conservation treatment technology. These projects, which generally are prompted by problems encountered during the treatments of objects, are carried out in collaboration with conservation scientists. During FY 1986, research was conducted on such subjects as the parameters and safety of light-induced bleaching of discolored paper; the chemical and physical effects of water-based washing treatments of aged paper; the consolidation of fragile archeological plaster; the effects of prolonged chemical treatment of objects with "bronze disease"; and the removal of harmful latex-based backing from rugs and carpets.

The Smithsonian museums rely increasingly upon the conservators on their own staffs to maintain their collections and to perform conservation procedures. The objects which undergo treatment at CAL generally present special, complicated conservation problems, which require thorough studies of the complex causes of the problems; scientific analyses; custom designed, often experimental, treatment procedures; and the use of specialized equipment. CAL also provides assistance to museums in the Smithsonian in the form of expertise not available on the museum staffs. Examples of such assistance included surveys of the condition of the collections, consultations in collections management, conservation and display, and special treatments or examinations.

The expertise of CAL's conservation staff is well recognized outside the Institution, and several requests were received for assistance with particularly

interesting and difficult cases. In response to a request from the American archeological team excavating Harappa, Pakistan, a CAL objects conservator spent three weeks at Harappa to provide advice and assistance. CAL intends to continue this support in FY 1987 and FY 1988. Agreement has been reached between CAL and the Department of Antiquities of Jordan, for the conservation of a cache of very rare and valuable plaster statues excavated at the 7th millenium B.C. site of 'Ain-ghazal. In addition, CAL's furniture conservators provided occasional assistance to the conservation departments of the National Gallery of Art and the Library of Congress.

Progress was made with the design and installation of the central fumigation facility at the Museum Support Center. This facility, which contains two fumigation chambers, and a specially designed arrangement of sophisticated monitoring devices integrated with a multilevel alarm system and a powerful ventilation system, is expected to undergo its first tests in early FY 1987.

Conservation Training - In FY 1986, the activities of the conservation training program were expanded significantly. Specifically, CAL's new entry level training program for furniture conservators, consisting of a three-year series of intensive courses followed by a one-year internship, started its first class. Four advanced specialist courses covered such topics as the identification of historic textile dyes; the preparation of analytical standards for dye stuff identification; wood carving and the conservation of carved surfaces; and wood technology for furniture conservation. A one-day course was held on the subject of pest control in textile collections.

CAL hosted a number of interns at various levels of training and experience. An objects conservator was selected for the second postgraduate conservation internship, while the occupant of the first such internship will continue work at CAL through FY 1987. Two students, who are enrolled in academic training programs, spent one-year graduate internships at CAL, and one candidate was selected to work in the paper conservation laboratory for an internship which started at the end of FY 1986. Four students worked with CAL's textile conservator on ten-week summer internships. In addition to training conservation professionals, CAL instructs other museum professionals in conservation-related matters, and CAL conservators frequently serve as faculty members for conservation workshops held at the Smithsonian and at other institutions.

With the additional funds allocated in FY 1987 for conservation training, CAL will expand its program significantly in scope and size. Based upon guidance received from the Congress, specific plans are being formulated.

Information - CAL's information program provides specialized bibliographic and reference research support to professionals in the Smithsonian Institution and other museums. It maintains current information files on conservation and archaeometry literature, technical information, commercial products data and internally generated reports. Part of this information was transferred to the Smithsonian Institution Bibliographic Information System for electronic access; also, on-line access is maintained to the conservation literature data base of the British Museum.

Agreement was reached with the Getty Conservation Institute and the Canadian Heritage Information Network for CAL to enter the recently established international Conservation Information Network. The first part of the project, for which the Getty Conservation Institute provided financial support, is expected to reach completion during FY 1987. As a result, CAL will be able to take advantage of the information held by major international conservation institutes.

CAL continued to add to its collection of reprints from the professional literature in conservation, archaeometry and related subjects. This rather unique resource contains well over 16,000 reprints.

The public information program continued to provide answers in response to questions from the general public. In FY 1986, an average of 65 such public inquiries were handled per month. In addition, an ever increasing number of requests for information are being received from the conservators of museums located all over the United States. In FY 1986, an average of 20 requests per month were received from conservators. Last year, CAL commissioned a recognized expert to prepare an annotated bibliography on pest control in museums. This bibliography was made available, on request, to museums, and approximately 300 copies have been distributed.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are derived from the nominal fee charged to participants in the advanced conservation specialist courses sponsored each year by CAL. These fees are used to offset partially the expenses incurred in the organization of these courses. Grants from the Scholarly Studies Program provided support for the research expenses incurred in the study of Hopi Indian pottery and the study of Middle Eastern ceramics. Support from the Research Opportunities Fund enabled one scientist to attend a conference in China and to confer with colleagues there on possible collaborative research, while another grant from this fund allowed a postdoctoral fellow to collect research specimens in Great Britain.

Restricted Funds - Funds are provided in the form of gifts and grants from individuals, organizations or corporations for specific purposes. A grant from the Santa Fe Pacific Foundation supports a visiting scholar working on the study of Hopi Indian pottery (estimated expenditures of \$21,000 in FY 1987). The Getty Conservation Institute provides funds to support the research on the effects of fumigants on the materials in museum objects (estimated expenditures of \$46,000 in FY 1987 and \$14,000 in FY 1988).

OFFICE OF EXHIBITS CENTRAL

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	43	1,528	-	-	-	-16	-	-	-	-
FY 1987 Base	44	1,758	-	-	-	122	-	-	-	-
FY 1988 Estimate	46	1,841	-	-	-	120	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	44	2	46
11 Personnel Compensation.....	1,268	66	1,334
12 Personnel Benefits.....	127	11	138
21 Travel.....	2	-	2
23 Rent, Communications & Utilities.....	2	-	2
24 Printing & Reproduction.....	2	-	2
25 Other Services.....	55	-	55
26 Supplies & Materials.....	182	6	188
31 Equipment.....	120	-	120
Total	<u>1,758</u>	<u>83</u>	<u>1,841</u>

Analysis of Increase

Necessary Pay.....	42
Program Funds.....	41

ABSTRACT - The Office of Exhibits Central (OEC) is essential to the successful mounting of a great many of the exhibitions presented at the Smithsonian. The highly skilled exhibition specialists and the well-equipped facilities of OEC provide those Smithsonian units having little or no specialized exhibition capability with invaluable and substantial support in the staging of exhibition and exhibit-related programs. The vast majority of the projects assumed by OEC are unique and involve the exhibition of specific objects from the collections of the Institution, other museums, and private collections. The inestimable value of these objects requires that OEC maintain the highest standards in its work. For this reason, meticulous attention to accuracy and extreme care in the handling of museum objects have always characterized the work performed by OEC. For FY 1988, an increase of 1 workyear and \$31,000 is requested to support expanded OEC activities for exhibitions and related needs of the International Center located in the Quadrangle and to supplement the exhibition capabilities of the Smithsonian Institution Traveling Exhibition Service. A further amount of .4 workyear

and \$10,000 is required to annualize partial-year funding of one position approved in the FY 1987 budget for Quadrangle-related support. Necessary pay of \$42,000 is required for existing staff.

PROGRAM - The Office of Exhibits Central provides professional services in all phases of exhibition production. In FY 1986, OEC designed and produced over 20 exhibitions for the Smithsonian Institution Traveling Exhibition Service (SITES). One of the more comprehensive of these exhibitions was "Community Shakers: A New Look," which presented 250 artifacts of Shaker life ranging from furniture and tools to seed packets. OEC designed and edited the exhibition; fabricated 11 freestanding, custom-designed exhibit cases and 15 platforms with back walls; silk-screened over 35 didactic panels and individual labels; and packed the artifacts in 38 shipping containers. OEC also assisted SITES with the exhibition "Hollywood: Legend and Reality," which required the packing and crating of three-dimensional artifacts, the design and fabrication of custom brackets and mounting devices for individual artifacts, and the modification of 15 mannequins to fit costumes as varied as that of the Straw Man from The Wizard of Oz and Dorothy Lamour's sarong from Beyond the Blue Horizon.

In FY 1986, a team from the OEC Model Shop went to Rahway, New Jersey, to make molds of three tombstones that were carved by John Frazee between 1811 and 1815. The molds were then used to cast replicas in fiberglass for an exhibition on the sculptor, which the National Portrait Gallery was sponsoring. The Model Shop also cast replicas of two urns and pedestals from the collections of the Office of Horticulture for use in the Enid A. Haupt Victorian Garden.

In addition to preparing several hundred customized shipping containers for various exhibitions, the OEC Fabrication Unit assembled Plexiglas frames for 32 over-sized posters from the "French Cinema Posters" exhibition. The posters, some of which measured 5x7 feet, were mounted and framed to meet stringent conservation requirements.

The OEC Graphics Unit contributed to the success of the 20th Festival of American Folklife by mounting almost 300 photographs and silk-screening information on over 200 panel surfaces. The Graphics Unit also mounted, matted and framed 75 original works on paper by John Held for a SITES' exhibition.

OEC provided support to the Smithsonian Associates by designing, writing, editing and supervising the printing of more than 25 brochures for its travel programs. Similar support was provided to the Women's Committee of the Smithsonian Associates for their Craft Show and Christmas Dance.

OEC staff continues to serve as faculty in the "Workshops for Museum Professionals," organized by the Office of Museum Programs and as consultants on Institution-wide planning for exhibitions, graphics, and the design and use of public spaces on the Mall and in the Smithsonian museums.

EXPLANATION OF PROGRAM INCREASE - In FY 1988, an increase of 1 workyear and \$25,000 is requested to enable the Office of Exhibits Central to expand its support for exhibition and related needs for the Quadrangle. Also, an amount of \$6,000 is required for necessary supplies and materials. A further amount of .4 workyear and \$10,000 is required to annualize partial-year funding of one position approved in the FY 1987 budget for Quadrangle-related support.

With funding provided in FY 1987, OEC will hire an exhibits specialist and model maker to assist with planned exhibition space of the new Quadrangle facilities. The requested increase for FY 1988 will provide for one new exhibit specialist position in the Graphics Unit. This position is required to silk-screen exhibit materials for exhibitions being planned for the International Center and for SITES' new display spaces in the Quadrangle, which is scheduled to open in September 1987.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are provided by tuition fees received from local universities, proceeds from the sale of the OEC book A Freeze-Dry Manual through the Smithsonian Institution Press and reimbursements from internal Smithsonian units. These funds are used to purchase supplies, materials and services in support of OEC activities, to defray costs associated with special events and, as needed, to supplement a portion of travel expenses associated with consultation with other museum professionals (estimated expenditures of \$122,000 in FY 1987 and \$120,000 in FY 1988).

SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
			FTP**	Amount	FTP**	Amount				
FY 1986 Actual	6	380	31	2,057	-	340	3	804	-	31
FY 1987 Base	14	568	7	250	24	1,716	3	890	-	22
FY 1988 Estimate	16	719	7	260	24	1,814	1	698	-	18

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	14	2	16
11 Personnel Compensation.....	370	40	410
12 Personnel Benefits.....	53	7	60
21 Travel.....	15	20	35
22 Transportation of Things.....	67	-	67
23 Rent, Communications & Utilities.....	26	-	26
25 Other Services.....	-	70	70
26 Supplies & Materials.....	27	14	41
31 Equipment.....	10	-	10
Total	<u>568</u>	<u>151</u>	<u>719</u>

Analysis of Increase

Necessary Pay.....	13
Program Funds.....	138

ABSTRACT - The Smithsonian Institution Traveling Exhibition Service (SITES) provides an important national service by offering carefully selected, well designed and widely circulated traveling exhibitions. The exhibitions draw upon the collections of the Smithsonian, domestic and foreign museums, foreign governments, private individuals, and organizations throughout the world. For FY 1988, an increase of \$90,000 is requested to begin research on exhibition themes for the celebration of the Quincentenary of the Columbus expedition. A further amount of 2 workyears and \$48,000 is required to fund two positions for Quadrangle-related support. Necessary pay of \$13,000 is required for existing staff.

PROGRAM - The Smithsonian Institution Traveling Exhibition Service is the primary organizer of Smithsonian traveling exhibitions. SITES, which is the largest service of its kind in the United States, provides a broad selection of exhibitions encompassing the diverse disciplines and subject matter represented in the collections of the Smithsonian.

SITES' exhibitions are accompanied by curatorial and registrarial information, handling instructions, technical information, publicity materials, suggestions for educational activities, and, in most instances, exhibition catalogues or posters. SITES also provides professional assistance in a variety of areas, including the shipping and insuring of artifacts; installation techniques; exhibit security; design and upgrading of exhibition space; and contract matters.

SITES represents an important Smithsonian outreach and service program. SITES maintains over 120 exhibitions in circulation at all times. These exhibitions are seen by approximately five million people each year at museums, galleries, and educational and cultural institutions around the world. Since its establishment in 1952, SITES' exhibitions have reached an audience of over 100 million people in 15,000 communities.

SITES publishes Update, an annual catalogue describing the available traveling exhibitions and publications; SITELINE, a quarterly newsletter; and special mailings providing information on specific exhibitions, publications, and educational materials. These publications are distributed to over 9,000 institutions each year.

Thousands of exhibition-sponsoring organizations depend on SITES' exhibitions each year for their programming needs. For a fraction of local production costs, exhibitors are able to bring the Smithsonian's cultural programs to their communities. Federal funding constitutes 17 percent of SITES' total operating budget, the remainder is provided by exhibition fees; nonappropriated Trust fund support from the Institution; and outside grants and contracts. Federal assistance insures that the fees charged for SITES' exhibitions remain affordable and enables many communities, which otherwise would not be in a position to do so, to present museum exhibitions.

During FY 1986, SITES' exhibitions were installed in 369 different locations in the United States, including 224 cities in 46 states and the District of Columbia.

Alabama	10	Montana	2
Alaska	1	Nebraska	3
Arizona	1	Nevada	1
Arkansas	4	New Hampshire	0
California	25	New Jersey	4
Colorado	13	New Mexico	9
Connecticut	4	New York	21
Delaware	1	North Carolina	10
District of Columbia	10	North Dakota	1
Florida	34	Ohio	16
Georgia	10	Oklahoma	5
Hawaii	3	Oregon	6
Idaho	1	Pennsylvania	18
Illinois	13	Rhode Island	1
Indiana	6	South Carolina	3
Iowa	8	South Dakota	0
Kansas	2	Tennessee	9
Kentucky	4	Texas	12
Louisiana	7	Utah	2
Maine	1	Vermont	0
Maryland	14	Virginia	9
Massachusetts	17	Washington	7
Michigan	8	West Virginia	6
Minnesota	3	Wisconsin	13
Mississippi	2	Wyoming	0
Missouri	9		

SITES' exhibitions also travel abroad, providing people in other countries with the opportunity to learn about American history and culture.

SITES estimates that 50 new traveling exhibitions will begin their tours during FY 1987 and FY 1988. Major new exhibitions will include "Magnificent Voyagers: The U.S. Exploring Expedition of 1838-1842," adapted from the National Museum of Natural History exhibition; "Views of Rome: Watercolors and Drawings from the Collection of the Biblioteca Apostolica Vaticana"; "New Horizons: American Painting 1850-1910," which will travel in FY 1988 to the Union of Soviet Socialist Republics in exchange for the Soviet exhibition "Russia, The Land, The People: Russian Painting 1850-1910," which will circulate to three museums in the United States; "King Herod's Dream: Caesarea on the Sea," which is being organized in collaboration with the University of Maryland; "Medieval Art from Yugoslavia"; "The Voices of Hellenism: The Collection of Anthony Benaki," from the Benaki Museum in Athens; as well as "Generations: Birth Rituals and The Roots of Becoming," which will be the opening exhibition in the International Gallery in the Quadrangle. SITES has preliminary plans to develop 20 new exhibitions. These exhibitions, which will require approximately one year to 18 months to develop and produce, are scheduled to tour in FY 1989 and following years.

Quadrangle-Related Programs - Recent occupation of its new facilities in the Quadrangle is enabling SITES to expand its international role. Specifically, the new quarters allow SITES to increase the number of exhibitions traveling abroad and to demonstrate the work of SITES to foreign colleagues and visitors. The new SITES facilities in the Quadrangle include the Introductory Gallery that allows visitors to view the work conducted by SITES; the Educational Workshop for the testing and evaluation of educational materials; an exhibition publications center; a vault for temporary storage of exhibition objects and materials; and meeting rooms.

Exhibitions for the International Gallery - SITES is organizing the inaugural exhibition of the International Gallery, which will open in September 1987. The exhibition, which is the first in a series of exhibitions with the current title "Generations: Birth Rituals and The Roots of Becoming," focuses on the creation symbols and mythology of many cultures. This series of exhibitions involves the fields of art, anthropology, and history, and draws upon the expertise of many scholars from the Smithsonian, as well as from other museums and universities. A coordinated effort between SITES and the Directorate of International Activities is making this project possible.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of \$90,000 is requested to begin research for exhibitions celebrating the Quincentenary of the Columbus expedition. A further amount of 2 workyears and \$48,000 is required to fund two positions for Quadrangle support.

Columbus Quincentenary (\$90,000) - In 1990, the Western Hemisphere will commemorate the Quincentenary of the Columbus expedition to the New World. To mark this occasion, SITES is producing exhibitions which will explore various aspects of the Americas. Examples of the exhibition themes being explored by SITES are the cultures of the Indians of North, Central, and South America; the major political figures who have shaped the historical development of the Americas; the arts and architecture of the Western Hemisphere; and the environment of North, Central, and South America.

The scheduling requisites of the institutions interested in hosting Quincentenary exhibitions demand that detailed information on the program content of the exhibition be available at least two years prior to the scheduled time of exhibition. For this reason, the requested funding will be used to contract the services of five scholars who will survey collections in Latin America, Spain, and Portugal for objects which could be included in the Quincentenary exhibitions (\$25,000). The scholars also will investigate the cost of researching, designing, and producing the exhibitions (\$45,000), while

seeking to elicit outside support for the production of these exhibitions. Additional funding is sought to cover the travel costs for SITES' staff to investigate the logistics of shipping the exhibitions to institutions throughout the Americas (\$20,000).

Quadrangle-Related Support (2 workyears and \$48,000) - With its move to the Quadrangle, SITES' new facility includes an Introductory Gallery and Education Workshop. The Introductory Gallery will provide space where visiting colleagues, potential corporate sponsors, exhibitors and lenders can view samples of SITES' educational materials, public service announcements, and illustrations of educational and interpretive techniques that museums can use to improve educational aspects of their programs. As a result of this expanded public service function, a secretary/receptionist (1 workyear and \$17,000) is required to provide public assistance to visitors and staff.

Also, with completion of the new Education Workshop, which will be used to test and evaluate educational materials designed to accompany SITES' exhibitions, to hold seminars, and to sponsor outreach programs, a secretarial position (1 workyear and \$17,000) is requested to provide support for staff, and provide assistance in the scheduling and promoting of Workshop activities.

The addition of these two new positions (originally sought in the FY 1987 budget), will allow SITES to administer expanded program responsibilities for Quadrangle activities. An amount of \$14,000 also is requested to purchase supplies and materials used in producing Introductory Gallery presentations and developing educational programs for the Education Workshop.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are derived from participation fees collected from museums, universities, historical societies and other users of the traveling exhibitions. These funds, supplemented by an allotment, support 31 positions and virtually all exhibition development costs including publications, materials, outside specialists and contractual services (estimated expenditures of \$1,966,000 in FY 1987 and \$2,074,000 in FY 1988). For FY 1987, the majority of the SITES' operation was reclassified from a general fund to a special purpose fund which explains the difference in those fund categories between FY 1986 and FY 1987.

Restricted Funds - Funds are provided in the form of gifts and foundation grants from individuals, organizations and corporations for specific purposes. During FY 1986, several grants were received: from Time, Inc., for the exhibition "Hollywood: Legend and Reality"; from the Optical Society of America and the Lasers and Electro-Optics Society of the Institute of Electrical and Electronics Engineers for the "Laser at 25" exhibition; from the Phillips Petroleum Foundation for the "Fields of Grass" exhibition brochure and poster; and from Pepsico International, Inc., for the exhibition "New Horizons: American Painting 1840-1910."

Major funding is expected to continue during FY 1987 and FY 1988 for the development of important exhibitions: "Lost Cities, Forgotten Kings: Discovering the Ancient Civilization of Honduras"; "The Promised Land: Five Utopias"; "Diamonds Are Forever: Artist and Writers on the National Pastime"; "The Voices of Hellenism: The Collection of Anthony Benaki"; "Artificial Reefs"; "The Jewelry of Morocco"; "Views of Rome"; and the Japan Project.

Federal Grants and Contracts - These funds are provided by various government agencies and departments for support of specific exhibitions.

ASSISTANT SECRETARY FOR PUBLIC SERVICE

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount				
FY 1986 Actual	25	1,163	38	1,818	-	144	-	31	-	-
FY 1987 Base	24	1,295	38	2,216	-	85	-	-	-	-
FY 1988 Estimate	24	1,305	37	2,115	-	194	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	24	-	24
11 Personnel Compensation.....	845	26	871
12 Personnel Benefits.....	131	5	136
21 Travel.....	13	-	13
23 Rent, Communications & Utilities.....	20	-	20
24 Printing & Reproduction.....	81	-14	67
25 Other Services.....	126	-6	120
26 Supplies & Materials.....	46	-1	45
31 Equipment.....	33	-	33
Total	<u>1,295</u>	<u>10</u>	<u>1,305</u>

Analysis of Increase

Necessary Pay.....	31
Program Funds.....	-21

ABSTRACT - The Office of the Assistant Secretary for Public Service encourages and supports the development of programs to advance the Institution's objectives in education, publication, information, and folklife programs. This Office advises the Secretary on general policy issues and program planning for Public Service activities. Included in this line item are the Office of Telecommunications, the Visitor Information and Associates' Reception Center, and the Office of Public Affairs. The FY 1988 estimate reflects a decrease of \$21,000 associated with nonrecurring expenditures in the FY 1987 budget for one-time Quadrangle-opening publicity costs. No program increase is requested. Necessary pay of \$31,000 is required for existing staff.

PROGRAM - I. The Office of the Assistant Secretary for Public Service: With base resources of 4 workyears and \$229,000, the Office of the Assistant Secretary for Public Service coordinates and supervises the Institution's educational and public service programs and advises the Secretary on the development of policies and activities for

these programs. The bureaus and offices reporting to the Assistant Secretary include the Office of Telecommunications; the Visitor Information and Associates' Reception Center; the Office of Public Affairs; the Smithsonian Institution Press; Smithsonian magazine; the Office of Folklife Programs; the Office of Smithsonian Symposia and Seminars; the Office of Elementary and Secondary Education; the Office of the Committee for A Wider Audience; the National Science Resources Center, which was previously under the aegis of the Office of the Assistant Secretary for Research; and the newly established "University of the Air" program; and a converging National Demonstration Laboratory for Interactive Educational Technologies being developed in cooperation with a consortium of public broadcasting stations.

II. Office of Telecommunications: With base resources of 5 workyears and \$225,000, the Office of Telecommunications produces radio, film and television programs on the Smithsonian's varied scholarly activities. These programs inform the public and support the research, exhibitions, and educational goals of the Institution. Broadcast nationally, these wide-ranging programs also are available to educational institutions and libraries. The effect of these programs is seen in an enthusiastic response from audiences and in the recognition and prestigious honors received from the broadcast and film industries.

The Office produces three major program series. "Here at the Smithsonian...", an award-winning series of short video features, tripled its number of subscribing stations to 180 as it launched its sixth season. "Radio Smithsonian," a weekly 30-minute series, which is now in its 17th year, has become a staple for many member stations of National Public Radio. "Smithsonian Galaxy," which consists of short radio features, continues to be broadcast on 230 subscribing stations in the United States and around the world.

In FY 1986, the Office released the film "Coral Reefs: New Discoveries, New Resources," which depicts the research on Caribbean coral reefs conducted by the Smithsonian's Marine Systems Laboratory. Another production completed in FY 1986 was "Movie Palaces." This film, which is an expanded version of the Cooper-Hewitt exhibition film "American Picture Palaces," traces the glory days, the decline, and the rebirth of America's great movie houses. The Office also finished a video pilot for a children's television series entitled "Smithsonian Quest," and soon will complete a film on the Archives of American Art and its contribution to art historical research.

The Office broke new ground in FY 1986 with its production of the Smithsonian's first live teleconference. This teleconference provided a fitting conclusion to the four-day National Forum on Biodiversity, which was sponsored by the Smithsonian and the National Academy of Sciences. To conduct this teleconference, the Office enlisted 103 downlink sites in the United States and Canada. Surveys received from 80 of these sites indicated an extremely high rate of satisfaction and strong support for future Smithsonian teleconferences.

A number of projects have been initiated at the request of various Smithsonian units. Specifically, a half-hour videotape is being produced in cooperation with the Office of Elementary and Secondary Education to train museum docents to work more effectively with disabled visitors. A 30-minute educational film on the U.S. Exploring (Wilkes) Expedition of 1838-1842 is being made. Films being produced for the National Museum of American History include "Engines of Change," which will complement the exhibit of the same name, and "Field to Factory," which will accompany an exhibition on the migration of blacks to the northern United States. At the request of the National Museum of Natural History, a short piece is being produced to accompany an exhibition on Northwest coast Indian masks.

III. Visitor Information and Associates' Reception Center - With base resources of 3 workyears and \$207,000, the Visitor Information and Associates' Reception Center

(VIARC) provides the public with information on Smithsonian exhibitions, events, programs and activities, and administers a range of centralized information and assistance programs which serve the public, Associate members, Smithsonian staff, volunteers and interns.

VIARC's seven-day services include the staffing of 15 information desks in 11 museums by a corps of 400 volunteers and the operation of the primary telephone information service, which also provides 24-hour recorded information on Dial-A-Museum and Dial-A-Phenomenon. VIARC also serves as the primary research, response and referral point for public inquiry mail; operates an outreach program to promote previsit education; presents a variety of daily slide/lecture orientation programs for visitors; and conducts behind-the-scenes tours of the Castle Building. During the summer months when visitation is at a peak, VIARC supplements the information services available in the museums with mobile information units on The Mall. In addition, VIARC conducts a registration and placement program for the approximately 1,100 volunteers who assist behind the scenes pan-Institutionally, and a similar registration and placement program for interns.

To strengthen the Institution's ability to inform, orient and serve its millions of visitors, VIARC has developed a multifaceted program to upgrade the visitor services provided by the Institution. The important facets of this project are the development of a better system of identification for Smithsonian facilities; improved pedestrian and vehicular directional signage; production of general information directories; and the establishment of an Information Center in the Castle Building, which will provide a primary point of information and orientation.

IV. Office of Public Affairs: With base resources of 12 workyears and \$634,000, the Office of Public Affairs (OPA) is responsible for acquainting the public with the programs and policies of the Institution. This is achieved with news releases, the Smithsonian News Service, feature articles, Research Reports, calendars, radio-television public service announcements, guides, brochures, contacts with journalists, news conferences, and paid advertisements. OPA provides advice to the individual bureaus and offices on public information policies and programs, and monitors the units' public information materials, the Institution's many relations with corporate and other sponsors, and the advertising and promotional plans and materials of corporate sponsors. OPA also produces a monthly staff newspaper, The Torch, and informs management of public and media attitudes and needs. The OPA director serves as the principal Institutional spokesperson.

For the past seven years, the Smithsonian News Service has provided some 2,000 daily and weekly newspapers with a free monthly package of four feature-style articles on subjects in art, history, science, technology and contemporary life. In September 1986, the News Service launched a Spanish-language edition, which was distributed to approximately 100 Hispanic and bilingual newspapers in the United States (including Puerto Rico) and Canada. The Hispanic edition, which provides one article per month in Spanish, has been greeted with enthusiastic reviews. OPA also began the electronic distribution of News Service articles to client newspapers at cost through the Associated Press Datafeature wire.

In 1986, OPA redesigned its monthly calendar of events, published in the Washington Post and distributed to local civic organizations, to inform the public about Smithsonian events, lectures, films, and Resident Associate activities. OPA also published a completely revised edition of The Smithsonian Institution: Yesterday and Today, a 100-page publication for journalists.

The circulation of Research Reports, a periodical devoted to reports on research in the arts, history, and science, reached a record in FY 1986 of 45,500 readers including the scholarly community, foundations, universities and Smithsonian contributing members.

The Office also wrote a brochure describing the facilities, research and resources of the National Museum of Natural History's Department of Botany.

The Office continues to receive acclaim for the work of its staff. In FY 1986, a Smithsonian News Service article and The Torch were awarded first prizes in their respective categories by the National Association of Government Communicators and the Society for Technical Communications.

In FY 1986, the Office of Public Affairs produced and distributed a generic television public service announcement (PSA) in English and Spanish that featured Bob Hope as the narrator. OPA also coproduced a television PSA on the traveling exhibition "Hollywood: Legend and Reality," the Festival of American Folklife, and the exhibition at the National Museum of Natural History, "Magnificent Voyagers."

OPA is coordinating the public affairs activities associated with the 1987 opening of the Quadrangle. This will include the production of a television PSA; the preparation of revised editions of the Welcome brochure, including the foreign language versions of the Welcome brochure; and the initial production of Welcome brochures in Arabic and Chinese.

NONAPPROPRIATED SOURCES OF FUNDING:

I. Unrestricted General and Special Purpose Funds - The Office of the Assistant Secretary for Public Service: These funds are provided by allotments that cover the salary and benefits of three staff members assigned to the immediate Office of the Assistant Secretary for Public Service, temporary appointments and support costs for Quadrangle-opening activities in FY 1987, electronic media activities, an intern program and costs for the Office of the Committee for a Wider Audience which fosters the development of pan-Institutional outreach efforts designed to attract diverse cultural audiences (total estimated expenditures of \$303,000 in FY 1987 and \$323,000 in FY 1988). Although not included in the figures, a new "University of the Air" educational media project will be initiated during FY 1987, with estimated expenditures of \$59,000.

II. Office of Telecommunications: These funds are provided by allotments which support nine full-time staff members and expenses associated with the production of educational and informational materials for television, film and radio (estimated expenditures of \$553,000 in FY 1987 and \$597,000 in FY 1988). In addition, a nominal amount of subscription fees is received to help defray some of the production and distribution costs. Additional funds are obtained through sales of films and videotape programs. The Office produces three ongoing series of programs which reach the American public regularly through radio and television. "Here at the Smithsonian..." and "Radio Smithsonian" are financed partly by an allotment and partly by subscriber fees. "Smithsonian Galaxy" is supported by an allotment.

III. Visitors Information and Associates' Reception Center: These funds are provided by an allotment and are used primarily to support 21 full-time staff members associated with the Center's work as the Institution's public service bureau responsible for the information and assistance activities described in the above program statement (estimated expenditures of \$826,000 in FY 1987 and \$875,000 in FY 1988).

IV. Office of Public Affairs: These funds are provided by allotments which support four full-time positions and expenses associated with public outreach activities such as publication of the Institution's Welcome brochure, Washington Post calendar advertisements and public service announcements (estimated expenditures of \$491,000 in FY 1987 and \$430,000 in FY 1988).

SMITHSONIAN INSTITUTION PRESS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	27	1,066	35	13,155	-	-	-	-	-	12
FY 1987 Base	29	1,169	35	13,390	-	-	-	-	-	-
FY 1988 Estimate	29	1,197	36	14,580	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	29	-	29
11 Personnel Compensation.....	922	28	950
12 Personnel Benefits.....	132	4	136
21 Travel.....	2	-	2
24 Printing & Reproduction.....	52	-4	48
25 Other Services.....	38	-	38
26 Supplies & Materials.....	10	-	10
31 Equipment.....	13	-	13
Total	<u>1,169</u>	<u>28</u>	<u>1,197</u>

Analysis of Increase

Necessary Pay.....	32
Program Funds.....	-4

ABSTRACT - The Smithsonian Institution Press is responsible for the editing, design, production, and distribution of printed materials prepared by Smithsonian scientists, historians, and curators. The materials published include research monographs, technical and scientific series, exhibition catalogues for Smithsonian museums, educational pamphlets, and informational leaflets. The Press also is responsible for the development, production, business, and marketing functions of the Institution's recordings program. In addition, the Press acts as the official agent of the Smithsonian Institution in procuring printing services from the United States Government Printing Office; in creating government forms, guides, instructions; and in providing professional assistance to Smithsonian authors upon request. The FY 1988 estimate reflects a decrease of \$4,000 associated with nonrecurring expenditures in the FY 1987 base for one-time Columbus Quincentenary publication costs. No program increase is requested for FY 1988. Necessary pay of \$32,000 is required for existing staff.

PROGRAM - The Federal publication activity of the Press is a fundamental extension of the Smithsonian's basic research activities. The scientific, technological, and historical monographs published by the Press make the results of research conducted by Smithsonian curators and staff experts available to libraries, museums, scientific institutions, and interested members of the public. In addition to publishing research findings, the Press edits and designs exhibition catalogues, educational pamphlets, and informational leaflets that serve the millions of visitors to the Smithsonian in Washington, D.C., and the national programs of the Institution.

Furthermore, the Press edits, designs, and produces Smithsonian Year, the Institution's annual report to the Regents and the Congress. In addition, the Press procures and distributes, within the Institution, a variety of necessary manuals, reports, and directories, including copies of Congressional materials and reports from government agencies.

Federally funded books published during FY 1986 include "Geochronology of Sandia Cave," by C. Vance Haynes, Jr., and George A. Agogino (Smithsonian Contributions to Anthropology, #32); "A Phylogentic Analysis of the Orchidaceae," by Pamela Burns-Balogh and V.A. Funk (Smithsonian Contributions to Botany, #61); "Stratigraphic Record of the Neogene Globorotalid Radiation (Planktonic Foraminiferida)," by Richard Cifelli and George Scott (Smithsonian Contributions to Paleobiology, #58); "Seasonal Variation in Use of Time and Space by the Wedge-capped Capuchin Monkey Cebus olivaceus: Implications for Foraging Theory," by John G. Robinson (Smithsonian Contributions to Zoology, #431); and "The Organs of Mexico City Cathedral," by D.A. Flentrop, translated by John Fesperman (Smithsonian Studies in History and Technology, #47).

Federally funded books to be published during FY 1987 include "The Allende Meteorite Reference Sample," by Eugene Jarosewich et al (Smithsonian Contributions to the Earth Sciences, #26); "A History, Bibliography, and Annotated Account of the Benthic Marine Algae of Taiwan," by Jane E. Lewis and James N. Norris (Smithsonian Contributions to the Marine Sciences, #29); "Biology of Freshwater Fishes of the Bermuda Ocean Acre," by Robert H. Gibbs, Jr., and William H. Krueger (Smithsonian Contributions to Zoology, #452); "The Korean Onggi Potter," by Robert Sayers with Ralph Rinzler (Smithsonian Folklife Studies, #5); and "A Brief History of Geomagnetism and a Catalog of the Collections of the National Museum of American History," by Robert F. Multhauf and Gregory Good (Smithsonian Studies in History and Technology, #348).

During 1986, the Smithsonian book program continued to receive acclaim for its editorial, design, and production work. The Mystery of Comets by Fred L. Whipple won the 1986 Phi Beta Kappa Award in Science. Pleasures of Entomology by Howard Evans has won three awards to date: Science Books and Film Editor's Choice; Editor's Choice, Young Adult Books, American Library Association's Booklist; and a Library Journal Outstanding Sci-Tech Book of 1985. David B. Lellinger's Field Manual of the Ferns and Fern Allies of the U.S. and Canada was named a Choice Outstanding Academic Book. Ann Uhry Abrams' Valiant Hero was selected Editor's Choice, Adult Books, by the American Library Association's Booklist. Sculpture and the Federal Triangle was selected for the AAAP's (Association of American University Presses) 1986 Book Show in the Typographic category and also won first prize in the Books for a General Audience category of the Blue Pencil Awards.

The National Association of Government Communicators recognized a number of Smithsonian Institution Press publications. Islamic Metalwork in the Freer Gallery of Art by Esin Atıl took second place for Books for Professional Audience; and the Air and Space Museum's Research Report 1985 received second place for Publications for a Technical Audience.

Public acclaim greeted many Smithsonian publications. The Mystery of Comets by Fred L. Whipple, which was the first in the Smithsonian Library of the Solar System

series, sold out within six months and went back to press. Also back to press was Aditi, which was published in conjunction with the programs celebrating the Year of India (1985); Kelly -- More Than My Share of It All; The Pleasures of Entomology; and Treasures from the National Museum of American Art. Titles published in FY 1986 include Animal Extinctions: What Everyone Should Know edited by Robert J. Hoage; Magnificent Voyagers edited by Herman J. Viola and Carolyn J. Margolis; The Golden Age of the Great Passenger Airships by Harold G. Dick and Douglas H. Robinson; and Catchina Days: Reminiscences of a Russian Pilot by Alexander Riaboff. In addition, the first five titles in the new Smithsonian Series in Ethnographic Inquiry were published: Tsewa's Gift; Barawa and the Ways Birds Fly in the Sky; Independents Declared; Pintupi Country, Pintupi Self; and The Passion of Ansel Bourne.

The FY 1987 Federal publishing plans of the Smithsonian Institution Press will be determined primarily by client bureaus and offices and will depend upon the units allocation of funds for publications. Whenever possible manuscripts that were prepared on a computer will be processed within the Press to produce camera-ready pages output from a desktop laser printer. This process reduces the production cost significantly, and as the computer-assisted efficiency increases, so does the demand. For example, 28 jobs were submitted to the Series Section of the Press in FY 1986. As of January 1987, 11 Series jobs have been received with an expected total of 35 such jobs estimated for FY 1987.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are derived from the sale of Trust-funded books, recordings, royalties, and special publishing services. These areas support 11 staff members within the University Press Division, 16 members of the staff of the Direct Mail Books Division, and nine members of the Recordings Program. These funds also support the necessary services required to develop, market, warehouse, and distribute records and scholarly and general interest books, which are published in connection with the Institution's research, collections, exhibitions, and other programs.

Some of the scholarly and trade books published during FY 1986 include Treasures from the National Museum of American Art by William Kloss; Rethinking Regionalism: John Steuart Curry and the Kansas Mural Controversy by M. Sue Kendall, second in the New Directions in American Art series; American Archaeology, Past and Future, David J. Meltzer, Don D. Fowler, and Jeremy A. Sabloff, editors; Red Fox: The Catlike Canine by J. David Henry and Harrier, Hawk of the Marshes by Frances Hamstrom, both Smithsonian Nature Books; Envoys of Mankind: A Declaration of First Principles for the Governance of Space Societies by George S. Robinson and Harold M. White, Jr.; Animal Intelligence: Insights into the Animal Mind, R. J. Hoage and Larry Goldman, editors; and Plains Indian Sculpture: A Traditional Art from America's Heartland by John C. Ewers. Forthcoming trade titles for FY 1987 include Engines of Change: The American Industrial Revolution, 1790-1860 by Brooke Hindle and Steven Lubar; The Music Men: An Illustrated History of Brass Bands in America, 1800-1920 by Margaret Hindle Hazen and Robert M. Hazen; Mercury: The Elusive Planet by Robert G. Strom, second in the Smithsonian Library of the Solar System series; Rebels and Reformers of the Airways by R.E.G. Davies; and Gene Davis: A Memorial Exhibition by Jacquelyn Serwer.

The Smithsonian Collection of Recordings has published a number of popular recordings suitable for marketing by direct mail to Smithsonian Associates and other mailing lists. It also has issued numerous recordings of scholarly interest, which have enjoyed limited but consistent sales. During FY 1986, the recordings program released Virtuosi and Works of W. A. Mozart. Virtuosi received the Deems Taylor Award from the American Society of Composers, Artists and Performers (ASCAP) for its liner notes. The Works of W. A. Mozart was recorded by the Smithsonian Chamber Orchestra. The program's goals are

to continue publishing outstanding recordings and to distribute them in a productive and cost effective manner. Recordings planned for release in FY 1987 are Jimmy Rodgers: America's Blue Yodeler, Smithsonian Collection of Classic Jazz, Revised Edition, and Singers and Soloists of the Swing Bands.

Smithsonian Books, a division of the Press, publishes illustrated books for a general audience on subjects that relate to Smithsonian collections and research interests. They are marketed primarily by direct mail to Smithsonian Associates and other mailing lists and also are sold to the general public through several trade publishers. A few of the titles currently available are Treasures of the Smithsonian, Space, Time, Infinity, Thread of Life, and Zoo for All Seasons. During FY 1986, Smithsonian Books published The Smithsonian Book of North American Indians. The goals of the program are to continue publishing books of general interest that are well written and carefully researched, and to assure the commercial success and critical acclaim of these publications.

DIRECTORATE OF INTERNATIONAL ACTIVITIES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	11	508	11	558	-	33	-	288	-	-
FY 1987 Base	13	638	11	789	-	150	-	251	-	-
FY 1988 Estimate	13	908	11	742	-	175	-	369	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	13	-	13
11 Personnel Compensation.....	363	11	374
12 Personnel Benefits.....	45	2	47
21 Travel.....	23	45	68
22 Transportation of Things.....	4	3	7
23 Rent, Communications & Utilities.....	2	3	5
24 Printing & Reproduction.....	5	43	48
25 Other Services.....	177	161	338
26 Supplies & Materials.....	7	2	9
31 Equipment.....	12	-	12
Total	<u>638</u>	<u>270</u>	<u>908</u>

Analysis of Increase

Necessary Pay.....	13
Program Funds.....	257

ABSTRACT - The Directorate of International Activities was established in October 1984 to monitor, coordinate, and enhance the Smithsonian-wide endeavors in the international field; to be responsible for liaison with Federal agencies and national and international organizations whose international activities relate to those of the Institution; to ensure balanced international program emphases, reflecting all world regions and all fields of existing Smithsonian interests from basic research in the natural sciences to popular culture and the performing arts; to assist in developing comprehensive, long-range program plans that will increase the scope, salience, and effectiveness of all the Institution's international activities; and to plan, design, and conduct the programs of the International Center located in the Quadrangle complex.

The work of the Directorate is conducted in three divisions: a program staff primarily responsible for planning the programs of the International Center, and for filling

the liaison and coordinating roles of the Directorate; an Office of Service and Protocol; and an Office of Publications Exchange. The Directorate also has responsibility for overall Smithsonian planning of the 1992 commemoration of the 500th anniversary of the landing of Columbus in the Americas. Responsibility for the administration of the Special Foreign Currency Program was transferred from the Office of Fellowships and Grants to the Directorate of International Activities in October 1985. In October 1986, the Directorate of International Activities relocated to new facilities in the Quadrangle where the public opening of the International Center is planned for September 1987.

For FY 1988, an increase of \$257,000 is requested to create a stable funding base for exhibition planning for the International Center Gallery (\$110,000); develop two workshops on tropical biology (\$30,000); develop a series of symposia, public lectures and film programs to complement International Center exhibitions (\$70,000); and design and produce educational curriculum packets on important issues related to the commemoration of the Columbus Quincentenary (\$47,000). Necessary pay of \$13,000 is required for existing staff.

PROGRAM - International programs have played an important role within the Smithsonian from its earliest days and continue to be integral to its mandate, with approximately 1,000 Smithsonian research projects under way throughout the world during the past year. In 1984, the Smithsonian established the Directorate of International Activities to give higher visibility to these international programs both within and outside the Institution. With the opening of the Quadrangle in FY 1987, the focus on the Institution's international programs will be further heightened.

International Center Programs - The wide range of continuing Smithsonian international programs, conducted in large measure in the developing regions of the world, forms the basis for strengthening the Smithsonian's role in international sciences and provides the core subject matter for programs of the International Center in the Quadrangle complex. The International Center not only will complement the area interests of the National Museum of African Art and the Center for Asian Art, but also will focus much attention on Latin America, thereby enabling the Smithsonian for the first time to cover all of the developing world with programs ranging from the scientific and technical to the cultural and artistic. The objective will be to provide the public with carefully researched insights into this broad expanse of ancient cultures in new nations, now insufficiently known in the United States.

Through the programs in the International Center and other programs sponsored by the Directorate, the Smithsonian will present to the public, rapidly and comprehensibly, the results of new scientific research and will reinforce and extend the international cooperation essential to the scientific enterprise. Reflecting these major purposes, the programs in the International Center will include exhibitions, conferences, colloquia, performances, film showings, lecture-discussion meetings, seminars, symposia and intensive workshops. They will be integrated and thematically planned to promote greater cultural and scientific understanding about peoples and regions of the world not bound within national borders; cultures and natural systems rather than political entities will inspire the programs of the Center.

The inaugural exhibition and associated programs for the International Center Gallery in FY 1987 will present "Generations," an unprecedented multidisciplinary, multi-cultural investigation of the art and rituals associated with birth from ancient times to the present. It will link in a new way the Smithsonian's scholarly resources and collections in its many divisions of arts and humanities, and social and natural sciences, to explore the richness and diversity of cultures worldwide as they celebrate this milestone of the human experience. Of particular importance will be the interpretation of non-Western materials in context, through concentration on the ways certain

cultures view this subject, how they incorporate it in their world view, how they deal with its reality as well as its symbolism, and how they express these ideas and concepts in material form.

The second major exhibition in the International Center Gallery, "Tropical Forests: A Disappearing Treasure," is scheduled for a mid-1988 opening. This show gives the Smithsonian a special opportunity to present the results of its scientific work through an exhibition focusing public attention on the destruction of the world's tropical forests, the Earth's most biologically diverse habitat.

The tropical forests are being destroyed at a phenomenal rate; each year an area of tropical forest the size of the state of Delaware is denuded, its richness never to be regenerated. Deforestation of the tropics is an exceedingly complex ecological, social and economic problem. This destructive trend points the way to massive environmental changes, including the impoverishment of living places for man and loss of habitats for animal species, the loss of resources for subsistence and development, and the onset of major climatological changes. The exhibition will address this timely and vital problem with a cross-disciplinary approach and will draw extensively upon the Smithsonian scientists at the Tropical Research Institute, the Museum of Natural History and the National Zoo as well as other international experts. The goals for this exhibition are to alert the public to the necessity to maintain the tropical forests, and to present continuing programs in research, conservation and sustainable use.

During FY 1986, an exhibition planning team of curators and designers guided by an advisory board of experts in biological and conservation research developed a detailed outline of topics and a set of conceptual design plans. An education committee consisting of staff from the Smithsonian and the World Wildlife Fund was established to design and supervise the development of exhibition educational material such as curriculum guides, docent training manuals, and posters. A description of the exhibition has been published in the Smithsonian Institution Traveling Exhibition Service's (SITES) publication, SITELINES, resulting in expressions of interest from several major museums in showing the exhibition when it travels in 1989 and 1990.

To derive the maximum public educational potential of the exhibition, the Directorate of International Activities plans to sponsor a parallel series of scholarly and public programs. The programs are an integral part of the tropical forest exhibition because they will provide more in-depth information on a variety of topics that are too complex or otherwise not conducive to interpretation in a museum exhibition. They will assume three different but interrelated formats -- film series, public lecture series, and scientific symposia and seminars.

In September 1986, on a global theme closely related to the problem of tropical forests, the Directorate and the National Academy of Sciences cosponsored a four-day national Forum on BioDiversity. The Forum provided the general public, policymakers, press, educators and economic developers with the views of more than 50 eminent scholars and scientists on the global status of biological diversity. These scientific experts presented in lay language a "diagnosis," "analysis" and "prognosis" for massive habitat destruction and species extinctions. Over 1,300 people attended the Forum, while several hundred others were turned away because of the lack of space.

To broaden the educational impact of the program, the Smithsonian Office of Telecommunications produced a two-hour national teleconference. With the cooperation of George Washington University and Sigma Xi, the teleconference was aired at 104 "downlink" sites throughout the United States, reaching an estimated audience of 12,000. Presentations were made by Forum participants, and viewers were given an opportunity to call in and raise specific questions. The United States Information Agency also broadcast three hour-long "Worldnet" programs to Europe, Brazil and Spanish speaking countries in Latin America using a similar interactive format.

Several other Smithsonian units cooperated with the Directorate in this undertaking. The Smithsonian National Associates Program organized a special package tour to the Forum to be followed by a traveling version of the Forum to other United States locations. The National Museum of Natural History's Office of Education enabled the attendance of over 65 local science teachers and their students. They also arranged special showings throughout the Forum of the outstanding films on BioDiversity in various parts of the world. In addition, the entire Forum was videotaped for archival purposes.

Additional follow-up activities are planned. The Smithsonian Institution Press and the National Academy Press intend to edit and publish the Forum papers. SITES, with funding from the National Science Foundation, will develop a traveling exhibition of poster-panels on BioDiversity to begin touring in the spring of 1987.

The Forum has provided an important example of how a single carefully developed theme of global significance can become the focus of institutional cooperation between Smithsonian science bureaus and public service branches and non-Smithsonian institutions. It demonstrated the impact achievable with the combined efforts of the Smithsonian and the National Academy of Sciences.

In 1986 the Directorate, in cooperation with the National Museum of Natural History and the Man and the Biosphere UNESCO Program, undertook development of a new international program on biological diversity inventory procedures. The program was designed to develop a high resolution data base management system that will provide, in time, nearly complete biological inventories of selected species-rich sites such as Biosphere Reserves, National Parks and Reserves, and other protected areas of developing countries. With such a methodology, comparative work can proceed more efficiently and accelerate the pace of understanding the scope and scale of biological diversity in the world. The system will record microdistribution and co-occurrence of species in time and space in permanent plots thereby allowing long-term monitoring of selected areas within the protected areas. The system also is capable of incorporating data from past records in the literature and other published reports, from museum specimens, and from ongoing inventory efforts and other data base centers. The program has designed a standardized inventory protocol that can be easily taught to, and used by, biologists and protected area managers of developing countries.

During the last several months a program director was named, a program manager hired and an International Advisory Committee appointed. A field test of the prototype of the mapping and inventory computer program was made in a reserve in southwestern Peru and a number of national and international data centers have been contacted to explore the possibility of developing an international data network. One of the most important aspects of this new program is the training of biologists and other related professionals from developing countries, so that they can conduct their own biological inventories and search for their country's own new bioresources. A proposal to fund this training workshop has been submitted to the United States Agency for International Development.

Support Services for Smithsonian International Programs - The Office of Service and Protocol provides the basic services necessary to coordinate the international aspects of Smithsonian research and museum programs, such as obtaining passports and visas for Smithsonian travelers; facilitating communications and logistical arrangements for research and participation in meetings abroad; assisting in the drafting and implementing of agreements relating to international cooperative programs; providing assistance to foreign dignitaries and scholars who participate in Smithsonian programs in the United States; and compiling and updating annually the "Summary Profile of International Activities."

The Office of Publications Exchange fosters international scholarly interchange by enabling universities and learned societies in the United States to exchange their publications with those of corresponding institutions and governments of other countries. In recent years, more than 200 American universities, libraries and other organizations have participated in this international publications exchange. During FY 1986, more than 85,000 volumes were exchanged. In FY 1987, it is expected that this level of service will be maintained.

Special International Programs - During the next six years, the attention of the Smithsonian and, indeed, the Nation will become increasingly focused on the commemoration of the 500th anniversary of the landing of Christopher Columbus in the Americas. For the Smithsonian Institution, this occasion offers an opportunity to take a closer look at the past, present and future implications of the 1492 voyage. The Smithsonian Quincentenary observance will be a creative mix of historical, topical and cultural issues and ideas. Plans currently are under way not only to commemorate the encounter of civilizations, but also to draw attention to subsequent exchanges of ideas and material cultures, and to illuminate the creation of many new worlds. Through the organization of exhibitions and public and scholarly programs that explicate and celebrate five centuries of common experience in this hemisphere, the Smithsonian Institution will help shape the North American involvement in what assuredly will be an inter-hemispheric as well as trans-atlantic enterprise. See page A-3 in the appendix for a listing of Quincentenary programs of participating bureaus.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of \$257,000 is requested to create a stable funding base for exhibition planning for the International Center (\$110,000); develop two workshops on tropical biology (\$30,000); develop a series of symposia, public lectures and film programs to complement International Center exhibitions (\$70,000); and design and produce educational curriculum packets on important issues related to the commemoration of the Columbus Quincentenary (\$47,000).

Funding for exhibition planning for the International Center and the development of workshops in tropical biology was originally requested in the FY 1987 budget, but was deferred as a result of the distribution of the Congressional reduction for Quadrangle-related programs. To establish an adequate level of base support for these purposes in FY 1988 and following years, funding for these requirements is sought in this budget request.

Exhibition Planning (\$110,000) - The new Quadrangle space now occupied by the Directorate consists of administrative office space, the International Center Gallery and its adjacent conference suite. Through the exhibitions mounted in the Gallery, the Directorate will be able to present to the public the results of new scientific research and to promote greater cultural and scientific understanding about peoples and regions of the world. The first two International Center Gallery exhibitions, described above, exemplify precisely these purposes.

Subsequent exhibitions will contribute to the same objectives and also will reflect the increased attention to South and Middle America that is a long-range goal of the Directorate. In FY 1989, it is planned to open a cultural exhibition now under development at the St. Louis Art Museum, "Caribbean Festival Arts." Presenting vividly a central and unique aspect of pan-Caribbean culture, the exhibition provides an excellent basis for a broad exploration of Caribbean culture, history and experience. The exhibition will focus on the arts of three pan-Caribbean festivals: a widespread masquerade commonly known as Jonkonnu (John Canoe); an Islamic festival, Hussay, commemorating the death of Husein; and the pre-Lenten Carnival culminating in Mardi Gras. Included in the exhibition are treatments of both the European, middle Eastern, and African original sources for festival themes, costumes and accoutrements and the complex development and Creolization of these arts within the Caribbean. The exhibition also examines their pre-

sent reality in the lives of the populations of the Caribbean as well as the spread of these festivals to cities in the United States.

"Festival Arts" constitutes a geographical horizon style and reveals the creative artistry in the Creole world. It bridges the gap between what has been called primitive or folk arts and mainstream or fine arts. In this respect, "Festival Arts" is unique. In addition to the complementary public scholarly programs on Caribbean themes which the Directorate will develop to accompany the exhibition, other Smithsonian units have indicated interest in related programming as well.

In succeeding years, exhibitions and thematically related programs will continue to present subjects that will both strengthen Latin American programs at the Smithsonian and prepare for the Quincentenary observances in the 1990s. Future exhibition topics under consideration include textiles of Mexico and the history of Latin American photography.

To continue to plan original exhibitions for the International Gallery or to prepare the Gallery area as a venue for traveling shows, it is necessary to establish a modest amount of base funding. An amount of \$110,000 is requested for this purpose. For FY 1988, this funding will be used for contractual services for exhibition planning and related research (\$90,000); travel in conjunction with these international exhibitions (\$13,000); and transportation of objects, supplies and materials, and communications (\$7,000).

Tropical Biological Workshop Development (\$30,000) - The requested increase of \$30,000 for tropical biology workshop development will permit the planning of two short courses in tropical biology, beginning in FY 1988. The Institution has significant and wide-ranging interests in Latin America which are divided among various bureaus and programs. The Directorate represents the Institution's commitment to focus attention on the cultures and scientific endeavors of Latin American countries and to expand professional and scholarly collaboration. Latin America will be central to the planning for Quincentenary programs and to the development of an exploration of problems in the world's tropical forest. In recognition of these points, the Directorate proposes to begin a variety of programs based upon its Latin American interest and that also contribute to the exchange of ideas and information on subjects reflecting Smithsonian expertise.

As a part of this effort, the Directorate plans a series of intensive short courses developed and offered by senior Smithsonian staff, to be presented in the International Center and other Smithsonian facilities, for selected students and professionals from Latin America. This effort will begin with a course in the latest methodologies and research results in tropical biology, followed by one focusing on a specific aspect of tropical biology. The requested increase of \$30,000 will enable the Directorate to plan the workshop series, develop the syllabus and curriculum, and produce course material. Of this sum, an amount of \$19,000 will be used to contract with scholars and educators to plan the workshop series, \$7,000 will be used for the travel costs related to the planning of these workshops, and \$4,000 will be for the printing of course materials. In FY 1989 and following years, it is anticipated that funds will be needed to meet the expenses associated with actually conducting the courses. It should be noted that the Directorate will seek Institution Trust funds to provide travel and stipends for the participants.

International Center Programs (\$70,000) - To derive the maximum public educational potential of the exhibitions presented in the International Center Gallery, the Directorate plans to sponsor a full range of scholarly and public programs which will complement and amplify the themes highlighted by the exhibitions. For FY 1988, an amount of \$70,000 is requested to develop a series of symposia, public lectures and film

programs to complement the second International Center exhibition, "Tropical Forests: A Disappearing Treasure."

The "Tropical Forests" exhibition, scheduled to open in mid-1988, will present information about the ecological complexities of the tropical rain forest and the major potential global crisis resulting from the deforestation of these areas. It will also demonstrate the World's continuing dependence on products from these seemingly remote regions and offer suggestions for alternatives to the current rate of tropical deforestation.

The main focus of the scholarly and public programs planned to accompany the year-long exhibition will be a series of scientific symposia to discuss critical issues concerning tropical forest biology, human culture and conservation that are currently under study. These symposia will attract a nationwide audience of scientists and conservation professionals. In FY 1988, the subject matter will include preserving traditional knowledge systems of tropical peoples; the role of international law and monetary policy in tropical deforestation and conservation; and research access to tropical forest communities. To conclude each symposium, a public lecture will be given describing the research findings for the general public in non-scientific language and featuring internationally known experts on current issues concerning the tropical forest. To continue to maintain public awareness of the plight of tropical forests between these major symposia, a series of films on the subject will also be presented throughout the duration of the exhibition. These films will provide an effective medium for "transporting" the viewers to the tropics and encourage an esthetic appreciation of tropical forests, providing engrossing portraits of rare, beautiful and little-known tropical plants and animals. Each film will be chosen for its relevance to a specific portion of the exhibition, and will be introduced by an expert in the field covered by the film. The requested FY 1988 increase will provide the funding to support the symposia series (\$51,000); the lecture series (\$7,400); and the film series (\$11,600). A similar level of funding will be required for the continuation of these programs in FY 1989.

Columbus Quincentenary Program (\$47,000) - With funding of \$33,000 provided in FY 1987, the Directorate of International Activities will initiate a series of semi-annual seminars to examine current research conducted on the changing interrelationships between cultures of the New World and of Europe before and after the voyages of discovery of Christopher Columbus. Beginning in FY 1988, the Directorate plans to develop and publish a series of curriculum packets based on the scholarly materials derived from these seminars for use in upper elementary and secondary school social science curricula. Because school textbooks generally do not reflect recent research trends, this educational tool would convert the current scholarly materials resulting from the Quincentenary seminars into social science teaching materials. Thus, by developing and producing teaching materials based on Quincentenary research topics, a framework for a more coherent and in-depth understanding of the important issues related to the encounter of the two worlds will be well integrated into school curricula by 1992.

The first curriculum packet, to be developed in FY 1988, will be based on the seminars entitled "Americans Before Columbus: Ice Age Origins" to be held in the fall of 1987 and which will focus on the paleoecology of the Americas from 30,000 B.C. to 4,000 B.C. and the impact of human migration on this ancient environment. This series will present the pre-history of the ecological and cultural diversity of the Americas, thus providing insight into the existing conditions of the New World which the Europeans first encountered as a result of the voyages of discovery. Subsequent packets, based on future series of seminars, will analyze issues concerning the actual contact between New World and European cultures during the period of exploration and the ensuing cultural and ecological changes in the Americas.

The packet material derived from these seminars may include a teacher's guide, readings, film strips, research projects, hands-on activities and related bibliographies.

The requested increase will support the development and production costs of these curriculum packets, including editing, design, printing and distribution. For FY 1988, an amount of \$47,000 is requested for the development, reproduction and distribution of these materials. Of this sum, an amount of \$32,000 will be used for printing and reproduction costs of these materials, and \$15,000 for related contractual services.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are provided by allotments which support all positions and costs associated with the planning and development of research and exhibition programs for the International Center, Quincentenary commemoration, and FY 1987 Quadrangle opening celebration activities (combined estimated expenditures of \$789,000 in FY 1987 and \$742,000 in FY 1988). A special purpose fund will provide stipend support for international exchange of researchers to participate in Smithsonian-sponsored residencies, training courses and workshops (estimated expenditures of \$150,000 in FY 1987 and \$175,000 in FY 1988).

Restricted Funds - These funds are provided from gifts, grants and other donations from individuals, foundations, organizations or corporations for specific purposes, such as mounting exhibitions and staging performances, film showings, and other public presentations in the International Center (estimated expenditures of \$251,000 in FY 1987 and \$369,000 in FY 1988). The FY 1988 estimate reflects an anticipated increase in support of International Center inaugural activities.

AMERICAN STUDIES AND FOLKLIFE PROGRAMS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount			FTP**	Amount
FY 1986 Actual	12	680	12	598	-	100	-	402	-	221
FY 1987 Base	8	752	12	599	-	55	-	349	-	669
FY 1988 Estimate	8	806	12	654	-	42	-	503	-	1,198

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	8	-	8
11 Personnel Compensation.....	368	12	380
12 Personnel Benefits.....	49	3	52
21 Travel.....	18	-	18
22 Transportation of Things.....	5	-	5
23 Rent, Communications & Utilities.....	20	-	20
24 Printing & Reproduction.....	60	-	60
25 Other Services.....	172	39	211
26 Supplies & Materials.....	40	-	40
31 Equipment.....	20	-	20
Total	<u>752</u>	<u>54</u>	<u>806</u>

Analysis of Increase

Necessary Pay.....	15
Program Funds.....	39

ABSTRACT - The Office of American Studies and the Office of Folklife Programs are engaged in the study of various aspects of American society. Specifically, the staff of the Office of American Studies strives to advance the field of American Studies through research, a graduate program in the field of American material and folk culture, lectures, and publications, while the Office of Folklife Programs performs research on, prepares publications about, produces performances of, and strives to conserve living folklife traditions. For FY 1988, an increase of \$39,000 is requested to conduct research in preparation of the commemoration of the Quincentenary in 1992 of the Columbus Expedition. Necessary pay of \$15,000 is required for existing staff.

PROGRAM - I. The Office of American Studies: With base resources of 2 workyears and \$101,000, the Office of American Studies pursues research, the results of which are

disseminated in lectures and publications, and sponsors (in conjunction with various universities) for credit, a program of graduate studies in American material culture.

This graduate program, which is taught by the Director of the Office of American Studies and outside scholars, is unique in that it provides a means for scholars and students to utilize the vast resources of the Smithsonian. Specifically, the graduate program provides students in the American studies or American history departments of affiliated universities with the incomparable opportunity to draw upon the personnel and collections of the Smithsonian as they undertake a program of formal course work.

II. The Office of Folklife Programs: With base resources of 6 workyears and \$651,000, the Office of Folklife Programs engages in the study, exhibition and conservation of folklife traditions. The most visible result of these endeavors is the annual Festival of American Folklife, which since its inception in 1967, has drawn an estimated 14 million visitors. The Festival has proven to be an educational and enjoyable opportunity for the public to learn about American and foreign cultural traditions. In addition to sponsoring the Festival, the Office serves the members of traditional cultures by providing national recognition to their traditions, maintains an archive of traditional performances, and cooperates with government agencies to advance the Nation's interests in folklife.

Research and Publication - The Office is currently engaged in or has recently completed research projects on Tennessee folklife, the traditions of the elderly, the Ojibwa wild rice culture, Great Basin music, Appalachian flat foot dancing, traditional Mexican bread making, Japanese and Japanese-American folkways, African epics, Indian festivals and puppetry traditions. The results of this research are disseminated through the award winning annual Festival program book, articles in journals, books, films, radio programs, scholarly presentations and the Smithsonian Folklife Studies Series. The Folklife Studies Series (which couples monographs and documentary films) soon to be released "The Korean Onggi Potter," and Kathputli: The Puppetry of Rajasthan. Other recently completed projects include a monograph on the Ojibwa, a booklet on Indian fairs and festivals, a radio series on American musical traditions, and an Oscar Award winning film on Italian-American stone carving.

Exhibitions - The Festival of American Folklife, which has evolved into the largest annual cultural event in the Nation's Capital, has stimulated interest in and provided a model for the research and presentation of traditional cultures. Currently, the Office is working on Festival projects with Michigan, Massachusetts, Vermont, New Mexico, Puerto Rico, northwestern and midwestern states, and with the nations of Sweden, China, Pakistan, India, Canada and the Arab Gulf States.

In FY 1986, the 20th Festival featured the traditions of Tennessee, the Japanese rice culture, the cultural conservation of American craft traditions, the logical, rhetorical and narrative skills of American trial lawyers, and various American music and dance traditions. The Festival, which drew more than one million visitors, generated massive media attention and critical acclaim. In FY 1987, the Festival will feature the traditions of Michigan, the role of language in the conservation of traditional culture, and a District of Columbia music program.

Archives and Education - The archive, which holds the folkloristic materials generated by Office activities, is noted for its collections in family folklore, the folklore of aging, occupational narrative, and ethnic performances. The archives are invaluable in handling scholarly inquiries and general informational questions. In addition, the archive is a valuable resource for those conducting research into folklife traditions. In FY 1986, the resources of the archive were utilized by visiting fellows conducting research on such topics as Latin American performance, black American narrative, and Italian-American traditions.

A variety of educational materials, which are derived from Festival and other project research, are produced by the Office. In FY 1986 the Office, in cooperation with the Office of Education of the National Museum of Natural History, produced an educational kit on India for dissemination to universities, museums, and school systems across the Nation.

EXPLANATION OF PROGRAM INCREASE:

For FY 1988, an increase of \$39,000 is requested to conduct research in preparation of the commemoration of the Quincentenary in 1992 of the Columbus Expedition. To commemorate the Columbus voyage to the Western Hemisphere, the Office of Folklife Programs will present a program exploring the ramification of the encounter of the cultures of the Old and New Worlds. The program, begun with \$11,000 provided in FY 1987, will entail several years of research, resulting in a variety of exhibitions, festival presentations, symposia, publications and, in 1992, a major festival celebrating the Columbus Quincentenary.

The Quincentennial program will examine the agricultural and musical traditions of the Old and New Worlds. Specifically, the program will focus upon husbandry and the practical and symbolic uses of food. The Office of Folklife Programs will survey Europe, Africa, the Americas and China to study the agricultural and folk music traditions of these regions. It is hoped that the program will generate living cultural exhibits, and related programs and publications relating to the ecology, social organization, esthetics and historical significance of the agricultural and musical traditions of the Old and New Worlds.

In addition, the program will examine the complex of social processes which resulted from the encounter of the Old and New Worlds. In doing this, the program will strive to explore the complexity of folk forms and to view them in their own cultural and historic context. To continue the research necessary to produce this program, the Office requests an increase of \$39,000.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - I. Office of American Studies: Tuition reimbursement is received from the cooperating universities, principally the George Washington University and the University of Maryland, whose graduate students avail themselves of the courses offered by the Office of American Studies. The tuition reimbursement is designed to reimburse the Institution for the use of its facilities by the students participating in Smithsonian Institution classes and, in addition, to provide honoraria and reimbursement for the services of outside experts participating in the program (estimated expenditures of \$15,000 in FY 1987 and \$16,000 in FY 1988).

II. Office of Folklife Programs: Funds are provided by allotments and from concessions and sales relating to the Festival of American Folklife. These funds support the salaries of 12 full-time employees as well as related support costs (estimated expenditures of \$599,000 in FY 1987 and \$654,000 in FY 1988).

Restricted Funds - Funds are provided in the form of individual gifts and grants from private foundations and corporations and are used to fund specific programs (estimated expenditures of \$349,000 in FY 1987 and \$503,000 in FY 1988). In FY 1986, funds were received to support the Japan program, American trial lawyers and the Music Stage at the Festival of American Folklife.

Federal Grants and Contracts - These are provided by various state and local governments for support of performances and programs at the annual Festival of American Folklife (estimated expenditures of \$669,000 in FY 1987 and \$1,198,000 in FY 1988). In FY 1986, funds were received to support the costs of highlighting the folklife traditions of the State of Tennessee. Additional grant support is anticipated in future years for the Festival.

INTERNATIONAL ENVIRONMENTAL SCIENCE PROGRAM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount				
FY 1986 Actual	10	687	-	-	-	-	-	-	-	-
FY 1987 Base	13	743	-	-	-	-	-	-	-	-
FY 1988 Estimate	13	750	-	-	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	13	-	13
11 Personnel Compensation.....	216	7	223
12 Personnel Benefits.....	29	-	29
21 Travel.....	102	-	102
22 Transportation of Things.....	2	-	2
23 Rent, Communications & Utilities.....	5	-	5
24 Printing & Reproduction.....	14	-	14
25 Other Services.....	261	-	261
26 Supplies & Materials.....	85	-	85
31 Equipment.....	29	-	29
Total	<u>743</u>	<u>7</u>	<u>750</u>

Analysis of Increase

Necessary Pay.....

7

ABSTRACT - The International Environmental Science Program (IESP) coordinates the Institution's long-term monitoring and study of unique and significant ecosystems. Its goal is to evaluate and eventually predict the impact of human activities and natural change on selected ecosystems. The Program is a multibureau, interdisciplinary effort. Research occurs at two permanent Smithsonian sites--the Tropical Research Institute in Panama and the Environmental Research Center in Maryland--as well as at temporary sites throughout the world. No program increase is requested for FY 1988. Necessary pay of \$7,000 is required for existing staff.

PROGRAM - The Smithsonian's long tradition in international research and its unparalleled collections of natural history objects qualify it to sustain scientific activities abroad. The IESP provides funds for teams of scientists to monitor natural

variations in unstressed specific environments. A 1984 report from the Office of Technology Assessment reemphasized the need to expand existing long-term monitoring programs, maintain ecosystems, and develop ways to ensure the survival of rapidly diminishing tropical forests. A 1985 report by the Agency for International Development called for expansion of monitoring to help promote biological diversity as being of strategic value to the United States.

The Rhode River Estuary at Edgewater, Maryland, the tropical lowland forest of Barro Colorado Island (BCI), and the Galeta Reef on the Atlantic side of the Panama Canal are the Program's permanent research sites. For over ten years, scientists have developed a data base on the biological, physical and chemical components of these ecosystems. Analyses of this data have produced concepts and verifiable hypotheses on the long-term patterns in climate, and the stresses and disturbances resulting from human activity. Significant highlights for the past year are listed below.

- Animal population results were integrated and evaluated from the first six years of a long-term study in the tidal Rhode River, a tributary of the Chesapeake Bay. During the study, population abundances for invertebrates living in sandy or muddy bottom sediments were monitored; near-shore fish were sampled for young-of-the-year populations; and bottom-dwelling fish and crabs were trawled for by a standardized procedure each year. To test for patterns and relationships, population data were compared to physical/chemical water quality and weather variables, which have been monitored continuously at the site for 16 years. The study period spanned a multiyear period of regional drought which resulted in markedly increased salinities. All but two of 42 species underwent significant changes in population densities. However, only 12 to 82 percent of the population changes could be explained on the basis of salinity changes with a statistical model. Still under exploration are relationships to such other factors as phytoplankton densities, suspended sediment concentrations, and dissolved oxygen dynamics which have also been measured continuously. Vertical distributions of invertebrates in sandy and muddy bottom sediments were also measured in detail at a series of locales.
- Sediment dynamics of the Rhode River watershed and estuary were summarized covering data collected over a period of seven years. Sediment inputs to the estuary occurred primarily during a few major storms. These storms not only delivered soil particles eroded during these major storms, but also much of the sediments which had been eroded by smaller storms and deposited in habitats between the sources and the estuary. When these major storms delivered heavy sediment loads, most of the sediments were deposited in open water areas in the headwaters within two or three days. Some of these sediments were then slowly moved farther down the estuarine basin by tidal mixing processes which occur continuously during the year. Sediment dynamic data and historical records indicate that tidal marshes account for only 13 percent of sediment trapping, although they occupied 60 percent of the estuarine study area.
- Results in the marine studies at the Galeta reef site confirm the hypothesis that, when a coral reef forms an extensive, shoaling reef platform, the major reef organisms cannot survive because they have altered their environment to conditions that they can no longer tolerate.
- Earlier Program studies at Galeta demonstrated a slow rise in sea level. Recent analysis of International Environmental Science Program data and analysis of longer-term aerial photography shows the changes in zonation of coastal marine biotas are strongly correlated with changing sea levels. During April 1986, a massive oil spill near Galeta Island decimated reef and mangrove communities. The data base generated by the long-term International Environmental Science Program studies at Galeta Island provides a unique opportunity to evaluate the extent of damage from the oil spill and

the recovery processes for the biota, and is already attracting attention from authorities concerned about oil recovery effects in United States coastal states. Of the terrestrial studies at the BCI site, the water augmentation experiment is in its first year. The manipulation which is funded by the Program has attracted numerous investigators funded outside the Smithsonian. Soil processes, nutrient dynamics, and plant and animal responses are all under investigation. In the next few years, the experiment will provide major insights into the consequences of seasonal rainfall for most tropical forests. Outbreaks of defoliating insects are a rare phenomenon in most tropical forests. In 1985, the moth Eulepidotis defoliated the canopy trees Quarabea asterolepis on BCI. The Program monitored this event recording the first systematic data on the reproductive consequence (severe) and spatial contagion of defoliation for a tropical forest.

At IESP's nonpermanent sites in Aldabra, Nepal, Venezuela, and Brazil, scientists, with support from the host governments, are continuing their efforts to gather descriptive data that will aid in the development of verifiable hypotheses concerning genetic diversity, animal management, and natural area management. Recent accomplishments at nonpermanent sites for FY 1986 are listed below.

Aldabra - Continued surveys of the flora and fauna of the atoll occurred this past year by a team of eight scientists. A further 40 quantitative samples were taken in seagrass beds for analysis of infaunal composition. Observations and sampling of sinkhole shrimps were continued, with sex-ratios, growth rates, and fecundity being recorded. A survey of sipunculan worms yielded 15 species in all four families of the phylum. A collection of 86 species of opisthobranch mollusks was made, about 30 of which are new to science. This collection gave information on comparative faunas of atoll and granitic islands, and valuable zoogeographic data. Surveys of microlepidoptera and shore-flies yielded 1,100 pinned specimens of the former, and 1,275 of the latter. These included several undescribed species and several new records for the area. An assessment of the feral goat population continued from previous years' work. Ear-tagged animals were observed for population movements, and fecal samples were collected for feeding assessment. Birth and death rates and population estimates will be calculated from these observations and will provide background data for management decisions on these animals which pose a threat to the unique and indigenous species found on the atoll.

Nepal - Major achievements of the IESP funded Smithsonian-Nepal Terai Ecology Project were determination of the population size of the endangered Greater One-horned Asiatic Rhinoceros in Royal Chitwan National Park. This was a significant reduction in the size of the population based on estimates made in 1975. Four rhinoceros were successfully captured and transported to Royal Bardia Wildlife Reserve to establish a second population within Nepal. Important progress was made in assessing the effects of rhinoceros on structure and composition of vegetation within selected habitats. In the next two years, research activities will include annual censuses, further relocation efforts to Bardia, and continued studies of plant/rhinoceros interactions and coevolution in Chitwan.

Venezuela - Work continued on the red howler monkey project focusing on the determinants of social interaction in groups with known genealogy and demography. The social groups selected for this study included newly formed groups as well as groups with long-term stability of adult male membership. Observations of these groups also enabled the investigation of the effect of newly formed groups on the ranging patterns of neighboring groups. This investigation is now the most complete and longest-term population study conducted on any nonhuman primate found in South America.

The snail kite project demonstrated that the Venezuelan population of this species exhibited the same remarkable mate desertion pattern as the Florida population (listed on

the United States endangered species list); for instance, if snails are abundant, either parent may desert its mate about halfway through caring for the young and may find a new mate and reneest. Also, as in Florida, kite nest failures were high in Venezuela, but the causes of failures were not always the same in the two areas. During the next phase of the study, brood size enlargement experiments will be conducted to determine the effect of brood sizes on mate desertion behavior.

Research projects were also undertaken on the population dynamics of caimans, the dietary ecology of hoatzins, and a comprehensive nutritional study of red howlers. The study on the caimans would provide a scientific basis for the conservation and sustained yield management of this genus, which is the most heavily exploited of the world's crocodilians. The projects on the hoatzin (an avian folivore), and the leaf eating red howler, provide a unique opportunity to compare how sympatric species from unrelated taxa, and with very different lifestyles and gut morphology, deal with the digestive and nutritional problems of folivory.

Brazil (Golden Lion Tamarin Project) - During FY 1986, scientists have been closely monitoring the released golden lion tamarins at two sites in Brazil (Poco das Antas Reserve and Pesagro, an agricultural station). Three groups, totaling 11 animals, remain from the original animals released in FY 1984 and FY 1985. A total of three litters has been born to released tamarins, from which three young survive. Major causes of death of released animals include predation and disease. An analysis of survivorship has revealed that younger animals survive better, especially if reintroduced within their family group. Techniques for training captive-born golden lion tamarins in the wild are being developed to test if the release program can be made more cost effective. Other studies of wild golden lion tamarins continue. Although the vast majority of groups appear to contain a monogamous breeding pair, there are instances of polygyny and polyandry. Monitoring is intended to continue on the wild population so that scientists can characterize the age and sex structure of the species as well as the dispersal patterns of young over the long term. It is planned to test theoretical predictions concerning the genealogical relationships of adults that assist in rearing young to determine if "helpers" help due to kin selection or reciprocal altruism. Activities in conservation education continue, with a reevaluation of local attitudes towards conservation issues planned for FY 1986 and FY 1987 to determine if, and which, educational materials have an impact on the attitudes and awareness of the local community. Additionally, scientists continue to monitor and protect the condition of this very endangered habitat with its unique fauna through the control and regulation of hunters, squatters, and fire. During FY 1986, activities centered on identifying additional suitable habitat for tamarins and in initiating interactions with private landowners who might accept and protect tamarins released on their property.

Brazil (Amazonia) - Fieldwork in Amazonia and the Atlantic Forests was done in archeology, botany, entomology, and herpetology. Results of these investigations added important new information on the composition and distribution of the Neotropical biota. These data are important for completion of several major publications and conservation planning. Specific highlights during this past year include the publication of a monograph on a major Amazonian fish group, and an analysis of 35 years' data on frog populations in the same locale in southeastern Brazil, which yielded significant information on the role that climate plays in population stability. This study indicates that several species of frogs went extinct at certain localities due to an unusual weather cycle in 1979. This is the first time that unusual short-term climatic events have been implicated to have long-term, evolutionary consequences. The Program was also invited to participate in potential hydroelectric dam site ecological surveys in Brazil. The first survey team will work in Brazil on the Rio Xingu in August 1986.

Evaluation of Program - The International Environmental Science Program is involved in an ongoing process of evaluation to ensure the quality of the research. The

IESP programs regularly are subject to peer reviews. In FY 1986, an external panel reviewed the Venezuelan program. The panel felt that the ecosystem under study was one of the most biologically significant and protected locations in northern South America, and the long-term data derived from monitoring primates represented the most significant data sets on these species in the Americas. Continued funding of this study was considered a major priority. Recommendations were also received on expanding studies on other significant species to develop a better ecosystem analysis of this unique site.

Over the next five years, it is anticipated that work will continue at all Program sites. Selected new initiatives will be undertaken in the future to improve the Institution's capabilities in monitoring additional subtropical and tropical sites. The loss of habitat in these areas makes it essential that scientific data be gathered now on areas that may disappear, and to assist in developing plans to conserve other areas before they are lost.

ACADEMIC AND EDUCATIONAL PROGRAMS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	17	625	8	399	-	1,855	-	125	-	-
FY 1987 Base	19	840	9	490	-	2,149	-	157	-	-
FY 1988 Estimate	20	971	9	483	-	2,399	-	91	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	19	1	20
11 Personnel Compensation.....	522	37	559
12 Personnel Benefits.....	72	5	77
21 Travel.....	45	-28	17
22 Transportation of Things.....	-	1	1
23 Rent, Communications & Utilities.....	6	5	11
24 Printing & Reproduction.....	61	7	68
25 Other Services.....	117	72	189
26 Supplies & Materials.....	10	23	33
31 Equipment.....	7	9	16
Total	<u>840</u>	<u>131</u>	<u>971</u>

Analysis of Increase

Necessary Pay.....	17
Program Funds.....	114

ABSTRACT - Research and education are among the principal objectives of the Smithsonian. To attain these goals, the Institution promotes scholarly and academic ties with other learned institutions and offers its resources to the general public and to the academic community. Included in this line item are the Office of Fellowships and Grants, the Office of Smithsonian Symposia and Seminars, the Office of Elementary and Secondary Education and the National Science Resources Center. For FY 1988, an increase of 1 workyear and \$225,000 is requested to further research in the field of molecular biology through a fellowship program (\$100,000) and to support the activities of the National Science Resources Center (1 workyear and \$125,000). The FY 1988 estimate of funding also reflects a decrease of \$111,000 associated with nonrecurring expenditures in the FY 1987 budget to commemorate the Bicentennial of the Constitution of the United States. Necessary pay of \$17,000 is required for existing staff.

PROGRAM - I. The Office of Fellowships and Grants - With base funding of 9 workyears and \$286,000, the Office of Fellowships and Grants (OFG) manages Smithsonian fellowships; stipend appointments; and various research support programs, thereby enhancing Smithsonian research; fostering communication and collaboration between the Institution and universities, museums and research centers situated in the United States and abroad; and ensuring full use of Smithsonian resources.

The collections and facilities of the Smithsonian, as well as the curators and scholars who use them, offer unparalleled and essential resources for specialized study. The various forms of financial support offered by the Institution provide greater access to these resources and, thereby offer a unique complement to university education. Specifically, stipends, which are awarded primarily with Trust funds, support research in all areas of the Institution and promote interdisciplinary projects which draw upon the the resources of several bureaus.

In FY 1986, 88 predoctoral and postdoctoral fellows received awards through an Institution-wide program. Twenty-three of these recipients were foreign students and scholars from 19 countries. One hundred and twenty-one appointments were made with funds allotted to OFG to allow visitors to come to the Institution, for periods ranging from a few days to several weeks, to work in collaboration with the Institution's research staff. In addition, fellowships were provided with Trust and Federal funds designated for the bureaus. FY 1986 also marked the start of the fellowships of the recipients of the Rockefeller Foundation Program in the Humanities.

The Regents Fellowship Program continued to bring eminent scholars to the Institution and in FY 1986, three Regents Fellows began their residences at the Smithsonian. Several senior fellowships also are were awarded using bureau funding.

The Office manages the James E. Webb Fellowship, which promotes excellence in the management of cultural and scientific not-for-profit organizations. In FY 1986, six persons from within and outside the Institution were awarded fellowships to pursue their individual interests in formal academic and work situations.

The Office of Fellowships and Grants also administers stipends for Smithsonian internships. In FY 1986, 130 students, 26 of whom were minority students, were awarded internship stipends. In addition, seven fellowships were awarded to minority faculty to conduct research at the Institution for periods lasting from two months to four months.

Three minority students were granted funding under the Cooperative Education Program and the Education Fellowship Program which strive to promote increased minority representation in the professional research staff and activities of the Institution. The Native American Program, which facilitates Native American access to Smithsonian collections and promotes Smithsonian activities related to North American Native peoples, offered seven appointments. The Visiting Associates Program, which was initiated by OFG to introduce the Smithsonian to academic faculty and administrators committed to the improvement of minority education, organized two-week long programs specially designed to disseminate information about the Institution's research activities and support opportunities.

II. The Office of Smithsonian Symposia and Seminars - With base funding of 3 workyears and \$200,000, the Office of Smithsonian Symposia and Seminars (OSSS) serves as a center for interdisciplinary studies and communications. The Office's wide-ranging activities include research and analytical exploration, scholarly and professional exchange, and the publication of educational materials. The Office regularly organizes major symposia in the Smithsonian's international symposia series and the continuing seminar series, and hosts individual discussion programs. The Office also acts as a

resource center for visiting scholars and intermediate students and represents the Institution at national and international meetings and commemorations, thereby fostering better relations with academic institutions around the world.

In FY 1986, the Office organized the successful symposium "Man and Beast Revisited," which was a sequel to the symposium, "Man and Beast: Comparative Social Behavior." The symposium examined various aspects of sociobiology; genetics; and the role of language, myths and symbols in distinguishing humans from other animals. The ideas advanced at the symposium will result in a book; a videotape of a panel discussion; and tapes and manuscripts, which will be distributed to a specialized audience.

The Office also sponsored a colloquium in New York on "Liberty: As Idea, Icon, and Engineering Feat." The colloquium, which was held in celebration of the 1986 centenary of the Statue of Liberty, focused on the Statue of Liberty and, to provide a technological context for the discussions, the Brooklyn Bridge. A book based on the colloquium will be published.

The Institution's eighth international symposium resulted in the production of High Technology and Human Freedom which was published by the Smithsonian Institution Press. A second book stemming from the symposium currently is being edited for publication.

The Office is preparing for the Bicentennial of the Constitution and the Smithsonian's ninth international symposium, "Constitutional Roots, Rights and Responsibilities." Seventy scholars and specialists are being invited to participate in the extended program in civics and representative government. The symposium, which will be held in May 1987, will serve as the scholarly centerpiece for the United States' observance of the Bicentennial of the Constitution. The symposium will treat the concept of a written constitution; the intellectual history of the Constitution of the United States; Constitutional changes and interpretations; the interplay of rights and duties; the status of state constitutions and American Indian constitutions in the Federal system; the balance of powers; the influence of modern technology and the media in self-government; civic socialization; Constitutional influences on economic policy; the international influence of the Constitution of the United States; and citizenship in the third century.

III. The Office of Elementary and Secondary Education - With base funding of 7 workyears and \$354,000, the Office of Elementary and Secondary Education (OESE) works with the various education offices of the Institution to make Smithsonian resources for learning and teaching more readily available to local and national school communities and other specialized audiences. The programs of OESE include workshops and seminars for teachers and students, a summer internship program for high school students and a Career Awareness Program for minority young people from the District of Columbia's public schools. The Office also coordinates a wide range of services for disabled visitors to the Smithsonian.

During FY 1986, OESE sponsored 30 workshops, including ten summer courses which were attended by more than 800 educators. These workshops resulted in the production of curriculum units based on the Smithsonian's collections and the development of summer programs for teachers, including a series of in-depth, one-week, fully accredited seminars on such topics as teaching life sciences through direct observation, using community resources to teach about the Constitution of the United States, and teaching American cultural history through art.

OESE offers a number of programs to encourage cooperation and the exchange of information between the Smithsonian and schools in the Washington, D.C. area. The publications "Let's Go" (a monthly newsletter) and "Smithsonian Spectrum" (an annual calendar)

inform teachers about the variety of educational opportunities available at the Smithsonian. These publications are sent to approximately 11,000 teachers in the Washington D.C. area.

To reach the national audience, the Office distributes the journal "Art To Zoo" to more than 60,000 teachers and museum education departments throughout the United States. Furthermore, OESE circulates gratis two slide loan packages, entitled "The Museum Idea" and "Museums as Storytellers." During the 1985-1986 school year, these slide programs reached an estimated 1,550 students. In the summer of 1986, the Office sponsored two graduate level courses for a national audience of school librarians, teachers and curriculum specialists. The first course dealt with the teaching of writing, while the second, which was conducted in cooperation with the George Washington University, stressed social studies. In addition, a three-day Elementary Science Study Conference for teachers, museum educators and university personnel was held in collaboration with the National Science Resources Center.

During FY 1986, the Office continued its efforts to make Smithsonian programs accessible to disabled visitors by providing interpreters at special events, lectures and tours, and by furnishing guidance to Smithsonian museums which were seeking ways to offer more effective programming for retarded, hearing impaired and blind visitors. In addition, classes in sign language were given to approximately 75 Smithsonian educators, guards and other employees; and work was begun on a manual and video tape package designed to help museums, zoos and historic sites across the the country serve disabled people more effectively. In FY 1987 and FY 1988, OESE will maintain these specialized services to assure better access to Smithsonian resources.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an amount of 1 workyear and \$225,000 is requested to further research efforts in the field of molecular biology through a fellowship program (\$100,000) and to support the activities of the National Science Resources Center (1 workyear and \$125,000). The FY 1988 estimate of funding also reflects a decrease of \$111,000 associated with nonrecurring expenditures in the FY 1987 budget to commemorate the Bicentennial of the Constitution of the United States.

Office of Fellowships and Grants - It is requested that the resources made available by the closure of the Smithsonian Environmental Research Center-Rockville facility be redirected in FY 1988 to the National Museum of Natural History/Museum of Man, the National Zoological Park and the Smithsonian Tropical Research Institute for undertaking major research efforts in molecular biology. These bureaus will build upon existing interest and activities, and conduct basic research in a field which is clearly emerging at the forefront of modern evolutionary science. The planned programs of each of these bureaus are described within their individual budget statements and each program contains a modest component devoted to scholarly exchanges. In a rapidly developing research field, the need for communication among active participants at all levels is especially heightened, and this need is reflected in the proposed budget requests.

An amount of \$100,000 of the available resources is requested to supplement and complement these efforts with an interbureau fellowship program to be centrally administered by the Office of Fellowships and Grants. Fellowships will facilitate research to be undertaken at more than one of the bureaus involved -- for example, systematic studies based on field and museum collections or comparative behavioral studies of both wild and captive animals. The opportunities to work with organisms in natural, captive and museum settings add an important dimension to conducting research in molecular biology at the Smithsonian. An interbureau fellowship program will enhance that capability.

National Science Resources Center - The National Science Resources Center (NSRC) was organized by the Smithsonian Institution and the National Academy of Sciences in

response to a perceived lack in the quality of American education in the sciences and mathematics. Convinced that any effort to improve the quality of education in the sciences and mathematics must involve educators and scientists, NSRC is working with state and local school systems, educational and scientific organizations, science museums, and scientists to develop and disseminate imaginative and substantive teaching materials and to organize leadership development institutes for teachers and school administrators.

In July 1986, the Center launched efforts to improve science programs with a National Conference on the Teaching of Science in Elementary Schools. The conference assembled leading United States' scientists, teachers, school system administrators and science museum educators to discuss the teaching of science in elementary schools and to make recommendations for its improvements. The conference resulted in the establishment of a network of organizations dedicated to improving the teaching of science in elementary schools. NSRC is enlisting the assistance of this network in developing a data base of elementary science teaching resources, disseminating information about these resources, and providing assistance to school systems that are striving to improve their elementary science programs.

The NSRC also is working with the Council of State Science Supervisors to develop an informational data base of science teaching resources. Provision of the requested funding of 1 workyear and \$125,000 will enable the National Science Resources Center to embark upon these projects to improve the state of American education in the sciences and mathematics.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - I. Office of Fellowships and Grants:

These are provided from allotments which are designated primarily for an Institution-wide program of graduate student, predoctoral, postdoctoral and senior postdoctoral fellowships, as well as opportunities for shorter visits from scholars and students (estimated expenditures of \$1,725,000 in FY 1987 and \$1,975,000 in FY 1988).

The Regents Fellowship Program continues to bring distinguished visiting scholars to the Institution (estimated expenditures of \$140,000 in FY 1987 and in FY 1988). During FY 1986 the Regents Publication Fund was established to facilitate the publication of research findings (estimated expenditures of \$60,000 in FY 1987 and \$100,000 in FY 1988). The James E. Webb Fellowship promotes excellence in the management of cultural and scientific organizations (estimated expenditures of \$25,000 in FY 1987 and in FY 1988). Funding also is provided to cover the stipends for minority internships and faculty fellowships (estimate expenditures of \$80,000 in FY 1987 and in FY 1988); and fellowships for minority students pursuing graduate education (estimated expenditures of \$30,000 in FY 1987 and in FY 1988). Funding also has been provided for the Native American Fellowship Program (estimated expenditures of \$40,000 in FY 1987 and in FY 1988).

An allotment supports a small portion of the administration of the Office of Fellowships and Grants' academic programs (estimated expenditures of \$107,000 in FY 1987 and \$114,000 in FY 1988).

II. Office of Smithsonian Symposia and Seminars: An allotment is provided for salary and support costs for two full-time positions, including that of the director, and includes one-time support for the "Constitutional Roots, Rights and Responsibilities" symposium planned for FY 1987. In FY 1986, the efforts of both staff positions and program support for the year were directed toward "Man and Beast Revisited" and the Statue of Liberty colloquium (estimated expenditures of \$194,000 in FY 1987 and \$160,000 in FY 1988).

III. Office of Elementary and Secondary Education: A Career Awareness Program (CAP) for the District of Columbia's public schools introduces minority young people to career

opportunities at the Smithsonian. During the 1985-1986 school year, 50 students from two District high schools participated in CAP programming at the National Air and Space Museum and the National Portrait Gallery. Through the District's Summer Youth Employment Program, arrangements were made for 26 CAP graduates to work at the Smithsonian during the summer of 1986. In addition, after extensive evaluation of CAP, plans are under way to extend the program nationally through development of a manual and curriculum package for use by teachers and museum educators. These materials, slated for publication in early FY 1987, are designed to enable local museums to institute programs that will interest minority young people in museums and museum careers.

A new Internship Program for High School Teachers was initiated in 1986, bringing to Washington, D.C. an in-depth experience for five teachers from communities where Regional Workshops have been held. Designed to have a multiplier effect by training master teachers to train other teachers in their home communities, this program carries three graduate credits from the University of Virginia.

A Summer Intern Program, now in its 12th year, gives 40 graduating high school students an opportunity to participate in a learning/service program at the Smithsonian, working behind the scenes with curators and other museum professionals. High school students from all 50 states and the District of Columbia are eligible to apply for admittance to either of the two five-week sessions. Successful candidates receive free lodging and transportation to and from Washington, D.C., as well as a stipend. These programs are supported by annual allotments (estimated expenditures of \$187,000 in FY 1987 and \$207,000 in FY 1988). In addition, funds from the Institution's Scholarly Studies and Educational Outreach Program support research and education projects (actual expenditures of \$74,000 in FY 1986).

IV. National Science Resources Center: Although not reflected in these figures, for 1987, an allotment of \$180,000 has been made available to provide partial funding for the core operations of the National Science Resources Center (NSRC). These resources will enable the Center to hire a director and a program analyst and provide basic program resources necessary for the development of program initiatives to attract further support from the private sector.

Restricted Funds - I. Office of Fellowships and Grants: These consist of restricted endowments, gifts and grants from individuals, foundations, organizations and corporations which specify their use for a particular project. For example, an endowment from the Walter Rathbone Bacon Scholarship supports awards and research on fauna from outside the United States (estimated expenditures of \$12,000 in FY 1987 and in FY 1988). A Rockefeller Foundation grant will support fellowships for the National Museum of African Art and the Sackler Gallery (estimated expenditures of \$50,000 in FY 1987 and in FY 1988).

II. Office of Symposia and Seminars: Support from a grant will cover publication of selected papers from the "Man and Beast Revisted" symposium (estimated expenditures of \$23,000 in FY 1987). Although not included in FY 1987 or FY 1988 figures, a new \$3 million endowment effort is being developed to augment operations.

III. Office of Elementary and Secondary Education: Another OESE program for the District of Columbia's public schools is "Exploring the Smithsonian," which served close to 5,800 young people in FY 1986. Supported in part by a grant from the Cafritz Foundation (estimated expenditures of \$24,000 in FY 1987 and \$29,000 in FY 1988), this program provides bus transportation to bring junior high school students to the Smithsonian museums to take part in a selection of interdisciplinary lessons on curriculum related subjects in art, history and science. OESE works with the various Smithsonian education offices to plan and maintain the program activities.

MUSEUM SUPPORT CENTER

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**	Amount	FTE**	Amount
FY 1986 Actual	44	4,653	-	-	-	109	-	-	-	-
FY 1987 Base	36	4,447	-	-	-	60	-	-	-	-
FY 1988 Estimate	36	4,475	-	-	-	55	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	36	-	36
11 Personnel Compensation.....	849	25	874
12 Personnel Benefits.....	126	3	129
21 Travel.....	14	-	14
23 Rent, Communications & Utilities.....	10	-	10
24 Printing & Reproduction.....	3	-	3
25 Other Services.....	143	-	143
26 Supplies & Materials.....	146	-	146
31 Equipment.....	<u>3,156</u>	-	<u>3,156</u>
Total	<u>4,447</u>	<u>28</u>	<u>4,475</u>

Analysis of Increase

Necessary Pay.....

28

ABSTRACT - The Museum Support Center (MSC), located in Suitland, Maryland, adjacent to the Institution's Suitland Facility, provides a state-of-the-art facility for the care, conservation, and storage of the Institution's collections. The conservation facilities at the MSC include the Conservation Analytical Laboratory and conservation labs for the National Museum of Natural History/Museum of Man and the National Museum of American History. The collection storage area at the MSC occupies four discrete sections (or pods) and provides three types of storage space: "high-density" storage for collections stored in cabinets; "wet" storage for collections stored in alcohol; and "high-bay" storage for very large objects. The preparation and move of collections to the MSC from the National Museum of Natural History/Museum of Man and the National Museum of American History began in FY 1983 and is scheduled to continue through FY 1992.

For FY 1988, an amount of 36 workyears and \$4.475 million will permit the Institution to purchase collection storage cabinets and components (\$3.058 million); continue the preparation and transfer of collections to the MSC (\$448,000); and provide

ongoing administrative and building management services at the MSC (36 workyears and \$969,000). No program increase above the FY 1987 level of funding is requested. The continuation of this base of funding is essential for the planned development and use of the MSC as a major Institutional resource for the care and preservation of the National Collections and for the research programs based on these collections. Necessary pay of \$28,000 is required for existing staff.

PROGRAM - The Museum Support Center, located in Suitland, Maryland, provides a state-of-the-art facility for the storage of museum collections; conservation and preservation of museum objects; and conservation training. Conservation facilities occupy a significant portion of the laboratory wing for conservation treatment, scientific analysis and training functions. The Conservation Analytical Laboratory, the Anthropology Conservation Laboratory of the Museum of Natural History, and some of the facilities of the Division of Conservation of the Museum of American History are all located at the MSC. The Museum Support Center branch of the Smithsonian Institution Libraries system, one of five conservation libraries in the world and the only one in this country that provides a conservation reference service, maintains a collection of more than 1,500 books and 60 periodical titles in the areas of conservation and its related disciplines.

Collections storage facilities at the Museum Support Center are arranged in four discrete sections of the building, known as "pods." Approximately five-eighths of the total storage space (Pods 1 and 2, and a portion of Pod 4) will be occupied by collections stored in cabinets on three levels of concrete decks. In addition, one of the pods (Pod 3) has been reserved for the storage of "wet" collections (those stored in alcohol), and a portion of Pod 4 will be used for "high-bay" storage of very large objects.

The move of Smithsonian collections to the Museum Support Center is unprecedented in the museum community in terms of volume, characteristics and variety of the collections, and the distance of the move. The National Museum of Natural History/Museum of Man alone is sending millions of objects and specimens to the MSC. The entire transfer of the collections is occurring over a multi-year period, with portions being moved only when appropriate storage equipment at the MSC has been installed.

Current Status of the Museum Support Center - As of January, 1987, the Museum Support Center has proven to offer a decided solution to the Institution's storage needs yet has continued to present problems. In summary, on the positive side, construction continues on the installation of the decking in Collection Storage Pod 1; the great majority of the space in the laboratory wing has been put to use; many objects and specimens have been relocated; and more collections continue to be prepared for moving. On the negative side, the overall project for construction of decks in the pods and the procurement of storage cabinetry is behind schedule and beset with other difficulties; the lack of collection storage equipment has meant that certain collection-related laboratory and office functions have not yet been able to relocate; and the move of collections has likewise been greatly limited and delayed by this same lack of collection storage equipment.

Since the completion of the wet storage collection system in Pod 3, work has been underway through the Institution's agent, the General Services Administration, on the design and construction of the high density collection storage equipment for Pods 1, 2, and 4. While the pace of this work has been much slower than expected or desired, design drawings for Pod 1 have been submitted, and final coordination and approval of these drawings is in progress. New reinforced strip footings to support the concrete deck storage system in Pods 1, 2, and 4 were put in place as of May, 1986. Most of the steel components of Level 1 in Pod 1 have been installed. Preliminary design drawings for the Pod 2 and Pod 4 systems have been submitted by the contractor for review.

Occupancy of the laboratory wing and the MSC administrative structure has taken place, and the services provided by these offices and laboratories have been firmly established and are functioning well. The Conservation Analytical Laboratory (CAL), the Anthropology Conservation Laboratory, and a branch of the Museum of American History Conservation Laboratory, which occupy about half of the laboratory wing, continue in their objects conservation work. In addition, new programs and functions continue to become reality at the MSC. Of significance are the new facility for meteorites in which the collections are maintained and studied in a clean room environment and nitrogen atmosphere, and the new electrophoresis laboratory for the chemical analysis of plants and animals. The MSC Administration efficiently provides users of the facility with a wide range of services. The Computer Center used for research and inventory control purposes and the multiple services provided by the building management unit are examples.

A great concern to the progress of this project has been and continues to be the problems which the General Contractor has experienced in negotiating with manufacturers for the production of collection storage cabinetry. In January, 1986, the General Contractor and his subcontractor severed their relationship for this work. This action was taken in spite of the fact that approval of the design drawings for the cabinetry had been secured and that the subcontractor was about to begin fabrication. The selection of subcontractors is at the sole discretion of the General Contractor. At present, three potential subcontractors are being considered. The General Contractor is seeking a firm which can provide specialized storage cabinets within the established contract price. Until a subcontractor is secured, a schedule for the production and installation of the storage equipment cannot be established and provided to the GSA.

While the relocation of collections to the MSC is largely a function of the availability of appropriate collection storage equipment, the problems cited above in the procurement of this storage equipment system have not proven fatal to this move. The move into the "wet" collection storage equipment in Pod 3 was completed in 1985 with over 260,000 specimen lots transported to the MSC in 200 van loads. Since that time, more than 10,000 additional specimen lots, which are a part of ongoing departmental activities, have been moved into Pod 3. Other collections have been received at MSC and placed in temporary locations until such time as permanent facilities become available. Over 190,000 archeological objects (representing 25 percent of those collections) and 16,000 ethnological objects from the Department of Anthropology; more than 2,200,000 insect specimens from the Department of Entomology; over 36,000 petrology specimens from the Department of Mineral Sciences; and 91,000 specimens from the Department of Botany, including diatoms and algae, have been thus relocated. All of these collections have been carefully cleaned, inspected for pests and conservation problems, and properly stabilized. Many of these collections already are, and the rest will be, stored in less compressed conditions and under better environmental parameters. As a result, the collections stored at MSC have far greater potential for long term perservation than collections stored in most other Smithsonian storage areas. As more collections are prepared, they will continue to be moved to temporary storage at the MSC and the Mall buildings until their permanent storage locations are ready.

While such progress in the face of a lack of appropriate storage equipment is positive and encouraging, only a small fraction of the MSC's potential as a collection support facility can be realized without the availability of the storage system. Meanwhile, collection management problems, which the MSC was created to rectify, continue.

Museum Support Center Storage Equipment - Design work for a collection storage system for the MSC began in September 1980. In consultation with the architectural/engineering team's material handling consultant and with the General Services Administration (GSA), and on their recommendation, the Institution decided to use a storage system utilizing a number of standard components assembled into a self-

supporting three-level storage structure capable of holding the various kinds of shelves, drawers and screens needed to keep the collections safe from dust and insects while making them accessible for research, study and exhibition.

This design was a pioneer effort, since no other such system existed for museum purposes. After intensive efforts by the Institution, GSA, the architectural/engineering firm and the contractor extending over many months, the Institution was advised late in 1984 that the requirements for enclosure could not be met by the self-supporting system. Therefore, the Institution decided, upon the recommendation of the General Contractor, to switch to a more conventional collection storage system, consisting of pre-manufactured storage cabinets on three levels of concrete decks. Some modification of the existing pod floor slabs has been necessary to properly distribute weight loads of the new system.

Although not all of the engineering work has been completed, it is anticipated that the cost of the concrete deck system will remain within the projections of funding requirements for storage equipment for the initial move. To keep within this funding framework, however, the Institution revised the order of acquisition of some of the equipment. Installation of "high-bay" equipment for storage of large objects was deferred until FY 1988. In addition, the Institution will reduce the number of storage cabinets it will procure under the contract and substitute instead a number of existing storage cases from the National Museum of Natural History. This substitution would not have been possible with the original rack-storage structure.

The total cost of the storage equipment for the initial move is approximately \$25.0 million, including approximately \$23.3 million for the "wet" storage equipment and the "high-density" storage system with concrete decks and storage cabinets; and approximately \$1.7 million for the "high-bay" storage equipment. (Actual costs for the "high-bay" storage equipment may vary as the result of actual bids received at the time of procurement and the inflation rate in effect at the time of the bid for the city of the bidder.) Between FY 1981 and FY 1987, funds totaling approximately \$21.9 million have been obligated to purchase and install the "wet" storage and the "high-density" storage equipment for Pods 1, 2 and 4.

For FY 1988, base funding of \$3.058 million is requested for the purchase of storage equipment for the MSC. Of this sum, an amount of approximately \$1.7 million will be used to purchase the "high-bay" equipment. This funding level, based on the estimated cost of this equipment in FY 1985 (\$1.54 million), and an allowance to compensate for the accumulated effects of inflation since that estimate was calculated, is subject to change as the result of the actual bids received during procurement. The balance of the funding (approximately \$1.3 million) will be used to complete the purchase of shelves and drawers needed for the initial move and any remaining funds to begin the purchase of additional storage cabinets, shelves and drawers needed to accommodate collections growth in the "high-density" storage space and to meet the future storage needs of Smithsonian museums at the MSC. This level of funding will allow the storage equipment to be purchased in quantities sufficient to ensure that the contractors can avoid interfering with the Smithsonian move team and vice versa; that the collections will not be subjected to potential damage resulting from installation, dust and vibration; and that the collections will remain secure from potential theft.

It is currently estimated that additional funding totaling approximately \$16.5 million will be needed from FY 1989 through FY 1992 to make full utilization of all available storage space in the MSC. (Actual costs for the collection storage equipment to be procured from FY 1989 through FY 1992 may vary as the result of actual bids received at the time of procurement and the inflation rate in effect at the time of the bid for the city of the bidder.)

Funding for MSC Collection Storage Equipment, FY 1981 - FY 1988

(\$000's)

<u>FY 1981</u> <u>Actual</u>	<u>FY 1982</u> <u>Actual</u>	<u>FY 1983</u> <u>Actual</u>	<u>FY 1984</u> <u>Actual</u>	<u>FY 1985</u> <u>Actual</u>	<u>FY 1986</u> <u>Actual</u>	<u>FY 1987</u> <u>Est.</u>	<u>FY 1988</u> <u>Request</u>	<u>TOTAL</u>
2,051	3,325	3,469	3,090	3,505	3,363	3,058	3,058	24,919

Move of the Collections to the Museum Support Center - Beginning in FY 1983, a detailed plan for coordination of each phase of the move was developed using the principles and techniques of the "Critical Path Method" (CPM). Information affecting the complex schedules has been automated and is continuously updated. Simultaneously, decisions were also made regarding the specific methods of packaging and modes of transport appropriate to the particular collections and objects involved.

Since FY 1983, temporary museum technicians have been preparing the collections to be moved, including cleaning and stabilizing objects; packing and moving them within the museums to staging areas and then to the MSC; and performing conservation treatment when needed.

Preparation of "dry" collections (to be stored in Pods 1, 2 and 4) continues with work being done on the collections of the Departments of Anthropology, Entomology, Mineral Sciences, Vertebrate Zoology, Botany and Paleobiology. The move of these and other collections to their final storage locations is now planned to begin in FY 1988 following the installation of storage equipment. Most of these moves are scheduled for calendar years 1989 through 1991, with the relocation of some collections continuing through calendar year 1992.

After the installation of the "high-bay" storage equipment, scheduled for FY 1988, the schedule currently projects that the move of collections to be stored in "high-bay" storage (oversized objects such as whale skulls, rickshaws, weaving looms and totem poles) will begin in FY 1989 and take approximately two years.

Between FY 1983 and FY 1987, funds totaling approximately \$2.4 million have been spent to prepare the collections for relocation and to begin the move to the MSC, including the salary costs for the temporary work force engaged in cleaning, packing and moving collections. The FY 1988 request will continue the FY 1987 level of funding. It is anticipated that future funding requirements for the move will total approximately \$2.8 million from FY 1989 through FY 1992.

Funding for the MSC Move, FY 1983 - FY 1988

(\$000's)

<u>FY 1983</u> <u>Actual</u>	<u>FY 1984</u> <u>Actual</u>	<u>FY 1985</u> <u>Actual</u>	<u>FY 1986</u> <u>Actual</u>	<u>FY 1987</u> <u>Est.</u>	<u>FY 1988</u> <u>Request</u>	<u>TOTAL</u>
562	483	427	468	438	448	2,826

Administration and Facility Management - With base funding of 36 workyears and \$951,000, the Office of the Director of the Museum Support Center is responsible for the administrative coordination of the activities of the various user and support units, and for supervision of building management functions at the MSC. This Office administers the automated data processing center used for registrarial and collections management activities, including the move to the MSC, and for the research and informational requirements of the occupants. The Office also enforces the procedures established to control and account for the flow of collections into and out of the MSC, and insures the safety of the collections against pest infestations and other hazards. Under the general supervision of the MSC's Office of the Director, the facility manager is responsible for providing shipping and receiving services, moving equipment and objects, overseeing safety and security operations, and cleaning and maintaining all parts of the building. Because of the need to maintain very strict environmental standards for the care and storage of museum objects, cleanliness is a fundamental requirement in the successful operation of a collection management facility.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - An allotment of \$750,000 was provided to purchase special laboratory equipment for the Conservation Analytical Laboratory. Of this sum, approximately \$541,000 has been spent through FY 1986.

ADMINISTRATION

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount				
FY 1986 Actual	248	12,592	186	7,739	20	2,563	-	134	-	2
FY 1987 Base	270	15,736	194	11,015	20	2,339	-	153	-	-
FY 1988 Estimate	283	22,356	194	11,506	16	1,646	-	99	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	270	13	283
11 Personnel Compensation.....	8,625	338	8,963
12 Personnel Benefits.....	3,974	5,415	9,389
13 Benefits to Former Employees.....	398	-	398
21 Travel.....	86	8	94
22 Transportation of Things.....	8	-	8
23 Rent, Communications & Utilities.....	172	-	172
24 Printing & Reproduction.....	51	5	56
25 Other Services.....	1,190	660	1,850
26 Supplies & Materials.....	616	22	638
31 Equipment.....	616	172	788
Total	<u>15,736</u>	<u>6,620</u>	<u>22,356</u>

Analysis of Increase

Necessary Pay.....	313
Program Funds.....	914
Worker's Compensation.....	92
Grade Target Reduction.....	-373
Payroll Personnel System.....	400
Federal Employees Retirement System.....	5,274

ABSTRACT - Administration includes central management, planning, oversight and review by the offices of the Secretary, Under Secretary, Assistant Secretary for Administration, General Counsel and Treasurer. It also covers a wide range of specialized administrative and technical offices. Included among these are Audits and Investigations, Business Management, Congressional Liaison, Contracts, Equal Opportunity, Facilities Services (responsible for Design and Construction, Plant Services, Protection Services, Environmental Management and Safety, and Architectural History and Historic Preservation), Financial Management, Accounting, and Risk Management. Other offices

comprising this grouping include Information Resource Management, Management Analysis, Personnel Administration, Printing and Photographic Services, Programming and Budget, Special Events, Procurement and Property Management (formerly Supply Services), and Travel Services. These organization units receive both appropriated funds and nonappropriated unrestricted Trust funds for their operating support in approximate balance to the overall funding of the Institution. Some offices, however, such as Business Management, Contracts, and Risk Management, are funded entirely with Trust funds reflecting the nature of their work.

For FY 1988, an increase of 13 workyears and \$914,000 is requested. An increase of 1 workyear and \$165,000 is required for the Office of Accounting and Financial Services for computer usage and programming (\$150,000) and to support on-site financial services in the Quadrangle (1 workyear and \$15,000). The Office of Personnel Administration requires 2 workyears and \$56,000 to strengthen personnel support. The Office of Facilities Services requests an increase of 2 workyears and \$131,000 to strengthen capability to assess and plan for long-range facilities requirements of the Smithsonian Institution (2 workyears and \$116,000) and to provide automated programs and office equipment (\$15,000). The Office of Environmental Management and Safety requests 6 workyears and \$454,000 to provide support necessary to manage all hazardous waste generated by the Smithsonian to assure compliance with regulatory requirements (1 workyear and \$112,000), to provide industrial hygiene support for the Asbestos Abatement Program (2 workyears and \$132,000), to increase the fire protection engineering staff to keep up with an increasing workload (1 workyear and \$42,000), to develop and implement a Hazard Communication Program as required by law (1 workyear and \$60,000), to provide administrative support (1 workyear and \$37,000), and for office automation and information management (\$71,000). The Office of Procurement and Property Management requires 2 workyears and \$108,000 for additional staff and for support costs to function in full support of the Institution's significantly increasing acquisition needs.

Also included in this line item are increases of \$92,000 for Worker's Compensation; \$400,000 for operating costs of the new Personnel Payroll System; \$5,274,000 for the new Federal Employees Retirement System; and a reduction of \$373,000 reflecting anticipated savings from the Office of Management and Budget's requirement to reduce the number of employees in grades 11 through 15. These items are discussed in the Uncontrollable Increases section of this budget. Necessary pay of \$313,000 is required for existing staff.

PROGRAM - Within this activity grouping, the Office of the Secretary, with the assistance of the Office of the Under Secretary, is responsible for management and administration including policy determination, program planning, legislation, and the direction and review of performance of activities. The Office of the Assistant Secretary for Administration, including the Director of Facilities Services, is responsible for administrative and technical services, design, construction, building operation and maintenance, protection services, environmental management and safety, and architectural history and historic preservation.

The Office of Audits and Investigations is responsible for performing all internal and external auditing and the investigation of any fraud, waste, abuse or white collar criminal activity. The internal audit function includes auditing both federally and Trust-funded activities on a recurring basis. The Office reports the results of audit findings and makes recommendations to aid management at all levels in program administration. The external audit function involves the audit of documentation in support of claims, cost proposals and cost and pricing data arising from contracts, grants, and other financial agreements. The Office also investigates acts of alleged criminal activities by employees or contractors, the results of which serve as the basis for appropriate criminal, civil, or administrative remedies. Investigations are directed at programmatic and operational weaknesses susceptible to fraud and abuse. The Office's work is considered by the Smithsonian's public accountants in determining the nature, timing, and extent of the public accountants' audit procedures.

The Office of the General Counsel provides counseling to the Smithsonian Board of Regents, the Secretary, and the executive and program offices on legal matters involving Smithsonian administration; coordinates and oversees the conduct of litigation and other adversarial proceedings to which the Institution is a party; reviews administrative claims arising from Smithsonian operations; and generally monitors all aspects of Smithsonian operations for legal implications.

The Office of the Treasurer has responsibility for Institution-wide financial management and reporting of Federal and Trust funds. Included are the following functions: accounting, payroll, accounts payable, cash management, financial systems, financial analysis, administration of grants and contracts, and banking relationships. The Office, furthermore, oversees selected auxiliary activities, risk management, and investment of the Smithsonian's Endowment Fund. Reporting to the Treasurer are the Office of Accounting and Financial Services; the Office of Financial Management and Planning; the Office of Risk Management; and the Business Management Office, which oversees the Museum Shops, Mail Order Division and Concessions.

The Office of Congressional Liaison is responsible for the development and maintenance of the Institution's relationships with the Congress; communication of policies, programs and plans to the Congress; preparation and clearance of legislative materials and organization of Smithsonian participation at legislative hearings; and liaison with Federal agencies and organizations having related interests.

The Contracts Office assists in obtaining Federal grants and contracts for special programs and projects and negotiates certain specialized contracts related to Trust-funded operations.

The Office of Equal Opportunity plans, conducts and monitors an active program to provide equality in employment practices and program activities. Major efforts include an affirmative action program; program and facility access for disabled persons; employee counseling and complaint adjudication; upward mobility; programs for women, Hispanics and Asian-Americans; and community outreach to minority and women's groups.

The Office of Information Resource Management helps determine information resource management policy; ensures the integrity and security of Institutional data; directs modern computer and communications technology in support of the Smithsonian's scientific, scholarly, and management information activities; and ensures technical integration of hardware and software required to make information and computing power widely available to users of information systems and computers. The Office acquires, develops, and maintains high quality automated information processing and data communications systems; administers the Smithsonian's data processing cost center; operates computer systems and data communications networks; and performs applied research supporting the Institution's use of data processing and communications technologies. In all of these areas, support is provided to major Smithsonian constituencies: collections management, education, research, administration, and business activities.

The Management Analysis Office provides staff assistance and advisory services in support of Smithsonian administrative operations. The Office performs studies of organizations, systems and procedures; prepares and distributes management issuances containing policy and instructions governing operations; and conducts the Institution's forms management program.

The Office of Personnel Administration provides personnel services, advice and assistance to managers and employees of the Institution. Within the laws, rules and regulations of relevant controlling agencies and within the policies of the Institution, the Office is responsible for recruitment, staffing and placement; position classification; wage and salary administration; performance management systems, recognition, and

merit pay; employee relations; and benefits administration, planning, counseling, processing and communications. The Office also is responsible for labor-management relations; providing training and career development; employee assistance, job and work counseling; worker's compensation and unemployment insurance; personnel policy development; personnel management evaluation; and records and data processing and maintenance.

The Office of Printing and Photographic Services is the central office for technical advice, guidance and production on photography and duplicating services to curatorial, scientific, technical and administrative staff. Photographic services include studio and on-site photography, photographic copy restoration, printing, preservation of originals under archival conditions, the development and maintenance of an automated catalogue of photographs and sales of materials to the public.

The Office of Programming and Budget formulates the consolidated Federal and nonappropriated Trust fund budgets for review and approval by the Secretary and the Board of Regents. Approved budgets are prepared for submission to the Office of Management and Budget (OMB) and to the Congress, and the Office serves as liaison with OMB and Congress on budgetary matters. Appropriated budgets and nonappropriated Trust fund budgets are monitored to help assure that program needs are met, that budgetary goals are achieved and that accountability is maintained. The Office has the responsibility for the development of the Five-Year Prospectus, advises management on matters pertaining to program planning and development, and incorporates financial information in central data bases for use in management reports, budgetary planning and special analyses.

The Office of the Director of Facilities Services directs a wide range of programs essential to the security, operation, maintenance and repair of the Smithsonian facilities, as well as the modification and improvement of the physical plant to support growth of the Institution's programs and activities. The Office also is responsible for long-range planning for facilities development and utilization, energy conservation, real property management and provision of facilities-related services. It also is responsible for safety programs and the preservation of the architectural integrity of the Institution's historic buildings.

The Office of Special Events plans and arranges events associated with exhibition openings, seminars, lectures and other activities upon the request of bureaus and offices and outside groups when given the permission to use Smithsonian facilities. A monthly master calendar of special events is maintained.

The Office of Procurement and Property Management (formerly Office of Supply Services) is responsible for policy, planning, coordination and operation of the procurement, contracting, property management and supply programs for the Smithsonian Institution, including its world-wide field operations. As the central and principal acquisition management office for the Institution, it ensures that all ongoing and special requirements are met by procuring contractual services, supplies, materials, and equipment for research and other programs, facility construction and building renovation and repair. The Office is also the Institution's space leasing agent and responsible for the management of nonexpendable property.

The Travel Services Office makes travel arrangements in the most economical and effective manner, consistent with Smithsonian and Federal travel regulations. Information concerning changes in travel procedures and regulations is distributed to bureaus and offices. Requirements for the use of contract carriers and United States carriers for international travel are enforced. The Office works closely with other offices in the development and implementation of new and revised travel regulations.

Progress in Administrative and Technical Support - Major emphasis over the past year and continuing for the current and future budget years includes the supervision of the

administrative and support activities to assure their responsiveness to needs. Continued attention is being given to legal oversight of and counseling on the Smithsonian's programs and improvement of financial management, accounting, monitoring, reporting and auditing systems to assure control and accountability. A number of specific developments merit reporting in the areas of facilities management, safety, employee and financial services, photographic technology, information resource management, procurement and property management and travel management.

In FY 1986, a new Director of Facilities Services was hired. With new perspectives on technological advances in the field of facilities management, improvements have been made in energy conservation, cost estimating and tracking of major renovation projects. The past year has seen several changes in the Smithsonian's safety and health program. In March 1986, the Safety Division was removed from the Office of Protection Services and was established as a separate entity, now designated the Office of Environmental Management and Safety. This organizational change reflected the growth of the safety program, its significant impact on all employees and visitors, and the need to give it recognition at an appropriate level. The Office now reports directly to the Smithsonian's designated safety and health official. Emphasis was placed on new regulatory activities in the areas of PCBs, hazardous waste disposal, environmental protection, and hazard communication. This change in emphasis and direction was necessitated by new regulatory requirements imposed by the Environmental Protection Agency and Occupational Safety and Health Administration.

FY 1986 was a year of implementing major personnel changes, such as revised Reduction-In-Force regulations, a new Performance Management System, and continued refinement of the Performance Management and Recognition System. To assist in communicating important personnel, organizational, financial and other matters to all employees, a staff bulletin was suggested by the Office of Equal Opportunity and is now prepared and published every two weeks by the Management Analysis Office. The collaborative efforts of the Office of the Treasurer and Office of Personnel Administration under the guidance of the Office of Information Resource Management produced a statement of requirements for a new automated Personnel Payroll System. Further work determined that the essential aspects of this system for Civil Service and Trust employees could be met by the Department of Agriculture's National Finance Center. The system is expected to be operational in the latter part of 1987. Work is under way by the Office of Financial Management and Planning to improve other financial systems.

In the Office of Printing and Photographic Services, the film conversion program is nearing the end of its first phase--the conversion of hazardous nitrate negatives to safety film. This work began in FY 1981. Attention will now be turned to other deteriorating types of film and to the conversion of glass plates to safety film to prevent breakage. For archival preservation a Halon fire protection system was added to the cold storage room. Planning continues for the expansion of this room (see the Restoration and Renovation of Buildings section of this budget) to meet a growth rate of 16,000 to 20,000 new photographs a year. A research program in applied photographic preservation is aimed at stimulating research of methods of preserving photographs. Two projects under way include the testing of new toning solutions to eliminate the use of a suspected carcinogen and the testing of newly introduced color duplicating films against older color originals to determine the best matches of duplicating stock versus originals. The Office has completed the filming of all its 35mm slides for the modification of its original videodisc and the addition of a second side. Images to be available total more than 70,000. The completed discs will be available early in the next fiscal year. Work will begin on several historic railroad collections in the National Museum of American History. Under investigation is the use of newly developed still video systems for use in collections management projects. In August 1986, the Office presented its third annual exhibition, "History as Seen From the National Museum of American History." Working with the curatorial staff of the Museum, this exhibition covers events happening

on or near the Mall during the past year. In addition, the Office in November 1986 opened an exhibition, "The Vietnam Veterans Memorial: A National Experience," to be circulated by the Smithsonian Institution Traveling Exhibition Service. Furthermore, the Office is preparing a book in collaboration with the Museum on the Vietnam Veterans Memorial to be published by Stackpole Books. Office staff continue to be active in teaching programs both inside and outside the Institution. The Office hosts a photographic workshop for museum professionals each year under the Office of Museum Programs, and during the last year conducted a similar program in Richmond, Virginia. The Office also cosponsors with the White House News Photographers Association a free one-day workshop for local high school students. In addition, working through the Office of Museum Programs during the last year, the Office conducted programs in Williamsburg, Virginia, and Reno, Nevada, on photographic preservation.

During the Institution's fourth year of formal information resource management activities, major strides were made in the transition from a central data processing technology to distributed processing using microcomputers, minicomputers, and a new mainframe computer. This was accomplished under the guidance of the Office of Information Resource Management. The Smithsonian Institution Bibliographic Information System was upgraded by the implementation of new software and a more powerful processor. A pilot system for information retrieval as part of a new specimen collections system was developed, and an Institution-wide committee is developing plans for the implementation of the system for all collections information. The new mainframe computer became operational and began to service applications transferred from the old mainframe as well as new applications made possible by commercially acquired software. The construction of interbuilding raceways on the Mall is under way and technical requirements for office networks were issued. A year-long study led to the selection of the Department of Agriculture's National Finance Center as a service bureau to run personnel payroll functions, and implementation planning was undertaken to achieve this in FY 1987. The Office developed a regular curriculum of more than a dozen courses which were taught to over 1,000 staff in FY 1986. A handbook of information policy and technical bulletins was published. Committees established by the Secretary developed strategic objectives for information resources and planned a process for their implementation. A long-range telecommunications plan is being developed in collaboration with the Office of Plant Services. Physical security, data security and access control to computers were significantly augmented.

Effective November 1986, the Office of Supply Services was renamed the Office of Procurement and Property Management. This change more accurately reflects the Office's full range of responsibilities in acquiring the products and services necessary to support Smithsonian programs and activities. The Office executed its procurement, contracting, and property management responsibilities in a responsive fashion, completing all contracting and procurement actions and corresponding Federal reporting requirements. Advance Procurement Plan criteria were established, monitored and followed to improve workload planning. Special requirements for contract development in the areas of data processing, food services and construction posed unusual demands upon the Office. Reviews of the delegated procurement practices of the Trust-funded auxiliary activities were conducted to ensure cost effectiveness and propriety. Savings continue to be produced for the Institution as a result of the property management program. The nonexpendable property records system and procedures are scheduled for refinement utilizing the computer mainframe and personal computers in the field. In addition to safeguarding existing property, a considerable amount of excess property was obtained and reutilized. The annual property inventory was completed.

The Travel Services Office continues to monitor the changes to the requirements for the use of government contract carriers and United States flag carriers. A familiarity with all aspects of government travel is maintained including the new Federal per diem system and rates. Use of new airline discount fares has achieved an even greater savings on individual trips than is possible with the use of government airfares. Travel information is provided by a quarterly Travel Newsletter, a revised Travel Handbook, and

participation in training seminars for employees. A computer link between the Travel Services Office and the Office of Accounting and Financial Services will be implemented, enabling travel documents and accounts to be processed more efficiently.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 13 workyears and \$914,000 is requested. An increase of 1 workyear and \$165,000 is required for the Office of Accounting and Financial Services for computer usage and programming (\$150,000) and to support on-site financial services in the Quadrangle (1 workyear and \$15,000). The Office of Personnel Administration requires 2 workyears and \$56,000 to strengthen personnel support. The Office of Facilities Services requests an increase of 2 workyears and \$131,000 to strengthen its capability to assess and plan for long-range facilities requirements of the Smithsonian Institution (2 workyears and \$116,000), and for automated programs and office equipment (\$15,000). The Office of Environmental Management and Safety requests 6 workyears and \$454,000 to provide support necessary to manage all hazardous waste generated by the Smithsonian to meet current regulatory requirements (1 workyear and \$112,000), to provide industrial hygiene support for the Asbestos Abatement Program (2 workyears and \$132,000), to increase the fire protection engineering staff to primarily keep up with an increasing workload (1 workyear and \$42,000), to develop and implement a Hazard Communication Program as required by law (1 workyear and \$60,000), to provide administrative support (1 workyear and \$37,000), and for office automation and information management (\$71,000). The Office of Procurement and Property Management requires 2 workyears and \$108,000 for additional staff and support costs to function in full support of the Institution's significantly increasing acquisition needs both in terms of quantity and degree of difficulty and sophistication.

Office of Accounting and Financial Services (1 workyear and \$165,000) - For the Office of Accounting and Financial Services (OAFS), an increase of \$150,000 is sought to maintain accounting master files on the Institution's central mainframe computer and to keep OAFS' minicomputer technically updated. In addition, the conversion to the new mainframe computer will require parallel processing for approximately three to six months. The Nixdorf minicomputer needs computer programming to manage the increasing volume of transactions, changes in the data environment, additional computer terminals and printers, and the communication link with the mainframe computer. On occasion, computer reprogramming is mandated by Federal regulations (Internal Revenue Service-Payroll), internal service bureau requirements (Smithsonian Institution Office of Information Resource Management), and external service bureau requirements (United States Treasury). Further, the conversion to the new mainframe computer and implementation of a new accounting system will require significant reprogramming of the Nixdorf minicomputer. In addition, an increase of 1 workyear and \$15,000 is requested for establishing an Accounting Service Unit in the Quadrangle. This accounting technician (originally requested in the FY 1987 budget) will provide on-site financial support for the International Center, the National Museum of African Art, the Sackler Gallery and other activities located there.

Office of Personnel Administration (2 workyears and \$56,000) - An increase of 2 workyears and \$56,000 is sought to strengthen personnel services to bureaus and offices in preparation for the following: implementation and operation of the new Federal Employee Retirement System (FERS), which will require considerably more counseling of employees and information dissemination due to its complexity than does the current Civil Service Retirement System (CSRS). This will be particularly true for CSRS employees who will have the opportunity to switch to FERS in FY 1988, as well as for those who will only make use of the FERS thrift plan; expansion of the Performance Management Recognition System to all grade levels which will necessitate rewriting many job descriptions by the Personnel Office plus extensive assistance to managers in the preparation of performance plans; and revision of the classification and pay system proposed in the Personnel Simplification Act. These major adjustments to the Federal Personnel System will have to be accomplished with an employee-to-staff ratio which is among the highest

in the government. In FY 1986, this ratio was 1 to 75 while the government average is 1 to 45. These programs and personnel functions and activities are mandated by regulation and cannot be eliminated. A deterioration of service will result if new programs continue to be added and staff shortages are not improved.

Office of the Director of Facilities Services (2 workyears and \$131,000) - An increase of 2 workyears and \$131,000 is requested to strengthen capability to assess and plan for long-range facilities requirements of the Smithsonian Institution. An amount of 2 workyears and \$116,000 are requested for a facilities planner and clerical support to direct a number of long-range planning activities, including development of the construction program, coordination of the master planning process, space management and control, and real estate acquisition and management. The planning function would provide the capability to make coordinated and comprehensive assessments of Smithsonian requirements for storage, office and support space and provide a focus for such issues as the most effective use of existing facilities, and the relative merits of leasing space or building new facilities to house program activities. An additional amount of \$15,000 for a personal computer and software also is required to facilitate this effort.

Office of Environmental Management and Safety (6 workyears and \$454,000) - Increases are sought for the Office of Environmental Management and Safety to strengthen existing safety programs and to meet new regulatory requirements; to provide support necessary to manage all hazardous waste generated by the Smithsonian; to provide industrial hygiene support for the Asbestos Abatement Program; to increase the fire protection engineering staff; to develop and implement a Hazard Communication Program; and for office automation and information management.

- Hazardous Waste Program (1 workyear and \$112,000) - This increase is requested to improve significantly the current hazardous waste disposal program at the Smithsonian. Improvements are needed to reduce present expenses, to avoid future liability and to bring the current program into full regulatory compliance with Federal and state laws. A full-time technical specialist is needed to coordinate and manage the disposal of all hazardous waste at the Smithsonian, to identify and implement waste reduction efforts, to maintain all required records and to file legally mandated reports. In addition, equipment and storage systems are required to meet the legal requirements for a Hazardous Waste Program.
- Asbestos Abatement Program (2 workyears and \$132,000) - The Smithsonian is heavily involved in removing or containing asbestos insulation in its facilities. This activity poses potential contamination threats to employees, visitors, collections and buildings and must be managed effectively to avoid disaster. When asbestos is disturbed during removal or handling, it can pose a cancer threat to persons exposed. The Smithsonian is required by law to protect its employees and the environment from asbestos contamination. Asbestos abatement projects are scheduled well into the 1990s, and the requested resources are needed to ensure that these projects do not pose a health risk to Smithsonian employees, or make the Institution liable for environmental damage. This request would fund additional technical personnel and monitoring equipment to determine if asbestos removal or containment operations are posing a health or environmental risk.
- Fire Protection Engineer (1 workyear and \$42,000) - A fire protection engineer is requested to meet increasing demands and requests for services. These services include the review and approval of all construction, renovation and exhibit plans to ensure compliance with applicable codes and regulations; performance of fire protection systems acceptance tests; facility surveys; evaluations of hazardous operations; and preparation of Fire Protection Master Plans. Requests for these services have increased substantially since 1979 with no additional resources

made available. This has resulted in an inability to provide the level of services required for a comprehensive Fire Protection Program essential to maintaining compliance with life safety regulations.

- Hazard Communication Program (1 workyear and \$60,000) - The legal requirements for a Hazard Communication Program were imposed by the Occupational Safety and Health Administration in 1986. This Program requires that employers inventory all hazardous materials in their possession and that employees be trained in the hazards associated with these materials. It is estimated that the Smithsonian has approximately 100,000 items for inventory. Employees will, therefore, require broad training in the safe use of these substances. This request will provide a safety specialist/industrial hygienist to implement the Program and other resources necessary to complete the inventory, to procure equipment for automating the resulting data and to initiate a training program for Smithsonian staff. Without this support, the staggering workload imposed by this regulation cannot be managed.

- Administrative Support (1 workyear and \$37,000) - The Office has an immediate need for an administrative officer to handle all the daily details of operating the organization. Until March 1986, this function was absorbed by the administrative staff of the Office of Protection Services. Although significant administrative functions such as budget preparation, personnel administration and funds control were assumed when the Office was established, no additional staff could be provided.

- Automation and Information Management (\$71,000) - The purchase of computer equipment is requested for office automation and information management. With the increasing requirements that sampling data, inspection records, funds control data, and new regulatory standards be easily accessible at all times, the information management system will provide quick and accurate information retrieval. At the present time, legal requirements for the reporting of occupational safety and health statistics and hazardous waste disposal data cannot be met. Automation of these tasks will free safety and health professionals from data management duties so that time can be spent in the field in support of the safety program.

Office of Procurement and Property Management (2 workyears and \$108,000) - This increase is requested to allow the Office to be responsive and supportive to organizations under increasingly frequent periods of special projects, and increasingly complex acquisition demands. Examples of recent and upcoming projects include: furnishing and moving to the Quadrangle; renegotiation of the food services contracts; major construction and renovation projects; expanded automation system development; special exhibition contracts; and increasing security needs. These projects illustrate the critical need for additional management staff with specialized knowledge and skills. The requested positions and support costs would strengthen the Office's major functional areas in support of the Institution's significantly increasing acquisition needs.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Funding of these centralized services from both appropriated and nonappropriated sources produces a ratio of Federal and Trust fund administrative support approximately in proportion to the operating program expenditures of the Institution as a whole. The amounts shown under Unrestricted General represent administrative expenditures for those units that are organizationally under Administration. Certain other units receiving administrative allotments are reflected in the appropriate section of the budget request. For example, administrative costs for the Smithsonian Astrophysical Observatory are reflected within its

nonappropriated Trust funds section. Also included are expenditures for producing, distributing and marketing photographic material and slide sets, and funds to help defray the costs of the Office of Printing and Photographic Services. A program allotment is made to the Office of Equal Opportunity to support community outreach through exhibits and publications, specifically aimed at women and minorities. Funds also are provided for the costs of the identification and implementation of new financial and administrative management systems. Special Purpose funds include gifts received through unrestricted bequests which in accordance with the Bylaws of the Board of Regents subsequently are transferred to endowment. Anticipated expenditures in the Special Purpose category include support of studies in ornithology, computer conversion costs, a computer cost center and small amounts used for legal seminars, and research.

Restricted Funds - Included in this category are endowment bequests and foundation grants for scientific research publications and general research projects.

OFFICE OF DESIGN AND CONSTRUCTION

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTE**		Amount	
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	35	1,783	9	576	-	98	-	-	-	-
FY 1987 Base	35	2,139	9	374	-	-	-	-	-	-
FY 1988 Estimate	35	2,261	9	387	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	35	-	35
11 Personnel Compensation.....	1,434	41	1,475
12 Personnel Benefits.....	244	6	250
21 Travel.....	15	-	15
23 Rent, Communications & Utilities.....	24	-	24
24 Printing & Reproduction.....	10	-	10
25 Other Services.....	319	-	319
26 Supplies & Materials.....	25	-	25
31 Equipment.....	68	75	143
Total	<u>2,139</u>	<u>122</u>	<u>2,261</u>

Analysis of Increase

Necessary Pay.....	47
Program Funds.....	75

ABSTRACT - The Office of Design and Construction (ODC) provides professional architectural and engineering services to the Institution in support of the development, operation, maintenance, repair and improvement of the physical plant. Services include short- and long-range planning feasibility analyses, design and engineering studies, project management and development of cost and budgetary estimates. Other services provided by ODC include contract review, preparation and supervision, general construction administration and management, interior design work and space utilization planning, and technical consulting support. For FY 1988, an increase of \$75,000 is requested to implement an automated management and production scheduling system. Necessary pay of \$47,000 is requested for existing staff.

PROGRAM - The primary functions of the Office of Design and Construction are to provide planning, engineering, architectural and related administrative services for all construction, renovation, and repair projects for Smithsonian facilities. The facilities

are located primarily in the Washington metropolitan area, as well as the Smithsonian Environmental Research Center near Edgewater, Maryland; the Whipple Observatory in Arizona; the Cooper-Hewitt Museum in New York; and the Tropical Research Institute in Panama. ODC's staff includes electrical, mechanical, structural and civil engineers, architects and construction managers, architectural and engineering draftsmen, planners, estimators, and administrative support personnel.

The major responsibility of the Office is to administer the Restoration and Renovation of Buildings account (R&R) and construction programs by providing technical and professional support that addresses the facilities needs of the Institution in a cost effective manner. The Restoration and Renovation Program is designed to preserve an aging physical plant, to bring it up to acceptable levels of safety for visitors and staff and to provide proper environmental conditions for the preservation and maintenance of the National Collections.

Staff services provided by the Office include the preparation of detailed project designs and specifications in support of future year physical plant projects, and related budget estimating. In FY 1986, increased emphasis continued on master planning for Smithsonian facilities. Master plans were developed for the Tropical Research Institute, the Whipple Observatory, the Silver Hill facility, the Hirshhorn Museum and Sculpture Garden, and the American History and Natural History buildings. When the master plans are completed, the Institution will be better able to more effectively establish priorities to accomplish required work consistent with programmatic needs. The Office conducts architectural and engineering studies of buildings' operating systems; recommends and oversees efforts to solve functional deficiencies; reviews designs prepared by the museums' exhibits staffs to ensure compliance with safety, health, accessibility and other technical standards; prepares, reviews and supervises architectural and engineering design contracts, as well as construction contracts; and performs architectural and engineering feasibility studies and analyses.

Also, expertise is provided to Smithsonian managers on matters relating to planned construction and facility development or utilization. To support these functions, ODC maintains a central library for cataloguing, filing and identifying all plans, drawings, and specifications related to Smithsonian buildings and properties.

In FY 1986, ODC monitored and supervised 111 construction contracts. The most prominent among these were the ongoing exterior renovations and repairs to the Arts and Industries building, including roof replacement, cleaning and pointing of the brick, refinishing of stone sills and installation of new energy efficient windows; the completion of renovation of the facade at the Renwick Gallery, including the replacement of all existing sandstone elements that deteriorated from weathering and age with architectural precast concrete replicas; construction of a new Anacostia Neighborhood Museum annex, including exhibit, curatorial and administrative space as well as increased exhibit production areas; and major repair of the roof and exterior of the American History building.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of \$75,000 is requested on a one-time basis to implement an automated management and production scheduling system. Based upon ODC's assigned functions to provide facilities planning, engineering, architectural and construction management services to the Institution, and the administration of the Restoration and Renovation of Buildings and Construction accounts, vast amounts of related data are catalogued, filed and retrieved manually, requiring numerous work hours to meet management needs. Currently, ODC prepares 16 monthly and bimonthly reports that document work schedules, project activities, project fund status, construction activities, fiscal analyses, and planning information. A recent study of ODC's operations and activities concluded that a one-time investment tailored to the needs of automating various tasks would significantly enhance capabilities. With

improved capability, production schedules, workload analyses and project status reports can be developed routinely, expeditiously and with a greater degree of accuracy, providing management with current information for decision-making and adjustments as required.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds are provided by an allotment used to cover salaries and partial support costs (estimated expenditures of \$374,000 in FY 1987 and \$387,000 in FY 1988) as ODC provides services for both Trust and Federally funded projects.

OFFICE OF PROTECTION SERVICES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		Funds		& Contracts	
		FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	
FY 1986 Actual	624	16,665	-	7	-	-91	-	-	-	-
FY 1987 Base	711	18,601	-	7	1	152	-	-	-	-
FY 1988 Estimate	735	19,419	-	7	1	157	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	<u>Base FY 1987</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1988</u>
FTE Allocation.....	711	24	735
11 Personnel Compensation.....	13,465	932	14,397
12 Personnel Benefits.....	1,373	131	1,504
21 Travel.....	38	-	38
22 Transportation of Things.....	3	-	3
23 Rent, Communications & Utilities.....	30	-	30
24 Printing & Reproduction.....	10	-	10
25 Other Services.....	3,102	-321	2,781
26 Supplies & Materials.....	275	45	320
31 Equipment.....	300	31	331
42 Insurance Claims & Indemnities.....	5	-	5
Total	<u>18,601</u>	<u>818</u>	<u>19,419</u>

Analysis of Increase

Necessary Pay.....	446
Program Funds.....	372

ABSTRACT - The Office of Protection Services (OPS) protects visitors, staff, collections and facilities of the Smithsonian Institution by providing guards, physical security and medical services. The authority of OPS to provide these services is derived from Public Law 82-206 and Public Law 88-391, which relate to the policing of Smithsonian buildings and grounds, and from Public Law 91-616, which relates to employee health. For FY 1988, an amount of \$666,000 is required to maintain existing security operations throughout the Institution. Funds are available within the Office for redirection to cover these costs from the completion of the Smithsonian Institution Proprietary Security System and the planned elimination of summer hours. An increase of 11 workyears and \$165,000 is requested to provide security for the Quadrangle building and grounds. A further amount of 13.4 workyears and \$207,000 is required to annualize the partial-year funding of 25 positions approved in FY 1987 for Quadrangle-related support. Necessary pay of \$446,000 is required for existing staff.

PROGRAM - The Office of Protection Services is a support organization responsible for protecting the collections, facilities, and other property of the Smithsonian from damage, destruction, or loss from any cause; protecting staff and visitors from personal injury; and creating and maintaining a secure environment for visitors and staff. The Office is responsible for determining the protection requirements of Smithsonian facilities and meeting these requirements by operating a guard force; procuring, installing and maintaining an alarms network and responding to its signals; installing and maintaining locks and other security hardware in Smithsonian facilities; planning and providing health services for employees and taking appropriate action to eliminate health hazards from the workplace; and providing emergency medical treatment for the injuries and sudden illnesses of visitors and staff.

In FY 1987, the Smithsonian closed the public parking lots in and around its buildings, in order to assure full perimeter security. Operational control of the parking lots was assigned to the Office of Protection Services. In FY 1987 and FY 1988, the program will be funded with existing base resources until the full costs of annual operation of the parking areas can be determined. In FY 1987, combined Federal and nonappropriated Trust funds will be used to install security devices, such as card readers and closed-circuit monitoring equipment, which will serve to reduce the personnel required to maintain adequate security.

OPS provides security management, guard, investigative, and occupational health services to the Cooper-Hewitt Museum in New York City and to the major Smithsonian facilities in Washington, D.C., including 13 museums and art galleries, and provides technical assistance and advisory services in security matters to all Smithsonian bureaus. The Office employs a force of security officers and a staff of administrators, training specialists, alarm systems specialists and mechanics, investigators, museum security specialists, a medical officer, nurses, and emergency medical technicians.

The security force operates 24 hours-a-day, every day of the year. Uniformed guards, plain clothes officers, and K-9 officers are stationed at entrances and parking lots, and patrol galleries and grounds around Smithsonian buildings day and night. They respond to emergencies; operate and respond to the signals of an alarms network that covers all Smithsonian facilities including the National Zoological Park, and the Smithsonian Mail Order Center in Springfield, Virginia; conduct security and fire patrols after the museum buildings are closed to the public; investigate accidents; report fire and safety hazards and malfunctions associated with mechanical and electrical equipment; escort valuable art shipments; and provide information to museum visitors. Protection arrangements, especially those related to dignitaries' visits and exhibitions of international interest, must be coordinated with and supported by the State Department, the Secret Service, the U.S. Park Police, and other Federal and local agencies. In recent years, OPS has concentrated on reducing the number of thefts committed in Smithsonian facilities by posting plain clothes officers in high crime areas, by providing intensified training in police methods and security practices for its officers, and by thoroughly investigating incidents. The number of reported incidents (FY 1982 - 219; FY 1983 - 164; FY 1984 - 179; and FY 1985 - 204) in the last four years has prompted this action.

The training of museum security officers is a specialized area in which OPS takes pride and for which it has gained renown in the museum community. Training staff instructs all new guards (including K-9), prepares guards for higher level officer positions, and conducts refresher courses for the force. Over the past several years, the staff has trained guards and guard supervisors from the Detroit Institute of Art, the Museum of New Mexico, the Virginia Museum of Fine Arts, the U. S. Air Force Museum, the Amon Carter Museum of Art of Fort Worth, the High Museum of Art of Atlanta, the National Aquarium of Baltimore, as well as others across the United States. OPS assists the Institution's Office of Museum Programs in providing training in security for small

museums across the United States. Every year, OPS hosts a large international conference on museum security. In addition, OPS has played a leading role in international efforts to improve the security of cultural objects.

An extensive network of locks, alarms and other devices is necessary to control access to and protection of Smithsonian facilities and property. OPS advises curators and exhibitors on appropriate security systems. In addition, OPS plans, designs, acquires, installs and maintains security systems in Smithsonian facilities in the Washington metropolitan area.

OPS has been developing a proprietary security system (SIPSS) to provide complete internal control of the equipment used and the information provided by this security system, to improve the timeliness of OPS response to the signals received through its alarm installations, and to control the costs associated with operating a security system. Installation of the first phase of the SIPSS at the Museum Support Center in Suitland, Maryland, during FY 1983, and at the Central Control Room on the Mall in FY 1984 have been completed. By the end of 1987, the system will have been expanded to all Washington-area facilities.

Construction of the Museum Support Center (MSC) and the Quadrangle has presented great demands for the design and installation of new security systems. More than 350 state-of-the-art sensing devices, including 18 closed-circuit television cameras (CCTV) and 47 access card readers, were placed in the MSC during FY 1984 in conjunction with the installation of the SIPSS. State-of-the-art security technology has been incorporated in the security system in the Quadrangle project. The system, to be controlled by the SIPSS, includes 500 zones of security, and is able to control up to 68 CCTV cameras and 102 card readers. It employs for the first time the new delay-action locking devices permitted by the life safety code to improve security on exit doors without jeopardizing life safety.

OPS conducts and arranges for security management surveys to determine protection requirements of Smithsonian facilities, investigates alleged and actual violations of the law occurring on Smithsonian premises, and escorts many shipments of valuable objects to and from the Smithsonian. The investigative program is designed to resolve collection losses, thefts, and other serious internal matters. Similar investigative assignments affecting the retail operations of the Smithsonian Institution also are handled. Successful resolution of collection losses and thefts requires coordination with the United States Attorney, the Department of Justice, and the court system.

OPS provides occupational health services and counseling for Smithsonian employees. The medical officer, occupational health nurses, and emergency medical technicians assist in identifying and eliminating hazardous work environments, monitor the health of employees exposed to occupational hazards, and provide first aid for on-the-job injuries of employees. Major program elements include general protection and monitoring of employees who are exposed to various specific hazards such as asbestos, loud noise, pesticides and other toxic chemicals; preemployment evaluation of individuals selected for certain hazardous jobs or for such job duties or functions as underwater diving or operating motor vehicles; employee assistance counseling to deal with substance abuse and emotional problems; routine medical treatments, such as allergy shots and dressing changes, prescribed by an employee's private physician, to reduce the amount of time employees must spend away from the workplace for simple health care; immunizations for employees on official travel orders; and health education and major disease screening programs; and cardiopulmonary-resuscitation and first aid training for employees including special first aid training for scientific expedition members traveling in medically remote areas. OPS provides occupational health services at the Washington-area facilities and at major remote facilities.

Occupational health units are operated in the National Museum of American History, National Museum of Natural History, National Air and Space Museum, National Zoological Park, Museum Support Center, and Hirshhorn Museum and Sculpture Garden. Health services are available to employees in other facilities during regular visits by members of the health staff. OPS has acquired new equipment and developed a new examination program for the increasing number of employees identified as being at risk from exposure to asbestos and other toxic substances. Since December 1983, OPS has performed 650 base line examinations.

Medical standards for Smithsonian divers have been revised in strict accordance with the standards of the Undersea Medical Society, the National Oceanic and Atmospheric Administration, and the American Academy of Underwater Sciences, and meetings are being conducted with divers to explain the new regulations. OPS reviews medical qualifications of those planning to dive, performs physical examinations of divers, represents the Smithsonian on appropriate committees of national diving organizations, especially with regard to scientific diving, and provides liaison on medical aspects of scientific diving with Federal agencies, legislative committees and scientific societies. The medical officer has accompanied several research expeditions to the Caribbean to observe and evaluate medical conditions and requirements.

OPS is now conducting inspections of all Smithsonian and National Zoological Park cafeterias, lunch rooms, snack bars and food vending facilities and is requiring testing of food handlers for tuberculosis.

In September 1983, OPS expanded its counseling program for employees with alcohol, drug abuse, and emotional problems to bring it into full compliance with the requirements of Public Law 91-616. A member of the OPS staff who is a certified counselor is now available to employees on a full-time basis. The number of referrals is increasing dramatically as the existence of this service is publicized more widely to employees and supervisors and as extensive training programs are conducted for management personnel.

Audiometric examinations were given to 900 employees for whom a hearing conservation program is required. Hearing protection devices were also provided. OPS will continue to develop its occupational health programs and will undertake additional programs as a need for them becomes apparent. The programs expected to grow most rapidly are employee assistance counseling and preemployment physicals. There is also a need to promote voluntary screening programs to increase employee participation, and to conduct these programs at the Cooper-Hewitt Museum and the Smithsonian Astrophysical Observatory more frequently.

EXPLANATION OF PROGRAM CHANGE - In FY 1988, an amount of \$666,000 is required to maintain ongoing security operations throughout the Institution. Funds are available within the Office's base resources for redirection to cover these costs as a result of the completion of the Smithsonian Institution Proprietary Security System and the planned elimination of summer hours. An increase of 11 workyears and \$165,000 is requested for guard positions to complete Quadrangle staffing. A further amount of 13.4 workyears and \$207,000 is required to annualize the partial year funding of 25 positions approved in FY 1987 for Quadrangle-related support.

Redirection of Base Resources (\$666,000) - In FY 1988, the redirection of \$666,000 would allow hiring of the 26 guard positions previously authorized by Congress and the purchase of essential equipment, supplies and services needed to support these positions. In recent years, these positions have had to remain vacant due to insufficient funds. Resources were requested in FY 1986 to remedy this long-term problem. The request was reduced by \$250,000; however, across-the-board and necessary pay reductions in FY 1985 and FY 1986 have contributed a further \$416,000 to the shortage. The filling of these

authorized positions would eliminate the frequent need to close exhibition galleries and other spaces as the result of understaffing and would provide adequate coverage for regular operations. Partial funding is available within the Office's base as a result of the completion of the Proprietary Security System in FY 1987. The amount of \$356,000 added to the base in fiscal years 1977 through 1980 for development and installation of the system will no longer be needed. In addition, the Institution proposes to apply funds for extended summer hours (\$310,000) to the correction of the base shortage. While recognizing that the summer program is of value, particularly to Washington area residents, it is costly given the relatively few hours involved between essentially June and September. The maintenance of adequate staffing and public accessibility to all exhibition areas during regular hours throughout the year is deemed to be a greater public service and thus a higher priority for use of these funds.

Quadrangle Security (11 workyears and \$372,000) - An increase of 11 workyears and \$165,000 is requested for 11 guard positions to provide the necessary security for the Quadrangle when it becomes fully operational in the fall of 1987. These positions will complete staffing requirements for the buildings, providing security coverage for the visitors, staff, collections stored and displayed in the Quadrangle, and exterior buildings and grounds. A further amount of 13.4 workyears and \$207,000 is required to annualize the partial-year funding of 25 positions approved in FY 1987 for Quadrangle-related support.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These are provided by an allotment and by reimbursements for the use of guard services at special events and lectures at Smithsonian facilities. These funds are used to purchase supplies, materials and equipment. Although not reflected in these figures, an allotment has been established to facilitate the transfer of the parking program to the Office of Protection Services (estimated expenses of \$220,000 in FY 1987).

OFFICE OF PLANT SERVICES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		FEDERAL GRANTS & CONTRACTS	
	FTE*	Amount	General		Special Purpose		FTP**	Amount	FTP**	Amount
			FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1986 Actual	422	30,840	7	1,477	7	141	-	4	-	-
FY 1987 Base	498	35,624	7	1,538	8	75	-	7	-	-
FY 1988 Estimate	506	37,505	7	1,617	8	82	-	7	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent positions

Detail of Federal Funding

	Base FY 1987	Proposed Adjustments	Est. FY 1988
FTE Allocation.....	498	8	506
11 Personnel Compensation.....	12,004	730	12,734
12 Personnel Benefits.....	1,569	121	1,690
21 Travel.....	25	3	28
22 Transportation of Things.....	2	-	2
23 Rent, Communications & Utilities.....	18,683	763	19,446
24 Printing & Reproduction.....	5	-	5
25 Other Services.....	1,781	11	1,792
26 Supplies & Materials.....	1,171	228	1,399
31 Equipment.....	384	25	409
Total	<u>35,624</u>	<u>1,881</u>	<u>37,505</u>

Analysis of Increase

Necessary Pay.....	393
Program Funds.....	725

ABSTRACT - The Office of Plant Services (OPlantS) operates, maintains, and repairs 14 museums and art gallery buildings including the Quadrangle, which will open to the public in 1987, and a number of other work and collections storage areas located in the Washington metropolitan area and New York City. OPlantS provides utilities, transportation, mail and telephone services as well as exhibits renovation and other essential program services in support of research, exhibition, education and other public programs. In addition, technical services and assistance are provided to other Smithsonian units located outside the Washington metropolitan area including the Tropical Research Institute in Panama, the Cooper-Hewitt Museum in New York, the Whipple Observatory in Arizona and the Environmental Research Center in Maryland. Also included in this line item are the Office of Horticulture, South Group Buildings Management and the Quadrangle Facility Management units.

For FY 1988, an increase of 1 workyear and \$580,000 is requested. For the Office of Plant Services, an amount of \$540,000 is sought to provide sufficient base funds for salaries and basic supplies, services and equipment in support of OPlantS' facilities operations, and maintenance and repair personnel. For the Office of Horticulture, an amount of 1 workyear and \$40,000 is required for a gardener and necessary supplies and equipment.

A further sum of 7 workyears and \$145,000 is required to annualize the partial-year funding of four positions approved in the FY 1987 budget for Quadrangle-related support for OPlantS (2 workyears and \$54,000) and 19 positions approved for Quadrangle Facility Management (5 workyears and \$91,000).

Necessary pay of \$311,000 is required for existing staff. An amount of \$763,000 for utilities, postage, rent and communications is being requested and justified in the Uncontrollable Increases section of this budget.

PROGRAM - I. Office of Plant Services - With base resources of 373 workyears and \$13,533,000 (exclusive of rent, communications, and utilities budgets), the Office of Plant Services operates, maintains and repairs the Smithsonian's physical plant on or near the Mall, including over 5.1 million net usable square feet in museums and art galleries. In addition, OPlantS operates, maintains and repairs 82,000 square feet of space in the Cooper-Hewitt Museum in New York City. Services also are provided to other work and storage areas including the Museum Support Center in Suitland, Maryland, and space in leased facilities. These services include maintenance of building interiors and exteriors; all mechanical and electrical equipment, including elevators and escalators; lighting and refrigeration components; and oversight of emergency property repairs which are accomplished by service contracts. Operational responsibilities for the Energy Management Program include operation and maintenance of large and complex heating, air conditioning and ventilating systems and electronic environmental control systems essential for the protection of buildings, specimens, objects, paintings and sculptures. Trade and craft assistance, including carpentry, painting, plumbing, plastering, sheet metal and electrical work, are provided to further research projects, office relocations and modifications, exhibition installations and other public events at all museums and facilities. Financial monitoring and oversight responsibilities for the Energy Management Program also rest with OPlantS.

OPlantS also maintains a supply warehouse at the Smithsonian Institution Service Center where heavily used supplies and materials (purchased in bulk to obtain the most favorable price) are received, stored and distributed. Packing, crating, warehousing and moving services for museum objects and collections are also performed by OPlantS. In addition, the Office is responsible for oversight of all communications systems including the management and funding of telephone installations and services (Federal Telecommunications System Network and local calls), and processing of mail and the monitoring of postage costs. Transportation services, including the maintenance, repair and operation of vehicles, are also carried out by this Office.

The Computerized Preventive Maintenance System for scheduling preventive maintenance requirements continues to provide for a highly reliable and efficient physical plant operation. The preventive maintenance program schedules periodic maintenance for fire prevention, automatic lighting, guard stations, roofing systems and heating, ventilating and air conditioning mechanical equipment in all Washington, D. C. museums and the Smithsonian Environmental Research Center near Edgewater, Maryland.

The Computerized Facilities Monitoring System continues to analyze and control the operation of mechanical equipment and monitor environmental conditions in major Smithsonian museums. This System uses nearly 1,900 sensors located on equipment components and in areas where stable temperature and humidity controls are essential. The

sensors automatically alert a control center to equipment malfunctions and deviations from required environmental conditions. These automatic alerts have aided in avoiding costly repairs and in maintaining proper environmental conditions required by the collections.

Accomplishments in FY 1986 included providing trade and craft services (such as electrical, carpentry and custom woodworking, plumbing, painting and machinist) in support of 45 exhibit projects for Smithsonian organizations. Notable among these were "Hollywood: Legend and Reality" and "Engines of Change" at the National Museum of American History; "Earliest Traces of Life" at the National Museum of Natural History/Museum of Man; "Rising of a New Moon," "Go Well, My Child," and "Bamana Figurative Sculptures" at the National Museum of African Art; "Patrick Ireland Drawings," "James Rosenquist Retrospective," and major remodeling of three permanent galleries at the National Museum of American Art; "Gaston Lachaise," "Artists on Paper" and "John Frazee, Sculptor" at the National Portrait Gallery; "F. L. Wright/Johnson Wax" at the Renwick Gallery; "Directions 86" and "Robert Arneson" at the Hirshhorn Museum and Sculpture Garden; and "Looking at Earth" at the National Air and Space Museum.

Also in FY 1986, OPlantS was called upon to provide other essential program support services to museums and other Smithsonian organizations. These projects included office modifications to keep pace with changing program needs; creation of exhibit storage space; modifications of areas to accommodate installation of scientific and other specialized equipment; continued upgrading and expansion of the capabilities of facility monitoring equipment which are essential to maintaining stringent museum and gallery environmental conditions; operational changes required to participate in the energy load reduction program sponsored by the utility company servicing Washington, D. C.; and installation and maintenance of fire detection and suppression and other equipment.

II. Office of Horticulture - With base resources of 45 workyears and \$1,602,000, the Office of Horticulture applies the disciplines of horticulture as an educational, scientific, research, exhibition and display activity for the Smithsonian Institution. The Office provides horticultural services to all museums, including interior and exterior landscape management, from design to installation including maintenance; research and development of historically styled gardens for museum grounds and special exhibitions; interior plantscapes; management of grounds around museums; and operation of a large greenhouse-nursery complex. Responsibilities of the Office also include exterior buildings and grounds pest control; snow and ice removal from sidewalks, roadways, parking lots and decks in locations on and off the Mall; and trash policing of grounds.

III. South Group Buildings Management - With base resources of 41 workyears and \$1,055,000, South Group Buildings Management is responsible for the Arts and Industries and the Smithsonian Institution Buildings. Included in these responsibilities are cleaning, minor maintenance and renovation projects, labor services, relamping, craft services, shipping and receiving, special events preparation and contract coordination for maintenance, trash removal and pest control.

IV. Quadrangle Facility Management - With a base of 39 workyears and \$858,000, Quadrangle Facility Management will provide a wide variety of support services to the Museum of African Art, Center for Asian Art, Resident Associate Program, National Associate Program, Smithsonian Institution Traveling Exhibition Service and the Directorate of International Activities. These services will include shipping and receiving, custodial, minor maintenance, relamping and other services.

EXPLANATION OF PROGRAM INCREASE - For FY 1988, an increase of 1 workyear and \$580,000 is requested. This amount is sought to provide sufficient base funds for OPlantS' salaries (\$290,000); to purchase basic supplies and equipment and to provide

services in support of OPlants' facilities operations, maintenance and repair personnel (\$250,000). For the Office of Horticulture, an amount of 1 workyear and \$40,000 is required for a gardener and necessary supplies and equipment.

For Quadrangle support, a further amount of 7 workyears and \$145,000 is required to annualize the partial-year funding of 23 positions requested for OPlants (2 workyears and \$54,000) and for Quadrangle Facility Management (5 workyears and \$91,000) in the FY 1987 budget.

OPlants - Adequate Base Funds (\$540,000) - For FY 1988, an increase of \$540,000 is sought to alleviate OPlants' long-term base deficiency in funds to cover salary and benefits costs of authorized positions and the costs of supplies, services and equipment essential for the maintenance and repair of the Smithsonian physical plant.

The Office of Plant Services' primary mission, to operate and maintain the Smithsonian physical plant, continues to be hampered as a result of the long-term base shortage in funds needed to cover fully the salary and benefits costs of Congressionally authorized positions (\$290,000) and to purchase basic supplies, services and equipment to support OPlants' facilities operations, maintenance and repair personnel. This request made in FY 1986 to solve this long standing situation was reduced by \$250,000 by Congress. Other across-the-board reductions to the FY 1985 and FY 1986 appropriations have increased the deficit by \$290,000.

Of the total, an amount of \$290,000 is requested in FY 1988 to fund the salary and benefits costs of ten utility system repair/operator employees essential to ensure that heating, ventilating and air conditioning systems, electronic environmental control systems and other vital equipment installed in Smithsonian buildings operate efficiently and receive required preventive maintenance service throughout the year. There is no alternative to properly operating, maintaining and repairing these large, complex and expensive facility systems. Without adequate funds to cover the salary and benefits costs of staff necessary to perform these critical physical plant operating functions, the life expectancy of this vital machinery will be significantly reduced, increasing the risk of unplanned shut down and expensive early replacement. The most cost effective solution in the long-term is a strong preventive maintenance and repair program. OPlants has developed a very successful program in this area, but full effectiveness of the program cannot be maintained without additional resources.

A sum of \$236,000 is also required in FY 1988 to purchase essential supplies (\$216,000) and equipment (\$20,000) used exclusively by OPlants staff in maintaining Smithsonian buildings and in making emergency repairs to mechanical and electrical systems installed throughout the Institution's physical plant.

A final amount of \$14,000 is needed to cover increased costs of the annual contract with an independent commercial firm for specialized inspection and minor maintenance servicing of high voltage electrical equipment installed in Smithsonian buildings (\$11,000) and to cover travel costs for operations and maintenance personnel inspecting off-Mall facilities, including the Cooper-Hewitt Museum in New York City and the Tropical Research Institute in Panama (\$3,000).

Horticulture - Gardener (1 workyear and \$40,000) - An increase is requested to support the perpetual maintenance of the Enid A. Haupt Garden located in the Quadrangle. This Garden will encompass 4.2 acres and will require the utmost care to maintain the abundant plant types and elaborate landscapes.

The Garden area will consist of three distinctly different types of gardens--the center will be a Victorian style and will be flanked by Oriental and Persian gardens. The Victorian Style garden will include elaborate parterres which require weekly edging

and trimming; the Oriental and Persian gardens will consist of specimen plantings, rock work and water features.

Interior plants will be located in the entrance pavilions, reception areas and museum galleries. These plants will require regular rotation, watering, feeding, trimming, and removal of damaged or dead leaves. The interior plant program will improve the esthetic appearance of the museums and galleries and will relieve the subterranean feeling engendered by the underground location of the Quadrangle complex. Interior plants are being chosen to reflect native plants of each museum's discipline--such as plants of African and Eastern origin. All plants will be rotated to and from the greenhouse nursery complex located at the United States Soldiers' and Airmen's Home.

With funds provided in FY 1986 and FY 1987 for gardener positions, an increase in FY 1988 of 1 workyear and \$23,000 will allow the Office of Horticulture to provide the full complement of services required for the care and maintenance of the horticultural collection located in the Quadrangle. An amount of \$17,000 also is required to purchase necessary supplies and equipment.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Unrestricted Trust funds are provided by allotments and are used primarily to cover salaries and support costs of seven full-time positions in the Office of Plant Services (estimated expenditures of \$331,000 in FY 1987 and \$346,000 in FY 1988) and to provide for the payment of the Trust fund share of the Smithsonian's annual costs for the use of the Federal Telecommunications System Network and for the Trust fund share of space rental costs for administrative activities located in L'Enfant Plaza (estimated expenditures of \$1,191,000 in FY 1987 and \$1,263,000 in FY 1988). Special Purpose funds are provided through reimbursements primarily from Trust-funded client organizations for support services rendered. These amounts are used to purchase supplies, services, equipment, and landscaping materials.

MUSEUM PROGRAMS AND RELATED RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

SMITHSONIAN INSTITUTION
MUSEUM PROGRAMS AND RELATED RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

1986 Appropriation.....	\$2,378,000	} Equivalent in Excess Foreign Currencies
1987 Appropriation.....	-0-	
1988 Estimate.....	-0-	

PROGRAM OF GRANTS FOR RESEARCH

The Smithsonian Institution, through its Special Foreign Currency Program, makes grants to United States universities, museums, and other institutions of higher learning, including the Smithsonian itself, primarily for research and advanced professional training in fields of traditional Smithsonian competence.

Since FY 1966, the Smithsonian program has been a major source of excess foreign currency support for research carried out by United States institutions in the excess currency countries (currently Burma, Pakistan and Poland are so designated). Distinguished from other Special Foreign Currency Programs in that the full responsibility for the design, execution and publication of research results rests with a scholar working within the program of a United States institution, Smithsonian foreign currency grants have also strengthened the research and training activities of collaborating institutions abroad, since most projects directly involve host country institutions and scholars. Enduring professional ties which result from joint efforts and scholarly exchange contribute to the strongest form of United States cultural relations with other nations. Also, these ties contribute to the integration of the worldwide advancement of science which serves to narrow the gap between the industrial and the developing nations.

Funding for this program through FY 1986 had been provided directly by appropriations in excess currencies received from Congress. Outlays from the budget authority appropriated through FY 1986 will continue through at least FY 1988, with outlays from the Forward-Funded Reserve for the American Institute of Indian Studies continuing into the 1990s. In addition, beginning in FY 1986, the Smithsonian has received allocations of U.S.-owned Indian rupees from the funds appropriated to the Department of State in FY 1985 for the establishment of the U.S. - India Fund for Cultural, Educational, and Scientific Cooperation.

The Importance of Research in the Natural Sciences and Cultural History

The rapid growth of world population and technological development has resulted in significant effects on the natural environment and on society. Research sponsored by the Smithsonian in the natural sciences and in cultural history is aimed in part at improving understanding of the environment and the management and conservation of scarce natural and cultural resources.

In FY 1986, grants supported the following projects of special interest:

Archeological and geomorphic studies at Ghazi Shah in Sind, Pakistan, are providing information on river channel, climatic and tectonic changes as they affected pre-historic settlement in the Lower Indus valley.

An ongoing exchange between Indian and U.S. astronomers is elucidating questions on applications of nuclear, elementary and relativistic physics to astrophysics.

Studies on the vegetation in the Bharatpur wetland in India are providing indices for predicting the impact of changes in water regime on vegetation development.

Documentation of land use and vegetation changes in India and Burma from 1800 to 1980 by U.S. historians is providing a new data base for conservation management.

Further, with emphasis on information exchange through small workshops, symposia and field conferences, the Smithsonian is encouraging international research in specialized areas. In FY 1986, for example, United States scholars received support for participation in exchanges on the subjects of endangered marine mammals, environmental education, biosaline research, astronomy, atomic and molecular physics, cosmic ray physics, and geophysics.

The Importance of Multi-Year Grants

Since FY 1979, the Smithsonian Foreign Currency Program has followed a policy of multi-year funding of major programs, whenever sufficient funds were available. Such funding has been important because rational planning requires the advance commitment of professors' and graduate students' time as well as facilities. Multi-year grants, with annual disbursements subject to satisfactory review of progress by the advisory councils, allow participating institutions to coordinate such projects into their long-range scholarly programs, by providing some assurance of funding for the duration of the project.

Further, the Smithsonian has been able to use multi-year grants to protect successful projects from sudden termination when excess currency accounts were exhausted abruptly, as occurred in Poland and Tunisia in 1976 and in Egypt in 1981. In FY 1985, the last year of Indian funds, several ongoing projects were multi-year funded to completion. Because FY 1986 was designated by OMB as the final year for other excess currency appropriations, the Smithsonian's first priority has become the necessity to provide all ongoing projects with multi-year grants to guarantee reasonable conclusions.

FORWARD-FUNDED RESERVE FOR THE AMERICAN INSTITUTE OF INDIAN STUDIES

Since 1967, the Smithsonian has provided annual funding through the Special Foreign Currency Program to the American Institute of Indian Studies (AIIS) for fellowships, research, symposia and publications and for administrative costs. The Smithsonian has helped sustain this Institute and other American research centers abroad for the last 20 years because of their significant contributions to scholarship and science without regard for national boundaries and their special service to American scholars conducting research.

To prevent the sudden termination the programs of the AIIS after the removal of India from the excess currency list and to provide it with interim funding for a period after the end of excess currency status, a forward-funded reserve of \$7,170,000 equivalent in rupees was established for the AIIS with Special Foreign Currency Program appropriations from FY 1980 through FY 1985. Beginning in FY 1986, after the Indian rupee was removed from the excess currency list, the AIIS, with oversight from the Smithsonian, began to use funds from the reserve for its fellowship program and administration costs in India. It is anticipated that the reserve will support AIIS programs through the 1990s in conjunction with continued support from the U.S. - India Fund. Annual proposals will be examined through the Smithsonian's peer review system before each yearly increment is released from the reserve account.

INTERNATIONAL EFFORT TO SALVAGE MOENJODARO

In FY 1986, the Smithsonian provided the fourth and final increment of the United States contribution to the international effort to salvage the city of Moenjodaro in Pakistan, bringing the total contribution to \$4 million in nonconvertible Pakistani currency. Moenjodaro, discovered in the Indus Valley in 1921, apparently was the product of the Harappan civilization which flourished over 4,500 years ago (from about 3000 B.C. to 1500 B.C.). This ancient city anticipated developments in planning, sanitation and social organization which only blossomed several thousand years later.

The excavated ruins at Moenjodaro have been threatened since their discovery: floods of the Indus River and highly saline ground waters have caused the serious deterioration of the excavated remains. In the 1960s, the Government of Pakistan appealed to the international community for assistance in salvaging the city by diverting the river, lowering the water table, providing remedial action to stabilize threatened buildings and preventing disintegration of those that have not yet been seriously damaged, and installing appropriate landscaping. Since 1974, UNESCO has coordinated the international fundraising campaign. Approximately \$9,300,000 has been raised so far, mainly from governmental contributions from UNESCO member states and the Government of Pakistan. The total budget for the project is now estimated to cost over \$19 million.

A ground water control scheme for the site has been completed. The construction of the tube wells for lowering the level of the water table to preserve the remaining structures and landscaping has begun. Salt-tolerant plants will be planted for erosion control and to provide suitable protection from wind driven sands.

U.S. - INDIA FUND FOR CULTURAL, EDUCATIONAL, AND SCIENTIFIC COOPERATION

In FY 1986, the Smithsonian received an allocation of \$1.5 million equivalent in Indian rupees from the U.S. - India Fund to continue programs in India similar to those administered under the Special Foreign Currency Program which would otherwise have been discontinued when India was removed from the excess currency list in 1985. While the allocation was not received in total until June 1986, obligations were made for a number of research programs. An initial allocation of \$1.4 million equivalent in Indian rupees has been received for FY 1987.

FACILITIES PLANNING, RENOVATION,
RESTORATION, AND CONSTRUCTION

CONSTRUCTION AND IMPROVEMENTS
NATIONAL ZOOLOGICAL PARK

1986 Appropriation.....	\$5,281,000
1987 Appropriation.....	\$2,500,000
1988 Estimate.....	\$5,150,000

This appropriation is for use at the National Zoological Park for repairs, alterations and improvements to plant property and for the construction of additions to existing facilities and minor new facilities including exhibits; preparation of plans and specifications for construction; and to perform renovations, restorations and new construction to implementing the Master Plan approved by the Commission of Fine Arts and the National Capital Planning Commission in FY 1973. The Zoo's facilities include 163 acres in the Rock Creek Valley of Washington, D.C., and a 3,150-acre Conservation and Research Center located in Front Royal, Virginia. Construction and improvements are accomplished primarily by contract, except in instances when suitable contractors cannot be located or their estimates are above acceptable cost levels in relation to proposed work. In such cases, accomplishment of the work by other means, such as the purchase of supplies, materials and equipment and the use of permanent staff or temporary labor, is the most economical alternative. Furthermore, occasionally it is necessary to fund other related expenses from this account, particularly those associated with the displacement of animals as a result of the construction program or major grounds maintenance in repair of storm damage.

Status of the Construction Program - The National Zoological Park was established in 1889 under the Board of Regents of the Smithsonian Institution, which was authorized to "administer and improve" the Zoo for "the advancement of science and instruction and recreation of the people" (20 U.S.C. 81). The Zoo administers two permanent facilities. Exhibition, research and educational functions have been centered since 1890 on 163 acres in Rock Creek Valley of Washington, D.C. Complementary animal conservation, research and breeding functions have been conducted since 1975 on a 3,150-acre site near Front Royal, Virginia.

The National Zoo's Rock Creek facilities have been undergoing renovations and improvements since FY 1974 through implementation of the Master Plan. With the transfer of selected and critical animal breeding functions to Front Royal, the elimination of costly projects and the scaling down of others, the total Rock Creek Master Plan program has been reduced from an original plan of 41 major projects and an estimate of \$118,000,000 (1974 dollars) to less than 30 projects and a current estimate of \$101,521,000 (1986 dollars). The total \$43,781,000 appropriated through FY 1986 has been spent on 27 new or rebuilt exhibits and support facilities. During FY 1985, a revised Master Plan was developed that incorporated changes in exhibit concepts as they have evolved during the past decade. The revised Master Plan will place the Park among the world's finest zoos.

For FY 1988, an amount of \$5,150,000 is requested to support projects at the two sites operated by the National Zoological Park. Explanation of the sums of \$4,400,000 sought for Rock Creek and \$750,000 sought for Front Royal follows:

Olmsted Walk - Phase III (\$2,600,000) - An amount of \$2,600,000 is requested for the renovation and improvement of the final section of the Olmsted Walk. This third phase will renovate the center section from the Great Ape Facility to just below the Education Building. This will complete renovation of the walkway from the Connecticut Avenue walk-in entrance to the newly created entry at Rock Creek. After this phase of construction, there will be a new main pedestrian walkway through the Zoo with the prominence befitting

our National Zoological Park. This walkway will serve as a focal point for the Zoo's centennial which will begin in January 1989. In FY 1989, additional funding will be requested to support the Olmsted Walk landscaping program.

Renovation, Repairs and Improvements: Rock Creek (\$1,800,000) - An amount of \$1,500,000 will be used to continue the program of renovation, repairs and preventive maintenance of existing facilities at Rock Creek, where there are over 60 facilities of varying age and 163 acres of land containing over 18 miles of heavily used paths and roadways. The pedestrian paths and vehicle roadways require regular maintenance in order to prevent future, more costly repairs. Renovation, repairs and improvement funds are used to complete emergency repairs to mechanical, electrical, plumbing and support systems, as well as animal exhibits areas. Safety of visitors and employees is a major consideration in the operation of a zoo, and this can be assured only by the most rigorous maintenance of exhibits and other facilities.

In FY 1988, an additional \$300,000 is requested to renovate the Zoo's Bird House Outdoor Flight Cage. This exhibit was constructed in 1965 and has had only general maintenance over the past 21 years. This major renovation calls for the replacement of the exhibit's wire fabric, repair or replacement of all walkways and ramps, and painting the entire facility.

Renovation, Repairs and Improvements: Front Royal (\$750,000) - An amount of \$750,000 will be used to continue the program of renovation and repair of existing facilities at the Conservation and Research Center at Front Royal. The Conservation and Research Center includes 89 facilities of various types, containing approximately 236,000 square feet of space, two and one-half miles of paved roads, 20 miles of jeep trails, and 30 miles of fences, all of which must be maintained. Funds also will be used for upgrading the Center's utility systems.

RESTORATION AND RENOVATION OF BUILDINGS

1986 Appropriation.....\$10,536,000
1987 Appropriation.....\$12,975,000
1988 Estimate.....\$14,254,000

The Restoration and Renovation of Buildings (R&R) account is used to finance repairs, alterations and improvements to Smithsonian facilities. (The repairs and renovations at the National Zoological Park are presented separately in this budget submission.)

Smithsonian facilities are comprised of over 5 million square feet of building space located in 14 museum and gallery buildings in Washington, D.C. and New York City, housing research and collections management activities and a wide range of exhibitions in the fields of science, history, technology and art. In addition, the Institution operates and maintains preservation, storage, aircraft and spacecraft display facilities and the Museum Support Center at Suitland, Maryland; centers for biological research, conservation and education in Panama and on the Chesapeake Bay near Edgewater, Maryland; a center for astrophysics in Cambridge, Massachusetts; and the Whipple Observatory on Mt. Hopkins in Arizona. These facilities range in age from new to 130 years old, and many are listed as Historic Landmarks.

The Smithsonian's request of \$14,254,000 for FY 1988 reflects a commitment to preserve the Institution's facilities and provide a safe, secure environment for its visitors, staff and collections. At present, there is an identified backlog of over \$200 million in essential repair and restoration projects to keep the buildings in good operational condition and to meet all applicable safety and environmental codes. The emphasis in this budget request, and in future budgets, is on implementing a planned program to identify more fully the present and future requirements of the Institution's buildings and to eliminate this backlog over time. The largest portion of the current budget request will therefore be used for repairs and replacement of heating, ventilating and air conditioning systems, restoring and renovating building exteriors, improving fire detection and suppression capabilities to meet current codes, improving safety, security and access for disabled persons, eliminating hazardous conditions, and continuing a wide range of other essential repair projects. A smaller portion of this request will be used for the alteration or construction of space necessary to meet the Institution's present and future programmatic requirements.

The FY 1988 request for \$14,254,000 represents an increase of \$1,279,000 over the FY 1987 R & R appropriation and reflects the Institution's need to increase the level of annual funding for this account to begin elimination of the extensive backlog of essential repair projects. The composition of this year's budget request follows. Included are those projects deferred as a result of mandated redirection of these projects for replacement of (polychlorinated biphenyls) PCB transformers in FY 1987.

1. General repairs and improvements	\$ 655,000
2. Facade, roof and terrace repairs	1,980,000
3. Fire detection and suppression systems	2,385,000
4. Access for the disabled, safety and security and correction of hazardous conditions	950,000
5. Utility systems repairs and improvements	5,560,000
6. Other projects	<u>2,724,000</u>
Total	<u>\$14,254,000</u>

GENERAL REPAIRS AND IMPROVEMENTS (\$655,000): Funds requested in this category support a wide variety of projects that do not lend themselves to discrete categorizations. These include ongoing repairs to facilities, roads, sidewalks, docks and other support systems. Funds in this category also support minor unscheduled, but essential, repairs that cannot be anticipated. Examples of projects include unforeseeable repairs or replacements of building systems or components which fail unexpectedly.

For FY 1988, an amount of \$655,000 is requested, of which \$100,000 is designated primarily for emergency repairs, and \$145,000 is sought for minor plumbing, electrical, lighting, and floor and wall repairs at off-Mall facilities. A further sum of \$130,000 is requested for repairs and improvements to the roads serving the Whipple Observatory in Arizona and the Paul E. Garber Facility and Museum Support Center in Suitland, Maryland. Funds requested for the Whipple Observatory road improvements (\$40,000) will provide for necessary continuing repairs to the dirt road leading from the current base camp to Mt. Hopkins, which is subject to continual deterioration due to heavy use by Smithsonian vehicles and extreme weather conditions. Road improvement projects at the Paul E. Garber Facility will include the repair of the perimeter fence and installation of a gravel road inside the fence to allow patrol and surveillance for improved security at the Facility (\$50,000). Funds are also required to repair the deteriorated perimeter road at the Museum Support Center which has been subjected to heavier than anticipated use because of continued construction and equipment installation and artifact delivery (\$40,000). The amount of \$50,000 is requested to repair the dock serving the Smithsonian Environmental Research Center on the Chesapeake Bay. A survey conducted in May 1986 determined that the replacement of a number of piles and deck boards was required to upgrade the dock to meet safety standards. An amount of \$230,000 is requested for modification of attic space at the American Art and Portrait Gallery Building to provide needed storage for paintings and sculpture acquired by the National Museum of American Art in recent years. The fourth floor attic space on the G Street side of the building is presently unusable for this purpose because of ductwork occupying the floor space. The ducts will be relocated and partitioning, lighting, insulation and climate control will be provided so that the space can be used to store collections. Although future plans for this building and the General Post Office Building will provide additional storage space, creation of this space is urgently needed to solve immediate problems of overcrowding of the collections.

FACADE, ROOF AND TERRACE REPAIRS (\$1,980,000): Maintaining the integrity of the exteriors of all Smithsonian buildings is critical to prevent major structural and interior damage and deterioration due to age, water intrusion and weathering and to ensure a safe environment for visitors, staff and collections. Energy conservation also demands weather-tight exteriors. Work in this category includes a variety of major projects that must be accomplished periodically according to the life cycles of the materials used. For example, roof replacements are needed about every 20 years; facade joints must be recaulked and repointed about every ten years; and window frames and other exterior trim should be repainted every five years. Several Smithsonian buildings require large-scale renovation, and work is under way to assure that in the future adequate protection of the exteriors of these buildings can be provided through a preventive maintenance and repair program. In addition, two of the newer museums are experiencing serious deterioration of the plazas and major replacement programs are being initiated.

For FY 1988, a total of \$1,980,000 is requested to continue, complete and initiate essential roof, facade and plaza projects at four Smithsonian museums and at the Paul E. Garber Facility in Suitland, Maryland. Of this amount \$1,250,000 is requested to continue the window replacement program and \$50,000 is required to continue facade restoration at the Smithsonian Institution Building; \$200,000 is sought to continue facade repairs at the Air and Space Building; \$50,000 is requested to begin roof replacement at the Cooper-Hewitt Museum; an amount of \$300,000 is needed to begin replacement of the

plaza at the Hirshhorn Building; an amount of \$100,000 is requested to begin a program of general facade renovations at various buildings; and \$30,000 is required for exterior maintenance of Building 10 at the Paul E. Garber Facility in Suitland, Maryland.

An amount of \$1,250,000 is requested to continue the phased replacement of the windows in the Smithsonian Institution Building. Many of the existing windows, including frames, have deteriorated beyond repair and require replacement to prevent leakage of air and water which causes loss of energy and water damage to the interior. Others have been replaced since original construction with windows of a more modern design that are not in accord with the architectural style of the building. Most of the nearly 600 windows in the building will be replaced with double-glazed windows to improve energy conservation and match the original architectural style of the building; those windows in exhibit areas will be provided with a factory-bonded ultraviolet filter film to screen light harmful to collection items. Because of the numerous types and sizes of windows in the building, and because they must be specially manufactured to reflect the architectural style of the building, the total project is estimated to cost \$3,400,000 (in FY 1988 dollars) and therefore will be funded over several years. Funds in the amount of \$100,000 provided in the FY 1986 appropriation are being used for partial design of the project and replacement of the four windows on the first floor of the South Tower. The amount of \$1,250,000 requested for FY 1988 will be used to replace all windows at the center section of the building and at the North Entrance pavilion, including the Flag and North Towers. This work is scheduled to coincide with the first phase of construction of the Visitor Center being funded by a grant from the Pew Foundation. Subsequent amounts will be requested for phased replacement of windows in other sections of the building.

An amount of \$50,000 is requested to continue the phased replacement of deteriorated stones in the facade of the Smithsonian Institution Building. After removal of the ivy from the facade, approximately 300 pieces of decorative sandstone were found to be deteriorated. The deterioration of the facade of this Historic Landmark must be arrested to prevent water intrusion and damage and to preserve the architectural integrity of the building. With funds made available in FY 1985 (\$50,000), a master stone carver has been retained to recarve and replace the stones with designs replicated in sandstone that match the original building materials. The project is estimated to cost a total of \$300,000, and the amounts of \$40,000 appropriated in FY 1987 and \$50,000 requested in FY 1988 will be used to continue this project.

For the Air and Space Building, the sum of \$200,000 is requested for repair of the facade, which is subject to water intrusion in a number of areas. This water seepage is caused by deterioration of the caulking between the stones of the facade and requires immediate attention to avoid more extensive interior damage. The work will involve the phased replacement of the caulking and will be coordinated closely with the plaza replacement project to maintain public access to the building. The amount requested in FY 1988 will be used for design and initial implementation of the project, and an amount of \$600,000 is expected to be required in future years to complete this work.

Repairs or replacement of the roofs of several buildings will be required in FY 1988. The amount of \$50,000 is requested to begin replacement of the roof of the Carnegie Mansion at the Cooper-Hewitt Museum. This building was reroofed in 1975 with a liquid applied polymer membrane which carried a five-year warranty. The Mansion is experiencing water intrusion through the roof. Some remedial repairs were completed in FY 1986 from General Repairs funds, but the roof will have to be replaced to prevent further interior damage. The amount requested will be used for design and replacement of portions of the roof. The sum of \$30,000 is also sought for repairs and preservative coating on the metal roof and repairs to gutters and downspouts of Building 10 at the Paul E. Garber Facility in Suitland, Maryland.

The surface of the plaza of the Hirshhorn Building has not weathered well. The freeze-thaw cycles of the Washington, D.C. area winters have caused deterioration of the exposed concrete aggregate creating a safety hazard for pedestrians where the surface has chipped away or where standing water freezes in the winter. Temporary repairs of large areas of the plaza have not been an effective solution, and a more permanent replacement is necessary. During FY 1986 and FY 1987, a Space Use Study is being conducted of the Museum's overall space requirements, which may have an impact on plaza replacement plans. Once this study is complete, more detailed information on the total cost of the replacement project will be available. The amount of \$300,000 is requested in FY 1988 for design of the project, and additional funds will be sought in succeeding years to implement the construction.

In numerous locations in the Washington, D. C. area, serious deterioration has occurred to exterior building elements, including painted surfaces such as window components, wrought-iron railings and perimeter fences, and monumental bronze entrance doors. For FY 1988, an amount of \$100,000 is requested to begin a program of systematic repair and refurbishment of these components before major replacement becomes necessary. Windows, trim and other painted surfaces on the exterior of Smithsonian buildings will be repaired and painted; wrought-iron railings and fences, such as the perimeter fence at the American Art and Portrait Gallery Building, will be cleaned of rust, sealed and painted; and bronze entrance doors will be repaired, stripped and refinished at the Natural History Building, the American Art and Portrait Gallery Building, and the Hirshhorn Building. It is expected that an amount of \$200,000 will be required each year through FY 1992 to continue this work.

FIRE DETECTION AND SUPPRESSION SYSTEMS (\$2,385,000): The Institution is continuing to upgrade fire protection systems in all buildings to provide the highest level of safety consistent with today's standards and technology. Work includes the installation of heat and smoke detection systems; sprinkler and chemical suppression systems; fire doors and walls; and the improvement of exit capability, particularly in older buildings. Improvements to systems are also made to meet current fire codes as exhibitions are changed and as other modification projects proceed.

For FY 1988, a total of \$2,385,000 is requested to continue the implementation of fire protection master plans at the Natural History Building (\$400,000), the American History Building (\$500,000), the Air and Space Building (\$350,000), the Smithsonian Institution Building (\$250,000), and the American Art and Portrait Gallery Building (\$225,000); to make fire protection improvements at the Renwick Gallery Building (\$215,000) and at the Hirshhorn Building (\$80,000); and to install sprinkler and smoke detection systems in the Arts and Industries Building (\$100,000), in Buildings 15 and 16 at the Paul E. Garber Facility (\$50,000), in the buildings on Barro Colorado Island (\$65,000) and at other sites of the Tropical Research Institute in Panama (\$100,000), and at the Fred L. Whipple Observatory in Arizona (\$50,000).

The Institution continues to place the highest priority on completion of implementation of fire protection master plans at the Natural History and American History Buildings, which together represent the largest areas with the least fire protection.

At the Natural History Building, steady progress has been made in implementing the fire protection master plan developed in FY 1979. Funds appropriated from FY 1979 through FY 1984 (\$2,075,000), have been used to complete construction on the sprinkler and smoke detection systems for the east and west wings and portions of the main building; to install of a master fire control panel; and to provide an upgraded and interconnected fire main and riser distribution system for the building's sprinkler systems. Funds appropriated in FY 1985 (\$500,000) and FY 1986 (\$300,000) are being used to provide safe flammable liquid storage rooms; to separate the West Court from the main building with fire walls; and to provide new fire alarm pull stations and integrate the

smoke detection, sprinkler and alarm systems into the computer system in the master control room. The sum of \$175,000 appropriated in FY 1987 and the amount of \$400,000 requested in FY 1988 will be used for installation of fire doors in a number of locations throughout the building and to upgrade the fire rating of access from the public areas of the main building into the wings; replace electric locks on perimeter doors with fail-safe locks meeting life safety codes; provide two-hour fire separation between the main building and the wings; and install fire doors and partition systems in several locations in the building. It is expected that an additional \$800,000 will be required through FY 1990 to complete the implementation of the fire protection master plan at the Natural History Building.

The fire protection master plan for the American History Building outlines phased improvements similar to those under way or planned for the Natural History Building, including upgrading and/or adding sprinkler and detection systems; upgrading the existing emergency power supply and distribution system; upgrading the fire pumps; installing a new fire alarm system; and undertaking architectural modifications to improve the efficiency of fire zones and exit capabilities. With funds of \$1,265,000 appropriated in FY 1980 through FY 1984, the fire protection master plan was completed; fire wall separations were designed for the first floor and installed on the west side; a new ten-inch water main from the street to the building and sprinkler risers throughout the building were designed and installed; a master alarm control panel and electrical trunk lines for smoke detection systems and sprinkler annunciation alarms were designed and installed; and additional automatic sprinkler and smoke detection systems are being installed throughout two-thirds of the basement level. Funds appropriated in FY 1985 (\$200,000) and in FY 1986 (\$300,000) are being used to install fire protection systems on the fourth floor, including installation of sprinkler and smoke detection systems and fire pull stations; removal of existing heat detectors; and installation of an emergency generator. The amount of \$250,000 appropriated in FY 1987 will be used to install sprinkler and smoke detection systems, emergency lighting and related structural work in the east side of the building, in conjunction with heating, ventilating, air conditioning and other work to be performed in the same area. Funds of \$500,000 requested in FY 1988 will be used for similar work in the eastern central portion of the building. It is expected that an amount of \$1,000,000 will be required through FY 1990 to continue implementation of the fire protection master plan at the American History Building.

At the Air and Space Building, a fire protection master plan was completed in FY 1986. Funds appropriated in FY 1986 (\$100,000) are also being used to begin implementation, including replacement of doors and door closers with fire-rated door assemblies and locking mechanisms, and construction of new flammable liquid and gas storage rooms. An amount of \$100,000 received in FY 1987 will be used to install a new fire alarm control panel and to replace all chimes with fire alarm bells. Funds sought in FY 1988 (\$350,000) will be used to install smoke detectors in the remaining unprotected areas of the building. It is anticipated that an amount of \$600,000 in future years would be required to install sprinklers and Halon systems in the building and to make architectural and structural modifications necessary to increase the fire rating of walls.

At the Smithsonian Institution Building, funds appropriated from FY 1983 through FY 1985 have been used to design and install smoke detection systems. A fire protection master plan was developed in FY 1985, and funds appropriated in FY 1986 are being used to make further improvements to fire detection and suppression capabilities. The amount of \$225,000 appropriated in FY 1987 will be used to install automatic sprinklers throughout the basement and to install additional smoke detectors in mechanical rooms, basement and fourth floor corridors and in the South Tower. The amount of \$250,000 requested for FY 1988 would be used for installation of automatic sprinklers on all floors in the East Wing and in various rooms on the first floor; replacement of corridor doors on the first, second and third floors with fire-rated doors; and installation of sprinklers, smoke detectors and fire-rated self-closing doors in the North and South Towers, as well as

first floor and mezzanine staff and theater areas in association with construction of the new Visitor Center. An additional amount of \$500,000 is expected to be required through FY 1990 to extend the automatic sprinkler system to all remaining areas of the building and to do other architectural and structural work necessary to meet all life safety codes.

In FY 1985, a fire protection master plan was developed for the American Art and Portrait Gallery Building. With \$180,000 received in FY 1985, automatic sprinklers were installed in the basement. Funds appropriated in FY 1986 (\$100,000) are being used to begin architectural and structural modifications to doors and walls to increase their fire rating, install magnetic door holders and make improvements to exit signs. The amount of \$225,000 requested for FY 1988 will be used to replace doors in the stairwells with higher fire-rated doors. It is anticipated that an additional \$250,000 will be required in future years to provide sprinklers in the mechanical rooms and library, and to partition the building into fire zones.

An amount of \$215,000 is requested to continue fire protection improvements at the Renwick Gallery Building. A fire protection study was conducted in FY 1985 with an amount of \$80,000 provided. Funds received in FY 1987 (\$50,000) will be used to install a fire pump and controller in the basement, and sprinklers on the first floor. The amount sought in FY 1988 will be used to provide automatic sprinklers on the second floor, modify the attic sprinkler system, and to replace the fire alarm system and the smoke detection system in the basement, first and second floors. In FY 1989, \$100,000 will be required to provide an emergency generator and exit and emergency lights, provide self-closing devices for the doors to the basement stairs, and seal wall penetrations with fire-retarding material.

For the Hirshhorn Building, an amount of \$80,000 is requested to extend the sprinkler system to the two large basement mechanical rooms and other unprotected areas of the building. Funds appropriated in FY 1987 (\$110,000) will be used to provide sprinklers in the east mechanical room and the remaining ground floor areas, and funds requested for FY 1988 will be used for the west mechanical room.

With funds of \$225,000 appropriated through FY 1985, fire protection improvements were made at the Arts and Industries Building, including installation of smoke detection systems in the exhibit halls and pavilions, and Halon systems are being installed in the Computer Center. The amount of \$100,000 per year received in FY 1986 and FY 1987 will be used to update the fire protection master plan to include space use changes which will be recommended by a space utilization study now under way. The changes recommended will be implemented in the future. Meanwhile, the sum of \$100,000 is requested in FY 1988 to extend fire protection systems to areas of the building that are currently unprotected and to correct other life safety deficiencies, such as improving the fire rating of walls, replacing doors with fire-rated doors, providing fire-rated enclosures for electrical and mechanical equipment rooms, and upgrading the fire alarm bells and fire pull stations.

The amount of \$50,000 is requested for fire protection improvements at the Paul E. Garber Facility in Suitland, Maryland. Buildings 15 and 16 are used to store collections of the National Museum of American History, and the funds requested would be used to extend the existing sprinkler systems into the rack areas of these buildings, and into the environmentally controlled room in Building 15.

For the Tropical Research Institute, funds are sought for fire protection improvements at a number of sites. An amount of \$65,000 is required to extend the main fire water line and provide branch lines to the new kitchen/dining/conference center and the new dormitory as well as to existing buildings which are to remain as recommended under the master plan. (The sprinkler systems within the new buildings will be installed as

part of the construction projects.) The sum of \$100,000 is sought for fire protection work at other sites, including installation of automatic sprinkler systems in the Tivoli and Ancon Buildings and installation of a transmitter to annunciate the fire alarms in these buildings to the fire department. In addition, engineering tests and studies will be conducted to determine whether sufficient water pressure exists at the Naos site to provide effective sprinkler protection. This study will also recommend steps to be taken in the future to improve fire protection systems for the buildings at this site. In FY 1989, \$100,000 will be requested to begin implementation of the study recommendations.

At the Fred L. Whipple Observatory in Arizona, an amount of \$50,000 is requested to provide a Halon fire suppression system in the control and computer rooms of the building which houses the Multiple Mirror Telescope and to install smoke detection in other areas of the building.

ACCESS FOR THE DISABLED, SAFETY AND SECURITY, AND CORRECTION OF HAZARDOUS CONDITIONS (\$950,000): The Institution continues to place emphasis on correcting facility conditions to improve the security of the National Collections, promote improved environmental conditions for the health and safety of visitors and staff, and to provide better access for disabled persons to Smithsonian buildings.

For FY 1988, a total of \$950,000 is sought for four projects. To correct hazardous conditions, an amount of \$640,000 is required to continue asbestos removal in various Smithsonian buildings. In order to address safety problems, \$170,000 is requested for safety railings at five buildings at the Paul E. Garber Facility; \$110,000 is needed for minor safety and security projects at the Hirshhorn Building; and \$30,000 is needed to complete replacement of emergency doors at the Air and Space Building.

Major attention will continue to be placed on the containment or removal of asbestos materials located in various Smithsonian facilities. Asbestos has been identified in areas of the American Art and Portrait Gallery Building; the American History Building; the Natural History Building; the Arts and Industries Building; and in a number of buildings at the Suitland storage facility. Additional areas contain asbestos, primarily the mechanical equipment rooms in several other buildings. Funds of \$1,550,000 appropriated through FY 1985 were applied toward the containment and removal of asbestos in the attics, mechanical equipment rooms, skylight areas and exhibit halls of the American Art and Portrait Gallery Building; in the carpentry shop in the Natural History Building; and in the television studio and other basement areas in the American History Building. Funds of \$500,000 appropriated in FY 1986 are being used for removal of sprayed insulation in Building 19 at the Paul E. Garber Facility; removal or encapsulation of asbestos insulation on ducts and pipes in the basement mechanical and shop areas of the American History Building, in the exhibits paint shop in the Natural History Building, in the basement of the Cooper-Hewitt Museum and in the steam tunnel in the Arts and Industries Building; and removal of loose insulation under the floor in the North Tower of the Smithsonian Institution Building. An amount of \$400,000 appropriated in FY 1987 will be used to continue removal or encapsulation of sprayed-on asbestos insulation at several locations, including Building 7 at the Suitland Facility and transformer rooms in the American History Building; and removal of asbestos insulation on pipes and ducts in the east and west steam stations in the American History Building, in the attics of the Renwick Gallery and Freer Gallery Buildings, and around fan and reheat coils in the American Art and Portrait Gallery, Natural History and American History Buildings. The amount of \$640,000 is requested in FY 1988 to continue removal and containment projects in various locations. This represents an increase in annual funding for this project because of concern for early elimination of the risk of contamination from this dangerous substance. Increased amounts of funding will continue to be required in future years until all asbestos has been removed or contained.

An amount of \$170,000 is requested in FY 1988 to install safety rails on the mezzanine level of Buildings 15, 16, 17, 18 and 19 at the Suitland facility. At present, the mezzanines are without safety railings to prevent objects or personnel from falling to the floor below. Railings will be installed at the open perimeter of each mezzanine in such a way that sections can be removed for loading or unloading of large objects.

An amount of \$140,000 is requested in FY 1988 for two additional safety projects. For the Air and Space Building, the sum of \$30,000 is needed to continue replacement of exterior emergency doors throughout the building; and \$110,000 is required to make safety improvements at the Hirshhorn Building. The work at the Hirshhorn will include renovation of paint spray and flammable liquid storage rooms, establishment of a secondary means of egress from the fourth floor office area, and provision of fire-rated enclosures for storage rooms within the mechanical equipment rooms.

UTILITY SYSTEMS REPAIRS AND IMPROVEMENTS (\$5,560,000): Funds appropriated in this category are used to repair, replace and upgrade the heating, ventilating and air conditioning systems (HVAC) and plumbing and electrical systems in the Institution's facilities. Proper renovations and improvements of these systems are essential for reliability and for providing stable temperature and humidity conditions necessary for the preservation of the collections. Scheduled repairs and replacements of deteriorated equipment components require a consistent level of funding, and major renovations and repairs are required in many Smithsonian buildings where utility systems have outlived their life expectancies despite regular maintenance, and are likely to cease operation, risking the closing of portions of exhibit and collection spaces.

The Institution is also making a concerted effort to conserve energy as described in the Uncontrollable increases section of this budget request. The most significant energy savings will be realized by applying substantial resources toward upgrading HVAC systems, replacing obsolete equipment and improving the efficiency of environmental zones. HVAC systems have been modified over the years as the Institution's programs have grown, as the functions of the buildings have changed, and as the environmental needs of the collections have become better understood. Prior to 1972, energy conservation did not represent a primary consideration. An integrated approach now is required to plan for long-range, systematic HVAC improvements that will meet museum environmental requirements in an energy efficient manner.

Comprehensive HVAC studies and energy audits have been conducted for most of the buildings to assist planning future improvements. The scope of the HVAC studies included field investigations of age, condition and performance of existing equipment, controls and current operating conditions; reviews of existing drawings, specifications, operating manuals and hygrothermograph records; an analysis of the relationship between the building structures and the HVAC systems; and an assessment of programmatic needs for environmental control. The data gathered by these studies are providing a basis for determining redesign or replacement needs of existing HVAC systems; for development of construction cost estimates or revision of previous cost estimates; and for establishment of priorities for the repair, replacement or modification of such equipment components as air handling units, chillers, condensers, compressors, cooling towers, automatic temperature and humidity controls, pumps, pipes, fans, filters, ductwork and related electrical and plumbing systems. At the same time, energy audits are being performed to investigate all factors relating to energy use, such as power-consuming equipment and building conditions (doors, windows, insulation, floors and partitions). Current energy consumption and costs are being evaluated; energy conservation opportunities are being identified; projected savings are being calculated; and plans are being developed to implement recommended energy conservation measures.

For FY 1988, a total of \$5,560,000 is requested for utility systems repairs and equipment replacement, and to provide essential utility services to the Institution's

research facilities. A large portion of this request, \$2,075,000, is designated for comprehensive projects to upgrade heating, ventilating and air conditioning systems at the American History Building (\$1,600,000) and the Natural History Building (\$475,000). An amount of \$500,000 is sought to continue installation of a network system that will facilitate computer and other communications between the buildings on the Mall. The sum of \$1,900,000 is required to complete the replacement of all electrical transformers containing the dangerous chemicals known as PCBs, as now required by the Environmental Protection Agency. An amount of \$550,000 is requested to replace deteriorated equipment, including electrical switchgear at the American History Building (\$400,000), and radiators at the Freer Gallery Building (\$50,000) and to upgrade the utility trench system at the Arts and Industries Building (\$100,000). Funds are sought in this budget request to provide essential utility service at the Smithsonian's research facilities outside Washington, D.C. At the Tropical Research Institute in Panama, the amount of \$335,000 is requested to install a sewage collection and treatment plant at Naos (\$120,000), to upgrade water and sewage systems (\$75,000), and to construct an emergency generator and building (\$140,000) at the site of the new Barro Colorado Island buildings. At the Environmental Research Center on the Chesapeake Bay, an amount of \$200,000 is needed for sewage system repairs and modifications.

At the American History Building, a comprehensive HVAC study initiated with \$100,000 appropriated in FY 1981 was completed in FY 1982. Difficulty in maintaining the desired environmental conditions is due, in part, to the age and construction of the building and to the deteriorating condition of the heating, ventilating, air conditioning and refrigerating equipment and controls. The study findings indicate upgrading the mechanical system is necessary to bring the system up to acceptable museum standards of operating efficiency and reliability. Other related projects recommended in the study include caulking and weather-stripping windows and doors; shading and suncreening windows; ceiling and wall improvements; window replacements; and installation of a central control and monitoring system. Funds of \$1,285,000 appropriated between FY 1981 and FY 1984 were used to replace 12 deteriorated air handling units and a cooling tower. A total of \$2.8 million appropriated in FY 1985 and FY 1986 (supplemented with \$1.4 million reprogrammed from the HVAC project at the American Art and Portrait Gallery Building) is being used to prepare drawings and specifications and to complete window and roof replacement and facade repairs required to provide an energy efficient building envelope. The amount of \$800,000 appropriated in FY 1987 will be used to implement Phase I of the mechanical equipment replacement program in the eastern quadrant of the building, in conjunction with fire protection and other modifications in the same area as outlined in the master implementation plan. This work will include installation of smaller mixing boxes and removal of asbestos around the present boxes; demolition and replacement of ceilings to accommodate new ductwork; and installation of new air handling units, and smoke and fire dampers. The amount of \$1,600,000 requested in FY 1988 will be used to continue design and construction in the other areas of the building, and to relocate staff, collections and other activities affected by the work. It is anticipated that an additional \$5,700,000 will be required to complete the project.

The Natural History Building houses approximately 100 million specimens in reference collections and also has a wide array of public exhibits that attract millions of visitors annually. The physical limitations of the building, and the age, type and deteriorating conditions of the HVAC systems, refrigeration equipment and controls, make it impossible to maintain the environment required for the preservation of the Museum's collections and exhibits. In April 1983, an environmental control and energy conservation study was completed. The study recommended that the air cooling units, central return air and exhaust fan systems be replaced with a centralized air system to be located in new penthouses over the east and west wings for energy efficiency, cost effectiveness and system reliability. Other modifications recommended include wall vapor barriers; roof insulation; replacement of single-glazed windows with triple-glazed windows; entrance and exit door modifications; air locks on loading docks; centralization of

laboratories with new exhaust systems; new air conditioning units for the Rotunda and attics; cabinet shop dust collection systems; West Court utility systems improvements; automatic temperature control system improvements; replacement of chillers; and a central control and monitoring system. The total cost of these recommendations is estimated to be \$54.5 million. These recommendations are being evaluated and reconciled to ensure consistency with program objectives, and an amount of \$235,000 appropriated in FY 1986 is being used to complete this evaluation process and to prepare a master implementation plan to establish a procedure and schedule for the renovation. The amount of \$100,000 received in FY 1987 and the amount of \$475,000 requested for FY 1988 will be used to begin preparation of design and specifications of the initial phase of the project. Additional funding will be required in future years to continue this work.

The Institution has established a coordinated program to apply office automation advances in all of its facilities and to provide access to data base management systems. The number of users of terminals and office automation equipment is expected to grow at the rate of 100 to 200 users per year. Funding for office automation equipment is sought in the Salaries and Expenses portion of this budget request. To be used efficiently and effectively, this equipment must be interconnected. Presently, a large number of devices are in use which would benefit from interconnection. These include word and data processing terminals, personal computers and telecommunications equipment. A computer-based research system is operating which has over 50 connections, and a computer-based security and fire protection system is being installed in Washington, D. C. area facilities. Over the next ten years, additional computer systems and electronic services will be needed including sensing systems for energy management; an expanded telephone system; telexes and facsimile devices; cabling for computer terminals and printers; protected electrical power supply for computer and office automation systems; and video systems for exhibits and education. The cost and management problems associated with separately installing these electronic services in each building, coupled with the requirement that most services link buildings on the Mall, led to coordinated planning efforts among the various offices responsible for each system. The result of this planning was a decision to install a common communications pathway system or master raceway system in the Mall area. Installation of a raceway system within and between eight buildings in the Mall area which will accommodate future electronic requirements is beginning in FY 1986. It will be a single, in-ground, multipurpose conduit system capable of housing wires and cables for all electronic services within and between the Smithsonian Institution, Arts and Industries, Freer Gallery, Hirshhorn, Air and Space, Natural History, American History and American Art and Portrait Gallery Buildings. Funds of \$250,000 appropriated in FY 1986 are being used to initiate the first construction phase which consists of interconnecting the Mall buildings using four-inch conduits encased in concrete. The amount of \$160,000 received in FY 1987 will be used to make additional interconnections among the buildings and to begin connection of the system with the main computer room in the Arts and Industries Building. The amount of \$500,000 requested in FY 1988 will be used for installation of an interbuilding cable plant. An additional amount of \$5,700,000 is expected to be sought through FY 1991 to continue extension of the raceway into each building and branching the system through floors, walls and ceilings to work stations, offices or exhibit areas.

A July 1985 regulation issued by the Environmental Protection Agency requires the replacement of all highvoltage electrical transformers containing cancer-causing chemicals known as PCBs by the year 1990. Polychlorinated biphenyls, or PCBs, are particularly dangerous to people if they volatilize and are converted into dioxin and other highly toxic compounds, which might occur in the case of electrical fire in a highvoltage vault, and residue from a fire can cause long-term contamination of museum objects harmful to people. PCBs have been shown to cause cancer from contact with the liquid form as well. The Institution identified 59 of these transformers in various buildings and has evaluated each transformer to determine the fastest and most cost-effective method for eliminating this hazard to visitors, staff and collections. Options

considered included replacement of each PCB transformer, or draining and flushing of the PCB liquid from existing transformers and substituting a liquid that is not harmful to the environment (a process called retrofilling). It was determined that only two transformers, both in the Air and Space Building, would be retrofilled because their location would make removal very difficult and costly. This work was initiated with R&R funds made available in FY 1985 and will be completed in early 1987. At this time the PCB content of these transformers will have been reduced to a level that under new EPA regulations will no longer classify them as PCB transformers. The remaining 57 transformers will be replaced, and this work has also been initiated. The three PCB transformers that serve the Smithsonian Institution Building have been replaced with funds received in FY 1987 from within the R&R account in FY 1986. The amount of \$1,800,000 received in FY 1987 will also be used to design, to purchase equipment and to begin replacement of the remaining 54 transformers. An amount of \$1,900,000 is requested in FY 1988 to complete installation of the new transformers to minimize the risk to the staff, visitors and collections of the Institution of a possible fire involving a PCB transformer. In addition to replacement of the transformers, an electrical system coordination study will be undertaken in conjunction with the design phase of the project, to determine the specifications, sizes, settings or adjustments of electrical protective devices and to provide up-to-date power distribution diagrams of each building.

Funds are requested in FY 1988 to replace deteriorated and outmoded equipment at three museums. At the American History Building, \$400,000 is required to replace electrical switchgear because it has become increasingly difficult to locate replacement parts for the circuit breakers for the 25-year-old equipment. Modifications must be made to available circuit breakers to fit into the existing equipment, but this makes the breakers unsafe to service. The switchgears, therefore, must be replaced with equipment that can be serviced easily and safely. It is expected that an additional \$400,000 will be required in FY 1989 to complete this work. At the Freer Gallery Building, cast iron radiators in the corridors, installed between 1916 and 1921, have outlived their life expectancy and have begun to deteriorate to the point where leaking is occurring. The amount of \$50,000 requested in FY 1988, will be used to begin replacement of the radiators, along with the asbestos insulation covering steam and condensate piping serving them. An additional \$100,000 is expected to be required to complete this project, which will be performed in conjunction with the basement and courtyard renovations to minimize disruption to Gallery programs and activities. At the Arts and Industries Building, the utility tunnels beneath the floor require extensive repair and removal of unused pipes and conduit. The amount of \$100,000 is requested to begin this work, with an estimated \$100,000 required to complete the work in a future year.

Another important component of this budget request is the provision of adequate utilities at the various research facilities located in Panama, on the Chesapeake Bay, and in Arizona. At the Naos site of the Tropical Research Institute in Panama, \$120,000 is required for construction of a sewage collection and treatment plant to eliminate the discharging of effluents into the Bay of Panama. Also at the Tropical Research Institute, the new facilities being constructed on Barro Colorado Island (BCI) require new utility support services. An amount of \$75,000 is requested in FY 1988 to extend and upgrade the water distribution and sewage collection systems serving the kitchen/dining/conference center and housing facilities which are being constructed. An amount of \$140,000 is also requested in FY 1988 for installation of a new emergency generator and construction of a building to provide shelter for the generator and associated equipment and fuel. Power to BCI is provided by underwater cable from the mainland and is frequently subject to interruption when passing vessels drag their anchors over the cable or when mainland transformers are struck by lightning. To maintain vital electricity for research and refrigeration during power losses, a back-up system is required, but the existing emergency generator is too small to provide adequate power for the expanded facilities. The new generator will be sized to serve the new as well as existing buildings on the Island. An amount of \$60,000 provided in FY 1986 will

be used for the design of the new generator and to provide a connection to the new kitchen/dining/conference facility.

At the Environmental Research Center on the Chesapeake Bay, the existing sewage systems are not performing adequately and will not be sufficient to accommodate further development of the site. The amount of \$200,000 is requested in FY 1988 to upgrade the existing system (actually four separate systems serving different portions of the site), to meet the future needs of the facility.

OTHER PROJECTS (\$2,724,000): Projects in this category include the planning of future restoration and renovation requirements as well as development of the Institution's outlying facilities and other projects designed to meet programmatic objectives in the areas of research, collections management and exhibitions. For FY 1988, a total of \$2,724,000 is sought for the following projects:

(\$000s)		
<u>FACILITY</u>	<u>PROJECT DESCRIPTION</u>	<u>AMOUNT</u>
American History Building	Mezzanines/exhibit halls	\$ 300
Natural History Building	SI Libraries renovation	215
Environmental Research Center	Instrument shop	175
Tropical Research Institute	Dock replacement - BCI	220
Tropical Research Institute	Paved road - BCI	75
Tropical Research Institute	Dormitory construction-Naos	390
Whipple Observatory	Ridge dormitory construction	800
Smithsonian Institution Building	Structural inspection and planning study	100
Miscellaneous	Combined master plan for SI facilities	120
Miscellaneous	Advanced planning and design	329
TOTAL		\$2,724

-- National Museum of American History - (\$300,000)

The long-range exhibit reorganization plan for the National Museum of American History calls for construction of a mezzanine system in various galleries on the first through third floors of the building. The mezzanines will create space for study galleries in key exhibits, which will permit greater individual interaction by the public with museum artifacts not normally on exhibit because of lack of space. The amount of \$103,000 appropriated in FY 1987 will be used to begin design, fabrication and construction of the basic steel and concrete galleries, necessary stairs and railings which will be incorporated into specific exhibit areas currently being designed by the Museum. The first exhibit to include the gallery concept is the exhibit planned to celebrate the Bicentennial of the Constitution, to open in 1987 on the east side of the third floor. This exhibit is being designed with a permanent core to occupy present space with the mezzanine, with short-term interpretive and study exhibits in the surrounding areas. An amount of \$300,000 is requested in FY 1988 for installation of mezzanines to be incorporated into the north sector of the Dibner Library and the southwest sector of the Medical Sciences Hall on the first floor. The amount of \$900,000 is expected to be required through FY 1991 to continue installation of mezzanines in concert with the long-range exhibits renovation program.

-- National Museum of Natural History, S.I. Libraries - (\$215,000)

With funds of \$200,000 appropriated in FY 1980, the first renovation phase was completed for space modifications of the Smithsonian Institution Libraries located in the Natural History Building. Reader services areas are being renovated with funds of

\$165,000 appropriated in FY 1984, and \$230,000 appropriated in FY 1985 is being used to modify the central library processing areas including central reference, binding, gifts and exchange, and shipping and receiving. Funds of \$200,000 received in FY 1986 will be used to complete the renovation of the Natural History library branch, including the purchase and installation of a compact library shelving system, and space modifications for the administrative, cataloguing and program office areas in the northeast section of the library. The amount of \$215,000 is sought in FY 1988 to complete the final phase of this project which includes renovation of the S.I. Libraries' administrative office and public access areas, including upgrading of HVAC and electrical systems and reorganization of space for more efficient utilization.

-- Smithsonian Environmental Research Center - (\$175,000)

At the Environmental Research Center on the Chesapeake Bay, a technical instrument support shop is required to permit on-site fabrication and repair of the specialized instruments used in research and for maintenance of the growth chambers that are key to the research activities at the Center. Funding in the amount of \$175,000 is requested in FY 1988 for an addition to the existing maintenance building to provide this essential shop space and to provide storage for materials used. The instrument shop will be heated and ventilated and will house such equipment as lathes, milling machines, drill presses, sheet metal fabrication equipment, and welding, paint spray and refrigeration equipment. The equipment for the instrument shop will be transferred from the Rockville facility.

-- Smithsonian Tropical Research Institute - (\$685,000)

Barro Colorado Island - Two additional projects are proposed at the Barro Colorado Island site of the Tropical Research Institute to support the new facilities being constructed as well as ongoing operations in existing buildings. An amount of \$220,000 is requested in FY 1988 for construction of a new docking facility for the Island. Located in the Gatun Lake of the Panama Canal, access to the Island is by boat from the mainland, and all supplies and personnel must arrive and depart from a boathouse that is poorly located to handle the volume and kind of traffic experienced. The proposed new docking complex will be constructed in a location, designated by the recently completed master plan, that will relieve the traffic problems and allow greater maneuverability for the larger boats, separation of passenger unloading from freight handling, and provide a staging area for transport and receipt of supplies.

The most severe impediment to development of adequate facilities on Barro Colorado Island has been restricted circulation. The movement of food and fuel, other supplies, materials and equipment is difficult and costly due to the steep terrain and distance between the shoreline arrival point and the centrally developed area at the top of the Island. The master plan addressed this logistical problem and recommended redevelopment of the site in a new area, nearer the shoreline and at a lower elevation, configured along a pathway that would accommodate circulation of tractors and forklifts used to shift supplies and materials. Funds appropriated in FY 1986 and in FY 1987 will be used to construct the new central facilities, a kitchen/dining/conference center and housing facilities, in the new location. The amount of \$75,000 is requested in FY 1988 for a paved road to provide access and circulation to the new buildings.

Naos Island Dormitory - The Tropical Research Institute (STRI) is one of the largest organizations in the world devoted to basic research on the ecology, evolution and behavior of tropical ecosystems. A staff of 26 professionals maintains an active research program including collaborative efforts each year by some 1,300 visiting scientists and students representing more than 200 institutions worldwide. STRI and visiting scientists and students are conducting joint studies that bear directly on natural resource issues in the tropics. To assure continuation of collaborative research efforts, it is essential that visiting scientists and students have access to suitable

housing at or near research and laboratory locations. Consequently, an amount of \$390,000 is requested in FY 1988 to construct a dormitory on Naos Island.

The funds sought will be used to construct a two-story dormitory on Naos Island that would accommodate ten visiting scientists. STRI's Naos marine laboratory is situated at the end of a long artificial causeway, and is bordered on one side by the Pacific entrance to the Panama Canal and on the other side by the Bay of Panama. Its location, not accessible by public transportation, is several miles away from areas in which STRI housing is available. Because marine scientists have irregular work schedules that are based on shifting tide cycles, they require accommodations that are near their work sites. An on-site dormitory would enhance research productivity. The proposed dormitory would replace several structures, located approximately five miles from Naos near STRI's administration building in Panama City. These structures are being returned to the Panamanian Government under the terms of the Treaty. Major modifications to existing water and electricity services would not be necessary, but an independent sewage processing and disposal system would be essential. The cost of such a system is included in the amount sought. (Report on use of the Surfside Theater Building submitted to Appropriation Subcommittees on October 2, 1986, as requested in House Report 99-714.)

-- Smithsonian Astrophysical Observatory, Whipple Observatory - (\$800,000)

The dormitory built in 1973 on the ridge of Mt. Hopkins provides seven bedrooms and kitchen, dining, library and recreation areas for scientists and technicians doing around-the-clock research and maintenance on the telescopes at the Whipple Observatory. The present structure, however, is situated at the top of a natural chimney or cleft of the mountain, making it particularly vulnerable to possible brush fire. The structure no longer meets the program requirements. Three additional bedrooms, ten in total, and larger common facilities are required to accommodate Smithsonian and visiting scientists working on the ridge. In addition, the present facility is rapidly deteriorating, requiring constant and costly maintenance. With an amount of \$45,000 received in FY 1987 (supplemented with FY 1987 advanced planning and design funds), the design of a new dormitory to replace this building will be completed. For FY 1988, the sum of \$800,000 is requested for construction of a 4,200-square-foot building to provide a suitable facility for the Whipple Observatory.

-- Smithsonian Institution Building - (\$100,000)

For FY 1988, the amount of \$100,000 is requested to begin a comprehensive structural analysis of the Smithsonian Institution Building to determine the existing condition of the building and to establish future requirements for restoration or repair. In the building's 130 years, a number of major renovations have taken place but a complete assessment of the soundness of foundations and structural elements has not been undertaken for some time. Such an analysis should be performed in order to identify current and future structural needs for repair and restoration. In addition, the building in recent years has been subject to a number of problems, notably water intrusion, associated with the deterioration of masonry elements of the exterior. A project is currently under way to recarve certain exterior stones damaged by the ivy that had been allowed to grow for a number of years on the facade, but the full extent of the restoration requirements to the facade will not be known without further analysis by experts with the necessary equipment to make a detailed examination of the facade elements. The proposed analysis will include an assessment of the structural integrity of the towers and parapet walls, interior floor loading capacities, and the condition of tuck pointing, caulking and other masonry elements of the facade. It is expected that an additional \$50,000 will be required in FY 1989 to complete the study.

-- Combined Master Space Plan for Smithsonian Facilities - (\$120,000)

The Smithsonian Institution occupies both owned and leased space in many different locations throughout the Washington metropolitan area, as well as New York, Arizona and Panama. The types of space are varied and include exhibit space, laboratory research facilities, office space, collections storage and conservation facilities, and other support space. A number of space studies and master plans are currently under way or planned for specific buildings and facilities of the Smithsonian. However, a comprehensive study is urgently needed to consolidate and coordinate the Smithsonian's efforts to resolve all of its space needs for the foreseeable future. Such a study is particularly important in view of the increasing costs of leased space presently used for certain operations, and would be of significant value in the planning of future solutions to prevent a piecemeal approach that could produce less effective results both in terms of costs and of meeting the Institution's needs.

For FY 1988, the amount of \$120,000 is requested to initiate a combined master space plan for Smithsonian Institution facilities, to include analysis of existing and projected space requirements by type and function; existing space, identifying crowded or underutilized areas; owned versus leased space alternatives; and new construction versus purchase of existing facilities. In addition, consideration will be given to current proposals to improve existing space or construct new space as well as to logistical problems such as transportation. Existing or ongoing master plans and studies will be used where available, and a multiyear implementation plan will be prepared. It is expected that additional funding will be required in future years to complete this study.

-- Advanced Planning and Design Funds - (\$329,000)

For FY 1988, an amount of \$329,000 is requested for both advanced planning and advanced design of projects in all subaccounts within the Restoration and Renovation of Buildings account, and for a study to identify outstanding requirements for repair and maintenance to be included in future R&R budget requests. For the majority of the R&R projects, particularly projects which are not phased and require only one-year funding, the project request includes funds for planning, design and construction. The planning and design stages require approximately ten percent of the project's funds, but may take from one to 12 months to complete, depending upon the project's complexity. Construction costs escalate at a rate of approximately four percent annually, so that a large portion of a project's construction funds could be lost by delay of the design by one year. Advanced planning and design funding enable the Institution to develop better cost estimates and to contract for construction as soon as the R&R appropriation is received. Funds of \$200,000 appropriated in FY 1985 and in FY 1986 have been used for these purposes, as will the amount of \$200,000 received in FY 1987. In addition, the Institution has recognized that although the level of funding in the R&R account has continued to grow over the last several years, the number of essential maintenance and repair projects that have been identified to date has also grown. Through inspection programs and museum initiative, many facilities requirements have been added to the long-range R&R program. However, there has not been a comprehensive program of inspection of certain structural components of the buildings to determine future repair and restoration requirements. A portion of the funds sought in FY 1988 will be directed to the identification and prioritization of these requirements so that they may be included in future year R&R requests.

CONSTRUCTION

FY 1986 Appropriation.....	\$3,805,000
FY 1987 Appropriation.....	\$6,095,000
FY 1988 Estimate.....	\$4,470,000

Consistent with the increased emphasis being placed on the Smithsonian's research programs, the Institution has initiated a coordinated effort to improve science facilities to meet program needs. Public Law 99-423 authorizes construction of a base camp and access thereto for the Fred Lawrence Whipple Observatory (FLWO) in Arizona and planning and construction of improved housing and additional research facilities at various sites of the Smithsonian Tropical Research Institute in Panama. For FY 1988, an amount of \$4,470,000 is requested to design and construct a base camp for the Whipple Observatory.

The Fred Lawrence Whipple Observatory, located on Mount Hopkins in southern Arizona, is the largest field installation of the Smithsonian Astrophysical Observatory. Since its official opening in 1968, the Observatory has been used as the site for observations requiring extremely dark skies, dry climate, and good "optical seeing." Mount Hopkins is the second highest peak in the Santa Rita Range of the Coronado National Forest. The Smithsonian's Observatory covers 4,744 acres, including the 8,550-foot summit.

The summit of Mount Hopkins is the site of the Multiple Mirror Telescope (MMT), a joint facility of the Smithsonian Institution and the University of Arizona. The MMT is the third largest telescope in the world in collecting area and is used for research in the optical and infrared regions of the spectrum. The first of its kind, the MMT combines six 1.8-meter telescope mirrors in a common support structure to produce the light-gathering capability of a conventional 4.5 meter telescope.

Instruments of the Fred Lawrence Whipple Observatory are located on a half-mile-long ridge at the 7,600-foot elevation. These instruments include a 10-meter optical reflector for observations of extremely energetic gamma ray events and 1.5-meter and 61-centimeter reflecting telescopes for optical and infrared observations of distant stars and galaxies. The latter telescope is now being replaced by one with a 1.2-meter diameter.

The administrative and support facilities of the Observatory, which serve all mountaintop activities, are located at Amado, Arizona, in an office and maintenance complex just east of Interstate 19, but west of the Santa Cruz River, and 18 miles from the scientific operations on Mount Hopkins. This base camp is the operational and logistical headquarters for anyone working at or visiting the mountain. Its site consists of two adjacent leased parcels of land totaling approximately 4.25 acres; its facilities include a one-level school building and a one-level residence which have been converted for office use. There are also vehicle service, repair, and storage sheds on the site.

The owners of the site have indicated a desire to sell the property. The site was the primary focus of Public Law 98-73, approved August 11, 1983, which authorized appropriations of \$150,000 for the Institution to purchase land in Santa Cruz County, Arizona for a base camp. Almost immediately after enactment of the measure, it became clear that the purchase price of the property could exceed the authorization. More significant, however, were the rains that fell on October 1, 2, and 3 of 1983, and the immensely destructive flooding of the normally dry river that ensued. The bridge between

the base camp and the mountain facilities was washed out, making access very difficult and often adding at least an hour to the already arduous trip to and from the summit. In view of these circumstances, the Smithsonian is no longer a prospective buyer of the existing site.

The Smithsonian is now completing a master plan for the proposed base camp. After a thorough review, the Institution has selected as its first choice a site on land under the control of the Forest Service, closer to the mountain than the existing one, and east of the Santa Cruz River. An environmental impact assessment study has been completed and negotiations are under way with the U. S. Forest Service for acquisition of the site.

An amount of \$4,470,000 is requested in FY 1988 for the design and construction of the base camp buildings totaling 16,400 square feet, along with necessary site improvements, purchase of necessary rights of way and road paving. A breakdown of estimated costs and a description of the facilities planned follows.

	<u>Estimate</u>
Administration Building and Visitor Center	\$ 730,000
Vehicle Maintenance Shop	520,000
Warehouse	350,000
Site Improvements	985,000
Access Road	1,250,000
Escalation	305,000
Design and Construction Management	<u>330,000</u>
Total	\$4,470,000

The operation of a large astronomical observatory such as Whipple requires computation and drafting facilities, public display areas, tool shops, vehicle maintenance and storage areas, space for the receipt and shipment of equipment and supplies, and administrative offices, all with access to major transportation routes in order to coordinate activities in several locations. The Observatory is, in effect, a small scientific mountaintop town which must be supported from the base camp. In addition, the increased public interest in astronomy nationwide, combined with interest in the unusual Multiple Mirror Telescope, has created a growing demand for access to the Observatory and a resultant need for expanded facilities to serve the public. The demand for access to the mountain is anticipated to increase sharply since the MMT has been chosen as the prototype for the construction of a larger new generation telescope called the "New Technology Telescope," and by efforts to reconfigure the MMT to a single mirror, 6.5-meter instrument. (See the Smithsonian Astrophysical Observatory in the Salaries and Expenses section of this budget.)

The proposed new base camp will provide space for all of these functions. The amount of \$730,000 is requested for construction of the Administrative Building and Visitor Center, which will provide 5,900 square feet of space for purchasing, fiscal, engineering and secretarial support, and for displays and briefings about the activities being conducted at the Observatory. The Vehicle Maintenance Shop, for which an amount of \$520,000 is requested, will provide 4,500 square feet of service and storage space to accommodate more than 60 vehicles, primarily buses and heavy machinery used for road maintenance. Enclosed motor maintenance shops are required due to extreme weather fluctuations in the desert environment, and space is needed for spare parts storage. The sum of \$350,000 is needed for a warehouse facility of 6,000 square feet for secure storage of goods and equipment going to and from the Observatory. An amount of \$985,000 will be required for site improvements, to include utilities, excavation and grading, pedestrian walkways, driveways, parking areas and motor pool areas.

In addition, an amount of \$1,250,000 is requested for construction of an all-weather access road from a permanent bridge crossing at Canoa (near Interstate 19) to the proposed base camp. At present, no reliable access exists for the transportation of staff, visitors, and equipment from the present leased base camp to the Observatory on Mt. Hopkins. A temporary bridge, erected following a severe flood of the Santa Cruz River in 1983, currently provides access to the Observatory. Santa Cruz County has recently decided not to erect a permanent bridge (capable of resisting flooding), thereby making it unreliable as a means of access to the Observatory in the future.

Faced with the above difficulties and the desire to be closer to the summit, the decision was made by the Institution to situate the new camp on the opposite side of the Santa Cruz River and to access this facility by means of a new bridge crossing at Canoa Road in Pima County, three miles north of Amado. The use of this new crossing, with convenient access to Interstate 19, will require a new four-mile paved road which will intersect with the existing Amado Road approximately three miles west of the proposed base camp. From this juncture to the new base camp, the existing three-mile section of road will require upgrading with particular attention to widening and paving. This seven-mile stretch of all-weather road will allow much improved, permanent access from the Interstate to the base camp. At the base camp, the road will connect to a Forest Service road that continues to the summit of Mt. Hopkins. The estimate also includes an amount to acquire the right of way from the State of Arizona for the connection from Canoa Crossing to Amado Road. Upon completion of the paved road, title would be vested in Pima and Santa Cruz Counties for future maintenance.

\$ 305,000

A further amount of ~~\$530,000~~ will be required to cover anticipated escalation in project costs and \$330,000 will be needed for design and construction management of the project.

APPENDIX

SMITHSONIAN INSTITUTION

Salaries and Expenses

Report of Appropriation by Objects of Expense

(Dollars in thousands)

	1986 Actual	1987 Base	1988 Estimate	Increase 1988 over 1987
	-----	-----	-----	-----
11 Personnel Compensation.....	102,183	106,992	112,714	5,722
12 Personnel Benefits.....	12,338	17,041	23,214	6,173
13 Benefits to Former Employees...	168	398	398	0
21 Travel & Transportation of Persons.....	1,086	1,430	1,702	272
22 Transportation of Things.....	575	659	730	71
23 Rent, Communications and Utilities.....	15,719	20,161	20,829	668
24 Printing and Reproduction.....	1,353	1,876	1,953	77
25 Other Services.....	18,304	20,623	20,681	58
26 Supplies and Materials.....	10,133	9,473	10,103	630
31 Equipment.....	4,999	9,687	11,323	1,636
Collections Acquisition.....	1,203	1,435	1,190	(245)
32 Land and Structures.....	184	9	9	0
41 Grants.....	946	11	11	0
42 Insurance Claims and Indemnities.....	8	5	5	0
	-----	-----	-----	-----
TOTAL.....	169,199	189,800	204,862	15,062

SMITHSONIAN INSTITUTION

Annual Visitation
FY 1982 - FY 1986

	<u>FY 1982</u>	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>	<u>FY 1986</u>
<u>MALL</u>					
SI Building	1,017,782	950,426	966,191	1,046,151	1,035,653
Arts & Industries Building	1,098,091	1,043,224	1,046,480	1,048,089	1,047,397
National Museum of Natural History	4,961,180	5,650,406	6,336,796	5,691,681	5,962,073
National Air and Space Museum	8,453,773	9,837,651	15,123,914	9,160,371	7,752,544
Freer Gallery of Art	285,410	269,980	373,208	291,376	308,236
National Museum of American History	4,463,041	5,049,038	5,392,718	4,858,483	5,143,334
Hirshhorn Museum and Sculpture Garden	1,038,910	1,052,786	980,944	1,059,050	1,057,753
<u>OFF-THE-MALL</u>					
American Art & Portrait Gallery	356,098	397,232	368,595	373,105	346,057
Renwick Gallery	172,909	149,447	129,989	124,684	124,850
National Museum of African Art	85,874	75,238	50,312	43,661	32,915
Anacostia Neighborhood Museum	46,033	17,210	22,681	21,603	36,314
Cooper-Hewitt Museum	166,778	216,720	131,690	112,442	190,751
National Zoological Park <u>/1</u>	3,275,000	3,300,000	3,300,000	3,100,000	3,300,000
GRAND TOTAL	<u>25,420,879</u>	<u>28,009,358</u>	<u>34,223,518</u>	<u>26,930,696</u>	<u>26,337,877</u>

/1 Number of visitors are estimates based on a sampling system.

Commemoration of the Columbus Quincentenary

During the next five years, the attention of the Smithsonian, and, indeed, the nation will become increasingly focused on the commemoration of the 500th anniversary of the landing of Christopher Columbus in the Americas. For the Smithsonian, this occasion offers an opportunity to take a closer look at the past, present and future implications of the 1492 voyage. The Smithsonian Quincentennial observance will focus on the Americas with a creative mix of historical, topical and cultural issues and ideas. Plans are currently underway not only to commemorate the encounter of European and American civilizations, but also to draw attention to subsequent exchanges of ideas, material cultures, and flora and fauna. Through the organization of exhibitions and public and scholarly programs that explicate and celebrate five centuries of common experience in the Western hemisphere, the Smithsonian Institution will help shape the North American involvement in what assuredly will be an inter-hemispheric as well as transatlantic enterprise.

To achieve a broad pan-institutional program, it has been important to keep the parameters of the commemoration wide and not force a rigid thematic program. The bureaus have explored their own staffs' interests, collections, resources and internal program priorities to develop a program that is feasible and contributes to a broader public understanding of the complexity and diversity arising from the fifteenth-century encounter of two worlds. The following list includes those bureaus and offices requesting funds for Columbus Quincentenary programs:

	<u>Page Reference</u>
National Museum of Natural History	73
National Air and Space Museum	82
National Museum of American History	92
National Portrait Gallery	106
Hirshhorn Museum and Sculpture Garden	110
Smithsonian Traveling Exhibition Service	151
Directorate of International Activities	167
Office of Folklife Programs	171

(\$1,000s)

SMITHSONIAN INSTITUTION - FINANCIAL SUMMARY
Fiscal Years 1986 - 1980

	FY 86 Actual	FY 87 Projected	FY 88 Estimate
<u>SI OPERATING FUNDS</u>			
FUNDS PROVIDED:			
FEDERAL APPROP. - S&E	169,384	183,920	204,862
GOVERNMENT GRANTS & CONTRACTS	15,534	18,933	25,835
NON-APPROP. TRUST FUNDS			
Investment Income			
-Unrestr. General & Special Purpose	5,473	5,888	5,334
-Restricted	4,046	4,536	4,726
Gifts & Grants (Ex. Gifts to Endow)			
-Unrestr. General & Spec. Purpose	336	251	261
-Restricted	6,318	11,004	11,564
Self-Generated Revenues			
Institutional (Gen. Unrest.,-Sch.,F)			
-Gross Revenues	146,364	158,460	170,865
-Less Related Expenses	(126,731)	(136,310)	(145,705)
-Net Income	19,633	22,150	25,160
Bureau (Special Purpose)			
-Gross Revenues	6,802	7,365	7,475
-Less Related Expenses	(4,840)	(6,147)	(6,352)
-Net Income	1,962	1,218	1,123
Other Misc. - Unrestricted	2,173	2,014	2,009
-Restricted	2,950	2,126	1,964
Total Non-Approp. Trust Funds - Gross	174,462	191,644	204,198
-Net of Exps. of Self-Gen. Revs.	42,891	49,187	52,141
TOTAL ALL OPER. FUNDS PROVIDED:			
-Gross	359,380	394,497	434,895
-Net	227,809	252,040	282,838
FUNDS APPLIED:			
Research	52,476	57,779	67,247
Less: SAO Overhead Recovery	(2,654)	(2,700)	(2,820)
Museums	89,764	88,971	92,285
Public Service	4,232	4,879	4,618
Directorate of International Act.	1,387	1,951	2,194
Special Programs	11,750	18,780	19,855
Associates Programs/Business Mgmt	1,033	1,661	1,424
Administration			
-Federal Appropriation	12,727	13,493	22,356
-Trust Funds	8,473	11,749	12,029
Less: SI Overhead Recovery	(8,491)	(8,700)	(9,000)
Facilities Services	51,301	57,999	61,398
TOTAL OPERATING FUNDS APPLIED	221,998	245,862	271,586
TRANSFERS (Non-Approp. Trust Funds)			
To Plant Funds	87	-	-
To Endowment Funds			
Unrestricted Purpose	5,733	3,000	3,500
Restricted Purpose	2,314	1,218	979
Total Transfers	8,134	4,218	4,479
CHANGE IN FUND BALANCE			
Unrest. & Special Purpose	(2,281)	(153)	2,994
Restricted (Incl. Fed. Grants & Contr.)	(28)	2,113	3,779
Total	(2,309)	1,960	6,773
FUND BALANCES - END OF YEAR			
Unrestricted & Special Purpose	26,689	26,536	29,530
Restricted (Incl. Fed Grants & Contr.)	9,656	11,769	15,548
Total Operating Fund Balances	36,345	38,305	45,078
OTHER FEDERAL APPROPRIATIONS			
-Foreign Currency Program	2,378	-	-
-Construction	19,622	21,570	23,874
TOTAL FEDERAL APPROPRIATIONS	191,384	205,490	228,736

Financial Report

Ann R. Leven, Treasurer

The Institution's financial report for fiscal year 1986 portrays a year of contrasts. On the one hand, in the wake of Gramm-Rudmann-Hollings the Institution began a thorough reassessment of its goals and priorities, as well as costs of achieving them. On the other, given the availability of previously appropriated funds matched by private dollars, construction proceeded at a rapid pace on the Quadrangle. A combination of Federal and Trust funds, moreover, provided the wherewithal for the Institution to consummate the purchases of the Deletaille Collection for the Museum of African Art and the Vever Collection for the Sackler Gallery. Both collections will be housed in the Quadrangle.

Operations

Federal monies provided the core support for the Institution's continuing programs of research, exhibitions, education and collections management as well as related administrative and support services. For the fiscal year ending September 30, 1986, the Federal government initially provided \$176,995,000 to fund ongoing operations, an increase of

\$12.7 million over fiscal 1985. However, as a result of the Gramm-Rudmann-Hollings Act, this amount was subsequently reduced by a 4.3% or \$7,611,000 to \$169,384,000. This reduction necessitated hiring freezes, curtailment of equipment purchases for research and collections management, postponement of selected activities, limits on travel and publications, and, sadly for the visiting public, elimination of summer evening hours.

Careful readers of the annual financial statements will see a \$2,234,000 surplus and wonder indeed. The monies in question come primarily from two sources and were given this year to the Institution on a no year basis; \$1,354,000 equivalent in excess foreign currencies for scientific work primarily in India but also in Pakistan, Burma and Guinea and \$917,000 from the Department of State for research projects in India.

The Institution also benefited from specific project grants and contracts, totalling \$15,534,000 from government agencies and bureaus. These monies constitute an important source of research funding for the Institution while also providing the grantors with access to Smithsonian expertise and resources, most particularly in the areas of biological studies and astrophysics.

Income from nonappropriated trust funds including gifts, grants, endowments, current investments, and revenue producing activities made the critical difference in fiscal 1986. The Institution was able to undertake new ventures and strengthen existing outreach programs in a way that might not have been possible otherwise. Recognizing the potential for a financially difficult year, the Regents authorized the Institution's

use of additional endowment income for one year only as an exception to established policy, as indicated in the footnotes to the financial statements.

The Institution was further blessed with an \$825,000 increase over the previous year in restricted gifts and grants from individuals, foundations, and corporations. Increased revenues from the Institution's retail activities and membership programs, in particular, provided venture capital for the new Smithsonian Air and Space Magazine while offsetting lost revenue from public parking. In the wake of national concern over terrorism, the Institution closed its major public parking facility under the National Air and Space Museum.

It is again useful to compare the Institution's sources of operating support on a gross and net basis, keeping in mind that expenditures necessary to generate trust revenues such as those for publishing Smithsonian Magazine also contribute to fulfilling James Smithson's mandate to increase and diffuse knowledge.

<u>Source of Funds</u>	<u>Gross Revenues</u> (\$1,000's)	<u>Net Income</u> (\$1,000's)	<u>Net income %</u>
Federal Appropriations	\$169,384	\$169,384	74%
Gov't Gr. and Contracts	15,534	15,534	7%
All Trust Sources	<u>174,462</u>	<u>42,891</u>	<u>19%</u>
Total Available for Operations	\$359,380	\$227,809	100%

Acquisitions of works of art played an important part in the Institution's fiscal 1986 financial picture. The Smithsonian funds its collecting activities out of operating funds. As previously noted, the Institution recorded the purchase of (1) the Deletaille Collection, and (2) the Vever Collection. In so doing, the Regents authorized the draw down of approximately \$3,000,000 in the Institution's unrestricted trust fund balance. The fund balance is to be restored to its previous level of \$5,000,000 at the earliest feasible date.

Moreover, in a unique arrangement conceived by the Directors of the concerned museums, an important grouping of African objects collected by Joseph Hirshhorn was transferred to the Museum of African Art. In return, the Institution established an acquisition fund, held in Endowment, for the Hirshhorn in honor of their benefactor. Coincidentally, the Hirshhorn Museum undertook a program of deaccessioning leading to the auction of works considered beyond the scope of the Museum. \$2.0 million in proceeds was added to the Joseph Hirshhorn Acquisition Fund.

Special Foreign Currency Program

Foreign currencies, accumulated primarily from sales of surplus agricultural commodities under Public Law 83-480 and determined by the Treasury Department to be in excess of the current needs of the United States, are made available to the Institution through the Special Foreign Currency appropriation. As indicated above, in fiscal year 1986, the

Smithsonian obligated \$1,381,000, equivalent in excess currencies, for scientific work primarily in India, but also in Pakistan, Burma and Guinea. The monies were made available to United States institutions for research advanced professional training in fields of traditional Smithsonian interests and competence. they include \$1,020,000 representing a contribution to the international effort to restore and preserve the ancient city of Moenjodaro in Pakistan.

Construction and Plant Services

Quadrangle construction was approximately 97% complete as of the end of fiscal year 1986. As this report is being read, final preparations are underway for the Quadrangle opening in September 1987. Although a \$1,000,000 private donation was returned when the details of the gift agreement could not be worked out, alternative funding has been provided and the project will proceed as planned. All major pledges have been received or are on a progress payment schedule. Federal appropriations have funded 50% of the project with matching funds provided by private donors.

Additional Federal appropriations totalling \$5,281,000 were provided to the National Zoological Park for a health and research facility, the design of the aquatic habitat exhibit, as well as for general repairs and improvements.

The principle of joint private and federal partnerships will assure construction of the Earl S. Tupper Research and Conference Center at the

Smithsonian Tropical Research Institute. The Institution is deeply grateful to the Tupper Foundation and the Tupper family for their generosity.

Endowment

The Smithsonian's Endowment Fund was valued at \$181,160,780 on September 30, 1986, topping its previous year-end high on September 5, 1985. The Institution has been equity oriented; this posture served it well as the stock market enjoyed an ebullient period during the summer of 1986. The Endowment has been further enhanced by yearly additions drawn from revenues generated by the Institutions auxiliary activities. This fiscal year \$3,000,000 were again transferred from operating revenues to the Endowment.

The role of the Institution's Investment Policy Committee continues to be critical to the success of the Endowment. In the spring of 1986, Mr. Barnabas McHenry was designated by the Chancellor as the new Chairman of this Committee. Stepping down as Acting Chairman, after eighteen months of dedicated service, was Mr. Carlisle H. Humelsine. Mrs. Jane Mack Gould, Senior Vice President of Alliance Capital Management Corporation, joined the Committee. Mr. T. Ames Wheeler, Treasurer of the Institution for many years, resigned from the Committee after many years of devoted service.

The Institution utilizes the Total Return Income Policy; total investment return is defined as yield (interest and dividends) plus appreciation, including both realized and unrealized gains. A portion of this return is made available for expenditure each year, and the remainder is reinvested as principal. As noted, this fiscal year the Regents approved a payout of 5% of the 5-year market value average of the Endowment Fund.

After a thorough analysis of the effectiveness of the investment managers and a review of eighteen prospective managers, a decision was made to replace one of the Institution's managers. The firm of Miller, Anderson and Sherrerd joins Fiduciary Trust Company of New York, Batterymarch Financial Management, and Rollert and Sullivan and Company as the Institution's four investment advisors. Advisors are given full discretion as to asset allocation and stock selection within guidelines set by the Committee. The change in managers gave the Smithsonian the opportunity to rebalance the portfolio among managers. Thus as the financial statements show, the Endowment funds had sizeable cash equivalent assets as managers considered how to redeploy funds.

On the question of South African investments, the Institution maintained its policy of investing only in U.S. corporations operating in South Africa which have signed the Sullivan Principles, a code of conduct for such corporations. The Smithsonian does not have and never has had any direct investments in South Africa. Holdings in corporations which had not signed the Sullivan Principles were disposed of based on action taken by the Regents in June, 1985. In January 1986, the Institution liquidated its position in the Trustees Co-Mingled Equity Fund

International Portfolio, in recognition of the difficulty of monitoring non-U.S. holdings.

Mindful both of their fiduciary obligations and of the Institution's position in American society, the Regents continue to monitor events in South Africa and developments in U.S. policy with respect to that nation. The Smithsonian is a member of the South Africa Research Consortium, a loose federation of over forty colleges and universities, which sponsors research of currently available information on South Africa. The Institution is particularly cognizant of Reverend Sullivan's May 31, 1987 deadline for South Africa to abolish apartheid.

Financial Management Activities

After a year of reassessment and evaluation, fiscal year 1986 was one of new beginnings as new procedures, practices, and systems were either implemented or planned for in many areas reporting to the Treasurer. A tireless staff made the year one of significant accomplishment and promise for the future.

Falling under the aegis of the Treasurer is a diverse group of activities: Office of Accounting and Financial Services, Office of Financial Management and Planning, Museum Shops, Mail Order Division, Parking, Concessions, Product Licensing, and Risk Management. With the exception of the Office of Accounting and Financial Services, the

orientation is primarily on generating and securing private funds. The Treasurer maintains a close working relationship with the Budget Office, under the Assistant Secretary for Administration, and the Office of Membership and Development.

After more than seventeen years of service to the Institution and nearly twenty three years of public service, Allen S. Goff retired as Assistant Treasurer and Director of the Office of Accounting and Financial Services. Al's leadership during his long tenure is noteworthy. More important, however, was his ability to visualize the Office of Accounting and Financial Services in an era of computerization and updated business practices; this vision began to take shape under his aegis and is his legacy to the Institution for which we are most grateful.

Upon Allen Goff's retirement a new position of Comptroller was established and filled by Shireen Dodson, formerly Assistant Director of the Office of Accounting and Financial Services. Shireen began her tenure acknowledging the need for greater efficiencies in the fiscal area. The office was reorganized and renovated for a more efficient utilization of space as well as providing adequate equipment and furniture necessary for efficient operation. New policies and procedures were established in the area of cash disbursement. In addition, implementation of short term system improvements as well as planning for the long term was initiated. An analysis of the Institution's requirements for a payroll/personnel system led to the decision to utilize the U.S. Department of Agriculture's service bureau, the National Finance Center.

During the year the Office of Financial Management and Planning became deeply involved with soliciting a new financial system for the Institution. With the help of outside consultants progress was made in defining system requirements and assessing the market place. A functional task force including representatives of the Office of Accounting and Financial Services, the Budget Office, the museums and other bureaus is assisting in this ongoing effort. The Office of Risk Management began work on a major Institutional initiative to develop a comprehensive disaster planning program.

Business Activities

It was a banner year for both Mail Order and Museum Shops. In the quest for Smithsonian related educational products of value and interest to our diverse audiences, success in the marketplace was matched behind the scenes with a flurry of activity to upgrade overloaded computer facilities and outdated warehouse facilities to enhance customer service. New systems and procedures improved efficiency. Product Licensing activities were revitalized enabling the Institution to benefit from uniquely Smithsonian related merchandise created by major American manufacturers. Noteworthy, in this regard were two series: "First Ladies Dolls" from the collections of the National Museum of American History and models replicating airplanes on view at the National Air and Space Museum. A new look at food service activities resulted in the issuance of three requests for proposals, on vending operations and public and employee food services for the North and South sides of the National Mall.

Perhaps, the most monumental task undertaken by the Business Management Office during 1986 was a reassessment of food service activities at the Institution. There followed a long and arduous evaluation of potential concessionaires who responded to publicly announced requests for proposals. Over twenty staff members were involved in the process shepherded by the Office of Procurement and Property management (formerly the Office of Supply Services). Contracts were awarded as the year closed to daka, Inc. to provide public and employee feeding at the National Museum of American History, the National Museum of Natural History, and the National Museum of American Art and Portrait Gallery; to Guest Services Inc. for similar services for the National Air and Space Museum, Hirshhorn Museum and Sculpture Gardens, and the Smithsonian Institution Building; ARA for vending machine service throughout the Institution. The Smithsonian deeply appreciates the fortitude of The Marriott Corporation, itself a bidder, throughout this process and its grace throughout the transition period.

Coincidental to but separate from the decisions made with respect to concessionaires, the Institution concluded that it indeed needed new restaurant facilities at the National Air and Space Museum. Plans were completed for a 1000 seat cafeteria and a 200 seat sit-down restaurant in a single ground level public facility to replace the woefully inadequate current public cafeteria seating 350 on the National Air and Space Museum's third floor. With Regents approval, the Institution sought \$11,000,000 in conventional financing for the project, signing for a bank loan with Riggs National Bank in December 1986.

Accounting and Auditing

The Treasurer wishes to express publicly her thanks to the Smithsonian's internal audit staff. The staff regularly reviews the Institution's financial activities and fiscal systems throughout the year, assists Coopers and Lybrand in the annual audit, and does special projects as required. The Audit staff's advice and counsel has been exceptionally helpful during the last two years as the new Treasurer has reviewed almost all aspects of the Institution's fiscal operations.

The Institution's funds, federal and nonappropriated, are audited annually by the independent public accounting firm of Coopers & Lybrand. Their unqualified report for fiscal year 1986 is reprinted on the following pages. Coopers & Lybrand's consulting staff also provided assistance to the Institution during the year at the request of the Treasurer. Special studies were done with respect to food service activities and financial systems and controls at the Cooper-Hewitt Museum.

Additionally, the Defense Contract Audit Agency conducts audits of grants and contracts received from federal agencies and monitors allocated administrative costs.

The Audit and Review Committee of the Board of Regents, chaired by Regent David Acheson, met three times during the fiscal year pursuant to their responsibilities under the bylaws of the Institution. In addition to the review of the 1985 audit performed by Coopers & Lybrand, special attention was given by the committee to the Institution's Business Management activities, safeguards for handling hazardous materials, internal controls, the loss of public parking, and the building renovation program.

Related Organizations

The Woodrow Wilson International Center for Scholars, the National Gallery of Art, and the John F. Kennedy Center for the Performing Arts were established by Congress within the Institution. Each organization is administered by its own board of trustees and reports independently on its financial status. Fiscal, administrative, and other support services are provided the Woodrow Wilson International Center for Scholars on a reimbursement basis by the Smithsonian; office space is made available for Center operations. Administrative services were also provided by the Institution on a contract basis to Reading is Fundamental, Inc., and the Visions Foundation. An independent non-profit operation, the Friends of the National Zoo (FONZ) operates under contract a number of concessions benefiting the National Zoological Park.

Table 1 Financial Summary (In \$1,000s)

	FY 1985	FY 1986
INSTITUTIONAL OPERATING FUNDS		
FUNDS PROVIDED:		
Federal Appropriations - Salaries & Expenses	\$ 164,321	\$ 169,384
Government Grants & Contracts	15,653	15,534
Nonappropriated Trust Funds:		
For Restricted Purposes	9,937	13,314
For Unrestricted & Special Purposes:		
Auxiliary & Bureau Activities Revenues - Gross	141,160	153,166
Less Related Expenses	(119,361)	(131,571)
Auxiliary & Bureau Activities Net Revenue	21,799	21,595
Investment, Gift & Other Income	6,744	7,962
Total Net Unrestricted & Special Purpose Revenue	28,543	29,577
Total Nonappropriated Trust Funds - Gross	157,841	174,462
- Net	38,480	42,891
Total Operating Funds Provided - Gross	337,815	359,380
- Net	218,454	227,809
FUNDS APPLIED:		
Research	\$ 51,607	\$ 52,463
Less SAO Overhead Recovery	(2,282)	(2,654)
Museums	76,346	89,765
Public Service	4,480	4,229
Directorate of International Activities	642	1,387
Special Programs	14,654	11,740
Associates & Business Management	930	1,043
Administration - Federal*	11,549	12,726
--Nonappropriated Trust Funds	7,814	8,474
Less Smithsonian Overhead Recovery	(7,391)	(8,491)
Facilities Services	48,576	51,302
Total Operating Funds Applied	206,925	221,984
Transfers (Nonappropriated Trust Funds)		
Unrestricted Funds - To Plant	20	67
- To Endowment	3,014	5,733
Restricted Funds - To Endowment	129	2,314
Total Operating Funds Applied & Transferred Out	210,088	230,118
CHANGES IN NONAPPROPRIATED TRUST FUND BALANCES:		
Restricted Purpose (Incl. Government Gr. & Contracts)	587	(28)
Unrestricted - General Purpose	52	(3,094)
- Special Purpose	7,727	813
Total	8,366	(2,309)
YEAR-END BALANCES - NONAPPROPRIATED TRUST FUNDS:		
Restricted Purpose	9,684	9,656
Unrestricted - General Purpose	5,138	2,044
- Special Purpose	23,832	24,645
Total	38,654	36,345
OTHER FEDERAL APPROPRIATIONS **		
Special Foreign Currency Program	8,820	2,378
Construction	18,326	19,621
Total Federal Appropriation (Including S & E above).....	191,467	191,363

* Includes unobligated funds returned to Treasury: FY 1985 - \$173,000; FY 1986 - \$185,000

** Excludes \$1,477,000 received in FY 1986 from the Dept. of State for research projects in India.

Table 2 Source and Application of Operating Funds Year Ended September 30, 1986
 [Excludes Special Foreign Currency Funds, Plant Funds and Endowments] [In \$1,000s]

	Nonfederal Funds						
	Federal Funds	Total Nonfederal Funds	Unrestricted			Restricted	
			General	Auxiliary Activities	Special Purposes	General	Government Grants and Contracts
FUND BALANCES - 10/01/85	\$ —	\$ 38,654	\$ 5,138	\$ —	\$ 23,832	\$ 9,312	\$ 372
FUNDS PROVIDED:							
Federal Appropriations	\$ 169,384	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
Investment Income	—	9,519	4,617	—	856	4,046	—
Government Grants and Contracts	—	15,534	—	—	—	—	15,534
Gifts	—	10,507	42	3,853	294	6,318	—
Salas and Membership Revenue	—	149,313	—	142,511	6,802	—	—
Other	—	5,123	162	—	2,011	2,950	—
Total Provided	169,384	189,996	4,821	146,364	9,963	13,314	15,534
Total Available	\$ 169,384	\$ 228,650	\$ 9,959	\$ 146,364	\$ 33,795	\$ 22,626	\$ 15,906
FUNDS APPLIED:							
Research:							
Assistant Secretary	\$ 653	\$ 1,520	\$ 91	\$ —	\$ 36	\$ 382	\$ 1,011
Astrophysical Observatory	8,642	17,164	2,665	—	1,853	161	12,465
Less Overhead Recovery	—	(2,654)	(2,654)	—	—	—	—
Tropical Research Institute	3,613	932	101	—	364	388	79
Environmental Research Center	3,175	698	75	—	97	43	483
National Zoological Park	11,105	573	113	—	296	157	7
Smithsonian Archives	518	175	173	—	1	1	—
Smithsonian Libraries	4,406	465	331	—	49	85	—
Total Research	32,112	18,873	895	—	2,696	1,217	14,065
Museums:							
Assistant Secretary	496	152	149	—	3	—	—
Museum Programs	366	504	7	—	113	379	5
National Museum of Natural History/ Museum of Man	20,212	4,178	110	—	1,343	1,606	1,119
National Air & Space Museum	8143	2,934	8	—	2,210	369	347
National Museum of American History	11,650	1,918	295	—	831	742	50
National Museum of American Art	4692	1,295	46	—	273	976	—
National Portrait Gallery	3,517	314	23	—	127	150	14
Hirshhorn Museum	2,961	1,761	13	—	1,253	495	—
Center for Asian Art	2,934	8,578	5,598	—	1,492	1,488	—
Archives of American Art	854	963	22	—	2	839	—
Cooper-Hewitt Museum	932	2,681	773	—	1,434	434	40
National Museum of African Art	2,349	955	54	—	804	97	—
Anacostia Neighborhood Museum	772	50	27	—	23	—	—
National Museum Act	733	—	—	—	—	—	—
Conservation Analytical Laboratory	1,993	35	—	—	33	2	—
Office of Exhibits Central	1,528	(16)	—	—	(16)	—	—
Traveling Exhibition Service	380	3,232	(4)	2061	340	804	31
Total Museums	64,512	29,434	7,121	2,061	10,265	8,381	1,606

Table 2 Source and Application of Operating Funds Year Ended September 30, 1986
 (Excludes Special Foreign Currency Funds, Plant Funds and Endowments) (In \$1,000s)

	Nonfederal Funds						
	Federal Funds	Total Nonfederal Funds	Unrestricted			Restricted	
			General	Auxiliary Activities	Special Purpose	General	Government Grants and Contracts
Public Services:							
Assistant Secretary	223	218	190	—	(3)	31	—
Telecommunications	195	894	555	—	139	—	—
Reception Center	187	700	700	—	—	—	—
Office of Public Affairs	558	381	373	—	8	—	—
Smithsonian Press	1,066	13,167	—	13,155	—	—	12
Total Public Service	2,229	15,160	1,818	13,155	144	31	12
Directorate of International Activities ..	508	879	558	—	33	288	—
Special Programs:							
American Studies & Folklife Program	680	1,318	598	—	98	401	221
International Environmental Science Pgm .	687	—	—	—	—	—	—
Academic & Educational Program	625	2,381	399	—	1,856	126	—
Collections Management/Inventory	1,030	—	—	—	—	—	—
Museum Support Center	4,653	110	—	—	110	—	—
JFK Center Grant	333	—	—	—	—	—	—
Total Special Programs	8,008	3,809	997	—	2,064	527	221
Associate Programs	—	77,933	922	76,890	81	40	—
Business Management	—	34,625	—	34,625	—	—	—
Administration	12,541	9,738	7,039	—	2,563	134	2
Less Overhead Recovery	—	(8,491)	(8,491)	—	—	—	—
Facilities Services	49,289	2,211	2,060	—	147	4	—
Transfers Out/ (In):							
Treasury *.....	185	—	—	—	—	—	—
Programs**.....	—	—	5,450	—	(5,450)	—	—
Net Auxiliary Activities	—	—	(18,650)	18,650	—	—	—
Other Designated Purposes	—	—	5,159	983	(6,176)	34	—
Plant	—	87	37	—	50	—	—
Endowment	—	8,047	3,000	—	2,733	2,314	—
Total Transfers	185	8,134	(5,004)	19,633	(8,843)	2,348	—
Total Funds Applied	\$ 169,384	\$ 192,305	\$ 7,915	\$ 146,364	\$ 9,150	\$ 12,970	\$ 15,305
FUND BALANCES 9/30/86	\$ —	\$ 36,345	\$ 2,044	\$ —	\$ 24,645	\$ 9,656	\$ —

*Unobligated funds returned to Treasury

**Includes Collection Acquisition, Scholarly Studies, Educational Outreach, and Special Exhibitions Programs.

Table 3 Government Grants and Contracts - Expenditures (In \$1,000s)
 Fiscal Years 1985-1986

Government Agencies	FY 1985	FY 1986
Agency for International Development	\$ 828	\$ 763
Department of Commerce	87	37
Department of Defense	1,245	1,676
Department of Energy	260	509
Department of Health and Human Services	438	461
Department of Interior	196	319
National Aeronautics and Space Administration* ..	11,425	10,992
National Science Foundation**	895	675
Other	194	474
Total	\$ 15,568	\$ 15,906

* Includes \$495,000 (FY 1985) and \$420,000 (FY 1986) in subcontracts from other organizations receiving prime contract funding from NASA.

**Includes \$321,000 (FY 1985) and \$261,000 (FY 1986) in NSF subcontracts from the Chesapeake Research Consortium.

Table 4 Restricted Operating Trust Funds*
Fiscal Years 1985 and 1986 (in \$1,000s)

	Investment	Gifts	Misc.	Total revenue	Deductions	Transfers in (out)	Net increase (decrease)	Fund balance end of year
FY 1985	\$ 3,639	\$ 5,493	\$ 805	\$ 9,937	\$ 9,306	\$ (129)	\$ 502	\$ 9,312
FY 1986:								
Astrophysical Observatory	42	141	--	183	161	27	49	11
Tropical Research Institute	69	296	--	365	388	12	(11)	496
National Zoological Park	25	239	3	267	157	--	110	228
Other Research	288	331	--	619	511	(176)	(68)	553
Museum Programs	21	505	10	536	379	--	157	255
Natl. Mus. of Nat. History	1,354	282	13	1,649	1,606	(303)	(260)	1,269
Natl. Air and Space Mus.	115	672	2	789	369	--	420	597
Natl. Mus. of Am. History	148	1,473	5	1,626	742	--	884	1,717
Natl. Mus. of Am. Art	91	463	5	559	976	--	(417)	246
Natl. Portrait Gallery	14	187	--	201	150	--	51	196
Hirshhorn Museum	83	4	1,952	2,039	495	(1,876)	(332)	256
Center for Asian Art	1,389	38	509	1,936	1,488	--	448	1,689
Archives of American Art	37	553	200	790	839	--	(49)	305
Cooper-Hewitt Museum	93	276	33	402	434	(33)	(65)	971
Traveling Exhibition Service ..	56	102	--	158	804	--	(646)	242
Other Museums	10	138	(1)	147	99	--	48	145
Am. Studies & Folklife Pgm. ...	17	285	198	500	401	--	99	127
All Other	194	333	21	548	623	1	(74)	353
TOTAL FY 1986	\$ 4,046	\$ 6,318	\$ 2,950	\$ 13,314	\$ 10,622	\$ (2,348)	\$ 344	\$ 9,656

* Does not include Government Grants and Contracts

Table 5 Unrestricted Trust Funds - General and Auxiliary Activities
Fiscal Years 1985 and 1986 (In \$1,000s)

	FY 1985	FY 1986
FUNDS PROVIDED		
General Income:		
Investments	\$ 4,137	\$ 4,617
Gifts	37	42
Miscellaneous	233	162
Total General Income	4,407	4,821
Auxiliary Activities Income (Net):		
Associates	13,518	11,284
Business Management:		
--Museum Shops and Mail Order	5,292	6,076
--Concessions and Parking	1,077	1,720
--Other	(228)	(238)
Smithsonian Press	2,176	1,357
Traveling Exhibitions	(311)	(566)
Photo Services *	11	--
Total Auxiliary Activities	21,535	19,633
Total Funds Provided (Net)	25,942	24,454
EXPENDITURES AND TRANSFERS		
Administrative and Program Expense	17,373	24,064
Less Administrative Recovery	9,673	11,145
Net Expense	7,700	12,919
Less Net Transfers Out:		
To Special Purpose for Program Purposes ..	15,170	11,592
To Plant Funds	20	37
To Endowment Funds	3,000	3,000
Net Transfers Out	18,190	14,629
NET ADDITION TO FUND BALANCE	52	(3,094)
ENDING FUND BALANCE	\$ 5,138	\$ 2,044

*Effective with FY 1986 Photo Services is classified in the Unrestricted Special Purpose Funds.

Table 6 Auxiliary Activities Fiscal Years 1985 and 1986 (In \$1,000s)

	Sales & membership revenue	Gifts	Less cost of sales	Gross revenue	Expenses	Net revenue* (loss)
FY 1985	\$ 132,218	\$ 3,150	\$ 76,593	\$ 58,775	\$ 37,240	\$ 21,535
FY 1986:						
Associates	84,320	3,853	58,686	29,487	18,204	11,283
Business Management:						
---Museum Shops/Mail Order	39,029	--	20,998	18,031	11,956	6,075
---Concessions/Parking	2,660	--	--	2,660	939	1,721
---Other	495	--	--	495	732	(237)
Smithsonian Press	14,513	--	4,328	10,185	8,827	1,358
Traveling Exhibitions	1,494	--	657	837	1,404	(567)
Photo Services (Admin.)**	--	--	--	--	--	--
Total FY 1986	\$ 142,511	\$ 3,853	\$ 84,669	\$ 61,695	\$ 42,062	\$ 19,633

* Before revenue-sharing transfers to participating Smithsonian bureaus of \$815,000 (FY 1985) and \$983,000 (FY 1986).

** Effective with FY 1986 Photo Services is classified in the Unrestricted Special Purpose Funds.

Table 7 Unrestricted Special Purpose Funds
Fiscal Years 1985 and 1986 (In \$1,000s)

	Revenue				Deductions				Fund balance end of year
	Investment	Bureau activities	Gifts and other revenue	Total revenue	Transfers in (out)	Program expense	Bureau activity expense	Net increase (decrease)	
FY 1985	\$ 645	\$ 5,792	\$ 1,692	\$ 8,129	\$ 15,156	\$ 10,030	\$ 5,528	\$ 7,727	\$ 23,832
FY 1986:									
Astrophysical Observ.	\$ 13	\$ 358	\$ 62	\$ 433	\$ 982	\$ 830	\$ 496	\$ 89	\$ 1,179
SAO Computer Ctr.	—	520	—	520	130	—	527	123	123
Tropical Research Inst.	—	199	—	199	720	210	154	555	657
Environmental Resch. Ctr.	8	16	1	25	119	97	—	47	238
Natl. Zoological Park	292	—	506	798	173	296	—	675	3,746
Natl. Mus. of Nat. History	26	1	77	104	1,148	1,343	—	(91)	1,185
Natl. Air & Space Museum	105	2,820	287	3,212	(148)	948	1,262	854	2,160
Natl. Mus. of Am. History	18	45	134	197	994	814	17	360	1,394
Natl. Mus. of Am. Art	37	8	362	407	493	264	9	627	963
Natl. Portrait Gallery	4	14	51	69	255	116	11	197	319
Hirshhorn Museum	145	—	11	156	(1,840)	1,253	—	(2,937)	559
Center for Asian Art	—	—	—	—	1496	1492	—	4	4
Cooper-Hewitt Museum	26	1,068	206	1,300	45	667	767	(89)	662
Natl. Mus. of African Art	3	1	22	26	704	802	2	(74)	464
Traveling Exhib. Serv.	3	—	8	11	1,685	340	—	1,356	1,802
Telecommunications	—	67	—	67	42	137	2	(30)	134
SI Computer Center	—	1,169	—	1,169	6	—	1,175	—	—
Fellowships & Grants	32	—	—	32	1,797	1,760	—	69	1,289
Museum Support Center	—	—	—	—	—	110	—	(110)	208
Liability Reserves	—	—	—	—	(133)	(671)	—	538	3,908
Unallocated Programs*	—	—	—	—	(1,165)	—	—	(1,165)	520
All Other	144	516	578	1,238	1,340	2,345	418	(185)	3,131
TOTAL FY 1986	\$ 856	\$ 6,802	\$ 2,305	\$ 9,963	\$ 8,843	\$ 13,153	\$ 4,840	\$ 813	\$ 24,645

*Includes Collection Acquisition, Educational Outreach, and Special Exhibitions Programs.

Table 8 Special Foreign Currency Program
 Fiscal Year 1986 - Obligations (In \$1,000s)

Country	Archaeology	Systematic & environmental biology	Astrophysics & earth sciences	Museum programs	Grant Administration	Total
India	\$ --	\$ --	--	--	\$ 13	\$ 13
Pakistan	1,134 *	108	7	4	60	1,313
Burma	--	25	--	--	--	25
Guinea	30	--	--	--	--	30
Total FY 1986.....	\$ 1,164	\$ 133	\$ 7	\$ 4	\$ 73	\$ 1,381

* Includes \$1,020 for the preservation of Moenjodaro Project.

Table 9 Construction and Plant Funds
 Fiscal Years 1985 and 1986 (In \$1,000s)

	FY 1985	FY 1986
FUNDS PROVIDED		
Federal Appropriations:		
National Zoological Park	\$ 4,851	\$ 5,280
Restoration and Renovation of Buildings	13,475	10,536
Quadrangle	--	3,805
Total Federal Appropriations	18,326	19,621
Nonappropriated Trust Funds:		
Income-Gift and Other		
Smithsonian Environmental Research Center-Gain on Sale	--	161
Smithsonian Tropical Research Institute-Research Facilities	373	767
Erection of Jacksonville Bandstand	3	2
Cooper-Hewitt Museum	2,544	537
American Art and Portrait Gallery Building	20	13
Quadrangle and Related	1,908 #	1,125 *
Smithsonian Institution Building South Entrance	1	35
Total Income	4,849	2,640
Transfers from Current Funds:		
National Museum of African Art	20	19
East Garden.....	--	50
Secretaries' Residence	--	18
Total Transfers	20	87
Total Funds Provided	\$ 23,195	\$ 22,348

* In the application of Plant Funds for this project, a \$4,000,000 pledge receivable was written off as uncollectible in FY 1985, and \$1,000,000 was refunded in FY 1986 on a previously collected pledge.

Table 11 Market Values of Pooled Consolidated Endowment Funds (In \$1,000s)

Fund	9/30/82	9/30/83	9/30/84	9/30/85	9/30/86
Unrestricted	\$35,974	\$54,677	\$56,592	\$65,404	\$81,992
Freer	22,596	32,096	31,125	34,066	39,570
Other Restricted	30,288	43,911	43,396	47,830	58,228
Total	\$88,858	\$130,684	\$131,113	\$147,300	\$179,790

Table 12 Changes In Pooled Consolidated Endowment Funds for Fiscal Year 1986 (In \$1,000s)

Fund	Market value 9/30/85	Gifts and transfers	Interest and dividends*	Income paid out	Subtotal	Market value appreciation	Market value 9/30/86
Unrestricted	\$65,404	\$5,770	\$2,833	\$2,530	\$71,477	\$10,515	\$81,992
Freer	34,066	--	1,420	1,262	34,224	5,346	39,570
Other Restricted	47,830	2,736	2,017	1,797	50,786	7,442	58,228
Total	\$147,300	\$8,506	\$6,270	\$5,589	\$156,487	\$23,303	\$179,790

* Income earned, less managers' fees of \$711,722.

TABLE 13 Endowment Funds September 30, 1986

	Principal		Income	
	Book Value	Market Value	Net Income	Unexpended Balance
UNRESTRICTED PURPOSE--TRUE:				
Avery Fund*	\$171,870	\$216,478	\$8,730	\$0
Higbee, Harry, Memorial	50,322	63,528	2,027	0
Hodgkins Fund*	276,651	298,546	24,647	0
Norrow, Dwight W.	303,166	390,791	12,467	0
Mussinán, Alfred	94,255	114,284	3,646	0
Olmsted, Helen A.	3,163	3,989	127	0
Poore, Lucy T. and George W.*	675,476	865,676	31,092	0
Porter, Henry Kirke, Memorial	1,120,822	1,443,048	46,034	0
Sanford, George H.*	4,829	5,827	329	0
Smithson, James*	662,436	662,074	91,702	0
Walcott, Charles D. and Mary Vaux, Research (Designated)	1,752,790	2,249,029	71,745	63,624
Subtotal	<u>5,115,780</u>	<u>6,313,270</u>	<u>292,546</u>	<u>63,624</u>
UNRESTRICTED PURPOSE--QUASI:				
Forrest, Robert Lee	4,241,189	4,348,756	138,728	0
General Endowment*	58,791,104	63,683,642	1,972,771	0
Goddard, Robert H.	33,567	34,439	1,099	0
Habel, Dr. S.*	612	611	85	0
Hart, Gustavus E.	2,196	2,578	82	0
Henry, Caroline	5,433	6,356	203	0
Henry, Joseph and Harriet A.	218,369	254,236	8,110	0
Heys, Maude C.	407,690	423,157	13,499	0
Hinton, Carrie Susan	110,694	123,787	3,949	0
Lambert, Paula C.	199,870	227,104	7,245	0
Medinus, Grace L.	4,039	4,212	134	0
Rhees, William Jones*	2,835	3,186	178	0
Safford, Clara Louise	186,787	197,653	6,305	0
Smithsonian Bequest Fund*	1,064,824	1,095,595	26,175	0
Taggart, Ganson	1,892	2,408	77	0
Abbott, William L. (Designated)	511,653	597,591	19,063	54,536
Barstow, Frederic D. (Designated)	4,283	4,995	159	6,250
Hirshhorn Museum Acquisition Fund (Designated)	2,764,147	2,904,378	92,651	97,303
Lindbergh Chair of Aerospace Hist.(Designated)	1,942,809	2,069,720	66,025	80,346
Lindbergh, Charles A. (Designated)	17,836	20,157	1,592	10,882
Lyon, Marcus Ward, Jr. (Designated)	16,803	17,807	568	3,516
Webb, James E., Fellowship (Designated)	926,005	873,049	27,851	49,558
Subtotal	<u>71,454,637</u>	<u>76,895,417</u>	<u>2,386,549</u>	<u>302,391</u>
Total Unrestricted Purpose	<u>\$76,570,417</u>	<u>\$83,208,687</u>	<u>\$2,679,095</u>	<u>\$366,015</u>

TABLE 13 Endowment Funds September 30, 1986

	Principal		Income	
	Book Value	Market Value	Net Income	Unexpended Balance
RESTRICTED PURPOSE--TRUE:				
Arthur, James	\$150,708	\$195,735	\$6,244	\$6,034
Baird, Spencer Fullerton	136,216	174,966	5,582	4,356
Barney, Alice Pike, Memorial	108,034	140,265	4,475	25,005
Batchelor, Emma E.	132,805	145,088	4,628	82,743
Beauregard, Catherine, Memorial	167,973	196,007	6,253	63,869
Bergen, Charlotte V.	14,327	14,486	462	1,179
Brown, Roland W.	113,504	134,522	4,291	17,895
Canfield, Frederick A.	156,512	215,655	6,880	124
Casey, Thomas Lincoln	53,811	62,840	2,005	6,154
Chamberlain, Frances Lea	106,074	137,722	4,393	22,642
Cooper Fund for Paleobiology	114,179	118,221	3,700	0
Division of Mammals Curators Fund	7,758	8,765	279	5,095
Drake Foundation	698,669	776,927	24,678	118,964
Drouet, Francis and Louderback, Harold B.....	229,937	233,890	7,461	21,627
Dykes, Charles, Bequest	208,250	238,139	7,522	12,075
Eickemeyer, Florence Brevoort	40,935	53,139	1,695	17,454
Forbes, Edward Waldo	431,896	419,689	10,041	10,411
Freer, Charles L.	33,951,121	39,570,119	1,262,308	1,285,590
Grimm, Sergei N.	120,701	123,976	3,955	21,891
Groom, Barrick W.	123,599	124,798	3,981	8,965
Guggenheim, Daniel and Florence	473,747	506,305	16,151	42,397
Hamilton, James*	4,639	5,174	491	2,018
Henderson, Edward P., Meteorite Fund	1,415	1,741	56	593
Hewitt, Eleanor G., Repair Fund	28,678	31,832	1,016	1,999
Hewitt, Sarah Cooper	169,519	187,893	5,994	12,503
Hillyer, Virgil	28,217	32,954	1,051	12,417
Hitchcock, Albert S.	5,998	7,841	250	251
Hoggkins Fund*	122,273	122,212	16,936	6,558
Hrdlicka, Ales and Marie	205,599	243,682	7,774	8,152
Hughes, Bruce	72,147	93,722	2,990	19,063
Johnson, Seward, Trust Fund for Oceanography ..	14,060,254	16,457,798	525,013	133,119
Kellogg, Remington, Memorial	96,864	101,504	3,238	10,157
Kramar, Nada	11,245	12,811	409	4,247
Lindsey, Jessie H.*	12,840	13,575	1,181	11,413
Maxwell, Mary E.	73,926	96,026	3,063	34,545
Milliken, H. Oothout, Memorial	845	936	30	81
Mineral Endowment	384,923	431,256	13,757	(15)
Mitchell, William A.	52,478	58,995	1,882	2,513
Nelson, Edward William	86,321	108,742	3,469	104
Petrocelli, Joseph, Memorial	27,997	36,424	1,162	29,030
Reid, Addison T.*	89,780	102,560	4,706	10,225
Ripley, S. Dillon and Mary Livingston	108,225	116,586	3,612	0
Roebing Fund	453,535	587,416	18,739	360
Rollins, Miriam and William	891,426	1,068,010	33,780	8,770
Sims, George W.	89,709	89,805	2,863	6,377
Sprague Fund	5,754,715	6,386,341	201,990	38,070
Springer, Frank	67,805	87,656	2,796	23,630
Stern, Harold P., Memorial	680,365	752,244	23,997	95,382
Stevenson, John A., Mycological Library	20,599	23,948	764	2,229
Stuart, Mary Horner, Mineral Fund.....	313,123	304,273	7,280	7,514

TABLE 13 Endowment Funds September 30, 1986

	Principal		Income	
	Book Value	Market Value	Net Income	Unexpended Balance
Walcott, Charles D. and Mary Vaux, Research ...	575,569	677,470	21,385	8,700
Walcott Research Fund, Botanical Publications .	216,852	296,483	9,458	5,315
Williston, Samuel Wendell Diptera Resear.....	15,189	16,058	492	2,299
Zerbe, Frances Brinckle	3,562	4,609	147	5,781
Subtotal	62,267,388	72,149,831	2,308,755	2,278,002
RESTRICTED PURPOSE--QUASI:				
Armstrong, Edwin James	13,630	14,885	467	0
Au Panier Fleuri	78,885	81,109	2,587	4,903
Bacon, Virginia Purdy	368,323	407,089	12,986	37,964
Becker, George F.	635,168	704,596	22,477	76
Desautels, Paul E.	50,048	57,394	1,800	0
Gaver, Gordon	5,022	5,730	183	3,393
Hachenberg, George P. and Caroline	17,856	21,417	683	2,884
Hanson, Martin Gustav and Caroline R.	38,153	44,544	1,421	8,938
Hirshhorn Collections Endowment Fund	1,899,784	1,776,223	4,722	4,755
Hunterdon Endowment	12,700,618	14,636,762	466,921	202,444
ICBP Endowment	760,166	796,881	25,143	136
ICBP Conservation Endowment	169,736	175,425	5,580	13,049
Johnson, E. R. Fenimore	31,225	32,981	1,052	5,434
Loeb, Morris	376,728	441,780	14,093	47,683
Long, Annette E. and Edith C.	2,078	2,729	87	465
Myer, Catherine Walden	86,717	101,250	3,230	20,700
Noyes, Frank B.	4,276	5,103	163	3,094
Noyes, Pauline Riggs	37,153	38,220	1,219	2,536
Pell, Cornelia Livingston	31,937	37,378	1,192	4,265
Ramsey, Adm. and Mrs. Dewitt Clinton*	1,194,686	1,273,649	41,201	12,686
Rathbun, Richard, Memorial	45,786	53,557	1,708	18,104
Roebing Solar Research	102,060	115,148	3,673	13,304
Ruef, Bertha M.	121,731	128,527	4,100	4,543
Schultz, Leonard P.	38,780	44,142	1,348	33,177
Seidell, Atherton	2,517,522	2,783,729	88,803	322,591
Smithsonian Agency Account	1,234,738	1,325,941	43,010	913
Strong, Julia D.	43,030	50,326	1,605	4,123
Witherspoon, Thomas A., Memorial	553,371	645,746	20,600	52,998
Subtotal	23,159,207	25,802,261	772,054	825,158
Total Restricted Purpose	\$85,426,595	\$97,952,092	\$3,080,809	\$3,103,160
TOTAL ENDOWMENT FUNDS	\$161,997,012	\$181,160,780	\$5,759,904**	\$3,469,175

*Invested all or in part in U.S. Treasury or other nonpooled investments.

**Total Return Income Payout; does not include \$265,089 of interest income for investment of unexpended income balances.

DRAFT

To the Board of Regents
Smithsonian Institution

We have examined the statement of financial condition of the Smithsonian Institution as of September 30, 1986 and the related statement of financial activity for the year then ended. Our examination was made in accordance with generally accepted auditing standards and generally accepted governmental auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We previously examined and reported upon the financial statements of the Smithsonian Institution for the year ended September 30, 1985, totals of which are included in the accompanying financial statements for comparative purposes only.

In our opinion, the financial statements referred to above, present fairly the financial position of the Smithsonian Institution as of September 30, 1986, and the results of its operations and changes in its fund balances for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

1800 M Street, N. W.
Washington, D. C. 20036
December 23, 1986

SMITHSONIAN INSTITUTION
STATEMENT OF FINANCIAL CONDITION
September 30, 1986
(with comparative totals for September 30, 1985)
(thousands of dollars)

	<u>Trust funds</u>	<u>Federal funds</u>	<u>Totals, all funds</u>	<u>Totals, 1985</u>
Assets:				
Fund balances with U. S.				
Treasury and cash on hand	\$ 744	\$ 78,689	\$ 79,433	\$ 75,365
Investments (Notes 1 and 3)	220,190	-	220,190	192,602
Receivables (Note 5)	35,953	8,016	43,969	48,301
Advance payments (Note 6)	431	15,174	15,605	16,567
Merchandise inventory (Note 1)	11,140	-	11,140	11,340
Materials and supplies inventory (Note 1)	-	1,421	1,421	1,340
Prepaid, deferred expense and other (Note 1)	13,952	-	13,952	13,400
Property and equipment (Notes 1 and 7)	<u>45,418</u>	<u>212,679</u>	<u>258,097</u>	<u>235,689</u>
Total assets	<u>\$327,828</u>	<u>\$315,979</u>	<u>\$643,807</u>	<u>\$594,604</u>
Liabilities:				
Accounts payable and accrued expenses, in- cluding interfund pay- able of \$17,609,000	\$ 39,443	\$ 16,444	\$ 55,887	\$ 50,307
Deposits held in custody for other organizations (Note 2)	4,071	28	4,099	3,937
Accrued annual leave (Note 1)	1,966	7,770	9,736	9,322
Deferred revenue (Note 1)	<u>30,999</u>	<u>-</u>	<u>30,999</u>	<u>28,133</u>
Total liabilities	<u>76,479</u>	<u>24,242</u>	<u>100,721</u>	<u>91,699</u>
Undelivered orders (Note 1)	<u>-</u>	<u>59,368</u>	<u>59,368</u>	<u>57,425</u>
Fund balances (Note 1):				
Trust funds:				
Current:				
Unrestricted general purpose	2,044	-	2,044	5,138
Special purpose	24,645	-	24,645	23,832
Restricted	9,656	-	9,656	9,684
Endowment and similar funds (Note 4)	161,997	-	161,997	137,444
Plant funds (Note 7)	<u>53,007</u>	<u>-</u>	<u>53,007</u>	<u>51,160</u>
Total trust fund balances	<u>251,349</u>	<u>-</u>	<u>251,349</u>	<u>227,258</u>
Federal funds:				
Operating funds - restricted (Note 8)	-	2,316	2,316	177
Construction funds	-	15,952	15,952	15,349
Capital funds	<u>-</u>	<u>214,101</u>	<u>214,101</u>	<u>202,696</u>
Total federal fund balances	<u>-</u>	<u>232,369</u>	<u>232,369</u>	<u>218,222</u>
Total fund balances	<u>251,349</u>	<u>232,369</u>	<u>483,718</u>	<u>445,480</u>
Total liabilities, un- delivered orders and fund balances	<u>\$327,828</u>	<u>\$315,979</u>	<u>\$643,807</u>	<u>\$594,604</u>

The accompanying notes are an integral part of the financial statements.

SMITHSONIAN INSTITUTION

STATEMENT OF FINANCIAL ACTIVITY

for the year ended September 30, 1986

(with comparative totals for the year ended September 30, 1985)

(thousands of dollars)

	Trust. funds		Federal funds			Totals, all funds	Totals, 1985			
	Totals, trust funds	Current funds	Endowment and similar funds	Plant funds	Totals, federal funds			Operating funds	Construction funds	Capital funds
Revenue and other additions:	\$ -	\$ -	\$ -	\$ -	\$ 191,383	\$ 171,762	\$ 19,621	\$ -	\$ 191,383	\$ 191,467
Appropriations	149,313	149,313	-	-	-	-	-	-	149,313	138,010
Auxiliary activities revenue	15,534	15,534	-	-	-	-	-	-	15,534	15,652
Government grants and contracts	11,988	10,307	-	1,681	-	-	-	-	11,988	12,658
Investment income	15,478	-	15,282	196	-	-	-	-	15,478	15,745
Net gain on sale of securities and property	11,707	10,507	436	764	-	-	-	-	11,707	9,742
Gifts, bequests and foundation grants	11,562	-	-	11,562	28,976	-	-	28,976	40,538	43,064
Additions to plant	5,854	5,854	-	-	1,627	1,627	-	-	7,481	3,419
Rentals, fees, commissions and other	221,436	191,515	15,718	14,203	221,986	173,389	19,621	28,976	443,422	429,757
Total revenue and other additions	45,305	45,305	-	-	109,162	109,162	-	-	154,467	149,677
Expenditures and other deductions:	12,005	12,005	-	-	12,614	12,614	-	-	24,619	23,104
Research, educational, and collection acquisition expenditures (Note 9)	2,211	2,211	-	-	49,289	49,289	-	-	51,500	48,615
Administrative expenditures	125,381	125,381	-	-	-	-	-	-	125,381	114,270
Facilities services expenditures	11,447	-	-	11,447	19,018	-	19,018	-	30,465	25,971
Auxiliary activities expenditures	11,829	-	-	829	17,571	-	-	17,571	18,400	17,155
Acquisition of plant and other	167	-	-	167	-	-	-	-	167	20
Property use and retirements (Note 7)	197,345	184,902	-	12,443	207,654	171,065	19,018	17,571	404,999	378,812
Retirement of and interest on indebtedness	24,091	6,613	15,718	1,760	14,332	2,324	603	11,405	38,423	50,945
Total expenditures and other deductions	-	(8,922)	8,835	87	-	-	-	-	-	-
Excess of revenue and other additions over expenditures and other deductions	24,091	(2,309)	24,553	1,847	14,332	2,324	603	11,405	38,423	50,945
Transfers among funds - additions (deductions) (Note 10)	-	-	-	-	(185)	(185)	-	-	(185)	(173)
Net increase (decrease) for the year	227,258	38,654	137,444	51,160	218,222	177	15,349	202,696	445,480	394,708
Returned to U. S. Treasury	\$251,349	\$ 36,345	\$161,997	\$53,007	\$232,369	\$ 2,316	\$15,952	\$214,101	\$483,718	\$445,480
Fund balances at beginning of year	-	-	-	-	-	-	-	-	-	-
Fund balances at end of year (Note 8)	-	-	-	-	-	-	-	-	-	-

The accompanying notes are an integral part of the financial statements.

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

1. Summary of significant accounting policies

Basis of presentation

These financial statements do not include the accounts of the National Gallery of Art, the John F. Kennedy Center for the Performing Arts or the Woodrow Wilson International Center for Scholars, which were established by Congress within the Smithsonian Institution (the Institution) but are administered under separate boards of trustees.

The financial statements of the Institution have been combined for this presentation to show both federal appropriations and trust funds. So-called federal funds reflect the receipt and expenditures of monies obtained from Congressional appropriations. The accounts of the federal funds have been prepared on the obligation basis of accounting, which is in accordance with accounting principles prescribed by the Comptroller General of the United States as set forth in the Policy and Procedures Manual for Guidance of Federal Agencies. The obligation basis of accounting differs in some respects from generally accepted accounting principles. Under this method of accounting, approximately \$44,198,000 of commitments of the operating fund, such as purchase orders and contracts, have been recognized as expenditures, and the related obligations have been reported on the balance sheet at September 30, 1986 even though the goods and services have not been received as of the balance sheet date. Approximately \$15,454,000 of these commitments are for internal storage facilities and equipment at the Museum Support Center. In addition, construction fund commitments for other projects, principally the Quadrangle, amounted to approximately \$15,171,000 at September 30, 1986.

The trust funds reflect the receipt and expenditure of funds obtained from private sources, federal grants and contracts, investment income and

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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certain business activities related to the operations of the Institution. The financial statements with respect to trust funds have been prepared on the accrual basis.

Fund accounting

To ensure observance of the limitations and restrictions placed on the use of resources available to the Institution, accounts are maintained in accordance with the principles of fund accounting. This procedure classifies resources for control, accounting and reporting purposes into distinct funds established according to their appropriation, nature and purposes. Separate accounts are maintained for each fund; however, in the accompanying financial statements, funds that have similar characteristics have been combined into fund groups. Accordingly, all financial transactions have been recorded and reported by fund group.

The assets, liabilities and fund balances of the Institution are self-balancing as follows:

Federal operating funds represent the portion of expendable funds available for support of Institution operations.

Federal construction funds represent that portion of expendable funds available for building and facility construction, restoration, renovation and repair. Separate subfund groups are maintained for each appropriation - Construction and Improvements, National Zoological Park, Restoration and Renovation of Buildings, Museum Support Center and the Center for African, Near Eastern, and Asian Cultures (Quadrangle).

Federal capital funds represent the value of those assets of the Institution acquired with federal funds plus nonexpendable property transfers from government agencies.

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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Trust current funds, which include unrestricted and restricted resources, represent the portion of expendable funds that is available for support of Institution operations. Amounts restricted by the donor for specific purposes are segregated from other current funds.

Trust endowment and similar funds include funds that are subject to restrictions of gift instruments requiring in perpetuity that the principal be invested and the income only be used. Also classified as endowment and similar funds are gifts which allow the expenditure of principal but only under certain specified conditions. Quasi-endowment funds are funds established by the governing board for the same purposes as endowment funds; however, any portion of such funds may be expended. Restricted quasi-endowment funds represent gifts for restricted purposes where there is no stipulation that the principal be maintained in perpetuity or for a period of time, but the governing board has elected to invest the principal and expend only the income for the purpose stipulated by the donor.

Trust plant funds represent resources restricted for future plant acquisitions and funds expended for plant.

Investments

All gains and losses arising from the sale, collection or other disposition of investments and property are accounted for in the fund in which the related assets are recorded. Income from investments is accounted for in a similar manner, except for income derived from investments of endowment and similar funds, which is accounted for in the fund to which it is restricted or, if unrestricted, as revenue in unrestricted current funds. Gains and losses on the sale of investments are recognized on the settlement date basis using the specific identification method, whereby the cost of

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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the specific security adjusted by any related discount or premium amortization is the basis for recognition of the gain or loss.

Inventory

Inventories are carried at the lower of cost or market. Cost is determined using the first-in, first-out (FIFO) method, retail cost method (for those inventories held for resale) or net realizable value.

Deferred revenue and expense

Revenue from subscriptions to Smithsonian Magazine is recorded as income over the period of the related subscription, which is one year. Costs related to obtaining subscriptions to Smithsonian Magazine are charged against income over the period of the subscription.

The Institution recognizes revenue and charges expenses of other auxiliary activities during the period in which the activity is conducted.

Works of art, living or other specimens

The Institution acquires its collections, which include works of art, library books, photographic archives, objects and specimens, through purchase with federal or private funds or by donation. In accordance with policies generally followed by museums, no value is assigned to the collections on the statement of financial condition. Purchases for the collections are expensed currently.

Property and equipment

Nonexpendable equipment purchased with federal funds is recorded at cost and is depreciated on a straight-line basis over a period of 10 years. Equipment purchased with trust funds for use by nonincome-producing activities is treated as a deduction of the current fund and a capitalized

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

cost of the plant fund. Depreciation on equipment capitalized in the plant fund is recorded on a straight-line basis over the estimated useful life of 3 to 10 years (see Note 7). Capital improvements and equipment purchased with trust funds and utilized in income-producing activities are capitalized in the current unrestricted fund at cost and are depreciated on a straight-line basis over their estimated useful lives of 3 to 10 years.

Buildings and other structures, additions to buildings and fixed equipment purchased with federal funds are recorded in the capital funds at cost and depreciated on a straight-line basis over a period of 30 years. Costs associated with renovating, restoring and improving structures are depreciated over their useful lives of 15 years.

Certain lands occupied by the Institution's buildings were appropriated and reserved by Congress for the Smithsonian and are not reflected in the accompanying financial statements. Property and nonexpendable equipment acquired through transfer from government agencies are capitalized at the transfer price or at estimated amounts, taking into consideration usefulness, condition and market value.

Real estate (land and buildings) purchased with trust funds is recorded at cost, to the extent that restricted or unrestricted funds were expended therefor, or appraised value at date of gift, except for gifts of certain islands in the Chesapeake Bay and the Carnegie Mansion, which have been recorded at nominal values. Costs of original building structures and major additions are depreciated on a straight-line basis over their estimated useful lives of 30 years. Costs of renovating, restoring and improving structures are depreciated on a straight-line basis over their estimated useful lives of 15 years. Depreciation is recorded in the plant funds as a deduction to the investment in plant (see Note 7).

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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Government grants and contracts

The Institution has a number of grants and contracts with the U. S. Government, which primarily provide for cost reimbursement to the Institution. Grant and contract revenue is recognized as expenditures are incurred within trust funds.

Pledges

The Institution records significant pledges that are supported by letters signed by donors. Pledges are recorded at net realizable value as a receivable and as deferred revenue on the Statement of Financial Condition. Revenue from pledges is recognized in the year the pledge funds are collected.

Contributed services

A substantial number of unpaid volunteers have made significant contributions of their time in the furtherance of the Institution's programs. The value of this contributed time is not reflected in these statements in accordance with generally accepted accounting principles.

Annual leave

The Institution's civil service employees earn annual leave in accordance with federal law and regulations. However, only the cost of leave taken as salaries is funded and recorded as an expense. The cost of unused annual leave at year-end is reflected in the accompanying financial statements as an asset and accrued liability of the federal funds capital account.

Annual leave is recorded for trust employees in the trust fund as earned.

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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2. Related activities

The Institution provides fiscal and administrative services to several separately incorporated organizations in which certain officials of the Institution serve on the governing boards. The amounts paid to the Institution by these organizations for the aforementioned services, together with rent for Institution facilities occupied, totaled approximately \$367,000 (\$295,000 for the trust funds and \$72,000 for the federal funds) for the year ended September 30, 1986. Deposits held in custody for these organizations were approximately \$4,071,000 as of September 30, 1986.

The following summarizes the approximate expenditures of these organizations for the fiscal year ended September 30, 1986 as reflected in their individual financial statements, which are not included in the accompanying financial statements of the Institution:

Visions Foundation, Inc.	\$1,452,000
Reading Is Fundamental, Inc.	\$6,780,000
Woodrow Wilson International Center for Scholars:	
Trust funds	\$5,121,000
Federal appropriations	\$3,197,000

3. Investments

Investments are recorded at cost on a settlement date basis, if purchased, or estimated fair market value at date of acquisition, if acquired by gift. At September 30, 1986, investments were composed of the following:

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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	<u>Carrying value (\$000s)</u>	<u>Market value (\$000s)</u>
Current funds:		
Certificates of deposit and repurchase agreement	\$ 16,816	\$ 16,816
Commercial paper	1,980	2,000
U. S. Government and quasi-government obligations	39,844	41,449
Corporate bonds	75	75
Common stock	13	6
Preferred stock	97	93
	<u>58,825</u>	<u>60,439</u>
Endowment and similar funds:		
Money market account	32,992	32,992
Deposit with U. S. Treasury	1,080	1,080
U. S. Government and quasi-government obligations	13,335	13,886
Corporate bonds	1,079	1,059
Common stock	110,967	129,845
Preferred stock	1,760	1,515
	<u>161,213</u>	<u>180,377</u>
Plant funds:		
U. S. Government and quasi-government obligations	27	29
Common stock	125	125
	<u>152</u>	<u>154</u>
	<u>\$220,190</u>	<u>\$240,970</u>

Since October 1, 1982, the deposit with the U. S. Treasury has been invested in U. S. Government securities at a variable yield based on market rates.

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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Substantially all the investments of the endowment and similar funds are pooled on a market value basis (consolidated fund) with each individual fund subscribing to or disposing of units on the basis of the per unit market value at the beginning of the month within which the transaction takes place. The unit value as of September 30, 1986 was \$259.24; 299,239 units were owned by endowment, and 394,280 units were owned by quasi-endowment at September 30, 1986.

The following tabulation summarizes changes in relationships between cost and market values of the pooled investments (excludes nonpooled investments such as the deposit with the U. S. Treasury, land held for investment and receivables of the endowment fund):

	(\$000s)			Market value per unit
	<u>Market</u>	<u>Cost</u>	<u>Difference</u>	
End of year	\$179,790	\$160,626	\$19,164	\$259.24
Beginning of year	\$147,300	\$136,156	<u>11,144</u>	223.18
Increase in unrealized net gain for the year			8,020	-
Realized net gain for the year			<u>15,282</u>	-
Net change			<u>\$23,302</u>	<u>\$ 36.06</u>

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

4. Endowment and similar funds

The fund balances for the endowment and similar funds at September 30, 1986 are summarized as follows:

	<u>(\$000s)</u>
Endowment funds, income available for:	
Restricted purposes	\$ 62,267
Unrestricted purposes	<u>5,116</u>
	<u>67,383</u>
Quasi-endowment funds, principal and income available for:	
Restricted purposes	23,159
Unrestricted purposes	<u>71,455</u>
	<u>94,614</u>
Total endowment and similar funds	<u>\$161,997</u>

The Institution utilizes the "total return" approach to investment management of endowment funds and quasi-endowment funds. Under this approach, the total investment return is considered to include realized and unrealized gains and losses in addition to interest and dividends. An amount of principal equal to the difference between interest and dividends earned during the year and the amount computed under the total return formula is transferred to or from the current funds.

In applying this approach, it is the Institution's policy to provide, as being available for current expenditures, an amount taking into consideration such factors as, but not limited to: (1) 4-1/2% of the five-year average of the market value of each fund (adjusted for gifts and transfers during this period), unless a higher percentage is approved by the Regents, (2) current dividend and interest yield, (3) support needs for bureaus and scientists, and (4) inflationary factors as measured by the Consumer Price Index;

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

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however, where the market value of the assets of any endowment fund is less than 110% of the historic dollar value (value of gifts at date of donation), the amount provided is limited to only interest and dividends received.

The total return factor for 1986 was 5% or \$8.27 per unit to all participating funds. The total return applied for 1986 was \$3,060,000 to Restricted Funds and \$2,529,000 to Unrestricted Funds.

5. Receivables

Receivables at September 30, 1986 included the following:

	<u>(\$000s)</u>
<u>Federal funds</u>	
Amount to be provided for accrued annual leave	\$ 7,770
Service fees and charges	246
	<u>8,016</u>
 <u>Trust funds</u>	
Accounts receivable, auxiliary activities, net	12,480
Interfund receivables due from current funds:	
Endowment and similar funds	500
Plant funds	17,109
Interest and dividends receivable	1,926
Unbilled costs and fees from grants and contracts	2,527
Pledges	1,365
Other	46
	<u>35,953</u>
Total, all funds	<u>\$43,969</u>

Continued

EX-107

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

6. Advance payments

Advance payments represent prepayments made to government agencies, educational institutions, firms and individuals for services to be rendered or property or materials to be furnished.

As of September 30, 1986, the Institution had advances outstanding to the U. S. Government of approximately \$12,528,000, principally for construction services to be completed in future fiscal years. The Institution at that date also had advances outstanding to educational institutions amounting to approximately \$1,959,000, principally under the Special Foreign Currency Program.

7. Property and equipment

At September 30, 1986, property and equipment were comprised of the following:

	<u>(\$000s)</u>	<u>(\$000s)</u>
<u>Federal</u>		
<u>Capital funds</u>		
Property	\$ 308,960	
Equipment	34,260	
Less accumulated depreciation	<u>(130,541)</u>	
Total, federal funds		<u>\$ 212,679</u>

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

	<u>(\$000s)</u>	<u>(\$000s)</u>
<u>Trust</u>		
<u>Current funds</u>		
Capital improvements	\$ 5,202	\$
Equipment	8,096	
Leasehold improvements	893	
Less accumulated depreciation and amortization	<u>(7,265)</u>	
	<u>6,926</u>	
<u>Endowment and similar funds</u>		
Land	<u>239</u>	
<u>Plant funds</u>		
Land and buildings	\$ 41,962	
Equipment	3,983	
Less accumulated depreciation	<u>(7,692)</u>	
	<u>38,253</u>	
Total, trust funds		<u>45,418</u>
Total, all funds		<u>\$ 258,097</u>

Included in the accumulated depreciation of the federal capital funds is approximately \$13,988,000 of depreciation expense for 1986.

Trust funds' depreciation and amortization expense for fiscal year 1986 for income-producing assets amounted to approximately \$1,925,000, which is included in auxiliary activities expenditures in the current funds. Depreciation of nonincome-producing equipment and buildings for 1986 amounted to approximately \$829,000.

The balance of the plant fund at September 30, 1986 included approximately \$14,754,000 of trust unexpended plant funds.

Continued

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

8. Federal operating funds

The federal operating funds include funds which are available until expended as follows:

	Additions (\$000s)		Fund Balance at Septem- ber 30, 1986 (\$000's)
	<u>Appropriations</u>	<u>Other</u>	
Salaries and expenses	\$169,384	\$ -	\$ -
Special Foreign Currency Program	2,378	-	1,354
U. S. India Fund (trans- fers from Department of State)	-	1,477	917
Smithsonian Tropical Research Institute	-	150	45
	<u>\$172,762</u>	<u>\$1,627</u>	<u>\$2,316</u>

9. Collection acquisitions

In keeping with accounting principles, the Institution records the acquisition of collections as an expense in the year of purchase. For fiscal year 1986, \$7,000,000 was charged to current funds for the acquisition of the Vever collection although payments are to be made over multiple years.

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SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

10. Transfers among funds

The following transfers among trust funds were made for the year ended September 30, 1986 in thousands of dollars:

	<u>Current funds</u>		<u>Endowment and</u>	<u>Plant</u>
	<u>Unrestricted</u>	<u>Restricted</u>	<u>similar funds</u>	<u>funds</u>
Portion of investment yield appropriated (Note 4)	\$ (398)	\$ (389)	\$ 787	\$-
Income added to endowment principal	-	(159)	159	-
For plant acquisition	(50)	-	-	50
For special purposes	33	(33)	-	-
Endowment released	-	33	(33)	-
Reclassified as true endowment	-	(292)	292	-
Appropriated as quasi-endowment	<u>(5,733)</u>	<u>(1,897)</u>	<u>7,630</u>	<u>-</u>
Total nonmandatory transfers	(6,148)	(2,737)	8,835	50
Mandatory transfers for principal and interest	<u>(37)</u>	<u>-</u>	<u>-</u>	<u>37</u>
Total transfers among funds	<u><u>\$(6,185)</u></u>	<u><u>\$(2,737)</u></u>	<u><u>\$8,835</u></u>	<u><u>\$87</u></u>

11. Retirement plans

The federal employees of the Institution are covered by the Civil Service Retirement Program. Under this program, the Institution withholds from the gross pay of each federal employee and remits to the Civil Service Retirement and Disability Fund (the Fund) the amounts specified by such program. The Institution contributes 7% of basic annual salary to the Fund. The cost of the plan for the year ended September 30, 1986 was approximately \$6,462,000.

The Institution has a separate retirement plan for trust employees. Under the plan, both the Institution and

Continued

SMITHSONIAN INSTITUTION
FY 1988 Budget Request

ACCOMPL. Bureau	Item	FY 1988 REQUEST		
		FTF	FTE	Dollars
SALARIES AND EXPENSES:				
FY 1987 Appropriation		3,960	3,996.00	160,820
Supplemental Requirement		0	0.00	9,896 /1
Uncontrollable Increases		0	0.00	9,896
PROGRAMMATIC INCREASES:				
Research				

Astrophysical Observatory	Instrumentation for Submillimeter-wave astronomy	2	2.00	152
Astrophysical Observatory	Conversion of the Multiple Mirror Telescope	0	0.00	528
Tropical Research Institute	Upper Laboratory and Conference Center staffing	16	8.00	547
Tropical Research Institute	Staffing, furnishings for new facilities	6	3.00	144
Tropical Research Institute	Molecular evolutionary studies	6	6.00	500
Environ. Research Center	Permanent reprogramming for biological activities	(12)	(12.00)	(1,600)
National Zoological Park	Support for current programs	7	7.00	392
National Zoological Park	Genetic management of rare and endangered species	2	2.00	250
S.I. Libraries	Redirection of funds for cataloging materials	0	0.00	0
S.I. Libraries	Support for branch library at Museum of African Art	2	2.00	32
Museums				

Museum of Natural History	Arctic archeology, anthropology and biology	3	3.00	200
Museum of Natural History	Collections management	6	6.00	160
Museum of Natural History	Computer hardware maintenance and replacement	1	1.00	47
Museum of Natural History	Columbus Quincentenary activities	1	1.00	48
Museum of Natural History	Molecular systematics laboratory	4	4.00	450
Air and Space Museum	Columbus Quincentenary world atlas	1	1.00	24
Museum of American History	Collections inventory support	5	5.00	93
Museum of American History	Columbus Quincentenary activities	1	1.00	59
Museum of American History	Redirection of Constitution Bicentennial funding	0	0.00	(450)
Museum of American History	Exhibition reinstallation program	0	0.00	227
Museum of American History	Center for the study of American history	2	2.00	76
Museum of American History	Master plan implementation	6	6.00	147
Museum of American History	Redirection of Duke Ellington funding	0	0.00	(100)
Natl. Portrait Gallery	Conservator	1	1.00	25
Natl. Portrait Gallery	Columbus Quincentenary activities	0	0.00	9
Natl. Portrait Gallery	Constitution Bicentennial program	2	2.00	111
Hirshhorn Museum	Columbus Quincentenary exhibition	0	0.50	23
Freer Gallery of Art	Collections storage equipment	0	0.00	100
Sackler Gallery	Redirection of Inaugural exhibition funding	0	0.00	(310)
Sackler Gallery	Enhancement of research capabilities	2	2.00	64
Sackler Gallery	Publications and public information programs	2	2.00	89
Sackler Gallery	Exhibition support	1	1.00	25

/1 Includes FY 1987 requirement for legislated pay raises, \$3,047,000; increased costs associated with the new Federal Employee Retirement System, \$1,971,000; and the restoration of the \$862,000 transferred to the Restoration and Renovation of Buildings account in the FY 1987 appropriation process for construction activities transferred to SERC-Edgewater.



E. ART

SMITHSONIAN INSTITUTION
NOTES TO FINANCIAL STATEMENTS

the employee contributes stipulated percentages of salary which are used to purchase individual annuities, the rights to which are immediately vested with the employee. The cost of the plan for the year ended September 30, 1986 was \$3,531,000. It is the policy of the Institution to fund plan costs accrued currently. There are no unfunded prior-service costs under the plan.

12. Income taxes

The Institution is exempt from income taxation under the provisions of Section 501(c)(3) of the Internal Revenue Code. Organizations described in that section are taxable only on their unrelated business income, which for the Institution was immaterial in 1986.

It is the opinion of the Institution that it is also exempt from taxation as an instrumentality of the United States as defined in Section 501(c)(1) of the Code. Organizations described in that section are exempt from all income taxation. The Institution has not as yet formally sought such dual status.

13. Subsequent event

On December 17, 1986, the Institution entered into a note agreement with the Riggs National Bank of Washington, D. C. for \$11,000,000. Proceeds from the note will be used to fund construction of a restaurant addition at the National Air and Space Museum. The note bears interest at a rate of 9% per annum and is payable in quarterly installments of interest only commencing on December 31, 1986 and principal and interest commencing on September 30, 1991 and ending on June 30, 1998.

FY 1987 APPROPRIATION
(\$000s)

<u>ACTIVITY/Unit</u>	<u>FY 1987</u> Congressional <u>Appropriation /1</u>	<u>Reprogrammings</u> <u>/1</u>	<u>Grade</u> <u>Target</u> <u>Reduction /2</u>	<u>Revised FY 1987</u> <u>Appropriation /3</u>
<u>RESEARCH</u>				
Asst. Secretary for Research	677	543 /4	(5)	1,215
Astrophysical Observatory	9,181	0	(29)	9,152
Tropical Research Institute	4,072	0	(9)	4,063
Environmental Research Center	2,570	(496)/5	(6)	2,068
National Zoological Park	12,045	0	(20)	12,025
Smithsonian Institution Archives	551	0	(2)	549
Smithsonian Institution Libraries	4,774	0	(10)	4,764
Subtotal, Research	<u>33,870</u>	<u>47</u>	<u>(81)</u>	<u>33,836</u>
<u>MUSEUMS</u>				
Asst. Secretary for Museums	1,036	5 /6	(2)	1,039
National Museum of Natural History	21,696	416 /6 /7	(76)	22,036
National Air and Space Museum	8,662	12 /7	(22)	8,652
National Museum of American History	12,795	356 /6 /7	(42)	13,109
National Museum of American Art	4,865	0	(14)	4,851
National Portrait Gallery	3,738	11 /7	(10)	3,739
Hirshhorn Museum & Sculpture Garden	3,207	4 /7	(7)	3,204
Center for Asian Art	3,897	0	(6)	3,891
Archives of American Art	926	73 /6	(3)	996
Cooper-Hewitt Museum	957	76 /6	(2)	1,031
National Museum of African Art	3,096	0	(3)	3,093
Anacostia Neighborhood Museum	902	0	(2)	900
National Museum Act	0	0	0	0
Conservation Analytical Laboratory	2,351	0	(9)	2,342
Office of Exhibits Central	1,727	0	(4)	1,723
Traveling Exhibition Service	560	0	(2)	558
Subtotal, Museums	<u>70,415</u>	<u>953</u>	<u>(204)</u>	<u>71,164</u>
<u>PUBLIC SERVICE</u>				
Asst. Secretary for Public Service	1,240	34 /8	(5)	1,269
Smithsonian Institution Press	1,145	4 /7	(5)	1,144
Subtotal, Public Service	<u>2,385</u>	<u>38</u>	<u>(10)</u>	<u>2,413</u>

<u>ACTIVITY/Unit</u>	FY 1987 Congressional Appropriation /1	Grade		Revised FY 1987 Appropriation /3
		Reprogrammings	Target Reduction /2	
<u>DIRECTORATE OF INTERNAT'L ACTIVITIES</u>	763	(137)/7	(1)	625
<u>SPECIAL PROGRAMS</u>				
American Studies & Folklife Programs	727	11 /7	(2)	736
Int'l Environmental Science Program	738	0	0	738
Academic and Educational Programs	826	0	(3)	823
Collections Management Inventory	831	(831)/6	0	0
Museum Support Center	4,426	0	0	4,426
John F. Kennedy Center Grants	0	0	0	0
Subtotal, Special Programs	<u>7,548</u>	<u>(820)</u>	<u>(5)</u>	<u>6,723</u>
<u>ADMINISTRATION</u>	12,417	746 /8 /9 /10 /11	330	13,493
<u>FACILITIES SERVICES</u>				
Office of Design and Construction	2,111	0	(11)	2,100
Office of Protection Services	19,092	(827)/9 /10 /11	(10)	18,255
Office of Plant Services	35,319	0	(8)	35,311
Subtotal, Facilities Services	<u>56,522</u>	<u>(827)</u>	<u>(29)</u>	<u>55,666</u>
<u>GRAND TOTAL, SMITHSONIAN</u>	183,920	0	0	183,920

/1 Reduction of \$1.0 million for Quadrangle has been distributed as follows: Center for Asian Art, \$179,000; National Museum of African Art, \$206,000; Assistant Secretary for Public Service, \$10,000; Smithsonian Institution Libraries, \$32,000; Office of Exhibits Central, \$41,000; Traveling Exhibition Service, \$38,000; Directorate of International Activities, \$259,000; Administration, \$15,000; Office of Protection Services, \$150,000; and Office of Plant Services, \$70,000.

/2 Reflects the distribution of the Office of Management and Budget Grade Target Reduction for FY 1987. The full reduction of \$373 thousand had been reflected in the Administration line-item in the FY 1987 request.

/3 Reflects FY 1987 Base Appropriation shown on the "Summary of the 1986 Appropriation and the 1987 and 1988 Estimates".

- /4 Reflects transfers from the Environmental Research Center, Rockville facility, for solar monitoring, carbon dating, and plant growth and development research programs and a permanent transfer of one position from the Administration line-item.
- /5 Reflects transfers to the Assistant Secretary for Research (see footnote /4) and transfers from the Rockville site to the Edgewater facility of CO2 monitoring program, saltgrass marsh program, and the instrument and support shop.
- /6 Reflects distribution of Collections Management/Inventory Program funding.
- /7 Reflects distribution of funds appropriated for the Columbus Quincentenary.
- /8 Reflects permanent transfer of one position from the Administration line-item.
- /9 Reflects establishment of the Office of Safety Programs, formerly a division of the Office of Protection Services.
- /10 Reflects a permanent transfer of one position to the Office of Protection Services.
- /11 Reflects a permanent transfer of three positions from the Office of Protection Services to the Office of Audits and Investigations in the Administration line-item.

SMITHSONIAN INSTITUTION LIBRARIES



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