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SMITHSONIAN INSTITUTION

Fiscal Year 1971

Justification of Estimates of Appropriations

To the Bureau of the Budget



1971 Budget to BOB

10-1-69

| | |
|--|-----------------------------------|
| 1. Pay Increases | |
| <i>General Counsel</i> | 10/31 |
| 2. United States National Museum | |
| 2a. Office of the Director General of Museums | Dingle |
| 2b. Office of Exhibits | Chadwick |
| 2c. Conservation Analytical Laboratory | Ward |
| 2d. Office of the Registrar | Ward |
| 3. Museum of History and Technology | Bonstein |
| 4. Museum of Natural History | Corcoran |
| 5. National Air and Space Museum | ✓ |
| 6. National Armed Forces Museum Advisory Board | progranted |
| 7. Anacostia Neighborhood Museum | Kennedy |
| 8. Freer Gallery of Art | Price |
| 9. National Collection of Fine Arts | Dr. J. M. Davis |
| 10. National Portrait Gallery | Dingle |
| 11. Joseph H. Hirshhorn Museum & Sculpture Garden | Levine |
| 12. Smithsonian Astrophysical Observatory | Whipple - Wertz - McKee |
| 13. Smithsonian Tropical Research Institute | Winters |
| 14. Radiation Biology Laboratory | Phillips |
| 15. Smithsonian Office of Ecology | Waller |
| 16. Office of Oceanography and Limnology | Waller |
| 17. Center for the Study of Man | St. Louis |
| 18. Center for Short-Lived Phenomena | Citron & 1/16/10 |
| 19. Smithsonian Research Awards Program | Thompson |
| 20. Office of Academic Programs | Butterfield |
| 21. International Activities | Challinor |
| 21a. Office of International Activities | Condon |
| 21b. International Exchange Service | |
| 22. Woodrow Wilson International Center for Scholars | |
| 23. Administrative and Central Support Activities | |
| 23a. Office of the Secretary | Ripley - Blalock - Tuller - G. W. |
| 23b. Management Support | Condon - Powers - Remond |
| 23c. Office of the Treasurer | Whitely - Morrison |
| 23d. Division of Performing Arts | Thompson |
| 23e. Office of Personnel & Management Resources | Poulton + 1 on 2/3/70 |
| 23f. Office of Public Affairs | Phillips |
| 23g. Supply Division | Barnett |
| 23h. Information Systems Division | Longworth |
| 23i. Smithsonian Institution Libraries | Shank |
| 23j. Photographic Services Division | Dillon |
| 23k. Smithsonian Institution Press | W. L. H. 2nd copy |
| 24. Buildings Management Department | Mechanics + 2 more 10/10 |
| 25. Science Information Exchange | Dr. Monroe Freeman 10/28/69 |
| 26. Sound Research | Thompson |
| 27. News | Stewart, T.D. 353 MWH |
| 28. Publications | Levine 5/20/69 |
| | Mr. Ripley 10/24/69 (2nd copy) |

SMITHSONIAN INSTITUTION
FISCAL YEAR 1971 ESTIMATES OF APPROPRIATIONS

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| GENERAL STATEMENT | i |
| "SALARIES AND EXPENSES" FOR ONGOING PROGRAMS | Tab A |
| Summary of Appropriations by Organization | A-1 |
| Program Structure by Organization | A-2 |
| Summaries and Narrative Justifications: | |
| Necessary Pay | A-6 |
| <u>Integrate and Expand Man's Knowledge of His Environment</u> <u>and the Universe</u> | A-7 |
| National Museum of Natural History | A-8 |
| Smithsonian Tropical Research Institute | A-12 |
| Smithsonian Astrophysical Observatory | A-14 |
| Radiation Biology Laboratory | A-16 |
| Office of Oceanography and Limnology | A-18 |
| Office of Ecology | A-20 |
| Office of Academic Programs | A-22 |
| Office of International Activities | A-23 |
| Smithsonian Research Awards Program | A-25 |
| Center for Short-Lived Phenomena | A-26 |
| <u>Strengthen an Appreciation of Man's Cultural and Material</u> <u>Accomplishments</u> | A-27 |
| National Museum of History and Technology | A-28 |
| Joseph H. Hirshhorn Museum and Sculpture Garden .. | A-31 |
| National Museum of Man | A-33 |
| Renwick Gallery of Art | A-35 |
| National Collection of Fine Arts | A-37 |

SMITHSONIAN INSTITUTION FISCAL YEAR 1971
ESTIMATES OF APPROPRIATIONS--Table of Contents--Page 2

| | <u>Page</u> |
|---|-------------|
| Summaries and Narrative Justifications (cont'd) | |
| National Portrait Gallery | A-39 |
| National Air and Space Museum | A-41 |
| Division of Performing Arts | A-43 |
| Freer Gallery of Art | A-45 |
| Office of Academic Programs | A-46 |
| <u>Extend the Usefulness of the National Reference</u> | |
| <u>Collections</u> | A-47 |
| National Museum of Natural History | A-48 |
| Information Systems Division | A-50 |
| Smithsonian Institution Libraries | A-52 |
| Smithsonian Institution Press | A-55 |
| Conservation Analytical Laboratory | A-57 |
| Smithsonian Archives | A-59 |
| Office of Academic Programs | A-60 |
| Office of the Registrar | A-61 |
| <u>Improve Museums as Social and Educational Institutions</u> ... | A-62 |
| Office of the Director General of Museums | A-63 |
| Anacostia Neighborhood Museum | A-64 |
| Office of Academic Programs | A-66 |
| Office of Public Affairs | A-67 |
| <u>Program Administration and Support</u> | A-69 |
| Office of the Secretary | A-69 |
| Office of the Treasurer | A-70 |
| Office of Personnel and Management Resources | A-70 |
| International Exchange Service | A-71 |

SMITHSONIAN INSTITUTION FISCAL YEAR 1971
ESTIMATES OF APPROPRIATIONS--Table of Contents--Page 3

Page

Summaries and Narrative Justifications (cont'd)

| | |
|--------------------------------------|------|
| Supply Division | A-72 |
| Photographic Services Division | A-73 |
| Travel Services Office | A-74 |
| Duplicating Unit | A-74 |

Buildings and Facilities Management

| | |
|---------------------------------------|------|
| Buildings Management Department | A-75 |
|---------------------------------------|------|

"SALARIES AND EXPENSES" FOR SPECIAL PROGRAMS..... Tab B

| | |
|--|------|
| American Revolution Bicentennial | B-1 |
| Environmental Sciences | B-8 |
| Geoastronomy | B-16 |

MUSEUM PROGRAMS AND RELATED RESEARCH (SPECIAL FOREIGN CURRENCY PROGRAM) Tab C

RESTORATION AND CONSTRUCTION Tab D

| | |
|---|------|
| Program Statement | D-1 |
| Five-Year Building Program | D-2 |
| National Zoological Park | D-3 |
| Restoration and Renovation | D-4 |
| Joseph H. Hirshhorn Museum and Sculpture Garden ... | D-12 |
| National Air and Space Museum | D-13 |
| Radio-Radar Astronomical Telescope | D-16 |

SMITHSONIAN INSTITUTION

FISCAL YEAR 1971 ESTIMATES OF APPROPRIATIONS

General Statement

To a large extent the Smithsonian's nature makes it extremely difficult to establish goals and monitor activities to achieve these goals. The kinds of basic research performed within the Institution and the Institution's responsibility to advance public knowledge through its exhibit and collection functions, preclude the development of precise quantitative yardsticks by which performance toward selected ends can be measured. In this respect, the Institution's output is much like that of libraries, schools, colleges, and universities as it strives to bring about improvements to public education but with infrequent opportunity to test and discern the impact on its audience. Within its museums, galleries, and research and curatorial laboratories, the Institution nurtures ideas which could lead to the production of a better celestial navigation system, the establishment of an effective environmental monitoring system, or the creation of an outstanding work of art. At the same time, however, in attempting to apply its resources most wisely, it must cope with the same inflationary and economic factors which are shrinking the budget flexibility of academic and research institutions across the nation. The salaries of trained and talented people, and the prices of sophisticated equipment and other support items are mounting more rapidly than the Institution's ability to provide funds or to implement, where it can, more effective procedures, such as the application of automatic data processing techniques to collections' data.

The Smithsonian is making a strong effort, however, to obtain a clearer picture of the contribution of individual units to the intermediate-range objectives of the Institution, and to identify more precisely those organization and program areas which can productively apply additional resources in 1971 and in following years. During the past year, the Institution conducted a review of the distribution of its Federal operating funds. The scope of the study covered the period of 1965-1970 (including early estimates for fiscal year 1970 funds), and traced how each of the functional units was participating in the funding and operational growth of the Institution. The value of a periodic study of this sort is obvious. It helps to provide partial answers to questions such as "Are resources flowing into those units conducting priority activity?" and "Is the Institution obtaining the desired mix of activities?" The budget requests for fiscal year 1971 in part reflect the results of this review. With the support of the Administration and the Congress, the Smithsonian will work energetically to improve its performance in those areas of research, information dissemination, and exhibits that seem of special timeliness in the new decade.

The fiscal year 1971 appropriation estimates are presented in four sections: "Salaries and Expenses" for regular operating programs in some 30 museums, art galleries, research laboratories, and program support offices; Special Smithsonian Programs (proposals for preparing for the celebration of the Bicentennial of the American Revolution, realizing the Environmental Sciences research potential of the Smithsonian, and for strengthening activities in Geoastronomy); the Special Foreign Currency Program; and for Restoration and Construction.

The total increase requested for "Salaries and Expenses" including the Special Smithsonian Programs is \$10,051,000 and would place operating fund support of the Smithsonian at approximately \$39,650,000 in fiscal year 1971. The requested increase for regular "Salaries and Expenses" in Section A is \$7,033,000 over the estimated 1970 base of \$29,599,000 (assuming a fiscal year 1970 appropriation increase of \$1,766,000 and an essential pay supplemental appropriation of \$1,495,000). This funding represents what is necessary to maintain a reasonable rate of growth to correct deficiencies and move ahead in traditional areas of research, collections management, and exhibits responsibilities. This amount includes \$607,000 for necessary pay increases in fiscal year 1971.

The requests associated with the Special Programs in Section B total \$3,018,000. Of this total, \$975,000 are for the American Revolution Bicentennial, \$1,000,000 are for Environmental Sciences, and \$1,043,000 are for Geoastronomy.

The Special Foreign Currency Program request amounts to \$4,500,000, an increase of \$2,184,000. The present funding level of this program, \$2,316,000, is almost entirely consumed in funding ongoing projects. Many proposals for valuable new research cannot be funded.

The amount requested for planning, restoration, and construction totals \$20,282,000 of which \$8,897,000 are for funding the contract authority for the Joseph H. Hirshhorn Museum and Sculpture Garden construction.

A. Salaries and Expenses

| <u>1969 Appropriation</u> | <u>1970 Appropriation</u> | <u>1971 Estimate</u> |
|---------------------------|---------------------------|----------------------|
| \$26,341,000 | \$29,599,000 | \$36,632,000 |

The requested bureau and office increases for the regular "Salaries and Expenses" appropriation are grouped under five major Smithsonian objectives which will be stressed over the next five years. These intermediate-range goals, along with the dollar distribution of the 1971 increase, are as follows. Each of these objectives is discussed more fully in the brief statements preceding the group of individual justifications.

| | <u>Distribution of 1971 Requested "S & E" Increases</u> | |
|--|---|----------------|
| | <u>Amount</u> | <u>Percent</u> |
| <u>Integrate and expand man's knowledge of his environment and of the universe</u> | \$1,764,000 | 30.0 |

The requests of the Smithsonian Tropical Research Institute, the Radiation Biology Laboratory, the Chesapeake Bay Center for Field Biology, the Office of Academic Programs, and the Smithsonian Research Awards Program are of particular significance in focusing research and higher educational activity on problems related to improving the quality of man's environment.

Distribution of
1971 Requested
"S & E" Increases
Amount Percent

| | | |
|--|---------------|------|
| <u>Strengthen an appreciation of man's cultural and material accomplishments</u> | \$2, 369, 000 | 40.2 |
|--|---------------|------|

The National Museum of Man, the Joseph H. Hirshhorn Museum, the Division of Performing Arts, and the Renwick Gallery of Art can make special contributions to a better understanding of man's artistic and cultural attainments in a world of rapid change.

| | | |
|--|------------|------|
| <u>Extend the usefulness of the National Reference Collections</u> | \$914, 000 | 15.5 |
|--|------------|------|

Improvements to information accessibility and dissemination are essential if the Smithsonian's research and collection management programs are to be applied productively to gaining insights on cultural and biological problems. Efforts by the National Museum of Natural History, the Information Systems Division, the Smithsonian Institution Libraries and Press, and the Conservation Analytical Laboratory are especially important in this regard.

| | | |
|---|------------|-----|
| <u>Improve museums as social and educational institutions</u> | \$402, 000 | 6.8 |
|---|------------|-----|

Museums offer unusual opportunities for education and training. The requests for the Office of the Director General of Museums, the Anacostia Neighborhood Museum, and the elementary and secondary education program of the Office of Academic Programs are designed to discover new communication and learning techniques and to improve the relevance and responsiveness of museums across the country.

| | | |
|---|------------|-----|
| <u>Provide adequate program administration and support services</u> | \$443, 000 | 7.5 |
|---|------------|-----|

Requests for the Office of the Treasurer, the Office of Personnel and Management Resources, the Supply Division, and the Duplicating Unit are important to serve and facilitate the program performance of the Smithsonian's museums and laboratories.

| | | |
|---|---------------|-------|
| Total (excluding Buildings Management Department) | \$5, 892, 000 | 100.0 |
|---|---------------|-------|

| | | |
|---|----------------------|--|
| Total request (including Buildings Management Department) | <u>\$7, 033, 000</u> | |
|---|----------------------|--|

B. "Salaries and Expenses" for Special Programs

| <u>1969 Appropriation</u> | <u>1970 Appropriation</u> | <u>1971 Estimate</u> |
|---------------------------|---------------------------|----------------------|
| 0 | 0 | \$3,018,000 |

This request is for three special Institution-wide programs totaling \$3,018,000. Of this total, \$975,000 will be devoted to activities which the Institution must initiate if it is to offer to the public an outstanding array of exhibits, publications, lectures, and other educational services during the celebration of the American Revolution Bicentennial. Funding for the Bicentennial project will be almost entirely nonrecurring. The remainder of the Special Program requests will be applied to a concerted effort to extend man's knowledge in two areas of growing scientific importance because of their bearing on man's successful coexistence with nature and the universe: Environmental Sciences (\$1,000,000) and Geoastronomy (\$1,043,000).

C. Special Foreign Currency Program

| <u>1969 Appropriation</u> | <u>1970 Appropriation</u> | <u>1971 Estimate</u> |
|---------------------------|---------------------------|----------------------|
| \$2,316,000 | \$2,316,000 | \$4,500,000 |

The need is to provide adequate support, without any dollar drain to the nation, for overseas archaeological work, systematic and environmental biology, astrophysical studies, and museum programs of benefit to American institutes of higher learning. Ongoing research, based on a progressively broader authority to employ these funds, now consumes the entire appropriation and new demand, spurred by diminishing dollar funding of basic research and by greater research opportunities abroad, is intense.

D. Restoration and Construction

| <u>1969 Appropriation</u> | <u>1970 appropriation</u> | <u>1971 Estimate</u> |
|---------------------------|---------------------------|----------------------|
| \$2,700,000 | \$4,525,000 | \$20,282,000 |

Included in this request are \$2,000,000 for the National Zoological Park; \$4,885,000 for the Restoration and Renovation of Buildings; \$8,897,000 to fund obligations entered into under the Hirshhorn Museum contract authority; \$2,500,000 for the redesign of the National Air and Space Museum; and \$2,000,000 for site acquisition and plans and specifications for a Radio-Radar Astronomical Telescope. Among the high priority needs to be met by this request are planning and repair funds for the National Zoological Park; completion of the restoration of the Renwick Gallery of Art; planning for American Revolution Bicentennial Pavilions on the National Museum of History and Technology; the redevelopment of Silver Hill as a collections center; and the balance of the funds required to liquidate the Hirshhorn contract authority.

Total 1971 Appropriations Requested \$64,432,000

"SALARIES AND EXPENSES" FOR ONGOING PROGRAMSTAB A

SMITHSONIAN INSTITUTION
Summary of "Salaries and Expenses" Appropriations
(In thousands of dollars)

| "Salaries and Expenses" Appropriation | 1969 | | 1970 | | 1971 | |
|---|------|--------|------|--------|------|--------|
| | Pos | Amount | Pos | Amount | Pos | Amount |
| Office of Director General of Museums..... | 5 | \$208 | 7 | \$247 | 12 | \$396 |
| Office of Exhibits | 167 | 2,153 | 167 | 2,405 | 167 | 2,431 |
| Conservation Analytical Laboratory..... | 10 | 116 | 11 | 155 | 16 | 211 |
| Office of the Registrar | 28 | 271 | 29 | 311 | 31 | 367 |
| National Museum of History and Technology | 154 | 1,869 | 155 | 2,136 | 160 | 2,505 |
| National Museum of Natural History..... | 210 | 2,759 | 210 | 3,035 | 242 | 3,480 |
| National Air and Space Museum | 41 | 505 | 41 | 580 | 48 | 721 |
| National Armed Forces Museum Advisory Board... | 7 | 129 | 7 | 148 | 7 | 151 |
| Anacostia Neighborhood Museum | 4 | 42 | 8 | 69 | 17 | 185 |
| National Museum of Man | 49 | 704 | 50 | 726 | 57 | 888 |
| Freer Gallery of Art | 7 | 38 | 7 | 54 | 8 | 77 |
| National Collection of Fine Arts | 55 | 951 | 55 | 1,023 | 60 | 1,159 |
| Renwick Gallery of Art..... | 1 | 1 | 1 | 20 | 5 | 229 |
| National Portrait Gallery | 27 | 704 | 27 | 818 | 30 | 964 |
| Joseph H. Hirshhorn Museum and Sculpture Garden | 7 | 149 | 13 | 197 | 26 | 1,211 |
| Smithsonian Astrophysical Observatory | 54 | 1,898 | 56 | 2,066 | 61 | 2,315 |
| Smithsonian Tropical Research Institute | 23 | 409 | 30 | 456 | 41 | 637 |
| Radiation Biology Laboratory | 32 | 399 | 36 | 789 | 44 | 1,070 |
| Office of Ecology..... | 5 | 110 | 5 | 133 | 9 | 345 |
| Office of Oceanography and Limnology | 18 | 310 | 22 | 356 | 33 | 496 |
| Center for Short-Lived Phenomena | 0 | 0 | 0 | 10 | 2 | 65 |
| Smithsonian Research Awards | 0 | 400 | 0 | 400 | 0 | 700 |
| Office of Academic Programs | 17 | 520 | 18 | 535 | 23 | 790 |
| Office of International Activities | 6 | 105 | 6 | 108 | 11 | 152 |
| International Exchange Service..... | 9 | 115 | 9 | 124 | 11 | 164 |
| Division of Performing Arts | 7 | 143 | 7 | 140 | 10 | 243 |
| Office of Public Affairs | 12 | 140 | 12 | 154 | 16 | 210 |
| Administrative and Central Support..... | 218 | 3,573 | 223 | 3,680 | 270 | 4,605 |
| Buildings Management Department..... | 827 | 7,628 | 870 | 8,724 | 946 | 9,865 |

Total "Salaries and Expenses" (excluding
special programs and the Woodrow
Wilson International Center for
Scholars).....

2,000 \$26,349 2,082 \$29,599 2,363 \$36,632

SMITHSONIAN INSTITUTION

"SALARIES AND EXPENSES"

PROGRAM STRUCTURE BY ORGANIZATION
(In thousands of dollars)

| Program Category | 1969 | | 1970 | | 1971 | |
|---|------|---------|------|---------|------|----------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| I. <u>Research and Scholarship</u> | | | | | | |
| Conservation Analytical Laboratory.. | 4 | \$36 | 4 | \$39 | 5 | \$54 |
| National Museum of History and Technology | 61 | 805 | 62 | 946 | 67 | 1,158 |
| National Museum of Natural History | 107 | 1,724 | 107 | 1,905 | 119 | 2,146 |
| National Air and Space Museum..... | 6 | 94 | 6 | 102 | 6 | 103 |
| National Armed Forces Museum | | | | | | |
| Advisory Board | 2 | 18 | 2 | 22 | 2 | 23 |
| National Museum of Man | 32 | 473 | 33 | 488 | 40 | 647 |
| Freer Gallery of Art | 7 | 38 | 7 | 54 | 8 | 77 |
| National Collection of Fine Arts | 15 | 166 | 15 | 182 | 17 | 213 |
| National Portrait Gallery | 7 | 115 | 7 | 136 | 8 | 150 |
| Smithsonian Astrophysical Observatory | 54 | 1,802 | 56 | 1,966 | 61 | 2,162 |
| Smithsonian Tropical Research | | | | | | |
| Institute | 11 | 302 | 17 | 322 | 26 | 416 |
| Radiation Biology Laboratory | 30 | 383 | 30 | 482 | 32 | 580 |
| Office of Ecology | 5 | 104 | 5 | 126 | 7 | 239 |
| Office of Oceanography and Limnology | 18 | 310 | 22 | 356 | 33 | 496 |
| Center for Short-Lived Phenomena.. | 0 | 0 | 0 | 10 | 2 | 65 |
| Smithsonian Research Awards | 0 | 400 | 0 | 400 | 0 | 700 |
| Office of Academic Programs | 6 | 414 | 6 | 420 | 6 | 536 |
| Office of International Activities | 6 | 105 | 6 | 108 | 11 | 152 |
| Information Systems Division | 1 | 20 | 1 | 22 | 1 | 23 |
| Smithsonian Institution Press | 17 | 429 | 18 | 492 | 19 | 603 |
| Smithsonian Institution Libraries ... | 26 | 368 | 26 | 390 | 34 | 537 |
| Total--Research and Scholarship.. | 415 | \$8,106 | 430 | \$8,968 | 504 | \$11,080 |

SMITHSONIAN INSTITUTION

"SALARIES AND EXPENSES"

PROGRAM STRUCTURE BY ORGANIZATION
(In thousands of dollars)

| Program Category | 1969 | | 1970 | | 1971 | |
|---|------|---------|------|---------|------|---------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| II. National Collections Management and Use | | | | | | |
| Conservation Analytical Laboratory .. | 6 | \$77 | 7 | \$107 | 11 | \$148 |
| Office of the Registrar | 22 | 191 | 23 | 218 | 25 | 273 |
| National Museum of History and Technology | 61 | 748 | 61 | 799 | 61 | 852 |
| National Museum of Natural History .. | 91 | 918 | 91 | 999 | 111 | 1,202 |
| National Air and Space Museum | 29 | 310 | 29 | 385 | 36 | 524 |
| National Armed Forces Museum | | | | | | |
| Advisory Board | 2 | 53 | 2 | 57 | 2 | 58 |
| National Museum of Man | 15 | 203 | 15 | 209 | 15 | 211 |
| National Collection of Fine Arts | 18 | 347 | 18 | 361 | 21 | 461 |
| National Portrait Gallery | 14 | 439 | 14 | 508 | 16 | 639 |
| Joseph H. Hirshhorn Museum and Sculpture Garden | 7 | 149 | 13 | 197 | 26 | 1,211 |
| Office of Academic Programs | 0 | 0 | 0 | 0 | 2 | 80 |
| Information Systems Division | 3 | 50 | 3 | 55 | 9 | 204 |
| Smithsonian Institution Archives | 4 | 35 | 4 | 37 | 5 | 62 |
| Smithsonian Institution Libraries | 14 | 172 | 14 | 182 | 16 | 234 |
| Total--National Collections Management and Use | 286 | \$3,692 | 294 | \$4,114 | 356 | \$6,159 |

SMITHSONIAN INSTITUTION

"SALARIES AND EXPENSES"

PROGRAM STRUCTURE BY ORGANIZATION
(In thousands of dollars)

| Program Category | 1969 | | 1970 | | 1971 | |
|---|------|---------|------|---------|------|---------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| III. <u>Education of the Public</u> | | | | | | |
| Office of Director General of Museums | 5 | \$208 | 7 | \$247 | 12 | \$396 |
| Conservation Analytical Laboratory .. | 0 | 3 | 0 | 9 | 0 | 9 |
| Office of Exhibits | 167 | 2,153 | 167 | 2,405 | 167 | 2,431 |
| Office of the Registrar | 6 | 80 | 6 | 93 | 6 | 94 |
| National Museum of History and Technology | 32 | 316 | 32 | 391 | 32 | 495 |
| National Museum of Natural History .. | 12 | 117 | 12 | 131 | 12 | 132 |
| National Air and Space Museum | 6 | 101 | 6 | 93 | 6 | 94 |
| National Armed Forces Museum | | | | | | |
| Advisory Board | 3 | 58 | 3 | 69 | 3 | 70 |
| Anacostia Neighborhood Museum | 4 | 42 | 8 | 69 | 17 | 185 |
| National Museum of Man | 2 | 28 | 2 | 29 | 2 | 30 |
| National Collection of Fine Arts | 22 | 438 | 22 | 480 | 22 | 485 |
| Renwick Gallery of Art | 1 | 1 | 1 | 20 | 5 | 229 |
| National Portrait Gallery | 6 | 150 | 6 | 174 | 6 | 175 |
| Office of Academic Programs | 11 | 106 | 12 | 115 | 15 | 174 |
| International Exchange Service | 9 | 115 | 9 | 124 | 11 | 164 |
| Division of Performing Arts | 7 | 143 | 7 | 140 | 10 | 243 |
| Office of Public Affairs | 12 | 140 | 12 | 154 | 16 | 210 |
| Smithsonian Institution Press | 3 | 148 | 3 | 166 | 4 | 200 |
| Smithsonian Institution Libraries | 4 | 46 | 4 | 57 | 4 | 58 |
| Photographic Services Division | 18 | 218 | 18 | 237 | 23 | 271 |
| Total--Education of the Public | 330 | \$4,611 | 337 | \$5,203 | 373 | \$6,145 |

SMITHSONIAN INSTITUTION

"SALARIES AND EXPENSES"

PROGRAM STRUCTURE BY ORGANIZATION
(in thousands of dollars)

| Program Category | 1969 | | 1970 | | 1971 | |
|--|--------------|-----------------|--------------|-----------------|--------------|-----------------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| IV. <u>Administrative and Central Support</u> | | | | | | |
| Information Systems Division | 4 | \$65 | 6 | \$73 | 6 | \$75 |
| Program Administration and Support | <u>124</u> | <u>2,022</u> | <u>126</u> | <u>1,969</u> | <u>149</u> | <u>2,338</u> |
| Total--Administrative and Central Support Activities | <u>128</u> | <u>\$2,087</u> | <u>132</u> | <u>\$2,042</u> | <u>155</u> | <u>\$2,413</u> |
| V. <u>Buildings and Facilities Management</u> | | | | | | |
| Smithsonian Astrophysical Observatory | 0 | 96 | 0 | 100 | 0 | 153 |
| Smithsonian Tropical Research Institute | 12 | 107 | 13 | 134 | 15 | 221 |
| Radiation Biology Laboratory | 2 | 16 | 6 | 307 | 12 | 490 |
| Office of Ecology | 0 | 6 | 0 | 7 | 2 | 106 |
| Buildings Management Department ... | <u>827</u> | <u>7,628</u> | <u>870</u> | <u>8,724</u> | <u>946</u> | <u>9,865</u> |
| Total--Buildings and Facilities Management | <u>841</u> | <u>\$7,853</u> | <u>889</u> | <u>\$9,272</u> | <u>975</u> | <u>\$10,835</u> |
| Total, "Salaries and Expenses," (excluding special programs and Woodrow Wilson International Center for Scholars) | <u>2,000</u> | <u>\$26,349</u> | <u>2,082</u> | <u>\$29,599</u> | <u>2,363</u> | <u>\$36,632</u> |

SMITHSONIAN INSTITUTION
NECESSARY PAY INCREASES

An increase of \$607,000 is required for personnel compensation and benefits. All operations of the Smithsonian Institution have been reviewed carefully to determine whether any portion of the requested increase can be absorbed. By absorbing part of the General Schedule and Wage pay raises and the reclassification of positions the Smithsonian is unable to absorb any of the following amounts.

| | | |
|----|---|-------------------|
| a. | Full-year costs of the pay increase granted to General Schedule employees July 13, 1969..... | \$ 38,000 |
| b. | Full-year costs of the wage board increases to be granted in October 1969 and to local rate employees in the Canal Zone..... | 200,000 |
| c. | Periodic step-increases in accordance with the Government Employees Reform Act of 1964 and prevailing practices in the wage scales..... | 299,000 |
| d. | To finance a new holiday - Columbus Day as authorized in Public Law 90-363..... | 70,000 |
| | | <u>\$607,000*</u> |

*This amount is reflected in the fiscal year 1971 column of the Smithsonian units.

INTEGRATE AND EXPAND MAN'S KNOWLEDGE OF HIS ENVIRONMENT AND THE UNIVERSE

The most important scientific task facing man today is understanding the physical relationships that exist in the biosphere and beyond. Survival depends on how mankind continues to nurture culture and technology in a small existing envelope of available land, water, and air, and on how well the physical laws of the universe affecting this envelope are understood. Through basic research programs the Institution has met its responsibilities in these areas since its establishment. For over 100 years, Smithsonian scientists and research collaborators have studied the earth, its inhabitants, and the vast spaces that surround this planet. Now, ten research laboratories and program support activities are actively engaged in investigations on the complex components of this system and how they affect one another. Each of these activities merits additional support.

Of special significance are the tropical biology programs of the Smithsonian Tropical Research Institute, the renewed potential of the Radiation Biology Laboratory in its new laboratory building, and the ecological baseline studies at the Chesapeake Bay Center for Field Biology. The Office of Academic Programs through its fellowship programs stimulates the research and higher education environment. The Research Awards Program supports special staff projects which are selected to advance basic knowledge in science areas pertinent to Institutional objectives.

NATIONAL MUSEUM OF NATURAL HISTORY

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|---------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| I Research and Scholarship | 107 | \$1,724,000 | 107 | \$1,905,000 | 119 | \$2,146,000 |
| II National Collections Management and Use .. | 91 | 918,000 | 91 | 999,000 | 111 | 1,202,000 |
| III Education of the Public | 12 | 117,000 | 12 | 131,000 | 12 | 132,000 |
| Total | 210 | \$2,759,000 | 210 | \$3,035,000 | 242 | \$3,480,000 |
| 1. <u>Urgent Environmental Studies</u> | | | | | 7 | \$127,000 |

Man's present rate of population growth and the increasingly rapid development of new technologies impart a new and special urgency to the need to conduct baseline ecological studies. Studies of past and present ecologies and environments such as are here proposed are needed to provide basic data for preserving and protecting our present natural resources and for developing sound plans for increasing them to meet future needs.

-- Research on Invertebrate Animals at Both Ends of Panama Canal.

This program of basic research is designed to provide information on the ecology of these organisms, their distribution patterns, relationships, and systematics. This study must be undertaken now to provide base line ecological information in support of research already under way and to be undertaken in the near future to assess the probable effects of the building of a sea level canal.

-- Studies of the Fauna of Southeast Asia. Biomedical studies in southeast Asia have shown that resident and migratory mammals and birds act as natural reservoirs for such insect-transmitted diseases as malaria, dengue, Chagas, plague, and typhus. The planned agricultural and industrial development of areas such as the Mekong River delta require immediate systematic and ecological studies of the local vertebrates to provide basic information on health problems which will be encountered so that solutions can be sought before these development programs actually get underway.

The National Museum of Natural History has an excellent nucleus collection of mammal and bird specimens from the Asia and the Pacific Basins. As a result of these collections many agencies, institutions, and individual zoologists in this country and in Asia look to the Smithsonian for assistance in the identification of material. There is an increasing demand for expertise and specialized knowledge, particularly regarding material from Viet Nam,

Thailand, Malaysia, Taiwan, and Indonesia. Expansion of the research, identification, and curation of specimens from this area is essential to provide the service the Smithsonian is called upon to perform. Further, extended research on population variation and the process of speciation based on these collections will make them fully available for advanced studies and reference.

-- Research on Lower Invertebrates in the Field of Coelenterate Systematics. The existing programs on the systematics of living invertebrates must be complemented by studies on coelenterates if the biology and ecology of the lower invertebrates are to be better understood. These basic studies would provide source data for use by Federal and private researchers in many institutions exploring such important segments of marine life as coral reefs or jellyfish, some of which are highly venomous.

-- Major Archeological and Ecological Project in Seistan. Seistan lies in southwestern Afghanistan and southeastern Iran. Its principal characteristics are large moving sand dunes, extensive salt plains, the second highest evaporation rate in the world, winter temperatures falling below zero, and summer temperatures rising above 130 degrees. For four months each year the region is subject to winds ranging from 40 to 120 miles per hour. This region, approximately 10,000 square miles in extent, was once relatively densely populated. On the salt flats and amidst the sand dunes are ruins of dozens of fortified farm "communes," towns, and at least two cities, each nearly a mile square including the remains of complex water distribution systems. However, today life in Seistan, except in the narrow valley of the Helmand River, is impossible.

Preliminary studies and field investigations clearly indicated the need for a broadly based study including extensive field study of ancient and contemporary hydrography and agriculture, together with basic research on the geology, climate, botany, zoology, and limnology of this region, all being closely interrelated factors in the society which developed in this region and from time to time flourished until the fifteenth century.

The ultimate goal of the project will be to provide a complete study of the history and human ecology of this well-defined area with specific desert characteristics. Findings would be of value to historical and development studies and projects in related areas of the world. It is anticipated that additional universities and government agencies will ultimately participate in the project.

For these projects, \$63,000 are requested for three zoologists, one museum specialist, one science illustrator, and two museum technicians. An additional \$64,000 are requested for travel, supplies, materials, equipment, and other services.

2. Evolutionary History of the Earth's Crust 5 \$80,000

This project would involve the study of two mechanisms that have played major roles in the development of the Earth's crust--sea floor spreading (or continental drift) and volcanic eruptions.

-- Research on the Origin of Deep Sea Rocks and Sea Floor Spreading.

This would involve the study of the origin and classification of deep sea rocks and the preparation of a systematic collection of such rocks to facilitate research by Government agencies, oceanographic institutions, and individual scientists. The models of sea floor spreading and continental drift, now being developed by a number of institutions both Federal and private, are tied intimately to the availability of a comprehensive collection and accurate identification and description of rocks from the deep sea floor. Research on many fronts depends on the availability of this basic information. The National Museum of Natural History has one of the largest collections of deep sea rocks and is the logical place for such identification to be done.

-- Study of Volcanic Eruption Patterns Including Development of Techniques for Predicting Courses of Volcanic Eruptions. The objectives of this project are fourfold.

1. Research and documentation of volcanic eruption patterns, including attempts to predict courses which will be followed by a given type of volcanic eruption.
2. Sampling and laboratory analyses of erupted samples.
3. Preparation of a research collection of specimens, films, and geophysical data documenting phases of volcanic eruptions.
4. Preparation, in conjunction with other groups including the Geological Survey, of a yearly summary of the major volcanic eruptions and of their contributions to research in volcanology.

There are between six and 50 volcanic eruptions each year. Of these, only about half are studied and documented by scientists. Further, there is no central repository for important information on the scientific aspects of those eruptions which are documented. In conjunction with the Center for Short-Lived Phenomena, this program will attempt to stimulate data collection and research on all major volcanic eruptions. Expeditions would be dispatched to those areas where there are compelling scientific reasons for direct involvement.

Funds are requested for five scientific positions (\$38,000) and for travel, supplies, services, and equipment (\$42,000).

3. Establish a Training Program within the National Museum of Natural History. \$5,000

The development of the younger members of the Museum staff and the retraining of those who have need to acquire new skills or knowledge of new fields of science or related areas is an essential part of the maintenance of a creative, productive, and enthusiastic professional staff, as well as knowledgeable and dedicated support personnel. On the basis of past experience it can be anticipated that about 25 employees from the Museum staff of over 250 will participate annually in training courses in such fields as data processing, statistics, etc., or enroll in courses primarily at the postgraduate level under the provisions of Public Law 85-507. Estimated additional costs for this training are \$5,000.

Total program increase 12 \$212,000

(See additional National Museum of Natural History request under the reference system category of this budget).

SMITHSONIAN TROPICAL RESEARCH INSTITUTE

| Program Category | 1969 | | 1970 | | 1971 | |
|--|------|---------------|------|---------------|------|----------------------------------|
| | Pos. | <u>Amount</u> | Pos. | <u>Amount</u> | Pos. | <u>Estimate</u> <u>Amount</u> |
| I Research and Scholarship | 11 | \$302,000 | 17 | \$322,000 | 26 | \$416,000 |
| V Buildings and Facilities Management | 12 | 107,000 | 13 | 134,000 | 15 | 221,000 |
| Total | 23 | \$409,000 | 30 | \$456,000 | 41 | \$637,000 |
| Research on Bioenvironmental Problems | | | | | 6 | \$80,000 |

The growth of an intellectual base of operations at the Smithsonian Tropical Research Institute permits strong new research into fundamental biological questions and provides a base for tackling unsolved and complex environmental problems. For example, a creative marine ecologist, who is a member of the Institute's professional staff, recently performed a study of environmental disturbances for the Federal Water Pollution Control Administration. Other members of the staff have provided similar assistance to other government agencies and universities. The ability of the Smithsonian Tropical Research Institute to increase knowledge of the tropical environment depends upon an improved capacity to conduct and coordinate original research under a wide variety of conditions.

Environmental comprehension demands mastering biology throughout the tropics in tropical marine and terrestrial environments, dry and wet tropics, Old World and New World, for low and high altitudes. Such study areas have been surveyed and work plans formulated for STRI research undertakings. A small station has been opened in Cali, Colombia, which permits STRI scientists and their associates to work at variable altitudes on three cordilleras and intervening features as well as giving them access to a moist tropical shore different from Panama's (and at low cost since travel to Cali from Panama is only \$50).

The bond between fundamental research and environmental problem solving shows clearly in marine biology. For instance, research into the populations, distributions, and habits of various fish is needed to evaluate the ecological consequences of the proposed sea level canal. National pressure is increasing for tropical marine centers. The STRI is already performing several of the important functions of such a center, i.e. research and advanced training in tropical marine evolution and ecology. The Institute is becoming increasingly active as a research base for many scientists working in tropical waters. A common failing at many marine laboratories is their isolation from other fields of research. A comprehensive marine laboratory at the Institute has the benefit of strong intellectual support from its staff of terrestrial biologists and an increasing number of visiting scientists and students utilizing the facilities. Research and study visits to the Institute numbered 289 in 1966, 468 in 1967, and 567 in 1968, over an

increasing spread of facilities (Barro Colorado, Galeta, Naos Islands, plus mainland facilities). The biological richness of the area, the separation of two oceans by approximately five million years and only fifty miles, the excellent accessibility of Panama, year-round opportunities of great importance for test-organism breeding in food culture experiments, and many other factors, yield a practical mandate for building this program.

The greatest need at this time is to fill specific gaps in the scientific and support staff of the Institute. A forest ecologist and a marine invertebrate biologist are needed to strengthen the capability of the Institute in those areas. Two additional laboratory technicians and two field assistants are needed in support of the increased research effort. An appropriation of \$55,000 is requested for these six positions and an additional \$25,000 for travel, transportation, and other services related to the research program. This increase will enable attacks on key questions concerning the dynamic relationship of the forest habitat and behavior, the ecological functioning of the estuary and other littoral environments, the roles of climatic variations in discreet ecological adaptations and behavior, and other central bioenvironmental questions. New staff additions may be modeled after a current one in which a mathematical ecologist performs in a joint STRI-Princeton appointment, thus enriching the program through ties with leading universities.

Buildings and Facilities Management and Administrative Support .. 5 \$90,000

Maintenance of the buildings and grounds within the STRI complex is provided for directly in its own budget rather than in the appropriation to the Buildings Management Department. Approximately 40 percent of the STRI budget was directed at the protection, maintenance, and operation of facilities in 1968. In 1969, this was reduced to 31 percent of labor and 37 percent of all other costs. Every possible economy has been made. The number of workers necessary to maintain Barro Colorado Island station has been reduced to the minimum. Food services are provided for entirely out of visitor fees. Ancient buildings have been successfully defended from the jungle. World War I bunkers have been converted into modern research facilities for the marine stations. The budget is inadequate, however, to keep pace with increasing research and study visits. An efficient approach to the maintenance of the facilities would be to establish a small centralized labor pool, initially of two men, to provide specialized maintenance and servicing, to replace deteriorated materials, and to insure the continued serviceability to the plant and equipment. A contracts clerk, an assistant librarian, and a clerk-typist are needed to perform routine administrative functions, to service visitors, and to free the staff scientists and technicians for more productive work. An amount of \$25,000 is requested for these five positions and an additional \$65,000 are requested for rent, supplies, materials, equipment, and other services.

Total Program Increase 11 positions \$170,000

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

| Program Category | 1969 | | 1970 | | 1971 | |
|---|------|-------------|------|-------------|------|-------------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| I Research and Scholarship | 54 | \$1,802,000 | 56 | \$1,966,000 | 61 | \$2,162,000 |
| II Buildings and Facil- ities Management.... | 0 | 96,000 | 0 | 100,000 | 0 | 153,000 |
| Total | 54 | \$1,898,000 | 56 | \$2,066,000 | 61 | \$2,315,000 |

Consolidated Program in Radio Astronomy and Stellar Physics. . 5 \$235,000

The Astrophysical Observatory is now in a unique position to increase its scientific productivity substantially by consolidating internationally renowned teams of theoretical and experimental scientists in two research areas-- radio astronomy and stellar physics. This staff has been built up carefully over the past decade; proposed experiments have been well defined.

Between the stars of our galaxy lie vast clouds of gas that may hold the clue to unanswered questions about a number of natural processes in the universe. Recent advances in radio astronomy have led to the discovery of radio signals from complex molecules such as formaldehyde coming from these clouds. In its report dated August 15, 1969, the Ad Hoc Advisory Panel for Large Radio Astronomy Facilities noted that "The new states of matter represented by ... interstellar molecular emission lines are of such fundamental interest to chemistry and physics, as well as astronomy, that their exploration will remain exciting and profitable through the foreseeable future."

Already involved in the discovery of interstellar molecular emission lines, SAO has established a laboratory headed by an expert in radio spectroscopy. This laboratory will attempt to identify the spectral lines at radio wavelengths emitted by a wide variety of molecules. The Observatory's observational radio astronomers will then search the universe for the predicted radio signals. Conversely, when unidentified signals are discovered, laboratory and theoretical techniques may be used to identify their sources.

For research in stellar physics, and other astronomical programs, SAO is completing the installation of a 60-inch telescope at Mt. Hopkins to be operated by highly qualified astronomer-observers. Theoretical study in stellar physics has long been one of SAO's major strengths. Now, spectroscopic observations of stars with the 60-inch telescope and the ongoing theoretical work can provide "mutual reinforcement" between "prediction and observation" cited by the radio astronomy panel.

In both radio astronomy and stellar physics, SAO has an outstanding record of achievement demonstrating the organization's qualifications to conduct these programs. It is able to attract and hold scientists of national and international repute. Its scientists have in each of the past few years published over 100 papers in scholarly scientific journals. Its leadership is willing to be selective, as demonstrated by the recent termination of low-priority research projects to make badly needed funding available to others. An increase in support for fiscal year 1971 holds promise of producing outstanding scientific results.

In order to provide for the efficient utilization of existing scientific staff and equipment, an additional radio astronomer, observer, engineer, administrator, and maintenance mechanic are requested. Since some funds will be redirected from completed or terminated projects, only \$52,000 will be required for these positions. The efficient analysis and comparison of observational results with theoretical predictions demand extensive use of computers and \$90,000 are requested for this purpose. An additional \$40,000 are needed for additional equipment to utilize fully the Observatory's optical and radio telescopes. An additional \$53,000 are requested for rent, supplies, and other services.

RADIATION BIOLOGY LABORATORY

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship | 30 | \$383,000 | 30 | \$482,000 | 32 | \$580,000 |
| V Buildings and Facilities Management | 2 | 16,000 | 6 | 307,000 | 12 | 490,000 |
| Total | 32 | \$399,000 | 36 | \$789,000 | 44 | \$1,070,000 |
| Relocation Requirements and Research Support | | | | | 8 | \$272,000 |

Fiscal year 1971 will be the first full year of operations in the new laboratory building in Rockville, Maryland. The move is now scheduled for November 1969. For the first time since the Laboratory's establishment in 1929, it will be provided with properly configured space of adequate size. A significant base for improved research capability will be provided. To assure the successful use of this new space, additional funding is requested for operation of the building and for support of research.

Increased funding provided in the fiscal year 1970 appropriation will meet the costs of the lease and part of the mechanical and service support staff required. Other building costs will not be met. The new laboratory area is at least one-third greater than the inadequate space in the Smithsonian Institution building previously occupied. Additional laboratory benches and exhaust fume hoods will be needed to furnish the new building for planned program needs. Mechanical and service support for the operation of the building, including refrigeration, electrical, plumbing, and controlled environment equipment, on a 24-hour continuous basis, is essential. Substantial utility costs will be incurred for electrical current to operate laboratory equipment and to light growth rooms, as well as for conventional lighting for the 50,000 sq. ft. building. Telephone, water, gas, sewage, and trash disposal services must be provided. Basic custodial supplies, materials, and equipment will be needed to clean and maintain the new building space.

Six positions and \$47,000 are requested for three operating engineers, an electrician, a stockroom clerk, and a laborer to maintain sensitive environmental equipment and the building. An additional \$130,000 are requested to provide for the utility costs, custodial supplies and services, and the necessary laboratory equipment needed for the larger building space.

With regard to funding research support, for the past several years only increases for keeping up with high salary costs have been provided. Funds for program activities have not been augmented, but have, in effect, been cut back despite a 50 percent increase in purchasing costs.

Less than \$16,000 have been available for the purchase of expendable supplies and materials, such as glassware, chemicals, liquid nitrogen, and dry ice. For carrying out the current program of studies of radiation-sensitive mechanisms relevant to man's environment, additional such materials are required.

Equipment deficiencies stand to retard the Laboratory's research activities. Fifty percent of RBL's scientific equipment, including spectrophotometers, radiation devices, monochromaters, autoclaves, centrifuges, and other instruments are more than eight years old and in need of replacement.

An additional technician is needed toward correction of a long-standing deficiency in support staffing. There are only four technicians now for a scientific staff of 13. Not only is this request consonant with the Institutional objective of providing research support comparable with that of university and other centers, but it would be a step toward relieving professional-level scientists from laboratory chores such as routine irradiation of experimental data.

An improved library program will be needed at the new location. A full-time librarian is required to maintain the present literature collection, recommend new publications, furnish information with regard to acquisitions, catalog and file published material authored by staff members and fill requests for reprints of these, service requests from research staff for literature citations, and provide other library services. At the present time, there is no qualified library service; secretarial time is used to keep shelves in order. It is unlikely that the Institutional library staff will be able to supply any supportive service at the Laboratory's location in Rockville.

Training funds are needed to help the senior staff adapt to changing technology and otherwise assist them to keep abreast of new developments. Additional funds are required to provide for cooperative research programs and participation in scientific meetings and symposia. Training programs at other centers and use of specialized equipment at other institutions will require travel of scientific staff.

Funding is requested for a technician and a librarian (\$15,000) and \$80,000 to provide for necessary scientific equipment, travel, training, and laboratory supplies and materials.

OFFICE OF OCEANOGRAPHY AND LIMNOLOGY

| Program Category | 1969 | | 1970 | | 1971 | |
|------------------------------------|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Research and Scholarship | 18 | \$310,000 | 22 | \$356,000 | 33 | \$496,000 |
| Oceanographic Sorting Center | | | | | 11 | \$130,000 |

The Smithsonian Oceanographic Sorting Center exists as a service organization and to assist marine biologists and geologists to increase their research productivity. Not only are specimens sorted, and distributed for study, but collecting efforts are guided, cruise summaries are prepared, and field data are correlated with collections. The Center has received an enthusiastic response from the scientific community. Samples have been distributed to hundreds of scientists throughout the world. These specimens have been used for a variety of purposes ranging from taxonomic studies to the screening of marine organisms for anticancer substances.

The Center has on hand about 200 manyears of sorting. During fiscal year 1970, it will receive many samples of freshwater organisms, particularly plankton, for sorting. Hundreds of samples will come from the Universities of Michigan, Minnesota, and Wisconsin. Others will come from several other United States and foreign sources. The pressure on the Sorting Center will be acute to sort and obtain identifications of these samples, in addition to the samples previously received from UNESCO-sponsored investigations of the Southern ocean and the U. S. Antarctic Research Program. Working through the Interagency Committee on Water Resources of the Federal Council for Science and Technology, the Smithsonian has agreed to take increased responsibility for the identification of freshwater populations since they indicate changes in environmental quality which result from man's activities.

In addition the Sorting Center has the potential to become the primary United States biological survey center for the International Decade of Ocean Exploration, which will include attempts to establish the populations of biological resources of the sea.

The Sorting Center has made concerted efforts to improve its productivity. An automatic data processing system for specimen records has been started. Many manual operations --including preparation of labels, inventory cards, and shipping documents--have been automated. The same system provides data suitable for a computerized storage and retrieval system. Many other timesaving instruments and devices such as plankton splitters, microscope grids, and special shipping containers have been purchased or fabricated by the Sorting Center to improve efficiency. Supplies and equipment have been purchased through Government surplus sources to cut costs. The workload can be met only by an adequate staff of trained skilled employees, properly

directed and supervised. Funds are requested for two oceanographers, one oceanic environmental effects specialist (for pollution studies), two technicians, a photographer, a training supervisor, two section supervisors, a secretary, and a clerk-typist (\$107,000). These positions represent the most critically needed skills of the Sorting Center. An additional \$23,000 are requested for travel, equipment, rent, supplies, and other services. The addition of these resources will assist in the reduction of the backlog specimens and allow the Center to service properly the scientific community.

OFFICE OF ECOLOGY

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| Research and Scholarship..... | 5 | \$104,000 | 5 | \$126,000 | 7 | \$239,000 |
| Buildings and Facilities Management..... | 0 | <u>6,000</u> | 0 | <u>7,000</u> | 2 | <u>106,000</u> |
| Total | 5 | \$110,000 | 5 | \$133,000 | 9 | \$345,000 |

The Chesapeake Bay Center is a planned 2,000-acre waterfront research facility with 11 miles of shoreline dedicated to preserving and enhancing the quality of man's environment through programs of ecological study and education. Located in an area of great ecological significance as well as historic and economic importance, it presents a wide selection of typical local ecosystems--from marshes, abandoned pastures, and upland hardwood forests to land still in cultivation.

The scientific programs at the Center are guided by an academic consortium which consists of the Johns Hopkins University, the University of Maryland, and the Smithsonian. Research is oriented toward both land and water ecosystems. Studies are being conducted in water quality; productivity of plankton in the Bay and rivers; distribution and abundance of native and introduced aquatic vegetation; fish populations; varieties, distributions, rates of growth and diseases of aquatic plants; ecology of aquatic birds, especially ducks, geese, and swans; studies of land plants and animals; vegetation mapping and underlying mechanisms of vegetation change; and host-parasite relationships of birds, viruses, and blood parasites. In addition, recent studies have disclosed 26 sites previously occupied by Indians. The National Museum of Natural History is considering archaeological study of these sites without disturbing the ecological balance of the area.

Strengthening the Ecological Program 2 \$121,000

The workload at the Center is too great for the existing staff of three employees. A soils scientist is needed for the ecosystem evaluation of the Center in order to maintain it in its natural condition. A resident program ecologist is required to provide coordination and guidance to Smithsonian and cooperating ecologists and to insure that compatible research programs are conducted by the researchers. An amount of \$31,000 is requested for these two positions.

The increased research activities at the Chesapeake Bay Center have put a severe strain upon the limited laboratory facilities of the Office of Ecology. A properly equipped ecological laboratory to be used by the resident and visiting ecologists of the office is essential. Laboratory equipment such as specialized microscopes, chemical analyzers of various types, centrifuges, etc. is needed (\$90,000).

Buildings and Facilities Management 2 \$89,000

The size of the Center and easy unauthorized access from surrounding areas create maintenance and security problems. Approximately 2,000 acres and the adjacent bay must be patrolled. An assistant resident manager is required to oversee the operations of the facilities and to assist visiting researchers and a security officer is needed to protect the area (\$15,000). An additional \$74,000 are needed for maintenance supplies, services, and equipment. The increases for these items result largely from the increased research program at the Center and the additional scientists using its facilities.

Total Program Increase 4 \$210,000

OFFICE OF ACADEMIC PROGRAMS

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|----------------|-------------|----------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship | 6 | \$414,000 | 6 | \$420,000 | 6 | \$536,000 |
| II National Collections Management and Use ... | 0 | 0 | 0 | 0 | 2 | 80,000 |
| III Education of the Public ... | <u>11</u> | <u>106,000</u> | <u>12</u> | <u>115,000</u> | <u>15</u> | <u>174,000</u> |
| TOTAL | 17 | \$520,000 | 18 | \$535,000 | 23 | \$790,000 |

Strengthening Environmental Studies \$54,000*

The first planned phase of development in the higher education fellowship program is almost complete. Under the present level of operations, for selected areas of competence and common staff/fellow interests, the Institution is able to accommodate only about one-third of the staff desiring to supervise the training of a fellow. There are important bio-science areas in which the program is still deficient, such as pathology, ecology, and physiology. Over twenty Smithsonian environmental biologists now pursue studies in these areas. It is proposed that a higher education training program be established to make their talents available to universities for the supervision of PH. D. dissertation research, postdoctoral training, and specialized instructional offerings. The Institution requests three postdoctoral stipends (\$36,000) and three stipends for dissertation research (\$18,000) to finance academic appointments at the Radiation Biology Laboratory, Chesapeake Bay Center for Field Biology, the National Zoological Park, Office of Oceanography and Limnology, and Office of Ecology.

Present funds available for fellowships cannot be spread into the these science areas without forcing operations in well established areas of the fellowship program in science below the critical levels required to nurture instructional interchanges and the research environment.

* Included in total request of 5 positions and \$250,000.

OFFICE OF INTERNATIONAL ACTIVITIES

| Program Category | 1969 <u>Appropriation</u> | | 1970 <u>Appropriation</u> | | 1971 <u>Estimate</u> | |
|---------------------------------------|------------------------------|---------------|------------------------------|---------------|-------------------------|---------------|
| | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> |
| Research and Scholarship..... | 6 | \$105,000 | 6 | \$108,000 | 11 | \$152,000 |
| International Scientific Support..... | | | | | 5 | 42,000 |

The Office of International Activities administers the Smithsonian's Special Foreign Currency Program, establishes cooperative research activities abroad with museums, universities, or international organizations, and provides the Institution with an international exchange of persons program, funded from outside sources, in Smithsonian fields of interest. The Office also serves as the Institution's representative on regional ecological research planning groups, such as the Southeast Asia Development Advisory Group [SEADAG], which is concerned with the Mekong Valley, the West African Center for Environmental Research and Education at the University of Ghana, Accra, and the Western Hemisphere's Organization for Tropical Studies.

An assistant to the Director is urgently needed to implement and administer a number of important research or exchange programs, other than those coming under the Special Foreign Currency Program. The most significant of these are:

--The United States-Iran Science Agreement. On May 27, 1968, the United States concluded an agreement with the Government of Iran "to intensify cooperation between the scientists of our two countries and to provide additional opportunities for them to exchange ideas, information, skills and techniques, and to pursue joint research projects." This agreement is similar in purpose to the scientific cooperation agreements which the United States has signed with Japan, Italy, and Germany, for example, over the last decade. At the request of the State Department, the Smithsonian was named as the "executive agent," or implementing agency, for the United States in this agreement. This is the first time the Institution has been so honored in any international agreement. The position of assistant to the Director is needed to give real substance to the agreement, beyond what the Smithsonian itself can do, by marshalling research contributions from other agencies and private institutions. Such contributions are essential to ensure that no damaging vacuum follows the termination of the official United States economic assistance program in Iran.

--Exchange of Persons. The assistant to the Director position is also needed to meet the increasing demands made upon the Smithsonian for selecting and arranging the programs of foreign scientists, technicians, or museum specialists visiting the United States under various exchange programs, both Federal and private. In the past fiscal year, the Office provided complete training

programs for three museum specialists from Africa and nationwide study tours for science administrators from Poland and India. More important, the Office provided partial programming services and arranged meetings with Smithsonian staff members for over 70 foreign visitors under State Department, A.I.D., or private programs. These services have been very valuable to the Smithsonian since they often lead to research opportunities abroad or high productive relationships with foreign institutions. They are, however, a heavy drain on the Office's manpower, since they involve everything from meeting visitors at airports and making travel arrangements to lengthy consultations with American host museums or universities concerning programs ideally suited to the visitors' fields of interest.

One grants technician and two clerk-typists are also requested to administer the growing administrative load of the Special Foreign Currency Program. These additions are essential because the work of the Office expanded for the second year by some 40 grants bringing the total to 140 in June 1969. This has been accomplished without additional personnel and by dint of a concerted effort to simplify procedures and by the introduction of labor-saving equipment. The need to hire program representatives in the Mediterranean and South Asia, where increasing activity called urgently for administrative support, was met without additional dollar expenditures when the Director of the Mediterranean Marine Sorting Center in Tunis, Tunisia, offered to serve as administrative agent in that region and the American Institute of Indian Studies agreed to provide administrative support in South Asia. Demand for foreign currencies continues unabated as more American research institutions seek support for high priority research abroad as Governmental sources of dollars for their work at home dwindle.

An increased travel budget is necessary to cover the meeting costs of three Advisory Committees (Biological Sciences, Earth and Space Sciences, and History and Art) which will be meeting twice annually by fiscal year 1970. Estimated costs for holding each meeting run about \$1,000. Members of these Committees give their time to the Smithsonian Institution without cost and are reimbursed only for their travel and expenses. It is mainly through such economies as this that the Foreign Currency Program has been able to keep the dollar costs of its operations at about three percent of the total amount administered.

Funding is requested for an assistant to the Director, a secretary, a grants technician, and two clerk-typists (\$37,000) and for travel and office support costs (\$5,000).

SMITHSONIAN RESEARCH AWARDS PROGRAM

| Program Category | 1969 | | 1970 | | 1971 | |
|----------------------------------|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Research and Scholarship..... | 0 | \$400,000 | 0 | \$400,000 | 0 | \$700,000 |

Since 1965, the Smithsonian Institution has been supporting staff research projects through the Research Awards Program. Its principal objective is to take advantage of unique opportunities for research that under ordinary circumstances probably could not be supported if funding has to compete within the regular operating budget allocations to the research units. The Research Awards Program has given the Smithsonian the opportunity to recognize, initiate, and integrate promising research, especially those projects aimed at achieving a better understanding of the interacting forces upon which life processes are dependent. 193 projects have been funded since the program's inception.

Research Awards support has led to an ingenious system of mathematical modeling which permits experimentation with environmental factors through manipulation in the model and leads to prediction of the effects on the environment. The work on Flora North America provides an important basic tool in the form of a base line of the natural flora and the changes that have come about as a result of such perturbations as pollution, exploitation, conservation, and various specific control measures. Studies of fossil invertebrates and their geographic and time distributions give the history of past population movements and adaptation to changes in climate which can serve as analogues for the interpretation of today's problems. Other studies have produced a better understanding of the taxonomic and phylogenetic relationship among plants and animals in changing environments. Studies of the structure and composition of the deep ocean sediments will aid in determining an explanation of various crustal movements, the history, and possibly the origins of the earth.

Rising research costs and a stable level of funding for several years have forced many significant and worthwhile projects to be deferred or abandoned. The Institution has been unable to continue research on the ecology of islands, a particularly useful approach since islands may be considered "laboratories" of ecology. These studies could demonstrate in a very specific way the various means humans have taken to adapt to their environment. Of special timely interest are techniques being developed for studying carbonaceous meteorites to determine the possible sources of the carbon in the presumably non-organic areas of outer space. A series of taxonomic studies have had to be postponed. These are essential building blocks to the necessary understanding of natural diversity and adaptation to environmental conditions. This area of science has been largely neglected especially outside the museums of the world. This neglect has caused a bottleneck in the advancement of ecological understanding.

In order that the Smithsonian can pursue research of national importance an increase of \$300,000 is requested in 1971.

CENTER FOR SHORT-LIVED PHENOMENA

| Program Category | 1969 | | 1970 | | 1971 | |
|----------------------------------|--|---|--|----------|---------------------------------------|----------|
| | <u>Appropriation</u> <u>Pos. Amount</u> | | <u>Appropriation</u> <u>Pos. Amount</u> | | <u>Estimate</u> <u>Pos. Amount</u> | |
| Research and Scholarship..... | 0 | 0 | 0 | \$10,000 | 2 | \$65,000 |
| Event Notification System..... | | | | | 2 | \$55,000 |

The activities of the Center for Short-Lived Phenomena have continued to increase rapidly in the past year because of the overwhelming response from Federal agencies and the international scientific community. The Center presently operates a network consisting of over 2,000 scientists in 119 countries reporting an average of one new event every three days. This network is now growing at a rate of 100 to 150 additional scientists each month. In the last nine months alone, the Center has participated in over 100 biological, geological, and astrophysical events; has published over 250,000 event notification and information reports; and has handled a communications volume exceeding 150,000 words.

The events reported by the Center cover almost every scientific discipline ranging from animal migrations to volcanic eruptions. Within the past year the Center's highly developed communications network enabled Mexican officials, in cooperation with the U. S. Air Force and U. S. Geological Survey to locate and examine meteor samples 12 hours after they had fallen to earth, and on another occasion permitted scientists from several institutions to reach an active volcano in Costa Rica that was in its initial and rarely documented stage of eruption. In addition, the Center was designated by NASA as the worldwide coordinator for transient lunar events during the Apollo 10 and 11 missions. Over 200 astronomers in 34 nations, including the Soviet Union, participated and reported information to the Center. The Center received notification of 44 events in 17 areas during the Apollo 11 flight. Information concerning these events was relayed to the manned space flight center in Houston and to lunar observatories throughout the world.

The Center has instituted every possible efficiency such as automatic computer printouts of Event Notifications, but the staff and resources are severely limited and the Center's current ability to cope with the demand for its services is very inadequate. While the Center has been successful in obtaining outside financial support for special projects, e.g. the Apollo flights, the success of the Center's regular operations will depend heavily on the level of core Federal funding it receives. An increase of \$18,000 is requested for an operations manager and an events research specialist, \$2,000 for travel, \$15,000 for rent, communications and utilities, \$8,000 for printing, \$6,000 for supplies, \$3,000 for equipment, and \$3,000 for other services.

STRENGTHEN AN APPRECIATION OF MAN'S CULTURAL AND MATERIAL ACCOMPLISHMENTS

In earlier times, nature was considered an enemy which had to be hacked, burned away, and pushed back in order to provide a setting for the proper development of civilization. Unfortunately, mankind never developed measures which would reveal whether or not his culture and his environment were ever at odds with each other on terms of rough equality. Evidence seems to be mounting in our cities, our forests, our oceans, and our remote and barren regions that our material culture is not only dominating nature, but is in the process of overwhelming it.

Intellectual leaders have developed the knowledge and the capability to deal with many technological and economic priorities. Communications have developed to pass this understanding to the general public. Very little effort, however, has been devoted to demonstrating the delicate balance between nature and culture and the need to solve successfully problems in these areas. Smithsonian research and exhibits will give increasing emphasis to man's survival in a rapidly changing environment. It is very important to provide to the public, especially to the younger generations, an understanding and appreciation of man's cultural background and how his artistic efforts and technological advances have contributed to the development of civilized life and what the future may hold.

Included in the Smithsonian are a number of developing museums and research centers. These are concerned with integrating studies of everyday life and material cultural remains with the literary and historical studies for a reappraisal of American civilization in a world of quick and steady change. Among the budget requests for 1971 of special applicability to this effort are those for the National Museum of Man, the Division of Performing Arts, and the fellowship program in cultural studies of the Office of Academic Programs. The Joseph H. Hirshhorn Museum and the Renwick Gallery can play strong roles in fostering a sense of pride in man's artistic achievements. Perhaps no greater record of technological achievement can be found than that contained in the National Air and Space Museum's collections and exhibits.

NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|----------------|-------------|----------------|-------------|----------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| I Research and Scholarship | 61 | \$805,000 | 62 | \$946,000 | 67 | \$1,158,000 |
| II National Collections Management and Use .. | 61 | 748,000 | 61 | 799,000 | 61 | 852,000 |
| III Education of the Public..... | <u>32</u> | <u>316,000</u> | <u>32</u> | <u>391,000</u> | <u>32</u> | <u>495,000</u> |
| Total | 154 | \$1,869,000 | 155 | \$2,136,000 | 160 | \$2,505,000 |

Investigation of the National Past and the National Identity .. 5 \$340,000

The National Museum of History and Technology can be a major contributor to a deepened understanding of the achievements of American civilization. Through extension of new programs and a broadening of established projects, the National Museum will seek to illuminate areas of American history study that by neglect have contributed to the misunderstandings that trouble our society today. The National Museum seeks no less than to aid the definition of our national purpose through an investigation of the national past and the national identity. Its world-famous collections, strong attraction for several million visitors, and extensive other public and educational services uniquely qualify this Museum to undertake such an effort whose effects may be felt throughout the whole of American society.

The Museum commands the respect of scholars, students, businessmen, political leaders and the general public. Drawing upon that respect, the Museum intends to involve these and other groups in a wide range of innovative and educational programs which will encourage a heightened pride in what it means to be an American. The Museum can aid the American people to see their country more clearly by recognizing more precisely its true past.

The new programs will advance on three fronts:

1. Widening the subject matter and the reach of the Museum's impact.

A special effort will be made to explore distinctive and crucially important areas of American civilization that, because they do not fit into traditional academic categories, have been neglected. These areas will include:

- business and industrial history;
- the history of immigration of ethnic, national and racial groups and their contributions to American civilization;

-- the history of the American standard of living, with special emphasis on the quality of daily life and the opportunities for personal fulfillment (including the treatment of the mentally retarded, the history of personal health and public health, and the history of housing, including recreational facilities);

-- the history of the family and of education (including not merely the history of marriage and schooling, but the influence of economic and technological forces on the relationships between parent and child and on the cohesiveness and warmth of the family group).

The following are two of the ways that new programs will increase the number and diversity of institutions and groups participating in museum inquiries into American civilization:

-- Leaders in business, labor, and technology will participate in an exploration of the history of American standard of living, modes of technological progress, the history of experiment, and the techniques of and obstacles to innovation. This participation will take the form of lectures, seminars, and conferences that will provide a forum for the actual makers of the economy to explain their institutions, attitudes and problems and make use of the Museum's vast reference resources.

-- A new, more intimate, and more intensive involvement of universities, colleges, and schools (including their administrations, faculties and students) in all the above explorations. Specially planned tours of the museum, seminars, lectures, and conferences with shapers of the American social and economic environment will focus on the above topics.

2. Deepening the subject-matter of American civilization and our understanding of it. This effort will be directed toward a qualitative inventory of American life and of the American experience. Experimental seminars and other techniques will encourage leaders in particular industries to recognize that they are making history and will help advise them on the most desirable, most feasible, and most durable modes of selecting their records and artifacts for preservation. These projects will be explored in connection with particular universities and other educational institutions including research libraries and research institutes and professional, labor, industrial, technological and learned associations. For example, steps have been taken to collaborate with a university in the petroleum-producing area of the Southwest to work out a plan with the American Petroleum Institute (and publications such as the Oil and Gas Journal) to select, preserve, and index data connected with the history of petroleum-mining and the place of petroleum in American industry, in the world economy, and in American life. Similar joint efforts will be explored for other aspects of the economy. The National Museum will play the role of advisor, organizer, and catalyst, but the major expense and the continuing operation of the program will be undertaken by groups in all parts of the country. The result would be a discovery and recording of distinctive and important achievements of American civilization while the pioneers are still alive and the records still available. If successful, this undertaking would be of inestimable value to future historians and generations of Americans in understanding our present society.

3. Developing experience-oriented museum programs. New techniques and experimental exhibits will aim to discover man's reactions to his environment. These will be organized not around categories of objects (e.g. textiles, locomotives, etc.) but around the impressions and feelings of man as he related to these objects. For example, drawing on the data of population-statistics, social and economic mobility, and technological history, experimental exhibits will try to recapture and compare man's experience in moving from one place to another in the colonial period, in the early 19th century, and in the later 20th century. These experiments will use the latest audiovisual and other sensory techniques to recapture the actual experience of riding westward in a covered wagon (with the scenery one would have seen), in an early transcontinental train, and in a contemporary transcontinental jet airliner. Related objects and other resources will be drawn from throughout the museum (and from other parts of the Smithsonian Institution) to give a more complete recounting of the particular experience.

Through these new programs, for which funds are not now available, the National Museum would participate in building a more comprehensive basis for the educational process, making it more relevant to the student, more thorough for the scholar, and more illuminating for the general public.

Funding requirements for this program may be grouped in three categories:

- Selective strengthening of the research and research support staff to fill gaps in subject matter competence. Two historians in ethnic and social history and three research assistants to support projects are needed (\$65, 000).
- Funding for lectures, seminars, conferences, and other techniques aimed at extending the boundaries of the Museum's public participation. Requirements for consultants, services, travel, and the preparation of reports and publications are included (\$175, 000).
- The design of experimental exhibits and the acquisition of objects for display and study (\$100, 000).

JOSEPH H. HIRSHHORN MUSEUM AND SCULPTURE GARDEN

| Program Category | 1969 | | 1970 | | 1971 | |
|---|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> |
| National Collections | | | | | | |
| Management and Use.. | 7 | \$149,000 | 13 | \$197,000 | 26 | \$1,211,000 |
| Preparing the Museum for a Public Opening | | | | | 13 | \$1,010,000 |

Plans and specifications for the construction of the Joseph H. Hirshhorn Museum and Sculpture Garden, revised to scale down the project to insure that bids do not exceed available funds, will be completed by mid-October 1969, thereby allowing a new bid opening by early December. With this schedule the Museum should be under construction by January 1970, with an estimated completion date of January 1972. Based on this new scheduling information, the Smithsonian has completed a thorough review of work necessary to complete the Museum and place it in operation and can now appreciate more fully the magnitude of restraints caused by current funding. It is clear that in order to bring this major new museum into existence, a dramatic step-up of operating program activity must take place during the two year building construction period. This will require a very substantial increase in program funds over this period if a public opening date of October 1972 (nine months after the completion of the building) is to be met.

Major additional funding requirements are in two categories: preparation of the collections and the acquisition of furnishings and special equipment for the building.

Preparation of the Collections. Some 1,200 paintings and pieces of sculpture of the total gift collection of 7,000 items must be readied for exhibition. These will be the choicest pieces with an estimated valuation of \$20 million. Of the 1,200 items, 700 are paintings and 500 are sculpture pieces. A careful survey of the restoration and framing requirements of these items has disclosed the following:

--100 large paintings (6 to 15 feet) will need major restoration at an average cost of \$1,000 (\$100,000) and 50 will require work at \$300 each (\$15,000).

--350 smaller paintings will require restoration at prices ranging from \$250 to \$500 (\$150,000).

--500 paintings must be framed at prices ranging from \$45 to \$200 for a total cost of \$57,000.

--400 sculpture pieces, including about 150 which are classed as monumental, will need restoration at prices ranging from \$100 to \$750. Estimated total cost of the job will be \$160,000, which includes protective display cases for the smaller pieces of fragile construction and bases for approximately 170 items.

To meet the museum opening date, this work must be greatly accelerated and a production rate of at least one item a day must be maintained. Since conservators are in short supply and one piece may take many weeks to restore, premium prices may have to be paid although an intensive search will be made to locate additional conservators.

Other contractual service costs related to the collections include the rental of warehouse space and warehouse services (moving items in and out of storage for inspection, conservation, framing, etc.), photography to document the collections for exhibits planning and research purposes, and protective packing for shipping once restoration has been performed. These costs are estimated to be \$200,000.

This is an estimated requirement of \$682,000 additional funds for the period through fiscal year 1972 of which \$300,000 are requested in fiscal year 1971.

Acquisition of Furnishings and Special Equipment. To insure an opening to the public as soon as possible after completion of construction, it is essential that procurement and installation of furniture, furnishings, movable equipment, and other items not included in the construction project be started as early as possible and phased over two budget years. As portions of the building are completed during fiscal year 1971, it will be possible to purchase and install exhibit lights (\$60,000), draperies and tracks (\$60,000), auditorium seating (\$100,000), furniture (\$100,000), and storage screens (\$180,000) for a total of \$500,000. The balance of the required amount (\$600,000) will be requested in fiscal year 1972 for installation during that year of the remaining items including office furniture, shop equipment, photo lab equipment, additional storage screens, and sound systems.

A commensurate increase in professional, administrative, and technical staff is required to prepare for the museum's opening and subsequent exhibition, research, and educational programs. This staff must: receive and process the approximate 500 new works of art being added to the collection each year by Mr. Hirshhorn; negotiate with conservators and other contractors and follow-up on work in progress; conduct research and documentation for the opening exhibition as well as continue with the cataloging of the entire collection; and continue the museum's present public services such as loans, photographic requests, and research queries. Major trips to art museums and galleries for research will be necessary as well as trips to various collection storage areas. A museum library serving the needs of the professional staff, students, and scholars must be planned and organized. Conservation, photography, and storage facilities also must be planned. Museum administrative, budget, personnel, and fiscal business must be handled. Thirteen additional curatorial, library, exhibit and museum technicians, and clerical positions are required (\$140,000) with funds for travel, the rental of temporary office space, and office supplies, equipment, and related services (\$70,000).

Total program increase 13 \$1,010,000

NATIONAL MUSEUM OF MAN

| Program Category | 1969 | | 1970 | | 1971 | |
|---|------|-----------|------|-----------|------|--------------------|
| | Pos. | Amount | Pos. | Amount | Pos. | Estimate Amount |
| I Research and Scholarship | 32 | \$473,000 | 33 | \$488,000 | 40 | \$647,000 |
| II National Collections Management and Use . | 15 | 203,000 | 15 | 209,000 | 15 | 211,000 |
| III Education of the Public | 2 | 28,000 | 2 | 29,000 | 2 | 30,000 |
| Total | 49 | \$704,000 | 50 | \$726,000 | 57 | \$888,000 |

The Smithsonian over the past several years has been restructuring and redefining its anthropological program to meet the urgent demand for knowledge concerning man's relationship to man and to his environment. The formation of the National Museum of Man by the consolidation of the Office of Anthropology of the National Museum of Natural History and the Center for the Study of Man is a further step in this evolutionary process.

The Office of Anthropology has established itself as a leader in the study of man's cultural and social relationships. Its staff of anthropologists and ethnologists engage in important research and produce many significant publications. Its anthropological collections relate to all parts of the world and contain a major collection of artifacts documenting the life and culture of the American Indian. The Center for the Study of Man was established to foster and coordinate interdisciplinary research efforts involving scientists and historians from the Smithsonian and other institutions in this country and abroad. Its special concern is an organized program of studies of rapidly changing civilizations and disappearing subcultures.

The budget request for fiscal year 1971 is directed at continuing two high priority projects that will produce major contributions to anthropology.

Handbook of North American Indians 7 \$120,000

The Handbook will be an encyclopedia of 15 or more volumes, summarizing all that is known of the prehistory, history, traditional, and modern cultures of all the Indian groups north of Mexico. It will bring up-to-date and replace the previous standard encyclopedic work on this topic which was issued by the Smithsonian in 1907-1910. It will become the standard reference work on all aspects of North American Indian history and anthropology for students, teachers, authors, researchers, and administrators, both nonIndian and Indian, both United States and foreign. Preliminary planning and correspondence have shown that there are more than 1,000 potential contributors, and that a large audience for the work exists. Ever since its founding, the Smithsonian has conducted research on American Indian history and cultures, and has been looked to as an important (often the most important) source of information on these topics.

As a result, the resources of the Institution--scientific staff, manuscript and picture archives, library, and museum collections--are unexcelled anywhere as a basis for this project.

The plans for the new Handbook were first announced in 1966. Progress since then has been limited to preliminary planning activities. The Handbook is now at the stage where the actual work on the book can begin. Any delays will cause the disillusionment of the academic community whose support, as authors and readers, is essential. An amount of \$65,000 is requested to provide for two editors, three research assistants, an illustrator, and a clerk-typist. An additional \$55,000 will be required for travel, supplies, equipment, short-term research contracts, and other services.

Urgent Anthropology Small Grants Program \$30,000

The primary purpose of this program is to gather data on cultures or subcultures that are rapidly changing or disappearing as a result of economic or technological pressures. By awarding small grants, from \$100 to \$1,000, it enables qualified investigators in many areas to carry out urgent research on groups while they still exist as distinct entities. Results of these studies may have bearing on the solution of social and economic problems. A pilot project consisting of a series of small grants, made from grant funds (usually on a matching basis with other institutions), over the past several years has proved highly successful, frequently taking advantage of researchers who happen to be on the scene. A \$300 grant to a VISTA volunteer working in an Eskimo village enabled him to document changes to the traditional culture of a village caused by industrialization. Another grant of only \$150 provided for the recording on film and tape of traditional music of the native people of the Eastern Caroline Islands. Both of these projects provided the Smithsonian with valuable data at far less cost than by other means, if it could have been obtained in time at all.

In order to continue this program, \$30,000 are requested to provide for a number of small grants in anthropology.

Total program increase 7 \$150,000

RENEWICK GALLERY OF ART

| Program Category | 1969 | | 1970 | | 1971 | |
|---|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> |
| Education of the Public | 1 | \$1,000 | 1 | \$20,000 | 5 | \$229,000 |
| Preparations for a Public Opening | | | | | 4 | 209,000 |

The Renwick Gallery of Art is planned as an exhibition center of American crafts and design, and as a ceremonial center related to Blair House and the White House. Housed in the building originally designed for the Corcoran Gallery by James Renwick, Jr., it preserves an architectural landmark which simultaneously can have an important functional use in an area of Washington that is a center of attraction for public and official visitors.

Approximately \$2,000,000 of appropriated funds have been invested in the restoration and renovation of the building. According to the present schedule, this work will be largely completed early in fiscal year 1971 and spaces provided to present an inaugural exhibition by mid-year. The Smithsonian is requesting an appropriation of \$300,000 of construction funds to complete the restoration project. Without concurrent provision of operating funds, however, it is likely that the building will remain closed to the public. The continued efforts by the National Collection of Fine Arts, under which this Gallery will be administered, to develop its public and scholarly functions, do not permit a major redirection of funds to the Renwick, although some funds will be applied to this new need.

The present high priority efforts to ready the physical structure for opening to the public require a companion effort by a small staff to provide outstanding exhibits for the museum. This staff must select and acquire basic furnishings and equipment appropriate to the building including display cases and other Gallery furniture; seek out and obtain through gifts and purchases an outstanding American crafts and design collection; and initiate work on an exhibition program including obtaining commitments from donors and lenders of art. A number of exhibitions will be staged each year, drawing on the varied collections of the Smithsonian as well as other private or public collections. A unique opportunity for public education will be a rotating and constantly changing showing of contemporary crafts.

With regard to likely official uses of the Gallery, the great reception room across the width of the building is potentially one of the finest in America. This room, the stairs leading to it, and an adjacent octagon room will be furnished to evoke the spirit of the 1860's and 70's, and will be a splendid background for the uses of the President, visiting heads of state, and official presentation activities of the Smithsonian, such as for important donors.

To permit preparing, opening, and maintaining the exhibition and other programs of the Gallery, the following additional staff and other

resources are requested. A curator of exhibits, two museum technicians, and a clerk-typist are the basic personnel required (\$33,000). These would be assisted by the National Collection of Fine Arts staff. Support funds are required for travel to obtain and ship collections, for rental of office equipment, services to provide special interior finishes and to prepare exhibits, and for the purchase of exhibit equipment and objects (\$176,000).

NATIONAL COLLECTION OF FINE ARTS

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship | 15 | \$166,000 | 15 | \$182,000 | 17 | \$213,000 |
| II National Collections Management and Use. | 18 | 347,000 | 18 | 361,000 | 21 | 461,000 |
| III Education of the Public | 22 | 438,000 | 22 | 480,000 | 22 | 485,000 |
| Total | 55 | \$951,000 | 55 | \$1,023,000 | 60 | \$1,159,000 |
| Developing Reference and Research Capability | | | | | 5 | \$124,000 |

The National Collection of Fine Arts pursues two broad objectives. The first is the acquisition, maintenance, and exhibition of a significant collection of art produced by artists of the United States. The second is that of making this collection and documentary materials readily accessible to scholars and the general public to create a fuller understanding and appreciation of the cultural accomplishments of our nation's artists.

The past two years have given the National Collection of Fine Arts an opportunity to establish its public exhibition functions in the museum space provided by the renovation and restoration of the Fine Arts and Portrait Galleries building. Efforts must now be concentrated on developing the companion reference and research resources of this art museum in order that the second objective can be met. Evidence of what artists thought and how they worked must be assembled and made available for staff and visitor study concurrently with their inspection and research on actual works of art. There is, at present, a general lack of thorough documentation of art objects already in the National Collection of Fine Arts' possession. Needed reference materials, including original or microfilmed archival records, are scattered throughout the United States but are available and, by a concerted effort, can be brought together by the museum to meet its own research needs and as a service to scholarship. These materials would be housed in the museum's library and archives spaces and made available to visiting students and scholars and by correspondence to American and foreign art museums, college and university art departments, and other institutions.

Concurrently with the acquisition of archival and library reference materials, the joint National Portrait Gallery/National Collection of Fine Arts library will need additional library staff to supplement the present staff of five. This would enable the library to process the additional materials and meet increased reference use by staff, visitors, and correspondents. Support for the library is shared with the National Portrait Gallery to develop a good facility and avoid duplication.

Professional assistance to scholars writing about the museum's collections of art objects requires senior curators of respected reputations in their fields of specialization. Notable gaps in the museum's research competence are in the fields of American Graphic Arts and American 18th and 19th Century Painting and Sculpture. In addition to assisting others, these two historians will undertake studies of their own leading to publications based on the museum's collections that will add to the body of standard reference material in the field of American fine arts.

Funds are requested for a reference librarian, a library technician, two research curators, and a clerk-typist (\$54,000) and for services, supplies, and the acquisition of archival and library materials (\$70,000).

NATIONAL PORTRAIT GALLERY

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------------------------------|----------------|-------------------------------------|----------------|--------------------------------|----------------|
| | <u>Appropriation</u> <u>Pos.</u> | <u>Amount</u> | <u>Appropriation</u> <u>Pos.</u> | <u>Amount</u> | <u>Estimate</u> <u>Pos.</u> | <u>Amount</u> |
| I Research and Scholarship | 7 | \$115,000 | 7 | \$136,000 | 8 | \$150,000 |
| II National Collections Management and Use. | 14 | 439,000 | 14 | 508,000 | 16 | 639,000 |
| III Education of the Public | <u>6</u> | <u>150,000</u> | <u>6</u> | <u>174,000</u> | <u>6</u> | <u>175,000</u> |
| Total | 27 | \$704,000 | 27 | \$818,000 | 30 | \$964,000 |
| Strengthening Resources for Scholarship | 3 | \$140,000 | | | | |

During fiscal year 1969 the National Portrait Gallery was opened to the public in its new quarters. A new Director took office in July 1969. Under these circumstances it seemed prudent to study the operations of the Gallery and to allow the new Director to formulate his plans before attempting to identify the Gallery's most pressing needs. Consequently, no additional program funding was requested for the National Portrait Gallery for fiscal year 1970.

This review shows that the Gallery's most urgent needs, in order to fulfill its obligation to serve the public, lie in the areas of research support and improvement of the collection.

In order to open the Gallery to the public, special initial emphasis was placed upon the assembling of a skeleton staff capable of handling basic administration and the day-to-day problems of exhibitions consisting largely of borrowed works. The result of this strategy has been the addition of a handsome, new, functioning Gallery to the Nation's Capital. In order to assure the continued high performance of the Gallery, and to assure that it will be worthy of its Congressional mandate to serve as the Nation's "free public museum for the exhibition and study of portraiture and statuary depicting men and women who have made significant contributions to the history, development, and culture of the people of the United States and of the artists who create such portraiture and statuary," it is now necessary to give priority to strengthening the research and conservation capabilities of the Gallery and to improving its collections.

The addition to the Gallery's staff of one archivist and one historian will enable the Gallery to locate and identify important portraits needed for its collection and will frequently make it possible for the Gallery to acquire significant portraits on much more favorable terms than would otherwise be possible. This same added capability will permit the Gallery to make better use of the portraits it already owns and others that may be offered to it, and to assemble and make accessible documentation on American portraiture for research.

The addition of one professional to the staff of the Conservation Laboratory, which serves both the National Portrait Gallery and the National Collection of Fine Arts, is especially important to the conservation of the collection, especially as new items are acquired. The existence of this inhouse capability results in very substantial financial savings by comparison with the use of outside conservators.

Because the National Portrait Gallery is a new museum, it must inevitably face the problem of acquiring a collection worthy of so important a national institution. The ability of the Gallery to attract gifts of appropriate portraits is already gratifying and will, almost certainly, improve as its exhibition program and research facilities improve. Nevertheless, the Gallery and its distinguished Commission (established by Public Law 87-443) should have the ability to seek out and acquire certain portraits of special importance to the purposes of the Gallery which can be acquired by no other means.

Funds are requested for an archivist, a historian, and a conservation technician (\$33,000) and for the acquisition of archival and library materials, conservation laboratory equipment, and the purchase of portraits (\$107,000).

NATIONAL AIR AND SPACE MUSEUM

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|----------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship..... | 6 | \$94,000 | 6 | \$102,000 | 6 | \$103,000 |
| II National Collections Management and Use.. | 29 | 310,000 | 29 | 385,000 | 36 | 524,000 |
| III Education of the Public..... | 6 | <u>101,000</u> | 6 | <u>93,000</u> | 6 | <u>94,000</u> |
| Total | 41 | \$505,000 | 41 | \$580,000 | 48 | \$721,000 |

NASA Artifacts Program 7 \$135,000

The National Air and Space Museum was originally established as a museum concerned with aviation alone and the majority of the professional staff are experts in the technology and history of atmospheric flight. However, under the provisions of the 1967 Agreement on Space Artifacts between the Smithsonian Institution and the National Aeronautics and Space Administration, the National Air and Space Museum has acquired priceless treasures in the form of spacecraft, spacesuits, scientific satellites and space probes, rocket motors, etc. epitomizing the successful accomplishments of the United States space program.

A few of the most significant examples of these specimens, including two pounds of lunar material, are placed on exhibit in Washington; the remainder are loaned to other museums and appropriate organizations for display. The artifacts represent the rapidly evolving technology of space flight and are of the highest interest to the American public, both professional and laymen. With the successful accomplishment of the lunar landing in July 1969 these exhibits have become among the most popular in the Smithsonian Institution. Over 2,000,000 persons have visited the air and space displays this past spring and summer.

With the widely variant attitudes and views as to the extent to which the United States may be involved in future space missions, whether they be orbiting research laboratories, recoverable space boosters, extensive lunar explorations, or a landing on Mars, the Smithsonian has an opportunity available to no other agency to enlighten and educate the public by exhibits of actual space material. Such exhibits require not only the display of "hardware" but an interpretation of the accomplishments and the resulting benefits - both real and potential - to all mankind.

The National Air and Space Museum has responsibility for the greatest collection of spacecraft and related material. This collected material is continually increasing. Restoration and preparation of these artifacts for exhibit require specialized skilled labor. Because of the need for inspection and curation on available material stored in many locations throughout the country, considerable travel is required. Supporting documentation to accessions is vital in order to provide an historical record and a basis for determination of the significance of these hundreds of specimens. This documentation consists of reports, drawings, photographs, motion pictures, film, sound tapes, etc. The backlog of acquisition, sorting and proper handling of such material represents a serious problem since the nature of much of this material is such that it tends to disappear as a program ends. Yet without this documentation the true significance of a spacecraft is based upon conjecture, not fact.

In fiscal year 1968 the NASA funded initial implementation of the acquisition and management of space artifacts, in the amount of \$199,000, for a period of two years only. These funds are no longer available. To meet the responsibilities of the NASA/Smithsonian agreement and to properly exhibit and display these artifacts to the American public, a minimum requirement of \$53,000 is needed for a curator, a secretary, two research assistants, a records clerk to assist with the accessions, and two clerk-typists. An additional \$8,000 are requested for travel, \$19,000 for the transportation of objects, \$18,000 for supplies and materials, \$25,000 for equipment, and \$12,000 for other services.

DIVISION OF PERFORMING ARTS

| Program Category | 1969 | | 1970 | | 1971 | |
|---|---------------|---------------|---------------|---------------|------------|---------------|
| | Appropriation | | Appropriation | | Estimate | |
| | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> | <u>Pos</u> | <u>Amount</u> |
| Education of the Public | 7 | \$143,000 | 7 | \$140,000 | 10 | \$243,000 |
| Presentations of American Folk Culture and Theater | | | | | 3 | \$100,000 |

The Division of Performing Arts plans and presents the Festival of American Folklife, the American College Theater Festival, and other programs in contemporary art forms; children's activities; and other public presentations related to the growth of American popular culture.

Increased funds are urgently needed in direct program support for additional staff and public services. An increase of \$50,000 is requested for the Festival of American Folklife. Public attendance at this living exhibition of traditional American culture has increased 25 percent per year since its inception in 1967, reaching an estimated 618,000 people in July 1969. Although the Division continues to raise private funds to cover some costs of this event (such as the generous support received in past years from the Institute of Texas Cultures, the A.F. of L. and CIO, and the States of Pennsylvania and Arkansas), these private donations cannot begin to meet the necessary costs of production, staff, travel to search out and obtain native craftsmen and performers, display objects, field research, and Festival supplies and equipment. As a well established and enthusiastically received public program, an increased cost-sharing by public funds is appropriate.

The American College Theater Festival provides a forum for the presentation of the best achievements of the nation's colleges and universities in the arts. In the selection of the 10 best productions chosen from participating institutions, this Festival offers national recognition and high incentive toward better standards of excellence and scholarship. Entrants have substantially increased over the first year of this event, and public response has substantially added to the Smithsonian's responsibility to provide an acceptable level of production support. This requested \$42,000 will provide needed staff, services for the design and fabrication of staging facilities, rental of equipment, and supplies. Supplementary educational assistance by way of planned exhibits and seminars will secure the very important scholarly foundation of this program.

Basic staff support is insufficient to meet the increased demands on the Division of Performing Arts for technical assistance and advice. Requests have risen fivefold in the past two years totaling more than 50 specific requests in the past year. The highly specialized nature of these inquiries demand detailed attention. For example, in the past year the Division has developed the concept and detailed plans for the performing

and cultural programs for Summer in the Parks; participated in the Inter-agency Committee to plan the United States' participation in the cultural programs of the XIX Olympiad in Mexico City; produced the folk, jazz, and crafts programs which were the official United States entrants in the Olympic International Cultural Festival; assisted in the planning of a national program in the arts which was carried out by the Girl Scouts of America; and many others. Increased staff and consultant services are needed if the Division is to meet these responsibilities (\$8,000).

Funds are requested for a production manager, a technical director, and a clerk-typist (\$35,000) and for travel, rental of equipment, contractual services, and production supplies and equipment (\$65,000).

FREER GALLERY OF ART

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|---------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Research and Scholarship..... | 7 | \$38,000 | 7 | \$54,000 | 8 | \$77,000 |
| Translating Capability, Refurbishing, and Equipment..... | 1 | \$21,000 | | | | |

Annually many publications and documents (often highly technical), inscriptions, and correspondence are received which require translation. The workload is more than the curatorial and library staffs can handle. A translator of Japanese is required.

Basic refurbishing, repairs, and the provision of essential office, shop, and library equipment are required to maintain the research and administrative programs of the Gallery. Included in these needs are the replacement of a joiner and drill press, carpeting, drapes, and blinds; the construction of bookcases; and acquisition of office copying equipment.

This is a request for a translator (\$11,000) and for supplies and equipment (\$10,000).

OFFICE OF ACADEMIC PROGRAMS

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|----------------|-------------|----------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship | 6 | \$414,000 | 6 | \$420,000 | 6 | \$536,000 |
| II National Collections Management and Use.... | 0 | 0 | 0 | 0 | 2 | 80,000 |
| III Education of the Public ... | <u>11</u> | <u>106,000</u> | <u>12</u> | <u>115,000</u> | <u>15</u> | <u>174,000</u> |
| TOTAL | 17 | \$520,000 | 18 | \$535,000 | 23 | \$790,000 |

Contributions to Knowledge in American Civilization..... \$62,000*

The Smithsonian's higher education fellowships thus far have emphasized the science area in order to attempt to reach a reasonable ratio of research trainees to the scientific staff's indicated level of capacity to supervise. Substantially less emphasis could be given to cultural studies despite staff interest because of the lack of fellowship funds. This represents a serious deficiency in the program, when over the next several years a major Institutional effort will be made to emphasize the importance of the relationships between man's culture and environment.

Over 20 Smithsonian scholars are engaged in the history of art and music, decorative and applied arts, and the study of folk art. Their expert knowledge, combined with the operation of practical programs of museum collecting and exhibition, make the Smithsonian uniquely well qualified to train students for careers in cultural establishments which share the Institution's commitment to community service. A higher education training program will be established to make these talents available to universities for the supervision of PH. D. research, postdoctoral training, and specialized offerings of instruction. The Institution requests three postdoctoral stipends (\$36,000), four stipends for dissertation research (\$24,000), and funds for one lecture series (\$2,000) to finance academic activities at the National Collection of Fine Arts, Freer Gallery of Art, and decorative arts divisions of the National Museum of History and Technology.

*Included in total request of 5 positions and \$250,000.

EXTEND THE USEFULNESS OF THE NATIONAL REFERENCE COLLECTIONS

The Institution, because of its stewardship of the National Collections and associated reference documents, possesses an assembly of material tracing man's physical, cultural, and technological development pertinent to an extended time framework which is unmatched anywhere in the world. The possession of these objects and data has enabled the Institution to perform research, produce exhibits, and perform other museum functions. It will attempt to continue to fill these national responsibilities in new and challenging ways. In this regard, the Institution has increasingly recognized that the information contained in these collections can have direct bearing on the successful solution to many questions facing modern man--questions dealing with man's cultural and biological environment.

Five years ago, the Institution first began to explore methods for structuring and extracting this information in order to make it more accessible to scholars and scientists around the world. As part of this effort, the Institution began to strengthen its automation capability, and to construct new systems for storage, retrieval, conservation, analysis, and dissemination of collections and collection information. Some progress has been made, but much more needs to be done.

The feasibility and usefulness of automating collections has been demonstrated by the joint efforts of the National Museum of Natural History and the Smithsonian's Information Systems Division in pilot studies of an information storage and retrieval system for biological and petrological data. This activity needs to be continued and expanded. The efforts of the Conservation Analytical Laboratory to serve interests of investigators in the areas of quantitative and qualitative analysis, artifact dating, and preservation will be strengthened over the next several years. The Libraries and Press meet special Institutional objectives in the area of information dissemination and require attention because of a backlog of activity resulting from growth in research and curatorial responsibilities. This entire grouping of activity is especially important to realizing the potential contributions of the Smithsonian's museums and research laboratories.

NATIONAL MUSEUM OF NATURAL HISTORY

| Program Category | 1969 Appropriation | | 1970 Appropriation | | 1971 Estimate | |
|--|-----------------------|-------------|-----------------------|-------------|------------------|-------------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| I Research and Scholarship | 107 | \$1,724,000 | 107 | \$1,905,000 | 119 | \$2,146,000 |
| II National Collections Management and Use .. | 91 | 918,000 | 91 | 999,000 | 111 | 1,202,000 |
| III Education of the Public | 12 | 117,000 | 12 | 131,000 | 12 | 132,000 |
| Total | 210 | \$2,759,000 | 210 | \$3,035,000 | 242 | \$3,480,000 |
| Collection Management Information System | | | | | 20 | \$188,000 |

This increase is required to continue to extend the application of computer processing systems to collection management in order to strengthen the Museum's capability as a major information resource in the systematic and environmental sciences. Five collection areas have been singled out for priority attention because of the widespread interest of the scientific community.

1. Entomological Literature. For over 200 years entomologists have acquired information relating to as many as two million species of insects. This data is scattered in biological literature throughout the world. The need for a centralized, organized, readily accessible pool of this information has long been recognized. It is proposed to meet this need by incorporating into a data bank 1) standard source books and catalogs already published and 2) new compilations as they appear including several now in process in the National Museum of Natural History. The data in the bank will be used by entomologists throughout the world. The system will permit queries to be made to, and answered directly from, the data bank without reference to the Smithsonian staff. This feature will permit a great expansion in the service rendered at an actual reduction in the time now required of the Smithsonian staff in answering questions.
2. "Type Register" of the Botanical Collections. This project is designed to allow input of data by all interested institutions to produce a "catalog" of type collections available for wide distribution. A trial mailing of 52 cards on only one genus to 50 of the major herbaria produced an enthusiastic response. It is clear that active participation, substantial input, and widespread use in connection with monographic studies and other research can be anticipated on the part of the herbaria in the United States and other countries. This catalog will represent a major development in facilitating botanical research and in expanding service to the scientific community.

3. Data Bank on the Collection of Fossils. The Museum's fossil collection is the largest in the United States and one of the most important in the world. No comprehensive study of fossil faunas can be made without reference to it and the collection is studied by scientists from around the world. No catalog or card file on this material is available. As a result, the scientific community cannot make full use of this material and considerable time is spent by Museum and visiting scientists in locating specimens. The employment of EDP techniques would permit the development of a system of data retrieval and the production of computer print-outs which would be sent to the major museums and universities of the world and provide ready reference to the Museum's research holdings.
4. Research Collections of Invertebrates. In the first phase, formats for data cards and for computer storage of data on parasites and commensals would be developed. Work on updating the information on Crustacea, Marine Nematodes, and the Cephalopoda would be started in fiscal year 1971. Particular emphasis would be placed on the usefulness of the data for bibliographic purposes and for the handling of inquiries.
5. Continuation of EDP Project on Seabirds and Endangered Species. At the termination of the Department of Health, Education, and Welfare grant in fiscal year 1970, data on all seabird families, all United States rare and endangered species, and 5,000 recently collected specimens from the Middle East will have been put in a data bank. This proposed increase would be used to enter: 1) all new bird specimens; 2) all types; 3) all species on the worldwide rare and endangered species list; and 4) to begin entry of United States specimens of gamebirds and waterfowls. There is intense current demand by Smithsonian scientists, other United States Government scientists and university investigators for data on specimens in these categories in connection with biomedical and systematic research, management of United States wildlife resources and urgent conservation projects.

To fund these projects and to permit future extension of the collection management information system into other areas of the collection, \$123,000 are requested for nine catalogers, seven key punch operators, and four clerk-typists. An additional \$65,000 are requested for necessary supplies, source data automatic equipment, computer time, and other services. (See additional National Museum of Natural History request under the science category of this budget.

INFORMATION SYSTEMS DIVISION

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship..... | 1 | \$20,000 | 1 | \$22,000 | 1 | \$23,000 |
| II National Collections Management and Use .. | 3 | 50,000 | 3 | 55,000 | 9 | 204,000 |
| IV Administrative and Central Support | 4 | 65,000 | 6 | 73,000 | 6 | 75,000 |
| Total | 8 | \$135,000 | 10 | \$150,000 | 16 | \$302,000 |
| Development of Computerized Reference Systems..... | | | | | 6 | \$148,000 |

The Smithsonian with its diverse research activities, extensive collections, and other information resources depends upon the Information Systems Division for computer services. This Division is closely involved with both the research projects of the Institution and the management of the National Collections.

The large number of objects in the Collections demands the development and use of computerized information systems for the documentation, storage, and retrieval of specimen related data to assist Smithsonian researchers and others who come to the Institution in search of study materials. For instance, one project presently being conducted by outside investigators involves the study of 20,000 human skulls in the National Collections to determine if any correlation exists between dental disease and environment. The time it would take to complete this project, and others like it, would be greatly reduced if the information relating to the skulls was already in a data bank and available for analysis. In this regard, the Information Systems Division is assisting the National Museum of Natural History to make specimen related information available using ADP techniques by developing the necessary data input-retrieval systems, operating the computer, and continuously monitoring and improving the various systems. In order to develop these techniques, however, research on efficient information storage and retrieval systems for large data bases is required. Developments in this area will provide for further exchanges of information throughout the scientific community. Computer tapes have already been sent to the British Museum. In addition, the Smithsonian will be developing substantial knowledge and abilities in museum-oriented data processing systems which can be of benefit to other museums, thus complying with the provisions established in the National Museum Act.

Computer time is needed to test out and prove algorithms developed in support of scientific computation and for "off-the-shelf" programming packages to perform statistical analysis of a routine nature. Furthermore, many research projects require special programs to solve complex interrelationships consisting of many variables. These research projects would be impossible to complete unless the data involved could be processed by the use of computers since manual processing would be extremely time-consuming, difficult, and costly.

A study, conducted by the Office of the Secretary, has shown that improved information handling techniques are needed in most of the history, art, and science bureaus and would very significantly improve the conduct of research, access to the collections, and service to the public.

The greatest need of the Information Systems Division is for programmer/analysts to research new applications and to develop, test, and install systems. Funding for six programmer/analysts (\$101,000) and for travel, equipment rental, computer time, and other services (\$47,000) is requested.

SMITHSONIAN INSTITUTION LIBRARIES

| Program Category | 1969 Appropriation | | 1970 Appropriation | | 1971 Estimate | |
|--|-----------------------|-----------|-----------------------|-----------|------------------|-----------|
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| I Research and Scholarship | 26 | \$368,000 | 26 | \$390,000 | 34 | \$537,000 |
| II National Collections Management and Use. | 14 | 172,000 | 14 | 182,000 | 16 | 234,000 |
| III Education of the Public | 4 | 46,000 | 4 | 57,000 | 4 | 58,000 |
| Total | 44 | \$586,000 | 44 | \$629,000 | 54 | \$829,000 |
| Repair of Most Serious Library Deficiencies..... | 10 | \$186,000 | | | | |

Given current budgetary restrictions, the Libraries' program is devoted to only the basic traditional functions. It offers document retrieval and delivery services for textual material on demand (generally only when references have been fully specified), standard bibliographical cataloging services for material to be retained for long periods, and quick, ready-reference and information services in all subjects.

The Libraries offer no non-traditional information services and develop few highly specialized documentary collections that would support such services. The development of research information centers within the nexus of the library complex, and of other specialized information services such as selective dissemination of information, translations, data compilations, bibliographies, state of the art reviews, abstracting and depth indexing of special collections have been held in abeyance pending improvement of the Federal fiscal picture.

The library activities of the Institution are operating with about half the necessary financial and staff resources for the standard basic services required to provide minimum support to the programs of the Institution. The additions to the budget requested for 1971 provide for only partial attainment of the minimum suitable library program. No new or advanced services and facilities are sought.

Basic needs fall into three highly interrelated areas of library operations.

1. Acquisition and bibliographical control of documentary resources (4 positions \$94,000)

The request includes \$10,000 for the purchase of journals (480 titles), \$34,000 for the purchase of monographs, technical reports, and documents (2,480 titles), and \$20,000 for binding, filming, and other preservation processes.

The Libraries should be acquiring about \$175,000 worth of purchased documentary material a year to cover subjects of Smithsonian concern. In 1969, \$47,000 were provided for this purpose (deficit = \$128,000). By 1971 this figure will be inflated by rising costs to \$190,000. The requested budget for documentary materials in 1971 is \$92,000 (deficit = \$98,000). This will restore only about one-quarter of the deficit purchasing power. The situation will actually be worse since these figures do not take account of the continually rising volume of important new publications and additions to the staff of the Institution.

Total buying power in 1971 will be about 3,000 monographs (2-1/2 titles per Smithsonian professional, technical, and administrative staff member) and 3,840 journals (3-plus titles per such staff member).

The binding and preservation budget with the requested funds will be about \$35,000 in 1971. This will accommodate about 7,000 volumes. The total annual requirement is for 10,000 volumes to be processed. The 1969 budget for preparation of materials for use and their preservation was \$15,000, (3,000 volumes). The 1970 budget estimate also provides for \$15,000. This will leave 14,000 volumes unprocessed for those two years, or 17,000 by the end of 1971. At 1969 prices, this is an \$88,000 backlog.

The request for new positions includes a manager for the vital gift and exchange program, and three cataloger-indexer technicians. It is estimated that each technician can assist with the cataloging and indexing of \$10,000 worth of new documentary material a year. The three technicians, therefore, will be able to apply standard controls to less than one-half of the material acquired by the increase in funds for the purchase of materials. The remaining material will be made available for limited use through gross inventory methods.

2. Information and document delivery services (4 positions \$45,000)

The Libraries had eight positions in 1969 for professional and subject specialists to offer information and reference services to the entire Institution. At this rate, each staff member in the Institution had access to about 12.5 hours of professional information service a year or 15 minutes a week. The recommended additions provide for two professional information officers, or about three additional hours of service availability per year for each Smithsonian staff member (3.6 added minutes per week).

For all services (information and reference, inter-library borrowing and lending, xeroxing, paging and messenger, etc.) the Libraries had 15 positions in 1969 (includes the eight cited above). This is one library staff member for each 78 Smithsonian staff members involved in research, exhibition, education, and administrative work. Each of these staff members, therefore, had available an average of 24 hours of library and information service a year, or 27 minutes per week. An additional reference librarian and technician would raise the Libraries' service

staff to 19 positions, or one for every 62 Smithsonian staff members. This is an average of 30 hours of service availability per year for each staff member or 34 minutes per week (Improvement = six hours of service a year for each Smithsonian staff member).

None of these calculations takes account of the service the Library gives to other Government agencies, and non-Smithsonian scholars and students.

3. Process management and improvement (2 positions \$47, 000)

This provides for an Assistant Director for Automation, a clerical support staff member, and \$18, 000 of computer services. The Libraries estimate that \$9, 000 of computer time in 1969 did the work of three (\$16, 000 worth) library technicians. Further innovations in automation and process improvement should reduce the rate of growth of the Libraries' staff to accommodate increased budgets for library materials and Institutional service demands.

SMITHSONIAN INSTITUTION PRESS

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|---------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| I Research and Scholarship | 17 | \$429,000 | 18 | \$492,000 | 19 | \$603,000 |
| III Education of the Public | 3 | 148,000 | 3 | 166,000 | 4 | 200,000 |
| Total | 20 | \$577,000 | 21 | \$658,000 | 23 | \$803,000 |
| Publication of Museum Catalogs and Research Reports..... | 2 | \$138,000 | | | | |

Publications are a major activity in operating museums. Catalogs of exhibits are the chief means of extending the educational content of exhibits beyond the walls of the museum, and of providing a semi-permanent repository of information conveyed by exhibits long after they are closed. Catalogs of collections are a basic archive and reference for scholars and laymen all over the world who are unable to examine the collections directly. This class of publications is expensive to produce because their purposes are to attract and inform, and because they must be made with high quality materials and workmanship. Works of art must be reproduced clearly and faithfully, and occasionally the use of color is necessary for the communication of aesthetic qualities. The Smithsonian recently has opened the National Collection of Fine Arts and the National Portrait Gallery. A number of major collection catalogs are pending in the National Museum of History and Technology. The Hirshhorn Museum and the Renwick Gallery will add an additional exhibit catalog workload. These are all national museums, devoted to the display and promotion of American culture, and the catalogs they produce must rank with the quality of those issued by leading museums elsewhere in the United States and in foreign countries. The funds for them are unavailable from other publications programs, because base resources are insufficient already to publish research reports.

The Federal support of Smithsonian research is wasted when that research remains unreported to its users. This is especially true of scientific results at the Smithsonian, which are typically basic data of primary necessity to the advancement of applied research in Government agencies, industry, and universities. There is a mounting backlog of research manuscripts to be published. This situation arose during fiscal years 1968 and 1969 because of an expanded staff of scientists and historians and greater research productivity. Appropriations for printing have not kept pace with the growth in manuscript output and higher printing costs. In fiscal year 1968, the Press began refusal of manuscripts at the end of January. In fiscal year 1969 it refused manuscripts from

most bureaus at the end of October. It is approaching the point where it must refuse all new manuscripts for an entire year in order to work exclusively on backlog. The 1969-1970 backlog is now estimated at over 14,000 manuscript pages. A continuing rise in the volume of manuscripts ready for submission is expected in fiscal year 1971 as well as further inflation in printing costs. The Press has greatly increased its efficiency through revised procedures and has worked with the GPO to reduce the per-page cost of printing by using improved technologies. Economies obtained through such means have leveled off and the printing workload can be met only by increasing Press funds.

Funding is requested for two clerks to assist with editorial work and program administration (\$14,000) and for printing and related production costs of museum catalogs and research reports (\$124,000).

CONSERVATION ANALYTICAL LABORATORY

| Program Category | 1969 | | 1970 | | 1971 | |
|---|--|-----------|--|-----------|---------------------------------------|-----------|
| | <u>Appropriation</u> <u>Pos. Amount</u> | | <u>Appropriation</u> <u>Pos. Amount</u> | | <u>Estimate</u> <u>Pos. Amount</u> | |
| I Research and Scholarship | 4 | \$36,000 | 4 | \$39,000 | 5 | \$54,000 |
| II National Collections Management and Use.. | 6 | 77,000 | 7 | 107,000 | 11 | 148,000 |
| III. Education of the Public | 0 | 3,000 | 0 | 9,000 | 0 | 9,000 |
| Total | 10 | \$116,000 | 11 | \$155,000 | 16 | \$211,000 |

Backlog in Conservation and Analytical Service 5 \$53,000

Entire collections of historically and technologically valuable objects, many of them irreplaceable, numbering thousands of items, need cleaning or conservation services. Objects which have never received treatment or which have been inadequately preserved are deteriorating toward total loss. New acquisitions are being received from excavations and donations at a rate far exceeding the capability to analyze or treat them adequately. During fiscal year 1969, 120 objects received from departments were treated and another 150 objects were examined preparatory to prescribing treatment by others. Analysis and conservation must be painstakingly careful in order to give maximum protection to the objects while treatment is underway. No production-line techniques are possible.

In order to meet its workload, the Laboratory has reorganized its space to improve productivity, has developed improved conservation techniques, is building a small fumatorium to treat objects, and has established a data input-retrieval system to make conservation information from various sources more readily available. This system also facilitates answering frequent questions from the general public and from organizations.

In addition to its conservation responsibilities, the Laboratory performs analyses, identification, and classification of materials from the collections. These studies help to determine the age, history, and attribution of objects. Any single object may require one or more analyses and each analysis may reveal a number of elements. One requisition for analysis involving several objects may be very complex. For instance, five gold bars, alleged to have come from the same mint, were analyzed for ten elements to establish whether the composition supported other evidence of authenticity. This examination, requiring 15 man-days, supported a belief that two of the bars were not produced as stated. During fiscal year 1969, fifteen requisitions resulted in 80 analyses of 2,200 elements. Only through the employment of time-saving analytical equipment and techniques can the Laboratory perform this work. Techniques relying upon atomic and thermoluminescence which are being developed will have wide applications, ranging from the identification of pottery to medieval inks.

It is essential that the time of the Laboratory's scientists be used efficiently and its equipment operated effectively. A laboratory technician is needed to operate the fumatorium that is being constructed and which will materially improve the conservation ability of the Laboratory. The analytical output could be improved by adding a spectrograph which determines the elements and molecular composition of materials. An additional laboratory technician is needed for its operation and an atomic physicist to concentrate on the development of new techniques and methods. Two clerks are needed to maintain and operate the data input-retrieval system and for general office administration. This is a request for five positions (\$ 37,000) and \$16,000 for supplies and equipment including funding for the spectrograph (\$11,000) which will be nonrecurring.

SMITHSONIAN INSTITUTION ARCHIVES

| Program Category | 1969 Appropriation | | 1970 Appropriation | | 1971 Estimate | |
|---|-----------------------|---------------|-----------------------|---------------|------------------|---------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| National Collections | | | | | | |
| Management and Use.. | 4 | \$35,000 | 4 | \$37,000 | 5 | \$62,000 |
| Survey and Organization of Manuscript Holdings..... | | | | | 1 | \$25,000 |

The correspondence, manuscripts, and other record holdings of the Smithsonian Institution are a valuable research resource for the scientific, cultural, and intellectual history of the United States dating back to the first century of the Republic. Smithsonian staff and students and scholars from other institutions make frequent use of these materials. Much greater use would take place if the materials were indexed and accessible. The approximately 25 million items are poorly organized, if at all, scattered throughout the files and collections of the museums and research laboratories of the Smithsonian, and are not under central control. It is essential to survey the holdings and to do the analytic work required to provide data for pilot studies of a computerized catalog. Funding is requested for an archivist (\$19,000) and for computer time and other costs of the program (\$6,000).

OFFICE OF ACADEMIC PROGRAMS

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|----------------|-------------|----------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| I Research and Scholarship..... | 6 | \$414,000 | 6 | \$420,000 | 6 | \$536,000 |
| II National Collections Management and Use.... | 0 | 0 | 0 | 0 | 2 | 80,000 |
| III Education of the Public ... | <u>11</u> | <u>106,000</u> | <u>12</u> | <u>115,000</u> | <u>15</u> | <u>174,000</u> |
| TOTAL | 17 | \$520,000 | 18 | \$535,000 | 23 | \$790,000 |

Improving the Management of the Institution's Reference Systems 2... \$80,000*

As part of the overall effort to improve the management and accessibility of reference resources, the Institution proposes to conduct a training program in the context of curatorial operations, aimed at producing apprentice curators who have had direct exposure to advanced techniques of information processing and collection development.

The Institution requests two positions (one program analyst to identify and describe training opportunities, and one clerk-typist) and \$25,000, including necessary administrative support funds.

The Institution also requests \$55,000 for 11 training grants to permit one trainee to be assigned to the principal ADP projects in the National Collections. The benefits to the Institution from the additional semiprofessional assistance thus obtained will be considerable, while the training benefits inhere to the entire museum community.

*Included in total request of 5 positions and \$250,000.

OFFICE OF THE REGISTRAR

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| II National Collections Management and Use .. | 22 | \$191,000 | 23 | \$218,000 | 25 | \$273,000 |
| III Education of the Public | 6 | 80,000 | 6 | 93,000 | 6 | 94,000 |
| Total | 28 | \$271,000 | 29 | \$311,000 | 31 | \$367,000 |
| Service Support for the National Collections | 2 | \$53,000 | | | | |

A number of important needs remain unmet in connection with this office's responsibilities for preparing and safeguarding the documentation pertaining to objects accessioned into the National Collections of the National Museum of Natural History and the National Museum of History and Technology.

A long standing need is the restoration of deteriorated accession papers for permanent preservation. These are irreplaceable records that document the receipt and legal base for the National Collections, dating from the establishment of the National Museum. The early papers are fragile, torn, and breaking at creased areas, the handwriting fading, and in a general state of deterioration. An estimated 18,000 accessions (80,000 pages) require attention. In addition, the service activity of the central records of the two museums requires improvement. This includes the indexing of papers and filing, the handling of telephone calls for information from the accession and permanent files, and minor research and file retrieval for staff members and visitors. Increased staff and greater program activities in the museums generate more records activity which is now beyond the capabilities of the two existing file clerks.

As a related activity to the accession files, the donor lists published in the Smithsonian Year are the only consolidated listing presently available to the staff and public of newly accessioned items in the museums. Procedures in effect in the Office of the Registrar involve the typing from each basic accession memorandum of an index card, a line entry on a manuscript card for the annual report, and an address label which is used to send each donor a courtesy copy of the report. Through source data automation, one typing could capture the required information, provide information which is now not readily available because of the impracticability of a manual search of the files, and give a periodically updated index of acquisitions.

An additional need is a cost-of-living increase in transportation funds to ship materials relative to the exhibition, research, and educational activities of the Institution.

Funds are requested for a records technician and a file clerk (\$12,000) and for preservation services, source data automation equipment, computer time, and shipping funds (\$41,000).

IMPROVE MUSEUMS AS SOCIAL AND EDUCATIONAL INSTITUTIONS

Museums teach people about real things. This is why they are major attractions to the general public, particularly young people. Museums tend to arrange objects and happenings in perspective. This relevance is frequently lacking now in the other ways our young people tend to learn. As an example, dates are being eliminated from the study of social science because it is assumed they have no contextual value. Eliminating perspective is also the failure of informal learning media. The scale of time is lost on television where everything is instant, and nations of men can be born, marry, suffer the tragedy and joy of life, and die, all within an hour's time.

Perspective on life needs to be nourished, and the Smithsonian has singled this out as a special objective. A major goal of this Institution is to increase its experimentation with new communication and learning techniques. Building on an established base of activity, the Smithsonian hopes to produce educational exhibits which will complement current elementary and secondary instructional practices by stimulating the viewers interest in learning. An important aspect of this effort will be to analyze the reaction and responses of the public, particularly children, to the Institution's exhibits in a constant effort to produce more effective displays. Increased museum training opportunities under the National Museum Act for personnel from other museums and related organizations will help to strengthen the public service capabilities of museums across the country.

The requests listed for the Anacostia Neighborhood Museum, the Office of the Director General of Museums, and the elementary and secondary education programs of the Office of Academic Programs, are especially important in helping to meet this objective.

OFFICE OF DIRECTOR GENERAL OF MUSEUMS

| Program Category | 1969 | | 1970 | | 1971 | |
|--|----------------------|--------------------|----------------------|--------------------|-----------------|--------------------|
| | <u>Appropriation</u> | <u>Pos. Amount</u> | <u>Appropriation</u> | <u>Pos. Amount</u> | <u>Estimate</u> | <u>Pos. Amount</u> |
| Education of the Public | 5 | \$208,000 | 7 | \$247,000 | 12 | \$396,000 |
| 1. <u>Experimental Exhibits and Museum Education</u> | | | | | 4 | \$85,000 |

The use of museum collections and exhibits in the service of education, to create the desire and the will to learn, and to encourage learning by the students' own efforts outside the classroom is increasingly required to strengthen faltering education at all levels. The Smithsonian's broad sweep of museums, large attendance, and comprehensive collections provide unequalled opportunities to experiment and develop new concepts of communication and museum education. The Smithsonian is increasing its research in communication and teaching through exhibits and in the methods and techniques for managing large reference collections to support effectively and economically the research and studies of scholars. Other actions have included a visitor's survey now being conducted and a small group of experimental teaching exhibits for use in local schools. New experimental exhibits must be built and tested, such as structured teaching and computer aids to learning, to involve the viewers, communicate with them, and sense their reactions to exhibit effectiveness.

This effort will be of great value to the Smithsonian's museums and other museums concerned with the effectiveness of their public education efforts. Funding is requested for an experimental psychologist, a program assistant, and two exhibits technicians to plan and develop exhibition tests and to evaluate results (\$41,000). Services, supplies, and equipment, including the development and installation of test devices and the construction of exhibits, will add \$44,000.

2. Museum Training under the National Museum Act 1 \$62,000

Some 1,500 requests a year are being received from all parts of the United States and the world to provide training for museum personnel in the conservation of museum objects, in exhibition, in techniques of museum education, in administration, and in the management of collections. National and international associations of museums urge surveys and studies of broad museum problems. They seek advice and require support for the purpose of setting standards of museum performance and professionalism in order to improve museum practices and to accredit museums. Training, standards, and accreditation are three of the principal needs of American museums described in the Belmont Report prepared by the American Association of Museums in response to former President Johnson's request. The Report recognizes the special capabilities of the Smithsonian Institution to aid these studies and provide training.

A coordinator of museum training (\$12,000) and \$50,000 for cooperative training grants, surveys, and studies with other museums are requested.

Total Program increase 5 \$147,000

ANACOSTIA NEIGHBORHOOD MUSEUM

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|---------------|-------------|---------------|-------------|---------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Education of the Public | 4 | \$42,000 | 8 | \$69,000 | 17 | \$185,000 |
| Improvement and Extension of Community Services | 9 | | | | | \$114,000 |

The Anacostia Neighborhood Museum opened its doors two years ago in September 1967. Since that time, over 105,000 children and other community residents have enjoyed and been educated by its exhibits, classes, and other projects aimed at maximum public participation and involvement. The Museum Director, a lifelong resident of the Anacostia area, who knows its people and their needs, has assessed its operations and what he identifies as its immediate needs. The following is his report.

"The Anacostia community is one of the deteriorated urban areas in Washington having a large degree of dilapidated housing, exploded school populations; low income and under employed individuals, and other general characteristics that describe blighted urban centers in cities across America. The Anacostia Neighborhood Museum was conceived to bring all segments of this community together for mutual good. It has demonstrated how a significant Institution like the Smithsonian Institution can develop meaningful programs in the inner city and achieve success in working with local neighborhoods. Philosophically, the museum was designed to provide meaningful learning experiences and the exposing of relevant objects for people who were not general museum visitors. Within this framework we have sought to do this, and further we feel that developing exhibits and programs around subjects that are of vital concern to the community for its uplift and enhancement is the proper road to travel. After experimenting for two years however we feel that certain basic needs remain unmet in order to define and deal with community issues more concretely.

"The Anacostia Neighborhood Museum in less than two years has developed a clear direction in two specific areas; one being education. We are seeking to enhance our involvement with the local schools and, to a greater degree, coordinate our exhibits and programs with the Board of Education. Within the past year, the demands on the Museum as a center for learning have increased immeasurably. Museum staff members have worked especially closely with the Anacostia Community School project, and the Museum's program manager was elected to the Council and Governing Board earlier this year. In addition, she has been called upon to act as a consultant to teachers and Community Reading Assistants in workshops and seminars. As an outgrowth of meetings held with school principals, counselors, Community Reading Assistants, Head Start personnel, and special groups of teachers in the fields of science and art, many requests for specific workshops and programs have been made. Among those that have been implemented are: a four-week series of programs on Afro-American history for two sixth-grade classes at Savoy Elementary

School; an art appreciation workshop for local teachers and Community Reading Assistants that focused on the making of paints from fruits, vegetables, clay, and ordinary household items; the training of local recreational staff in ceramics and pottery; the addition of live turkeys and chickens to the Museum Zoo at Thanksgiving in response to a request by Head Start teachers; a series of International Hours for pre-schoolers which included the sampling of food from other countries, the trying on of garments, story hours, films, and slides; and a six-week seminar on Afro-American history for local Community Reading Assistants. Other requests remain unmet. We should request in fiscal 1971 federal funding for an additional education specialist and a program assistant.

"Research on exhibit topics of particular timeliness to the needs of the community is the second area of our concern. We must improve our capability to provide material for the production of relevant exhibits. It is necessary to have personnel to do the actual day-to-day researching of material so that we can produce frequently changing exhibits to attract and hold neighborhood attention. We are requesting an additional research assistant in fiscal 1971.

"In the area of broader community affairs, we need to develop greater ties with not only Anacostia but also with other museums in America. We must learn of new developments in the museum world which may be relevant to our needs. We must tell the Anacostia story more graphically through a variety of media so that others will be able to benefit from our efforts. Letters are received almost daily from other museums, community groups, and concerned citizens asking for advice and assistance to undertake similar museums in their areas. A full-time community relations specialist, assisted by community aids and clerical staff, is a very important need. This staff will set up community meetings so that residents can make contributions as to the direction and purposes of the Anacostia Museum. They will also attend meetings of other community organizations to discuss with them affairs that affect the community that the museum needs to focus on. This is a critical need because often residents don't read the papers or listen to radio news; we have discovered the first hand approach to be most effective in Anacostia. On the other hand, the museum is made more visible through people who are known in the community and have spent most of their lives here.

"It has become apparent that with increased public participation and community involvement, it is necessary to employ an assistant director to help with the day-to-day administration of the Museum including the planning and evaluation of purposes."

Adequate support for the Anacostia Neighborhood Museum is a high priority need. Funding for fiscal 1971 is requested for an assistant director, an education specialist, a research assistant, a community relations specialist, two community aids, two clerk typists, and a custodian (\$70,000) and for space rental, printing of exhibit and education materials, services, exhibit supplies and equipment (\$44,000).

OFFICE OF ACADEMIC PROGRAMS

| Program Category | 1969 Appropriation | | 1970 Appropriation | | 1971 Estimate | |
|---|-----------------------|----------------|-----------------------|----------------|------------------|----------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| I Research and Scholarship | 6 | \$414,000 | 6 | \$420,000 | 6 | \$536,000 |
| II National Collections Management and Use ... | 0 | 0 | 0 | 0 | 2 | 80,000 |
| III Education of the Public ... | <u>11</u> | <u>106,000</u> | <u>12</u> | <u>115,000</u> | <u>15</u> | <u>174,000</u> |
| TOTAL | 17 | \$520,000 | 18 | \$535,000 | 23 | \$790,000 |

Increasing the Relevance of Museums as Social and Educational Institutions
..... 3 \$54,000

A key portion of the communications spectrum is elementary education, where visual processes are primary to learning. By observing the responses of children in the 21 subject areas where escorted tours are conducted every day during the school year, the Institution could discover a great deal about the effect of exhibits, applicable to their improvement also and to the creation of more effective learning environments in the schools. This is one of a number of ways in which the performance of museum functions may be put upon a surer academic footing. To this end, the Institution seeks to develop fellowship offerings for museum studies. For increasing the effectiveness of museum exhibits for the education of primary school children, the Institution requests three positions (audiovisual technician, program analyst, clerk-typist) and \$26,000 including program support costs. Also requested are \$28,000 for two postdoctoral fellowships to initiate the program of museum studies.

*Included in total request of 5 positions and \$250,000

OFFICE OF PUBLIC AFFAIRS

| Program Category | 1969 | | 1970 | | 1971 | |
|-------------------------|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Education of the Public | 12 | \$140, 000 | 12 | \$154, 000 | 16 | \$210, 000 |

| | | |
|---|---|-----------|
| Dissemination of Informational and Educational Materials to the Public | 4 | \$54, 000 |
|---|---|-----------|

Within its existing funding, the Office of Public Affairs is attempting to develop a well-rounded public information program. Included in its services are responses to public inquiries, visitor orientation materials, telephone recordings of Smithsonian and space happenings, films, press releases, and radio and television programs. These services are aimed at reaching a wide audience extending to and beyond the public able to visit the Institution's museums.

An examination of this program shows a number of needs which if met would strengthen the entire effort.

- Requests for educational program materials have been received from university-operated and other radio stations in Massachusetts, Illinois, North Dakota, Pennsylvania, Texas, Montana, and elsewhere. The Smithsonian is prepared to make copies of the "Radio Smithsonian" and other programs available. The National Educational Radio Network, in conjunction with American University, has offered to distribute these materials to 180 stations throughout the country and overseas at no cost to the Smithsonian beyond production. Costs to the Institution would be primarily for clerk time and tapes which would be returned for use.
- Responsibility for the preparation of general and technical guidebooks, information leaflets and posters, and other orientation materials for additional buildings and exhibits creates a need for a full-time designer to create materials that will have maximum visual appeal and interest.
- An operating and frequently updated mailing list and community directory system is essential to cover the Smithsonian's varied areas of interest and to make information available to diverse publics--students, scholars, historical and scientific associations, universities, and Government agencies. The one person available to operate the present system cannot keep up with changes much less improve the system and extend its coverage.
- The Smithsonian issues several regular public service news publications aimed at informing the public of a growing number of Smithsonian events. These are in great demand by the public with daily requests to be added to the mailing lists. Most popular is the Calendar of Events. While this publication has been printed with non-appropriated funds while its design,

format, and content were being developed, it is as appropriate for Federal funding as other visitor orientation materials. A request for Bureau of the Budget approval will be submitted. Funds for printing costs and clerical assistance in preparing the Calendar, employees' newspaper, new releases, and information brochures are required. At present one-clerk typist is responsible for all these materials.

- The Smithsonian Film Theatre, which presents educational documentaries three times each week free of charge, usually to large audiences, is a major, but low-cost, element of Smithsonian service to the public. The films are in most cases lent or borrowed for a short term from producers and introductory remarks are presented by Smithsonian or outside experts in art, science or history without any payment. At present manpower and available budget to operate this documentary film service make it possible to operate during the months from October to May. This request would allow the Smithsonian to make films available as well during the summer months when the greatest number of visitors and students come to Washington and are able to attend.

Funding is requested for a designer, two clerk-typists, and a film technician (\$26,000) and for printing funds, preparation of recording tapes, rental of films, and related supplies and equipment (\$28,000).

PROGRAM ADMINISTRATION AND SUPPORT

Increases being requested in this section cover the central administrative and technical services which operate primarily in support of the program units. The requests include the 1) Office of the Secretary, 2) Office of the Treasurer, 3) Office of Personnel and Management Resources, 4) International Exchange Service, 5) Supply Division, 6) Photographic Services Division, 7) Travel Services Office, and 8) Duplicating Unit. Requests total \$403,000, or about 6.1 percent of total Institution requested increase. For the last several years, actual operating expenses indicate that the costs of administering and supporting the diverse activities of the Institution have fluctuated between 14 percent to 18 percent of total obligations. The Smithsonian desires to keep the actual costs of management function at a minimum, thereby retaining flexibility of resources in program units. The requests presented for fiscal year 1971 cover only what is necessary to strengthen certain functions, particularly the fiscal and operational planning activities in the Treasurer's Office, the personnel management function, and supply and duplicating service needs resulting from growth in program operations.

Office of the Secretary

| Program Category | 1969 | | 1970 | | 1971 | |
|--|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Administrative and Central Support..... | 26 | \$475,000 | 28 | \$452,000 | 30 | \$497,000 |
| Science Program Management | | | 2 positions | | | \$37,000 |

The scientific programs of the Smithsonian Institution represent the largest area of the Institution's activities. These include the National Museum of Natural History, Smithsonian Astrophysical Observatory, Radiation Biology Laboratory, Smithsonian Tropical Research Institute, Office of Oceanography and Limnology, National Museum of Man, Office of Ecology, Center for Short-Lived Phenomena, and the Smithsonian Research Awards Program. The Assistant Secretary is concerned with not only internal planning and programming, but also with cooperative and coordinative activities with other agencies and abroad. It is important that he be present or be represented at many high-level meetings where policy is made and vital decisions are discussed. Each of these roles is time-consuming and many of the meetings overlap in time. A Deputy Assistant Secretary who can represent the Assistant Secretary and speak for him armed with full understanding of current and planned programmatic approaches and an understanding of problems is essential. The Deputy Assistant Secretary must also serve as a representative of the Assistant Secretary in dealings with the scientific bureaus and must be in a position to provide guidance and direction on the basis of the Secretary's policies.

Funding is requested for a Deputy Assistant Secretary and a secretary (\$37,000).

Office of the Treasurer

| Program Category | 1969 | | 1970 | | 1971 | |
|---|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Administrative and Central Support | 31 | \$558,000 | 31 | \$542,000 | 36 | \$655,000 |
| Financial Management Activities | 5 | | | | | \$108,000 |

This office manages the income and expenditures of the Institution and provides the Secretary with recommendations related to the allocation of funds. It is composed of the Office of Programming and Budget, the Contracts Office, the Accounting Division, and the Internal Audit Office. These sections provide analytical and technical support in financial management matters. Planning, budgeting, accounting, auditing, and reporting center in the Treasurer's Office. Additional funding is required to meet a rising and more complex workload. Staff increases required consist of a secretary to the Treasurer, an assistant internal auditor, a fiscal clerk in the Accounting Division, a budget technician and a clerk-typist in the Office of Programming and Budget (\$44,000). Equipment is required which would provide source data automation of accounting transactions, eliminate delays and costs of keypunching, and result in faster and better accounting control (\$10,000). As additional costs to this office, the Department of Labor has requested \$32,000 reimbursement to the Employee's Compensation Fund. Of this amount, \$16,000 is already in the base, and the Smithsonian is requesting \$16,000 additional. Postal rate increases and a higher volume of Smithsonian mail require a projected additional \$25,000 over the current expenses of about \$150,000.

Office of Personnel and Management Resources

| Program Category | 1969 | | 1970 | | 1971 | |
|--|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Administrative and Central Support..... | 18 | \$307,000 | 18 | \$288,888 | 27 | \$416,000 |
| Support for Smithsonian Program Development..... | 5 | | | | | \$75,000 |

In recent years the Congress has significantly broadened the base of the Smithsonian Institution with the enactment of over twenty major programs. Appropriations have increased to \$28,000,000 and manpower authorizations have increased from 500 to the current 2,200. This marked growth in the Smithsonian has placed great demands upon this Office which is responsible for a wide range of program functions including organizational development, manpower planning, management evaluations, and the full spectrum of personnel administration. Advice, assistance, and support is provided to all levels of management, the professional faculty, and to the 2,200 employees in the Smithsonian's Secretariat, central support units, and 20 bureaus and offices. As a result of Congressional action, these bureaus which are scattered from Cambridge, Massachusetts, to Panama are establishing new

programs, new research objectives, and new priorities for the Institution. The bureau directors seek guidance from the Office of Personnel and Management Resources in the analysis and deployment of resources, in problem solving, and in better ways of achieving organizational effectiveness.

Indicative of the Office's workload is the number of individual personnel actions, each requiring analysis and extensive discussion. Over 3,000 personnel requests are submitted annually. In addition, the Office had over 7,000 visitors, 51,000 telephone calls, and 2,000 letters last year. This activity is expected to increase this fiscal year and next. The Civil Service Commission has greatly increased the number and variety of special programs in the personnel area. New Executive Orders and Commission directives require expanded programs for the disadvantaged, the socially deprived, promotions, awards, appeals, discrimination, and discipline. The additional positions requested are urgently needed to meet these needs. A comparative study of the ratio of personnel office staff in other agencies to the number of employees serviced reveals that the staffing in the Smithsonian's office is 50 to 100 percent less.

Five additional specialists in personnel consulting, manpower planning and development, and recruitment and placement are required.

Health Services for Staff and Visitors 4 \$48,000

The Office of Personnel and Management Resources is also responsible for providing health services not only for the Institution's own staff but for the general public. The two health units now in existence in the Natural History and the History and Technology buildings are insufficient. Visitor attractions on the south side of the Mall now receive 5,000,000 visitors a year. This complex of buildings currently has no medical facilities to offer first-aid and medical assistance to either visitors or to employees. Additionally, the National Collection of Fine Arts and the National Portrait Gallery, opened in 1968, are located five city blocks from the nearest Smithsonian facility and have no medical services. Our responsibility for the safety and welfare of the visitors as well as staff demands that these facilities become available as soon as possible. Four nurses to staff these two critical health units are minimum needs. Equipment and supplies, including drugs and vaccines, are needed to stock these new units as well as to improve the capabilities and service of the existing units.

Total program increase.... 9 positions \$123,000

International Exchange Service

| Program Category | 1969 | | 1970 | | 1971 | |
|----------------------------------|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| Education of the Public | 9 | \$115,000 | 9 | \$124,000 | 11 | \$164,000 |

Maintaining and Improving Operations..... 2 \$33,000

Many requests are received from colleges and universities for assistance in the transmission of medical and dental publications as well as teaching and library reference material to new schools, colleges, and universities in other countries. With sharply rising personnel, shipping, and material costs, the present level of funding is inadequate to ship private as well as the required Government publications. This increase is to correct deficiencies in funds for maintaining current operation levels and to provide funds to survey the current operation with a view to finding new methods for the more efficient and economical transmission of information overseas. The Service has a record of 120 years of continuous operations. To reduce its operations would hamper the activities of foreign educational libraries.

Funding is requested for a clerk and a forklift operator (\$11,000) and for shipping and survey costs (\$22,000).

Supply Division

| Program Category | 1969 | | 1970 | | 1971 | |
|--|-------------|---------------|-------------|---------------|-------------|----------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate Amount</u> |
| Administrative and Central Support | 20 | \$276,000 | 20 | \$327,000 | 22 | \$367,000 |

Stockroom Operations and Procurement and Delivery

Services..... 2 \$36,000

The growth in research, exhibit, and educational programs has increased demands for common office, laboratory, and workshop supplies and materials. For economy and efficiency of purchasing, general supply items are bought centrally and stocked by the Supply Division for issue. The Division has been forced to reduce its expenditures for supplies in order to absorb higher personnel costs. Because of limited funds, the Division has been unable to conduct an orderly planned procurement and stocking program. It has been forced to buy often and sparingly, making for uneconomical procurement. To save funds, the stocks have been purged of slow moving items, and levels of many items have been reduced below replenishment levels leaving little or no reserves for surges of requirements. Stock prices are rising. The Supply Division must increase its purchasing power for supplies to meet Institution needs.

The Division's output of purchase orders, contracts, imprest fund uses, and other transactions continues to increase commensurate with the general expansion of the Smithsonian's activities. Although improved methods and techniques will continue to increase productivity, it is anticipated that the procurement workload will outpace available manpower in fiscal year 1971. The National Portrait Gallery was opened and space was taken over in the Pension Building in fiscal year 1969. The Renwick Museum will be ready for partial use during fiscal year 1971. These activities are contributing materially to the increase in procurement functions and to the problem of adequate control of receiving and prompt delivery services to the continually increasing number of buildings.

Funding is requested for a procurement clerk and a stockroom clerk (\$12,000) and for stockroom supplies and operations (\$24,000).

Photographic Services Division

| Program Category | 1969 | | 1970 | | 1971 | |
|---|---------------|-----------|---------------|-----------|----------|-----------|
| | Appropriation | | Appropriation | | Estimate | |
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| Administrative and Central Support | 18 | \$218,000 | 18 | \$237,000 | 23 | \$271,000 |
| Laboratory Assistance and Services | 5 | \$31,000 | | | | |

Clerk-typists are needed to relieve the photographer-supervisors of two laboratories in the processing of requisitions, the ordering of supplies, preparing personnel and other reports, phone calls, memoranda, etc. This would give these two supervisors additional time needed for technical photographic work and necessary supervision of laboratory employees. There is only one clerk-typist in the entire Division.

Lab technicians are needed to relieve the twelve photographers in the three laboratories who spend a total of approximately 17 hours each day on low level duties including microfilming, print washing, drying, straightening, sorting and reconciling with orders, negative filing, and transporting and setting up equipment. Relieving these highly skilled employees of these simple, but time-consuming tasks, would enable them to reduce the backlog of several hundred orders. There are no technicians in the division.

The photographic laboratories are not equipped to perform color and motion picture film processing, nor the preparation of mural-size prints, xerographic prints, duplicate transparencies, etc. Requests for commercial services of this type in support of the exhibits and other programs are increasing. Several thousand dollars' worth of work requests could not be met in fiscal year 1969 because of the lack of funds.

Many of the pieces of darkroom processing and printing equipment, purchased at the time of the Division's establishment in 1959, have deteriorated to the point where repairs no longer produce satisfactory operations. New equipment should allow five to seven years of trouble-free service. One enlarger, one printer, and one print straightener are required.

Funds are requested for two clerk-typists and three laboratory technicians (\$25,000) and for commercial photographic services and the replacement of wornout equipment (\$6,000).

Travel Services Office

| Program Category | 1969 | | 1970 | | 1971 | |
|--|---------------|----------|---------------|----------|----------|----------|
| | Appropriation | | Appropriation | | Estimate | |
| | Pos. | Amount | Pos. | Amount | Pos. | Amount |
| Administrative and Central Support..... | 3 | \$29,000 | 3 | \$32,000 | 4 | \$39,000 |

Travel Arrangements Workload 1 \$7,000

This office arranges travel for Smithsonian research, curatorial, and administrative staff in the Washington, D. C. area. In fiscal year 1969, the number of air and rail reservations booked increased by 35 percent over fiscal year 1968, from 7,400 to 10,000. Travel itineraries prepared increased by 30 percent from 2,000 to 2,600. Transportation requests processed increased by 19 percent from 1,600 to 1,900. Hotel reservations booked increased by 25 percent from 539 to 674. Travel arrangements were made for a large number of special activities such as the Folklife Festival, the Symposium for the Association for Tropical Biology at the University of Puerto Rico, and the Foreign Currency Program. The Office needs an additional travel clerk in order to meet this increasing workload and to make arrangements on a timely basis.

Duplicating Unit

| Program Category | 1969 | | 1970 | | 1971 | |
|---|-------------|---------------|-------------|---------------|-------------|----------------------------------|
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Estimate</u> <u>Amount</u> |
| Administrative and | | | | | | |
| Central Support | 7 | \$85,000 | 7 | \$93,000 | 11 | \$122,000 |
| Printing Support for Smithsonian Programs | | | | | 4 | \$28,000 |

This unit provides almost all of the inhouse printing services of the Institution in the Washington, D. C. area. Included are administrative instructions, forms, news releases, research reports, and information leaflets and publications distributed in response to public inquiries. Additional multilith and addressograph machine operators are requested to meet a heavy workload (\$18,000) and funds are required to replace deteriorating equipment (\$10,000).

BUILDINGS MANAGEMENT DEPARTMENT

| Program Category | 1969 | | 1970 | | 1971 | |
|---|----------------------|---------------|----------------------|---------------|-----------------|---------------|
| | <u>Appropriation</u> | | <u>Appropriation</u> | | <u>Estimate</u> | |
| | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> | <u>Pos.</u> | <u>Amount</u> |
| Buildings and Facilities | | | | | | |
| Management..... | 827 | \$7,628,000 | 870 | \$8,724,000 | 946 | \$9,865,000 |
| Utilities, Communications, and Other Essential Services | | | | | | \$100,000 |

In fiscal year 1969, the Buildings Management Department spent \$1.1 million on building utilities, communications, and essential detection and mechanical systems. Higher unit costs and additional facilities to be serviced and maintained are estimated to increase these costs to \$1.2 million in fiscal year 1970. Costs will further rise in the budget year because of added building spaces for offices (54,000 sq. ft.) in the Smithsonian Institution building and in the National Museum of Natural History because of the return of the Department of Entomology, and exhibit areas (45,000 sq. ft.) in the National Museum of History and Technology and the National Museum of Natural History; increases in air conditioning, heating, and environmental control equipment, especially in the renovated Smithsonian Institution building; and program increases in public service, educational, and scientific research activities during regular work and visiting hours, and in the evenings, weekends, and holidays. This request also includes a 10 percent price increase on contract services for the security and fire detection systems and for elevator repair and maintenance services based on higher labor and materials costs. Included within the \$100,000 request are \$75,000 for electricity and steam; \$8,000 for FTS intercity telephone services as projected by the General Services Administration; \$9,000 for detection systems; and \$8,000 for elevator services.

| | | |
|--|----|-----------|
| 2. Protection and Maintenance of the Fine Arts and | | |
| Portrait Galleries | 25 | \$170,000 |

The present staff provides protection, custodial and labor services, skilled craft services, and mechanical operations to the National Collection of Fine Arts and the National Portrait Gallery. Spaces include offices, laboratory areas, reference collection storage, and exhibit galleries, which have been completed, furnished, and opened to the public. Present level of effort is 76 manyears and \$550,000.

The increase requested for fiscal year 1971 is to provide an adequate level of service for the protection, operation, and maintenance of the building as additional galleries are completed, furnished, and opened to the public, and to bring staffing in nonpublic work areas of the building up to an adequate level (nine guards, 10 custodial employees, and six mechanics). This request also includes supplies and materials, and equipment related to the full operation of this building. This additional staff and funds should complete the phased requirements for this building.

3. Initial Operations of the Renwick Gallery 35 \$240,000

The Renwick Gallery was turned over to the Smithsonian by the contractor in February 1969 although some essential restoration and renovation work remains to be done. This building will be in partial use late in fiscal year 1970, and the present schedule calls for opening to the public in mid-fiscal year 1971. The planned level of effort in 1970 (seven manyears and \$31,000) will provide initial basic services (i.e. protection, custodial, crafts, and mechanical) and will include operation, maintenance, and servicing of the complex heating, air conditioning, and humidity control systems on a 24-hour basis, seven days a week. The requested increase is to provide necessary resources for full-year protection, operation, and maintenance services for the building as exhibit areas are prepared in fiscal year 1971 and when it is opened to the public (14 guards, 10 custodial employees, 11 mechanics, and related building maintenance costs).

4. System Requirements of the Renovated Smithsonian Institution Building 16 \$102,000

Operating engineers and electricians will be required to operate, maintain, and service the additional air conditioning and environmental control systems to equipment on a 24-hour, seven day a week basis. General custodial, labor, and restroom services also will be needed for the additional 20,000 sq. ft. of office space and four additional restrooms developed in the center section of the building. The additional space and related equipment constitute a significant added responsibility which can only be met by an increase in staff. The anticipated level of effort in fiscal year 1970 is seven manyears and \$55,000. The request is for five custodians, 11 mechanics, and supplies and materials.

5. Conversion and Better Utilization of Office and Work Space.... \$200,000

It is anticipated that additional office and work spaces will be required in 1971 for the expanding educational, public service, and scientific programs of the Institution. Funds are required to rehabilitate spaces in the Arts and Industries Building to provide additional offices and work areas, and to cover the costs of improvements at the Lamont Street building, Anacostia Neighborhood Museum, and the warehouse facility at Alexandria, Va., for better utilization of the spaces and to up-grade office and work areas to a usable basis. These costs are estimated as follows:

| <u>Facility</u> | <u>Amount</u> |
|--|---------------|
| Arts & Industries Bldg..... | \$85,000 |
| Lamont St. Bldg..... | 70,000 |
| Anacostia Neighborhood Museum | 30,000 |
| Bldg. #3, Alexandria, Va.... | 15,000 |
| Total | \$200,000 |

Total program increase 76 \$812,000

"SALARIES AND EXPENSES" FOR SPECIAL PROGRAMS . . . , TAB B

SMITHSONIAN INSTITUTION AMERICAN REVOLUTION BICENTENNIAL

The 200th Anniversary of the United States requires that Americans reassess the ideals which brought about the Revolution, review our national achievements, give proper emphasis to the importance of ethnic, cultural, and religious diversity in our development, see where we have fallen short of fulfilling the promise of 1776, and build a stronger base for hope and confidence in our future. The Bicentennial presents an unusual opportunity for strong reaffirmation of the self-reliance, courage, and pursuit of the worthy goals and high ideals which characterized our country's founders.

With its scholarly staff, large public participation in its activities, and as the national repository of objects documenting the history and growth of the country, the Smithsonian Institution will play a major role in the celebration of the Bicentennial of the American Revolution. In anticipation of increasing public interest, the National Museum of History and Technology has already presented exhibits commemorating the Stamp Act, James Mason and the Virginia Bill of Rights, and the Townshend Acts. The same museum also has continued to acquire artifacts to fill gaps in its collections of Revolutionary period objects.

The responsibility of the Smithsonian in the Bicentennial observances, and the expectations of the President, the Congress, and concerned private citizens and organizations, will place an enormous burden on the Institution's resources. The Smithsonian can attempt to commemorate the Bicentennial within the anticipated normal growth in its budget. This likely level of performance, however, will not be the significant contribution that the Smithsonian has the ability to make. It will not meet the letter or the spirit of the Bicentennial commemoration as intended by the Congress. Intensified preparations must begin in the budget year if the Smithsonian is to meet its responsibilities.

This fiscal year 1971 special budget request is for an integrated Smithsonian program of Bicentennial celebration activity. The request represents the first year increment of multi-year funding which will be largely nonrecurring when the anniversary celebrations are completed. This funding will not result in significant permanent additions to the Institution's staff or appropriations base. Most of the additional funding projected will not be for payroll costs. Table 1 shows the request for fiscal year 1971 and a projection for the commemoration of a series of anniversaries culminating in 1976. Collections, exhibits, and publications will continue to be a tangible result of this investment long after the Bicentennial period.

The proposed Bicentennial budget for fiscal year 1971 is \$975,000. In terms of its use, the Smithsonian's participation in the Bicentennial will focus on Washington, but will have an inter-acting national and international impact.

Washington Programs..... \$525, 000

Current data indicate that every other visitor to Washington is also a visitor to the Smithsonian. Total attendance at the Smithsonian will reach some 12 million in 1969, and will continue to grow in the years leading up to 1976.

To provide these visitors with a meaningful exposition of 200 years of national life, the Smithsonian will undertake a feasibility study for the addition of two exhibition pavilions on the National Museum of History and Technology. Funds for the architectural design of these are requested in the Smithsonian's fiscal year 1971 construction budget. These pavilions will provide the required space for extensive exhibits with two themes. The first will be the contributions to America made by other nations -- contributions which have resulted in an unparalleled diversity of ethnic, cultural, and religious backgrounds which constantly enrich our national life. Complementing this exhibit will be displays of America's contribution to the world -- our impact on the French Revolution and political developments in many other countries, our material productivity and technical achievements, our continuing concern for the rights of the individual and the quality of his life. These new exhibits will enjoy the unparalleled setting adjacent to the Smithsonian's permanent displays showing the development of American life.

Other plans for the Washington area include presentations by performing artists in the fields of drama, music, and folk arts from our past, both those that have survived from Colonial times and those that can be revived to show earlier cultural activities.

The Smithsonian hopes to complete a military park on the outskirts of Washington, where visitors can see reconstructions of Revolutionary War stockades, cantonments, and equipment.

Major exhibitions are planned at the National Portrait Gallery and the National Collection of Fine Arts, providing visitors with the most complete roster of American visual arts of the Revolutionary era which can be assembled.

Research fellowships, seminars, and symposia will be sponsored by the Smithsonian. By stimulating new research into our origins and past, and through publication of findings, a significant increase in the Smithsonian's contribution to the overall field of American studies will be realized.

National Programs..... \$425, 000

What is done in Washington will be the base for many major contributions to regional, state, and local observances of the Bicentennial throughout the United States. These activities will be an acceleration of the Institution's regular nationwide services. They will be expanded and focused more sharply on the Bicentennial theme.

For example, the Smithsonian has some 200 exhibitions traveling throughout the country for display at museums, universities, and public institutions. These exhibitions draw importantly from the Institution's activities in Washington. In 1971 it is planned to launch five or six exhibits dealing specifically with the Bicentennial theme, and increase the number of these special displays until by 1976 there will be perhaps 25 in the field at any one time.

In addition to exhibits, traveling troupes of performing artists will be sponsored, many of whom will present new works inspired by the Bicentennial. Work must be started now to complete extensive research into the significant themes and to enlist the aid of outstanding artists in this program.

During the Bicentennial period, however, the Smithsonian will be called upon for expanded support of existing programs for consultations in the field requested by museum directors, curators, and exhibit specialists. Many museum officers will come to Washington for guidance. Training of local museum employees in collection management and exhibit techniques will be stepped-up. Research stipends for scholars seeking special study will be provided. Seminars on topics of interest to museums will be held at various locations around the country. These activities, authorized by the National Museum Act, have demonstrated the value of Smithsonian advice. Funds for the anticipated increase for the Bicentennial observance are requested here.

The Smithsonian is currently engaged in preparing a consolidated record of Revolutionary War period materials in all Smithsonian units. This undertaking could be expanded to provide a national catalog of artifacts of the period.

Increasing numbers of requests for support will come from state and local historical societies and similar groups. This is especially important since the Bicentennial must be an occasion for participation by all Americans, including those remote from Washington.

| | |
|------------------------------|----------|
| International Programs | \$25,000 |
|------------------------------|----------|

Internationally, the Smithsonian has an important role to play. Through its established working relationships with museums and ministries of culture in many countries, it is in the preferred position to stimulate and support Bicentennial programs of a dual nature. On the one hand, the Institution expects to borrow items relating to the "USA 200" theme which have never before been seen in the United States. On the other hand, Smithsonian representatives will work closely with appropriate officials abroad to provide guidance for their local celebrations such as exhibitions keyed to historical relations between their countries and the United States.

These celebrations abroad will include commemorations involving contributions to the American concept--French support during the War for Independence, Central European migration, the origins of religious freedom, and important contributions from Great Britain, without which there would have been no Revolution. They will also stress American contributions to the lives of people in the host country.

Furthermore, the Smithsonian would hope to support appearances in Washington and throughout the United States by performing groups from abroad. Symposia in Washington and elsewhere would draw on the talents of leading scholars from many countries.

The Smithsonian's current programs of international activities, covering research in the physical sciences, exchange of publications and collections, support of archaeological expeditions, exchange of naturalists, etc., must be increased when world attention is focused on America. The Bicentennial must be embraced as an opportunity for improving relations with our professional collaborators abroad and for inspiring contributions to the increase and diffusion of knowledge.

The preceding paragraphs summarize the conceptual framework of a Bicentennial program of the Smithsonian aimed at reaching the broadest possible audience at all levels of interest. In order that this program can take place, activity and funding must be stepped-up in four interrelated areas.

| | |
|--|-------------------|
| Exhibits and performing arts | \$425, 000 |
| Research and publication | 350, 000 |
| Acquisition of objects | 150, 000 |
| Planning and administration | 50, 000 |
| Total | <u>\$975, 000</u> |

Exhibits and Performing Arts \$425, 000

Essential to Smithsonian participation in the Bicentennial is the display of artifacts from the collections, as well as the display of contemporary and period plays, musical works, and folk arts. Exhibits and performances must be carefully planned to take full advantage of resources and research available. Exhibits must be fabricated in such a way as to provide security with maximum visibility. They must be designed to conform to available space, both within Smithsonian premises and for use as traveling exhibits. To permit the fullest participation in the educational benefits resulting from proper display of significant historical art treasures, \$425, 000 are needed. These funds will provide the raw materials and workmanship needed to design, produce, install, and circulate exhibits.

Research and Publication \$350, 000

Research is a basic function of the Smithsonian. The budget year is none too early to begin a comprehensive research program into the origins and impact of the American Revolution on American life and national development. Original source material is rapidly disappearing with the passage of time. If the research is to serve fully the needs of the Bicentennial, it must be completed well before 1976 to be reflected in exhibits, in American

scholarship, and in the curricula of our educational systems. An important aspect of this research will be the holding of symposia of leading experts in various fields of American life, resulting in a distillation of national purpose. To make the most of this research, findings must be published. Some can be published by the Smithsonian, some will best be published commercially. The Smithsonian's collections and scholarship can be used to excellent advantage in the preparation of documentary films for use on television, in theatrical distribution, and in classroom showings. For these activities a request of \$350,000 is made. Wherever additional manpower is needed, the Institution intends to draw on the talents of outside organizations, such as universities and colleges. Special grants or special term appointments will be used where possible. In this way any extended increase in staff will be held to a minimum.

Acquisition of Objects \$150,000

Over the years the Smithsonian has developed its history and art collections largely by gift and bequest. It is not likely that these means will suffice to fill significant gaps in Revolutionary Period collections. Increased funds for purchase of objects are essential as market prices will soar. Items can be purchased only when they come on the market. This makes it impossible to itemize objects to be purchased in a given fiscal year, but this Bicentennial increment will strengthen our regular budget for accessions. The range of objects sought includes portraits and other works of art, tools used in agriculture and industry, scientific instruments, and early documents such as books, maps, charts, letters, and manuscripts.

Planning and Administration \$50,000

Fiscal year 1971 will be the first year of major Smithsonian involvement in Bicentennial planning. Much of the necessary planning will be performed within the Office of the Director General of Museums, but other elements of the Smithsonian--notably the National Museum of History and Technology and the National Armed Forces Museum Advisory Board--will need support in drawing up their plans. In addition, increased costs will begin to be incurred by certain of the administrative and central support activities for library services, computer processing, printing, and similar research and exhibit support activities.

In summary, because the major emphasis of the Smithsonian's Bicentennial activities will be centered in Washington, but with important and far reaching effects nationally and internationally, it is assumed the largest portion of the requested \$975,000 will be allocated for Washington activities. For this purpose, we propose a budget of \$525,000 for activities locally.

These activities will include the acquisition of objects, the cost of exhibits, and much of the necessary research. In addition, the cost of most proposed performing arts programs would initially be in Washington, as would the production of documentary films, the printing of pamphlets and books, and other activities which are most clearly identified with headquarters business.

Expenses for national observations, including counsel and guidance for museums and local organizations, such as State Bicentennial Commissions, and traveling exhibitions, would come to an estimated \$425,000.

While international activities are important, it will not be possible to organize events on such short notice as fiscal year 1971 affords. However, we believe a budget allocation of \$25,000 would serve our first year Bicentennial needs. Of course, wherever possible, we would use available local currencies, thereby reducing the expenditure of appropriated funds.

This request has been reviewed with the American Revolution Bicentennial Commission and has received its endorsement.

Funding by Category of Expense

| | |
|--|--------------|
| <u>Personnel</u> | \$70,000 |
| Assistant for Bicentennial Planning | |
| Historian | |
| Exhibits specialist | |
| Research assistant | |
| Clerk-typists (2) | |
| <u>Travel</u> | 75,000 |
| Acquisition of objects | |
| Advisory services | |
| Training | |
| Research | |
| <u>Transportation</u> | 40,000 |
| Borrowing and lending of objects | |
| Traveling exhibitions | |
| <u>Rent, Communications, and Utilities</u> | 5,000 |
| Office and exhibit equipment | |
| <u>Printing</u> | 23,000 |
| Guides | |
| Handbooks | |
| Research publications | |
| <u>Services</u> | 220,000 |
| Exhibits design and preparation | |
| Training of museum personnel | |
| Consulting | |
| <u>Supplies and Materials</u> | 130,000 |
| Exhibits preparation | |
| <u>Equipment</u> | 408,000 |
| Revolutionary Period artifacts | |
| Cases for permanent and circulating exhibits | |
| <u>Insurance</u> | <u>4,000</u> |
| Borrowed objects | |
| Total | \$975,000 |

Table 1

SMITHSONIAN INSTITUTION
American Revolution Bicentennial Program
(in thousands of dollars)

| | <u>1971</u> | <u>1972</u> | <u>1973</u> | <u>1974</u> | <u>1975</u> | <u>1976</u> | <u>1977</u> |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exhibits and Performing Arts..... | \$425 | \$500 | \$500 | \$600 | \$600 | \$650 | \$750 |
| Research and Publications .. | 350 | 380 | 425 | 425 | 400 | 300 | 250 |
| Acquisition of Objects | 150 | 225 | 300 | 300 | 300 | 250 | 200 |
| Planning and Administration | <u>50</u> | <u>50</u> | <u>50</u> | <u>50</u> | <u>50</u> | <u>40</u> | <u>30</u> |
| Totals | \$975 | \$1,155 | \$1,275 | \$1,375 | \$1,350 | \$1,240 | \$1,230 |
| Staff..... | <u>6</u> | <u>9</u> | <u>6</u> | <u>14</u> | <u>5</u> | <u>5</u> | <u>2</u> |

An additional estimated \$250,000 will be required for buildings maintenance, operation and protection costs associated with the Pavilions on the National Museum of History and Technology beginning in about fiscal year 1974.

ENVIRONMENTAL SCIENCES PROGRAM

General Statement

The need to understand and control the factors that cause environmental degradation is of increasing concern to the Nation and commands the attention of the Smithsonian Institution. Our Institution has the capability for assisting in three ways in the evolution of a national program for the improvement of man's environment.

I--The acquisition of new knowledge derived from the scientific investigations of the Institution's staff scientists and collaborators.

II--The organization and collation of specimens with field and literature data to provide base line information about the environment on a geographic, seasonal, and utilization basis.

III--The establishment of a neutral forum to encourage a free and full exchange of information and points of view among all groups of the community that are actively involved with or concerned with the prevention and control of deterioration of the environment.

I The Acquisition of New Knowledge

The effectiveness of any program designed to improve or maintain the environment will depend largely on our ability to provide the scientific and technical communities with fundamental information about the interrelationships between plants and animals and their environments. It is necessary to possess adequate information on the composition of populations and organisms that occur in natural environments and changes that occur in response to environmental disturbances as a result of man's activity. A fuller knowledge of the geographic distributions of species and of populations of animals and plants, their diurnal and seasonal population fluctuations, and their life cycles is also required. This knowledge represents the keystone to the construction of dynamic models which can be used to analyze normal ecological situations and predict ecological changes that would result from disturbing the natural environment. Smithsonian scientists are presently engaged in a number of field and laboratory investigations that are producing such information in systematics, ecology, and related fields.

The research funds requested within the regular "Salaries and Expenses" appropriation increase allow for little more than normal growth in ongoing activity. The availability of additional financial support would enable the Smithsonian to accelerate its research, especially in those geographic locations and environmental situations about which we know very little, such as the tropics of the world, especially the American tropics, and the polar regions. Examining ecosystems in these little known areas can fill knowledge gaps in systematics, ecology, animal behavior, and stress physiology which can be related to changes in more populated and temperate zones. The spreading spill-over effects of developing technology and civilization are many times more evident in the primitive areas than in the regions where human life is concentrated. In these latter areas, the

introduction of one more factor affecting vital life process often produces changes which , while important to life, are most difficult to isolate, measure, and make judgements about. With additional funds, the Smithsonian can encourage scientists to embark on intensified research programs designed to fill these gaps.

II The Organization of Knowledge

The second category of the Smithsonian's capabilities recognizes the fact that collections of biological and geophysical specimens and associated data, properly organized, provide systematists, ecologists, and other environmental scientists with essential information for reconstructing conditions during earlier historic and geologic times. A time-stream of information is absolutely essential in the area of environmental control where change must be thought of as occurring over perhaps several thousands of years. A snapshot of recent times is virtually of no use in making judgements concerning contemporary environmental problems facing man.

One of the handicaps to the full utilization of our current repositories results from the vastness and diversity of the material. The principal problem is the lack of rapid accessibility to specific parts of the collections. The Institution is presently engaged in pioneering the use of computer programs for the rapid cataloging, storage, and retrieval of collections and ancillary information. The present and likely level of support, through the normal growth in appropriations, however, limits this program to a bare minimum of activity. Increased support would enable the Institution to accelerate the natural history information program and to extend its scope to include a phase concerned with a rapid and systematic collation of diverse collections. Availability of current knowledge is of great importance in designing programs for rapid interpretation of the factors involved in the interrelationships of populations with their environment. The development of computer models for reconstructing basic sets of environmental situations is a necessary ingredient for predicting subtle changes due to pollution or other forms of man's intrusion.

III The Dissemination of Knowledge

The third category of the Smithsonian Institution's capability, namely serving as a neutral forum for the communication and exchange of information on the prevention and control of environmental degradation, would serve to decrease the polarization of opinion which is currently coming from several sectors of the community and which is leading to alienation among the principal parties and disciplines that must work together. Interdisciplinary work is vital if the Nation is to succeed in abating the causes of a deteriorating environment. The Smithsonian has the space, the organizational capability, and the high regard of the public's confidence to bring together the best talent of industry, government, and the academic community to pursue this goal.

Operational Plan

The successful development of a coherent environmental sciences program requires the concurrent development of an adequate worldwide network of

data collecting stations, a means for collating and interpreting the data through the utilization of man-machine systems and stochastic models, and an open exchange of views concerning implementation of correctional measures.

Basic measurement of and description of dynamic ecological processes, at all levels of biological organization and in all geographic and environmental situations, is central to the program. The Institution proposes under this plan to integrate and augment the environmentally oriented research activities of selected units in the manner described in the following paragraphs. Resources required to do this are stated.

The Radiation Biology Laboratory would work toward the development and deployment of environmental monitoring equipment designed to determine atmospheric changes that influence the earth's reception of solar energies. Over several years, the Radiation Biology Laboratory has developed the required scientific and technical skills. It possesses a daily record of measurements, from sunrise to sunset, of several color components of the white light spectrum in wavebands that control the growth and development of plant and animal organisms. This is the only complete set of data of this kind used by biologists everywhere for studying photobiological responses. Important environmental anomalies have been discovered with this information. For example, in the course of recording measurements of normal incident solar radiation at the Smithsonian, it has been established that the amount of sun's energy currently falling on the area around Washington is about 16 percent less than that measured and recorded in 1907. More information is needed to arrive at firm environmental conclusions, but the results are of interest to ecologists concerned with the implications of displacement of oxygen with carbon dioxide in the atmosphere. Under the joint sponsorship of the Smithsonian and the National Physical Laboratory of Israel, a station in Jerusalem has begun operations to obtain atmospheric information for that latitude. The measurements from several points of such things as the chemical composition of the atmosphere and the distribution and intensity of solar energy, will provide comparative records leading to new interpretations of cycles of growth and reproduction of plant and animal life.

Since its establishment, the Smithsonian Astrophysical Observatory has been studying the upper regions of the atmosphere. It is in these regions, above 50 km, that the solar energy is selectively filtered and scattered. The physical and chemical processes that occur in these regions are little understood, yet they play a major role in determining the spectrum and strength of the light and heat that strikes the surface of the earth. The Smithsonian Astrophysical Observatory will continue its studies of these regions in order to determine the density, composition, and behavior of the rarefied gases that exist at those altitudes.

In addition, by utilizing improved satellite tracking methods, the Observatory will continue to increase the accuracy of its reference standards, such as the Smithsonian Institution Standard Earth and the Reference Atmospheres. These standards are used by scientists throughout the world for the study of the movements of the earth's crust, ocean currents, climatic and atmospheric variations, and other environmental research. The

Observatory's satellite tracking stations which, in addition to their primary responsibilities, serve as selected environmental monitoring stations for the Radiation Biology Laboratory. The present distribution of the satellite tracking stations coupled with the excellent worldwide communications system available to the Observatory would permit the rapid transmission and conversion of environmental data that have ecological significance.

The Smithsonian Tropical Research Institute will serve as a research facility for its staff and visiting scientists who wish to engage in terrestrial and marine ecological research in the tropics. The location of the Institute between two oceans, with differing ecologies and environment, provides researchers with the unique opportunities to study biological adaptations to various environmental conditions. Because biological changes and adaptations generally occur at a faster rate in the tropics, scientists can observe and study reactions to environmental stresses that are not apparent in other locales. Institute scientists have taken advantage of this to conduct significant research into a variety of animal and plant responses to environmental disturbances. In addition, they have conducted environmental studies for the Federal Water Pollution agency and the Corps of Engineers. Over 500 visiting scientists came to the Institute in fiscal year 1969 to perform biological and ecological research.

In addition, it would also serve as a central environmental monitoring station in which capacity it would deploy the environmental monitoring equipment furnished by the Radiation Biology Laboratory in various environmental and geographic locations not covered by the Observatory in the American tropics and would transmit data on a regular basis to a central post.

The Center for Short-Lived Phenomena will extend its activities to include the reporting of environmental data collected by its correspondents throughout the world. The Center would make use of its excellent communications system to transmit environmental and ecological data to the Smithsonian Institution and other collaborating research organizations throughout the world. By doing this, the Center would make it possible for scientists and researchers to quickly reach and study environmental disturbances such as droughts, oil spills, or concentrations of smog. This would allow Smithsonian scientists and others to study these environmental disturbances as they develop and occur, rather than after the event. This would greatly enhance their ability to understand the causes and effects of these events and to develop appropriate preventative measures.

The National Museum of Natural History will serve as one of the principal reception centers both for specimens collected in the field and for ecological and environmental data. The new specimens would supplement those already in the National Collections, thereby providing scientists with powerful tools for biological, ecological, and environmental studies. In order that the Museum could quickly provide information related to the specimens collected in the field and those already in the collections, it will continue to develop its computer programs for the cataloging, storage, retrieval, collation, and synthesis of collection-related ecological data for scientists throughout the world. The science of systematics (the identification and classification of animals and plants along with limiting

conditions of their environment) is one of the primary endeavors of the scientific faculty of the National Museum of Natural History. This science is basic to most other biological disciplines and especially so of ecology since it provides the basic structure by which to measure the adaptation of animals and plants to their environment. As the gaps in the systematic structure are filled in, it is possible to construct reasonable hypotheses about the biology and distribution of individual organisms and communities of organisms, and from this to analyze population growth, movement, and the causes of long-term success or failure.

The Chesapeake Bay Center for Field Biology provides a facility for research in base line ecology. Being located near large population areas, the Center is in a position to monitor and study animal and plant responses to air and water pollution and other environmental perturbations. The Chesapeake Bay Center for Field Biology also provides facilities which enable the scientist to manipulate parts of the environment in selected plots or in the laboratory where he can duplicate specific aspects of the field situation under controlled conditions. Such manipulations allow him to experiment by changing individual conditions to determine the resulting effects. It also allows him to examine more closely the dynamics of such processes as energy exchanges between communities of organisms and their environment.

The Office of Ecology will be responsible for designing and coordinating multidisciplinary programs involving the appropriate parts of the Smithsonian Institution, other federal agencies, and universities. The Office will act as the vital link between the research programs being conducted in the various disciplines to insure that efforts are not being duplicated, research being conducted in various areas is compatible, and that all aspects of a particular problem are being considered. In this manner, the Smithsonian Institution could function as a National Environmental and Ecological Referral Center since through this office we will have developed experience and capabilities to coordinate environmental and ecological research on a scale broader than that of any other organization.

In addition to developing and coordinating research, the Office's theoretical ecologist, with a background in mathematics, will be designing stochastic models to test the validity of broad concepts of the dynamics of environmental interactions. A systems analyst will examine the strategies for collecting data and specimens and ensure that the precision, frequency, and geographic coverages are within appropriate guidelines that will be responsive to the overall programmatic objectives.

Funding in the amount of \$1,000,000 is requested for fiscal year 1971 to conduct a program in Environmental Sciences. This program, built upon the basic research excellence, collections, laboratories, and natural preserve areas of the Smithsonian, will utilize modern techniques to acquire, process, analyze, and disseminate information relating to our changing environment. It will provide the Smithsonian, federal and state agencies, and universities with the information they need to understand the processes that control and affect our environment.

In developing this program, the Smithsonian has formulated a five-year financial plan. The deployment of the field monitoring units is phased over five years to avoid excessive obligations in any one year and to allow for the simultaneous development of the monitoring units and the computer techniques needed to handle the data they gather. This will allow the Smithsonian to take advantage of the latest developments in computer technology, insure compatibility of the various systems, and assure that each station can start to feed data into the system as soon as it becomes operational.

Table 1 shows the projection by major areas of effort. Under "Acquisition of New Knowledge" is included the development and deployment of the environmental monitoring units, the operation of the stations, and the processing of the data gathered into suitable form to be utilized easily. "Organization of Knowledge" includes the cataloging and storage of data from various sources into cross-referenced data systems and the analysis of this data for significant information and relationships. Under "Dissemination of Knowledge" is included the conferences, meetings, and symposia needed to provide an interchange of information between the Smithsonian, state and federal agencies, universities, and other interested parties.

The program in the first three years will devote its efforts mainly to the deployment of monitoring systems, the establishment of interconnected data links and the development of suitable computer programs for the handling and analysis of the data gathered. Starting in fiscal year 1973, as a greater number of monitoring stations become operational, the major part of the program's effort will be devoted to data analysis and dissemination.

Table 2 details specific personnel requirements and other categories of program development costs in the initial year of activity.

Table 1

ENVIRONMENTAL SCIENCES
(In thousands of dollars)

| | FY 1971 Amount | FY 1972 Amount | FY 1973 Amount | FY 1974 Amount | FY 1975 Amount |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| I <u>Acquisition of New Knowledge</u> | <u>\$450</u> | <u>\$575</u> | <u>\$725</u> | <u>\$725</u> | <u>\$900</u> |
| a. Instrumentation | 250 | 250 | 250 | 100 | 50 |
| b. Data collection <u>1/</u> ... | 100 | 125 | 200 | 250 | 400 |
| c. Data reduction and processing <u>2/</u> | 50 | 150 | 200 | 300 | 375 |
| d. Administration | 50 | 50 | 75 | 75 | 75 |
| II <u>Organization of Knowledge</u> | <u>450</u> | <u>550</u> | <u>625</u> | <u>600</u> | <u>625</u> |
| a. Data collection and organization <u>3/</u> | 200 | 250 | 250 | 250 | 300 |
| b. Data analysis | 200 | 250 | 300 | 275 | 275 |
| c. Administration | 50 | 50 | 75 | 75 | 75 |
| III <u>Dissemination of Knowledge</u> | <u>100</u> | <u>125</u> | <u>150</u> | <u>175</u> | <u>200</u> |
| a. Conferences, meetings, publications, distribution of computer tapes, etc. | 100 | 125 | 150 | 175 | 200 |
| Total | <u>\$1,000</u> | <u>\$1,250</u> | <u>\$1,500</u> | <u>\$1,500</u> | <u>\$1,750</u> |
| Total positions | 19 | 25 | 30 | 32 | 35 |

1/ At Smithsonian field monitoring points.

2/ Converting raw data collected at Smithsonian monitoring points to usable tables, charts, tapes, etc.

3/ Consolidating information from Smithsonian and other sources.

ENVIRONMENTAL SCIENCES
Program Development Costs, Fiscal Year 1971

| | |
|--|-----------------------------|
| Personnel Compensation and Benefits | \$380,000 |
| <u>Acquisition of New Knowledge</u> | |
| 1 engineer | 1 field program coordinator |
| 2 instrument technicians | 1 secretary |
| 2 data technicians | 1 programmer |
| <u>Organization of Knowledge</u> | |
| 1 oceanographer | 1 systems analyst |
| 1 biologist | 3 programmers |
| 1 physicist | 1 program administrator |
| 1 research assistant | 1 clerk-stenographer |
| <u>Dissemination of Knowledge</u> | |
| 1 conference administrator | |
| Travel | 10,000 |
| Transportation of Things | 20,000 |
| (shipping of equipment to field sites) | |
| Rent, Communications, and Utilities..... | 40,000 |
| (communications -- \$20,000) | |
| Printing and Reproduction | 0 |
| Other Services | 300,000 |
| (computer time -- \$200,000) | |
| Supplies and Materials..... | 100,000 |
| (station operation and research materials) | |
| Equipment | 150,000 |
| (environmental equipment and instruments installed at various monitoring sites) | |
| <hr/> | |
| Total..... | 19 positions \$1,000,000 |

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

Geoastronomy Program

Smithsonian Astrophysical Observatory Accomplishments in Geoastronomy

Geoastronomy, the study of the Earth through astronomical observations, was an implicit objective when the Smithsonian Astrophysical Observatory (SAO) was organized nearly 80 years ago and began to measure transmission of solar radiation through the atmosphere of the Earth. The Smithsonian Institution, in the mid-1950's, seized the dramatic opportunity to advance geoastronomy through observations and studies of artificial satellites. Again, in the early 1970's, the evolution of new techniques calls for a major turn in the activities of the Observatory.

The results from satellite observations have been profound. SAO activities have provided the foundation for the tabulated Reference Atmospheres used as a standard by scientists everywhere. A new reference atmosphere is presently in preparation at SAO for publication in 1970. High altitude atmospheric density variations, associated with solar and geophysical events, have been recognized and modeled by SAO scientists.

Analysis of satellite motions has also produced detailed representations of the gravity field and geometrical figure of the Earth. These were published as Geodetic Parameters for a 1966 Smithsonian Institution Standard Earth. A major revision is scheduled for publication in 1970.

A further biproduct of satellite tracking was the SAO Star Catalog. For positional astronomy, this catalog, combines in a consistent format, all of the existing catalogs. The capability to deal with catalog problems is important because future objectives involve further catalog refinements.

Current Problems

Evidence has accumulated during the past five years that the Earth's surface is extremely mobile. Large plates constituting the upper 50 to 100 KM of the Earth with horizontal dimensions of thousands of KM appear to be moving with respect to one another at rates of 1 to 15 CM per year. These motions are believed to be responsible for earthquakes, mountain building, and tsunamis. Vulcanism is confined to a few narrow belts which appear to coincide with some of the plate boundaries. These tectonic plate motions have not been measured directly, and the basic driving forces and response mechanisms are unknown.

Another problem of current interest concerns the rotational dynamics of the Earth. There is a complex of excitation mechanisms, rheology, resonances, damping, etc., which cause variations in the Earth's rotation and wandering of the poles. An understanding of these phenomena, which must be related in some fashion to plate motion, is also hampered by a lack of accurate data.

It is expected that oceanography will derive great benefits from precise satellite altimetry, such as determination of the general circulation of the oceans. However, it will be necessary to determine independently the geoid to an accuracy of at least 10 CM, so that we can unambiguously distinguish the influence on ocean topography of the Earth's gravity field from that of ocean currents, water density, etc. This is a most challenging problem because we must improve the accuracy of our present geoid model by three orders of magnitude to achieve 10 CM accuracies.

Recent Pioneering Efforts

The Observatory has recently been engaged in the study of the problems outlined above. It has begun to outline an experimental and analytic program for solving these problems, and has explored mensuration techniques for obtaining measurements to unprecedented accuracies. The results of these studies are very encouraging. Measuring accuracies that were considered absurd 10 years ago, such as lunar ranging to an accuracy of 10 CM, are almost within grasp. In fact, SAO has already pioneered the use of precise laser ranging for satellite tracking and dynamic geodesy, and will very shortly explore the geodetic uses of very-long-baseline radio interferometry measurements. The use of instruments and techniques such as these will provide measurements of intercontinental distances to accuracies of a few inches, angles to thousandths of a second of arc, and time to one part in a trillion, so that we can, for the first time, make direct measurements of the dynamic movements of the solid Earth. The application of these techniques to the more stringent demands of current earth-physics problems would be a logical extension of the Smithsonian Astrophysical Observatory's embryonic experiments in these areas.

Existing Program Resources

SAO has a carefully selected, internationally respected team of scientists supported by an established, experienced, field organization operating effectively in 10 foreign countries. Since the geographical considerations which led to the original selection of satellite-tracking sites parallel criteria which apply to geoastronomy, initially no new facilities will be needed. The techniques have been developed and tested; the cameras and ancillary equipment are proven; and the personnel trained and experienced. The field network is complete with logistic and communications support and operates with the

cooperation of the host countries. Thus, developmental costs for this program are minimal and the facilities can be placed into operation with little delay. Clearly, continuity of effort is most important in this program, with respect to the people involved, the present cooperative working arrangements with other countries, and the existing facilities.

While SAO has embraced new objectives keeping pace with the dramatic evolution in geoastronomy, the National Aeronautics and Space Administration continues to support those aspects that bear on the space program. But to limit SAO's objectives to those aspects alone would be a failure to recognize and seize the full promise of the Observatory's current capabilities. A broad spectrum of new scientific results with practical implications now appears to be within grasp. SAO therefore requests funding to pursue those topics which fall more appropriately into astronomy and earth science than into space science.

Proposal for an Intensified Effort

Funding in an amount of \$1,043,000 is requested for fiscal year 1971 to conduct a vigorous program in geoastronomy. This program will combine observation and theory, new instruments and existing observing stations, classical problems, and space-age techniques. Just as the land surveyor measures distances and angles to determine the location of a lot within a township, SAO will measure distances and angles to measure the motions of points on the Earth's surface oceans apart. How fast and how much are various points moving? How do these motions produce earthquakes? How are they associated with vulcanism and tidal waves? The answers to these and similar questions are basic blocks with which scientists all over the world build theories to understand that part of man's environment that is the "solid" Earth.

In defining scientific goals, SAO has formulated a five-year financial plan. To avoid sharp peaking of obligations, procurement of equipment will be spread over three years. During that time, data processing techniques will be perfected, computer programs will be readied, and the required theory developed.

Table 1 shows projections by major areas of effort. Under "Theory" is included preparation of computer programs to be used for data analysis, improvement of classical mathematical treatments of certain problems in celestial mechanics, and application of modern state-of-the-art techniques to both these areas. SAO is already a recognized leader in these areas. "Instrumentation" covers the acquisition of high-powered lasers, radio interferometers, maser oscillators, and related equipment.

Operation of the stations once they are equipped is summarized under "Data Collection." "Data Analysis" is the scientific treatment of the observational data. Programs, techniques, and theory developed under "Theory" will be applied.

"Administration" includes essential support in personnel, financial control, logistics, and communications that is required for the efficient operation of an international scientific network.

The staff in the field increases for the first three years, then remains constant. The scientists working on theory at the outset gradually shift to analysis. Major equipment expenditures end after the third year.

Table 2 details specific personnel requirements and other categories of program development costs in the initial year of activity.

Table 1

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

Geoastronomy Program

(in thousands)

| | <u>71</u> | <u>72</u> | <u>73</u> | <u>74</u> | <u>75</u> |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| Theory | \$ 195 | \$ 150 | \$ 125 | \$ 125 | \$ 125 |
| Instrumentation..... | 528 | 528 | 528 | 40 | 40 |
| Data Collection | 156 | 350 | 500 | 550 | 550 |
| Data Analysis | 83 | 125 | 165 | 185 | 185 |
| Administration..... | <u>81</u> | <u>90</u> | <u>95</u> | <u>100</u> | <u>100</u> |
| Totals | <u>\$1043</u> | <u>\$1243</u> | <u>\$1413</u> | <u>\$1000</u> | <u>\$1000</u> |
| Staff..... | 19 | 22 | 27 | 27 | 27 |

Table 2

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

Geoastronomy Program

Fiscal Year 1971

| | |
|---|-------------|
| <u>Personnel</u> | \$ 243,000 |
| Theory | |
| Mathematician (2) | |
| Physicist (2) | |
| Astronomer | |
| Instrumentation | |
| Engineer (2) | |
| Data Collection | |
| Master Observer (2) | |
| Observer (2) | |
| Data Analysis | |
| Programmer (2) | |
| Administration | |
| Manager | |
| Administrator (4) | |
| Secretary | |
| <u>Travel</u> | 7,000 |
| <u>Transportation</u> | 8,000 |
| <u>Rent</u> | 15,000 |
| <u>Other Services</u> | 167,000 |
| Including computer time (\$150,000) | |
| <u>Supplies</u> | 153,000 |
| Station operations and research materials | |
| <u>Equipment</u> | 450,000 |
| Laser ranging equipment, radio interferometers and maser oscillators | |
| TOTAL..... 19 positions | \$1,043,000 |

MUSEUM PROGRAMS AND RELATED RESEARCH TAB C
(SPECIAL FOREIGN CURRENCY PROGRAM)

SMITHSONIAN INSTITUTION
MUSEUM PROGRAMS AND RELATED RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

| | |
|--------------------|-------------|
| 1969 Appropriation | \$2,316,000 |
| 1970 Appropriation | 2,316,000 |
| 1971 Estimate | 4,500,000 |

An appropriation of \$4,500,000 in foreign currencies which are determined by the Treasury Department to be excess to the needs of the United States is requested for a program of grants to United States institutions for essential field research in archeology and related disciplines, systematic and environmental biology and astrophysics, as well as for museum programs and for other Smithsonian interests.

The requested increase of \$2,184,000 in foreign currencies is to be devoted to strengthening the research programs of United States universities, museums, and other institutions of higher learning in those countries where the United States holds excess currencies. The increase is essential to support on-going and new research, some long in preparation, which contributes to United States national programs under, for example, the International Biological Program, the Intergovernmental Oceanographic Commission of UNESCO, the National Aeronautics and Space Administration, and the United States National Museum. Such basic research contributes to understanding of the urgent world problems of environmental quality and cultural change.

Funds are requested for the following programs:

| | <u>FY 1969</u> <u>Appropriation</u> | <u>FY 1970</u> <u>Appropriation</u> | <u>FY 1971</u> <u>Estimate</u> |
|--|--|--|-----------------------------------|
| Archeology and Related Disciplines | \$1,120,000 | \$1,105,000 | \$1,500,000 |
| Systematic and Environmental Biology | 1,046,000 | 1,046,000 | 1,800,000 |
| International Biological Program..... | | | 500,000 |
| Museum Programs | 40,000 | 40,000 | 100,000 |
| Astrophysics | 95,000 | 105,000 | 570,000 |
| Grants Administration | 15,000 | 20,000 | 30,000 |
| Total | \$2,316,000 | \$2,316,000 | \$4,500,000 |

PROGRAM HISTORY..IN FISCAL YEAR 1970, NO FUNDS FOR NEW RESEARCH

The five-year-old Smithsonian Foreign Currency Program was begun at the invitation of the Department of State as a national program of grants to United States institutions, including the Smithsonian, for basic field research in

archeology and related disciplines. With Congressional sanction, its scope has been broadened to support work in three additional fields of traditional Smithsonian strength, namely systematic and environmental biology, astrophysics and museology. Nine grants were signed in the first fiscal year, 1966; by the end of Fiscal Year 1969, grants totalled 140, up from 100 at the end of the previous year. More than 200 United States institutions in 25 states have benefitted. At the end of Fiscal Year 1970, it is estimated that all previously appropriated funds totalling \$10,564,000 in foreign currencies, will have been obligated, with the entire Fiscal Year 1970 appropriation flowing into on-going research, with none available for new work.

As a consequence, many new research projects long in preparation, which are only now being presented formally for funding, cannot be supported. The unfortunate result will be abandonment of worthy projects as participating scholars, always under pressure to publish, seek other research opportunities. Moreover, new inquiries about foreign currency uses continue to average one a day. It is estimated, therefore, that a realistic level of appropriation for the Smithsonian Special Foreign Currency Program in future years would be \$6,000,000. Only continuing budgetary restraint dictates that the Fiscal Year 1971 appropriation request be limited to \$4,500,000.

FOREIGN CURRENCIES SAVE HARD DOLLARS

Now is the time to employ fully the "excess" foreign currency holdings of the United States for basic research because Federal dollar support for this purpose is being cut. Consequently, pressure from the scientific community to make greater use of foreign currencies is great. Special Foreign Currency Program appropriations have the advantage that they are not new appropriations of tax dollars. Moreover, they do not add appreciably to the President's budget total, because the Commodity Credit Corporation reduces its appropriation request by an amount equal to the amount of foreign currencies expended. At the same time, these foreign currencies contribute to essential national research objectives abroad without contributing to a balance of payments deficit. Smithsonian Foreign Currency grants frequently serve as dollar-saving supplements to the dollar grants of both public and private agencies like the National Science Foundation, the National Institutes of Health, the World Wildlife Fund, the John D. Rockefeller III Fund and the Wenner-Gren Foundation. In such cases, the foreign currency grants cover costs in the host country; the dollar grants are expended in the United States for equipment not available in "excess" currency countries, for American salaries and the like. Similar reasons of economy dictate the use without delay of "excess" foreign currency accounts which continue to lose value through inflation and devaluation.

FOREIGN CURRENCIES SERVE NATIONAL PROGRAMS ON ENVIRONMENTAL QUALITY

This is the time to use foreign currencies for basic research also because they can be used to study urgently processes of change in man

culture and in his natural environment. Unrest in urban centers and among young people the world over attests to our poor understanding of these processes. The impact of technology on rural and urban communities, the poisoning of man's environment and the destruction of nature's productive mechanisms in the face of exploding human populations are all problems of direct interest to the Smithsonian. Although the Smithsonian adheres to its traditional role as an institution for basic, not applied, research, its traditional anthropological and biological competences are basic to an understanding of these immediate national and world problems. "Excess" foreign currencies represent a substantial national resource which should be fully utilized now for basic studies of environmental quality and cultural change.

On-going studies of cultural change supported by the Smithsonian Foreign Currency Program include:

...Duke University, Durham, North Carolina, studies of the effects of city life in New Delhi, India, on in-migrating minorities.

...University of Pennsylvania studies of the effects of urbanization on family life in India.

...University of Illinois studies of the effects of migration on basic cultural expression, specifically the traditional songs of communities of Jews migrating to Israel.

...University of Washington studies of the effects of spreading technology and urbanization on one of Ceylon's oldest ethnic groups.

...Center for the Study of Man, National Museum of Natural History, urgent anthropological studies of cultures changing rapidly or disappearing under the impact of modern technology.

Such studies by American scholars of man's behavior are best conducted abroad because, as a rule, the best observers of a living culture are those drawn from a different culture.

On-going studies of environmental quality receiving Smithsonian support include:

...International Biological Program/Smithsonian studies in Tunisia of the continuing encroachment of the Sahara in the face of concerted conservation programs.

...Yale University/Smithsonian field research in the Gir Forest in north-west India where agricultural pressures threaten destruction of the forest which is the last habitat of the Asiatic lion which once roamed the region from the Mediterranean to the South China Sea.

... Union College, New York, research into the deterioration of fresh water lakes in the Nile River delta as a result of the regulation of the river's flow by the Aswan Dam. The lakes have provided fish and employment for fishing communities for centuries.

... Smithsonian studies, together with Israeli scientists, of the movement of marine organisms through the man-made, sea-level Suez Canal. Results show that the majority of commercially valuable fish taken in the Eastern Mediterranean originated in the Red Sea. These studies have saved the United States thousands of hard research dollars because they provide a tested model for studies to be conducted in connection with a possible sea-level canal at Panama.

... University of Georgia studies of the tropical forests, grasslands and cultivated lands in the Ganges river valley in India.

... Smithsonian studies of migrating birds, and the parasites associated with these migrating birds, in Northeast Africa which have shown that they carry viruses and antibodies and thus can be considered potential carriers of human diseases.

RESEARCH WHICH MUST BE POSTPONED

New research long in preparation which must be postponed because of insufficient funds in the Smithsonian's Fiscal Year 1970 appropriation include:

... A University of Colorado comprehensive botanical survey over a five-year period of the major climatic regions of Yugoslavia which would provide the foundation for further urgent environmental studies.

... Continuous astronomical observations by a group of four United States research institutions taking advantage of the fact that observatories in the Western United States and Israel are located a half day apart on the Earth's surface.

... Oceanographic studies conducted aboard the Smithsonian research vessel, PHYKOS, by scientists from major American oceanographic research institutions as a part of the approved United States national contribution to the Cooperative Investigations of the Mediterranean of the Intergovernmental Oceanographic Commission.

... Smithsonian oceanographic studies of the Arabian Sea in collaboration with the Indian National Institute of Oceanography extending research begun under the Indian Ocean Expedition in which the United States officially participated.

... Smithsonian Astrophysical Observatory studies of the Earth's upper atmosphere and magnetic field through optical and laser tracking from the Uttar Pradesh State Observatory in India of man-made satellites. Reduction of National Aeronautics and Space Administration support for this national program

necessitates the use of foreign currencies to maintain this essential observation program.

ACCOMPLISHMENTS

Growing accomplishments of the Smithsonian Foreign Currency Program include the following:

...More than 37 research publications have appeared. Recent publications include the first systematic study of marine organisms sorted and distributed by the Smithsonian's Mediterranean Marine Sorting Center in Tunisia and an ecological analysis of the climate and vegetation of Ceylon growing out of the studies of the Ceylonese elephant undertaken by the National Zoological Park.

...More than 140 American graduate students have obtained essential field experience, frequently obtaining course credit and more often accomplishing the independent research for doctoral dissertations. Especially noteworthy for the training of students have been Hebrew Union College, Cincinnati, Ohio in its summer seminar at the excavation of the biblical city of Gezer in Israel; New York University's Institute of Fine Arts in the course of excavations of the ancient Egyptian city of Mendes in the Nile River delta; and the American Institute of Indian Studies (a consortium of 23 American universities, whose junior fellows conduct research in India toward their doctor's degrees with Smithsonian support. Few research projects supported by this program are so small that there is not at least one American and one host country graduate student involved.

...The research collections of the National Museum of Natural History and of other grantee institutions have been enriched by archeological, ethnographic and biological specimens collected and shared with the collaborating institutions in the "excess" foreign currency country. For example, Yale University's Peabody Museum and the Museum of the University of Colorado have benefited from additions to their paleontological collections growing out of expeditions in Egypt and Tunisia respectively. The Yale expedition is making substantial contributions to our understanding of man's evolution; the Colorado expedition has uncovered important information about the environment of early man and the geological history of northwest Africa.

GROWING RESEARCH OPPORTUNITIES

Opportunities continue to grow to employ foreign currencies. In June 1969 an amendment was signed to the principles of cooperation between the Smithsonian and the Government of Yugoslavia permitting collaboration in ecological research there. Moreover, recent political developments in Eastern Europe have increased Yugoslav interest in collaboration. In addition, museum programs were added to the program's authority opening up a range of "excess" currency uses covered by the National Museum Act of 1966.

Moreover, the change in government in Pakistan has brought increased interest on the part of its Ministry of Education in collaboration in basic research under the Smithsonian program. A University of Washington proposal to study the wild boar of Pakistan and a Smithsonian proposal to study the marine fauna of the continental shelf of West Pakistan are currently under consideration by the Government of Pakistan as pilot projects for a potentially extensive program. In India, the Smithsonian joined with the long-established American Institute of Indian Studies to provide facilitative services to American institutions in the development of projects there.

Direct dollar costs to the Smithsonian for its Foreign Currency Program are limited to those for administrative personnel in Washington. During Fiscal Year 1970, five people were employed by the Office of International Activities for this purpose at a total cost of about \$87,000. The administrative burden has grown by some forty grants for each of the last two years without any increase in personnel. The increase in activity has been made possible by the simplification of procedures and the introduction of labor-saving equipment. Further expansion of activity will require additional personnel. Consequently one additional Grants Technical Assistant and two clerk-typists are requested for Fiscal 1971.

This Special Foreign Currency Program request, as in the past, is based on budget projections for on-going research and on pending and new research proposals which include firm research proposals, postponed for lack of sufficient funds, and other sample or illustrative proposals based on firm indications of interest both within and without the Smithsonian. They represent the Institution's selection of possible projects which appear most promising for successful development and implementation during Fiscal Year 1971. It should be noted, however, that actual implementation of these projects will be contingent upon three factors: review by the Smithsonian's outside advisory councils, review and approval by American embassies overseas, and appropriate cooperative arrangements with host-country institutions or Governmental authorities.

RESTORATION AND RENOVATION TAB D

SMITHSONIAN INSTITUTION
BUILDING PROGRAM
PLANNING, RESTORATION, AND CONSTRUCTION
1971

This request is for high priority improvements and additions to the physical plant of the Smithsonian Institution. In presenting these projects for consideration, the Institution has singled out those projects which would increase the usefulness of existing building spaces and areas or would meet clearly identified current or future needs for exhibit and public service facilities, space for research, or for the adequate housing and protection of reference materials.

All requests for planning, restoration, and construction total \$20,282,000 including \$8,897,000 for the liquidation of contract authority. These projects include:

-- \$2,000,000 for the National Zoological Park for, in priority order: preventive maintenance and repairs to existing facilities (\$200,000); planning for the next increment of the improvement program (\$100,000); and construction of a public service building (\$1,700,000).

-- \$4,885,000 for the Restoration and Renovation of Buildings for, in priority order: completing the restoration of the Renwick Gallery (\$300,000); preparing plans and specifications for American Revolution Bicentennial pavilions to be added to the National Museum of History and Technology (\$500,000); redeveloping Silver Hill as a collections center (\$2,100,000); constructing a fumigation facility (\$75,000); constructing a small general purpose building at the Smithsonian Astrophysical Observatory's Mt. Hopkins site (\$90,000); modifying library spaces to relieve congested conditions (\$50,000); repairing existing buildings at the Smithsonian Tropical Research Institute and constructing a new laboratory building (\$225,000); constructing a residence at the Chesapeake Bay Center for Field Biology and improving existing buildings (\$95,000); constructing decks in the Arts and Industries Building to make use of wasted space (\$500,000); providing a service area in the basement of the Smithsonian Institution Building (\$200,000); remodeling the first floor vestibule of the National Portrait Gallery (\$50,000); rehabilitating the Pension Building (\$500,000); and for feasibility studies for future space needs (\$200,000).

-- \$8,897,000 for the liquidation of contract authority for the construction of the Joseph H. Hirshhorn Museum and Sculpture Garden.

-- \$2,500,000 for revised plans and specifications for the National Air and Space Museum in order to scale down the building size and costs and to restudy the exhibit program.

-- \$2,000,000 for planning and site acquisition for a radio-radar astronomical telescope contingent upon passage of authorizing legislation.

Amounts requested for each item are justified in the following sections of the budget.

SMITHSONIAN INSTITUTION BUILDING PROGRAM

APPROPRIATIONS

| Project | Total Cost | Available | 1971 | 1972 | 1973 | 1974 | 1975 | Additional Required |
|---|---------------|--------------|--------------|--------------|--------------|--------------|--------------|------------------------|
| Zoological Park | \$21,000,000 | \$8,503,000 | \$2,000,000 | \$1,500,000 | \$1,500,000 | \$1,500,000 | \$1,500,000 | \$4,497,000 |
| Hirshhorn Museum | 15,200,000 | 6,303,000 | 8,897,000 | ... | ... | ... | ... | ... |
| * Air and Space Museum | 46,875,000 | 1,875,000 | 2,500,000 | 10,000,000 | 32,500,000 | ... | ... | ... |
| * Armed Forces Museum | 45,000,000 | ... | 2,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 5,000,000 |
| Radio-Radar Telescope | 42,000,000 | ... | 30,000,000 | ... | ... | 10,000,000 | ... | ... |
| Restoration and Renovation Smithsonian Institution | | | | | | | | |
| Building | 500,000 | ... | 200,000 | 300,000 | ... | ... | ... | ... |
| Arts and Industries | | | | | | | | |
| Building | 3,750,000 | ... | 500,000 | 3,250,000 | ... | ... | ... | ... |
| Museum of Natural History | 10,500,000 | ... | ... | 500,000 | 5,000,000 | ... | ... | 5,000,000 |
| Museum of History and Technology | 10,800,000 | ... | 500,000 | 5,000,000 | 3,000,000 | 2,300,000 | ... | ... |
| Freer | 2,200,000 | ... | ... | ... | 100,000 | ... | 2,100,000 | ... |
| Fine Arts and Portrait Galleries Building | 500,000 | ... | 50,000 | 450,000 | ... | ... | ... | ... |
| Renwick Gallery | 2,350,000 | 2,050,000 | 300,000 | ... | ... | ... | ... | ... |
| Chesapeake Bay Center for Field Biology | 425,000 | ... | 95,000 | 100,000 | 100,000 | 130,000 | ... | ... |
| Smithsonian Tropical Research Institute | 520,000 | 125,000 | 225,000 | 170,000 | ... | ... | ... | ... |
| Silver Hill | 20,000,000 | 80,000 | 2,100,000 | 2,120,000 | 2,000,000 | 2,000,000 | 2,000,000 | 9,700,000 |
| Smithsonian Astrophysical Observatory-General | | | | | | | | |
| Purpose Building | 250,000 | ... | 90,000 | 160,000 | ... | ... | ... | ... |
| Fumigation Room | 75,000 | ... | 75,000 | ... | ... | ... | ... | ... |
| Library Modifications | 50,000 | ... | 50,000 | ... | ... | ... | ... | ... |
| Pension Building | 2,000,000 | ... | 500,000 | 1,500,000 | ... | ... | ... | ... |
| Feasibility Studies | 300,000 | ... | 200,000 | 100,000 | ... | ... | ... | ... |
| TOTAL | \$224,295,000 | \$18,936,000 | \$20,282,000 | \$65,150,000 | \$54,200,000 | \$25,930,000 | \$15,600,000 | \$24,197,000 |

*Construction authorization required - Priority to be determined

September 1969

CONSTRUCTION AND IMPROVEMENTS,
NATIONAL ZOOLOGICAL PARK

| | |
|--------------------|-------------|
| 1969 Appropriation | \$ 300,000 |
| 1970 Appropriation | \$ 600,000 |
| 1971 Estimate | \$2,000,000 |

Recognizing that the National Zoological Park had not had any major improvements since the mid 1930's and that it was in a disgracefully deteriorated condition, the Congress in 1963 approved a master plan for improvement of its physical facilities. The original schedule called for a ten-year program and funds were appropriated for each of the next five consecutive years (averaging \$1.4 million) in support of the master plan. In fiscal year 1968, only \$400,000 were appropriated; an amount insufficient to maintain the momentum of the program and the work was scaled down to those critical improvements required to extend the useful life of facilities not yet replaced and to minor projects which contributed to the elimination of pollution of Rock Creek. This holding action has continued through fiscal year 1970.

In fiscal year 1971 funds are requested at a level necessary to resume progress toward completion of the improvement program. The following specific items are listed in the order of priority:

1. Renovation and repairs--\$200,000
Funds are requested to repair, renovate, and extend the useful life of facilities for which replacement has been deferred indefinitely. These include the monkey house, bear dens, wolf pens, lion house, reptile house, and small mammal house. In addition, there are extensive walks, handrails, cages, fencing, and landscaping to be replaced, repaired or maintained in these areas.
2. Planning--\$100,000
Funds are requested to proceed with planning for the next increment of the improvement program so that momentum may be maintained and so that plans and specifications can be ready for immediate construction upon receipt of future appropriations.
3. Construction--\$1,700,000
Detailed plans and specifications are now being prepared, with funds previously appropriated, for a public service building with restaurant, cafeteria, and educational facilities along with contingent site development and landscaping. This facility is essential to serve properly the flood of visitors, students, and scientists who throng to the Zoo. The cafeteria will seat 250 inside and another 350 on an outside terrace. The educational and public orientation facilities include an auditorium, seating 300 for movie and slide orientation programs, and for special Zoo programs for school groups. This building will be the only facility designed to serve the varied needs of the Zoo's 5,000,000 annual visitors.

RESTORATION AND RENOVATION OF BUILDINGS

| | |
|--------------------|-------------|
| 1969 Appropriation | \$ 400,000 |
| 1970 Appropriation | \$ 425,000 |
| 1971 Estimate | \$4,885,000 |

An appropriation of \$4,885,000 is requested for the following projects, listed in the order of priority:

| | |
|---|-----------------|
| Renwick Gallery | \$ 300,000 |
| National Museum of History and Technology Pavilions..... | 500,000 |
| Silver Hill Redevelopment | 2,100,000 |
| Fumigation Facility | 75,000 |
| Smithsonian Astrophysical Observatory General Purpose Building..... | 90,000 |
| Library Modifications | 50,000 |
| Smithsonian Tropical Research Institute..... | 225,000 |
| Chesapeake Bay Center for Field Biology..... | 95,000 |
| Arts and Industries Building..... | 500,000 |
| Smithsonian Institution Building | 200,000 |
| Fine Arts and Portrait Galleries Building | 50,000 |
| Pension Building..... | 500,000 |
| Feasibility Studies | 200,000 |
| Total estimate for 1971..... | \$4,885,000 |
| Less amount appropriated in fiscal year 1970.. | 425,000 |
| Increase in fiscal year 1971..... | \$4,460,000 |

Renwick Gallery

An appropriation of \$300,000 is requested to complete a program of restoration and improvement of the old Court of Claims building on Lafayette Square, now known as the Renwick Gallery.

Completion of restoration work on the Renwick Gallery is of the highest priority, not only to protect the \$1,970,000 thus far appropriated by the Congress and invested in construction and restoration work, but also to make this historically important and centrally located building available for use and enjoyment by the public.

Although the work is substantially completed, there remains some special woodwork, finish work, museum lighting, and improvements to the service entrance. Also, if funds permit after completion of the more essential items, it would be desirable, in the interest of historical preservation, to replace the nine statues which originally were mounted on the building, with replicas cast from the originals.

With the additional funds requested, the Gallery, specializing in exhibits of American arts, crafts, and design can be opened to the public during fiscal year 1971.

National Museum of History and Technology Pavilions

An appropriation of \$500, 000 is requested for preparation of plans and specifications for pavilions to be constructed as additions to the National Museum of History and Technology.

The Smithsonian Institution is destined to play a vital and central role in the celebration of the Bicentennial of the American Revolution during the coming decade. To accommodate special exhibits covering the American Revolutionary period and an unprecedented influx of Bicentennial visitors, it is proposed that two exhibition pavilions, containing about 25, 000 square feet of floor space each, be added to the National Museum of History and Technology. This plan would also enable the special exhibits in the pavilions to be viewed in the context of the museum's permanent displays relating the 200 years of national development.

Funds for construction of the pavilions will be requested in a future year, based on an estimate of cost to be developed as part of the planning to be accomplished in fiscal year 1971. It is tentatively estimated that the pavilions will cost approximately \$5, 000, 000 and will require two years for construction. To complete construction and install exhibits prior to the 1974 start of Bicentennial events, construction funds must be appropriated in fiscal year 1972. This schedule indicates that fiscal year 1971 is the very latest time for appropriation of design funds to insure timely completion of this project.

Silver Hill Redevelopment

An appropriation of \$2, 100, 000 is requested to continue with a program for the redevelopment of the Smithsonian Institution's storage facility at Silver Hill, Maryland.

Rather than continue to store increasing numbers of objects from the National Collections in the buildings on the Mall, a central storage and retrieval center for classifying, preserving, restoring, studying and storing items is required along with shops and laboratories in support of research and education activities related to the Institution's work. This center would free substantial space in Mall buildings for additional public exhibits.

Planning studies are now in progress to define the methods for removing the temporary, steel storage buildings on the 20-acre Smithsonian Institution site at Silver Hill, Maryland, and replacing them with permanent, multi-story buildings constructed in modular increments over a 10-year period. This appropriation request is for design and construction funds for the first annual increment in the development program.

Fumigation Facility

An appropriation of \$75, 000 is requested to construct a fumigation facility in the National Museum of Natural History.

The large volume of organic specimens in the collections including plants, hides and skins, leather articles, bone, and wood require careful fumigation for preservation. Objects must be fumigated immediately upon receipt to eradicate live pests and then periodically to eradicate those hatched from eggs previously deposited or from new infestations.

In the past, fumigation work has been accomplished with a home-made facility in a room in the National Museum of Natural History in a rather crude manner requiring hand pouring of fumigants. Modern building codes, requiring specialized facilities, ventilation, and safety features as well as improved methods for handling toxic fumigants have shown our facility to be obsolete, inadequate, and unsafe. For safety reasons, the facility has been closed and fumigation work is now accomplished by outside contracting or is being deferred.

The cost of transportation to private fumigation facilities as well as the inconvenience and danger to security of the collections cause this high priority request for construction of a new facility in the National Museum of Natural History Building.

Funds requested will be used to construct a specially designed room, with sealable openings, safety control systems for storing and handling fumigants, and proper ventilation and exhaust systems.

Smithsonian Astrophysical Observatory General Purpose Building

An appropriation of \$90, 000 is requested to design and construct a small general purpose building at the Smithsonian Astrophysical Observatory's Mt. Hopkins' site.

The Congress has appropriated funds for the past three fiscal years to install observation facilities and equipment on Mount Hopkins located in the Coronado National Forest of southern Arizona. Mount Hopkins is regarded as the finest site available in North America for ground-based observations and should remain so with the National Forest providing a natural buffer preventing the encroachment of urban areas with their sky-spoiling lights and smoke.

With funds appropriated, a 34-foot diameter light reflector to observe Cerenkov radiation generated by gamma rays hitting the upper atmosphere is being installed along with a medium-sized astronomical telescope for spectrometry and a Baker-Nunn Camera and laser tracking

equipment for observing artificial satellites. Small masonry buildings have been constructed to house the equipment only and funds have not been available to provide any service facilities for staff use. Funds are now requested to prepare plans and specifications (\$10,000) and to construct (\$80,000) a small structure containing approximately 4,000 square feet of floor space for accommodations for visiting observers and scientists working at the observatory. The building will provide office space, simple dormitory space, and a small common area for eating and resting.

Library Modifications

An appropriation of \$50,000 is requested to modify a portion of the space in the National Museum of Natural History Building used by the Smithsonian Libraries.

The Libraries' collections now contain more than 600,000 pieces, most of which are housed in the National Museum of Natural History Building in less than 25,000 square feet of floor space. Because adequate operating space is not available nor can additional space be assigned at this time, it is necessary that maximum use be made of all available space and that mezzanines be constructed where head room permits.

With funds requested, it will be possible to construct a mezzanine level in three adjacent rooms and to install a booklift. This is a small project but will provide some urgently needed relief to the congested conditions now existing in the library.

Smithsonian Tropical Research Institute

An appropriation of \$225,000 is requested for continuing emergency repairs to existing facilities (\$25,000) and for plans and construction for a new laboratory building (\$200,000).

The Smithsonian Tropical Research Institute operates and maintains several small wood buildings for quarters and laboratory use on Barro Colorado Island in the Gatun Lake and four other buildings for office and marine laboratory purposes on the mainland. Buildings have had minimal maintenance and repairs in recent years because of fund shortages and now require substantial improvements to continue their useful life. The total rehabilitation program will cost approximately \$100,000 for which \$25,000 were appropriated in fiscal year 1970. An additional \$25,000 are requested to continue the program in fiscal year 1971.

Funds are also requested to prepare plans and specifications (\$20,000) and construction (\$180,000) of a new small laboratory building of approximately 10,000 square feet to provide space for increasing research activities in the tropics by American students and scientists. Although the Smithsonian Institution is charged with maintaining a natural reserve and providing study facilities, the demand cannot be met without additional physical facilities. This request is in support of the program justification contained elsewhere in this budget.

Chesapeake Bay Center for Field Biology

An appropriation of \$95,000 is requested for improvements at the Chesapeake Bay Center for Field Biology.

The Chesapeake Bay Center for Field Biology is a 700-acre waterfront research center dedicated to preserving and enhancing the quality of man's environment through programs of ecological study and education.

The Center is situated on the western shore of the Chesapeake Bay just south of Annapolis, Maryland, in an area of great ecological significance as well as historic and economic importance. It presents a wide selection of typical local ecosystems--from marshes, abandoned pastures, and upland hardwood forests to land still in cultivation.

Scientific programs at the Center are guided by an academic consortium in which the Johns Hopkins University and the University of Maryland have joined with the Smithsonian. The widest participation by other institutions as well as individual scientists is invited.

The Smithsonian acquired this land and established the Chesapeake Bay Center for Field Biology in June 1965 through the generosity of private individuals and foundations. Both public and private funds carry forward today's far-ranging programs. Further efforts are under way to acquire an additional 1,500 acres through private donations.

It has been found necessary to keep a full time resident manager on the site to administer the study center and to manage and protect this substantial tract of land. A temporary trailer was originally provided for this purpose but now should be replaced with a permanent structure. With funds requested, a house will be constructed for the resident manager.

An additional \$50,000 are requested for improvements to several former farm-type buildings existing on the site to protect them from the ravages of weather and to make them usable for study rooms, laboratories and storage use.

Arts and Industries Building

An appropriation of \$500,000 is requested to construct second-floor decks in the Arts and Industries Building to provide office space for the Smithsonian Institution staff.

In fiscal year 1967, the Congress appropriated \$133,000 to prepare plans and specifications for renovating the 90-year-old Arts and Industries Building, located at 9th Street and Independence Avenue. Although plans have been completed and construction can start upon receipt of an

appropriation, the funding request will be deferred until a future date, so that higher priority projects may proceed. The total renovation cost will be approximately \$3,000,000.

Included in the total project, however, is an item amounting to \$500,000 for construction of several second-floor decks in high ceiling court areas. The additional floor space is planned for use as offices. Because of the urgent need for additional office space, this portion of the renovation project should proceed as soon as possible, and funds are requested as a priority item.

The demands for additional administrative office space for the Smithsonian are the natural result of substantially broadening the diversified programs of the Institution in recent years. Over twenty programs have been added by legislation, including such major museums and functions as the National Museum of History and Technology, the National Portrait Gallery, the Foreign Currency Program, the National Air and Space Museum, and the Woodrow Wilson International Center for Scholars. All of these activities require administrative support from the personnel, fiscal, supply, buildings management, budget, and other management service units. Although Smithsonian administrative units have increased substantially, there has been no comparable increase in office space. With funds requested, substantial relief may be realized from the present overcrowding in administrative offices.

Smithsonian Institution Building

An appropriation of \$200,000 is requested for renovating the basement area of the Smithsonian Institution Building to provide a comprehensive service area for support of the activities in the building.

The renovation and rehabilitation of the Smithsonian Building for which the Congress has appropriated \$2,794,000 and which is nearly completed, did not include the basement area because limited use was planned for these rooms. It is now apparent that this space can be developed effectively to support the activities in the building, including general administrative offices and the Woodrow Wilson International Center for Scholars, which will be started in the building. The service area will include a small food receiving and preparation area for lunches to be made available to the Center for Scholars, and which can be served in a first-floor room now available; an archival vault and storage room; a reproduction and duplicating machine room; and general storage rooms.

Fine Arts and Portrait Galleries Building

An appropriation of \$50,000 is requested to remodel the first floor vestibule in the National Portrait Gallery. This minimum remodeling will include new lighting and some architectural improvements.

The experience gained during the past year and a half since the National Portrait Gallery was opened has shown that certain minimum improvements can be made which will greatly improve the first floor vestibule space for exhibits. Although this historic building is admirably suited for its new use and the renovation work was carefully planned to accommodate the galleries, only by actual use and experience can details be worked out and optimum improvements made.

Pension Building

An appropriation of \$500,000 is requested to start a rehabilitation program for the Pension Building for use by the Smithsonian Institution.

The Administrator of the General Services Administration has informed the Smithsonian Institution that the Pension Building located on F Street, N.W., between 4th Street and 5th Street, is no longer required for general office use, and suggests that the historical integrity of the building can best be protected if the Smithsonian Institution would accept the building, by transfer under the Federal Property and Administrative Services Act of 1949, 63 Stat. 377, as amended.

The Pension Building, completed in 1885, has continuously played an important role in the Government of the United States. In addition to the history connected with its use, the building is an architectural treasure, a national landmark, and should therefore be preserved.

The building is ideally suited to become a permanent future home for our traditional activities related to architecture, architectural research, historic preservation, the history of city planning and urban design, and other subjects related to our changing environment. Also, the building is on the potentially very important "F" Street axis connecting the proposed Visitor's Center at Union Station to the Fine Arts and Portrait Galleries Building and thence to the Mall via the proposed 8th Street plaza.

In the immediate future the building could serve as a center city focal point for activities related to the celebration of the Bicentennial of the American Revolution and could even be used by the Bicentennial Commission as their office center.

The General Services Administration has estimated that renovation of the building will cost approximately \$2,000,000. The work to be accomplished includes electrical improvements, mechanical improvements, millwork, plastering, and painting. With funds requested in fiscal year 1971,

a program of rehabilitation can be started leading toward an eventual transfer of jurisdiction after all work has been completed. After the Smithsonian assumes responsibility, funds for the operating costs will be transferred from the General Services Administration to the Smithsonian Institution.

Feasibility Studies

An appropriation of \$200,000 is requested to prepare feasibility studies for the future building needs of the Smithsonian Institution.

Careful advanced and long range planning are essential if the future building needs for the complex and varied programs of the Smithsonian Institution are understood and prepared for. With funds requested, urgent work can be started on studies of storage retrieval methods for the expanding collections; methods of cataloging, inventorying and preserving specimens; feasibility studies for physical facilities to accommodate future research needs in tropical biology, astrophysical sciences, environmental and ecological studies on land now owned by the Institution; and for new museum space to improve and expand the exhibits and educational programs for the benefit of the people of the United States.

CONSTRUCTION
JOSEPH H. HIRSHHORN MUSEUM AND SCULPTURE GARDEN
(Liquidation of Contract Authority)

| | |
|--------------------|---------------|
| 1969 Appropriation | \$2, 000, 000 |
| 1970 Appropriation | \$3, 300, 000 |
| 1971 Estimate | \$8, 897, 000 |

By the Act of November 7, 1966, the Congress provided a site on the Mall for construction of the Joseph H. Hirshhorn Museum and Sculpture Garden and provided statutory authority for the appropriation of construction and operating funds. Within this appropriation authority funds were appropriated in fiscal year 1968 for the preparation of plans and specifications. In fiscal year 1969 an additional \$2, 000, 000 were appropriated to start construction and authorization was granted by the language in an amount not to exceed \$14, 197, 000. An additional \$3, 300, 000 were appropriated in fiscal year 1970 toward liquidation of the contract authority.

The justification in support of the fiscal year 1970 budget request indicated that construction bids would be opened in the spring of 1969 and construction would be started soon thereafter. Bids were opened on May 27 but had to be rejected because the low bid exceeded available funds. Although this project was affected adversely by an unusual and unexpected sudden escalation in construction costs, the Congress will not be requested to provide additional funding. The General Services Administration was instructed to revise the drawings and scale down the scope of work to stay within the authorization. Drawing revisions should be completed by October 1969 and new bids should be available by January 1970.

Because construction work will be under way during fiscal year 1971, an appropriation of the remaining \$8, 897, 000 is requested to liquidate the outstanding contract authority. This appropriation will be used to complete funding of construction contracts, finance supervision and related construction management costs, and to provide necessary equipment and facilities to install the Hirshhorn collection in the completed building.

NATIONAL AIR AND SPACE MUSEUM

| | |
|--------------------|---------------|
| 1969 Appropriation | 0 |
| 1970 Appropriation | 0 |
| 1971 Estimate | \$2, 500, 000 |

An appropriation of \$2, 500, 000 is requested for revised plans and specifications for the National Air and Space Museum.

The ultimate construction of a suitable building to house the Nation's air and space collections will be the successful culmination of 24 years of Congressional encouragement and legislative action in the interest of air and space science and history.

Starting with the Act of August 12, 1946, the Congress established the National Air Museum as a part of the Smithsonian Institution. The Congress included provisions for selecting a site for a National Air Museum building to be located in the Nation's Capital. By the Act of September 6, 1958, the Congress designated a site for a building to be on the Mall from Fourth Street to Seventh Street, Independence Avenue to Jefferson Drive. Planning appropriations in the amount of \$511, 000 and \$1, 364, 000 have been made available to the Smithsonian by the Congress for the fiscal years 1964 and 1965, respectively. In 1966 the Congress enacted legislation authorizing the construction of the National Air and Space Museum. Construction plans and specifications for the proposed museum building have been completed for a building now estimated to cost nearly 60 million dollars.

The latest construction estimate is far greater than the target amount suggested when the design was started in 1964. However, construction costs have increased nearly 40 percent since then and still increase at an unprecedented rate. Rather than to seek funding for such a costly facility it is proposed that a new design be prepared to scale down the building size and to restudy the exhibit program. By using better and more modern exhibit's techniques a great museum can be provided at far less cost.

The new National Air and Space Museum will be notable in two particular aspects. First, it will be visited by unprecedented crowds of citizens from every State in the Union. In the existing World War I hangar where only six air and space craft are on exhibition, but including the original space capsules of John Glenn and Alan Shepard, 1, 500, 000 visitors crowded last year. Five million visitors a year come to the new National Museum of History and Technology. It can be predicted with complete confidence, therefore, that in the first year of the National Air and Space Museum, well over five million visitors will come and that the crowds will increase steadily in the years ahead.

Here will be displayed the full panoply of American achievements in air and in space:

- the original Wright Brothers Flyer, first to fly at Kitty Hawk in 1903
- General Billy Mitchell's SPAD of World War 1
- the U. S. Navy's NC-4, first to fly across the Atlantic Ocean, 1919
- General Jimmy Doolittle's Schneider Cup racer, 1925
- Lindbergh's "Spirit of St. Louis," first solo across the Atlantic, 1927
- Wiley Post's "Winnie May," flown twice around the World, 1931-1933
- the Bell X 1, first airplane to fly faster than sound

And now the spacecraft:

- first U. S. Earth satellites Explorer I and Vanguard I
TIROS - first U. S. Weather Satellite
- Alan Shepard's Freedom 7 and John Glenn's Friendship 7, manned orbiting spacecraft
- Gemini and Apollo, manned spacecraft
- and the pioneering rocket launch vehicles--Atlas, Jupiter, Agena.

The second important aspect of this Museum is its great education and research potential. Not only will our youth and our citizens of all ages respond to the inspiration of seeing these history-making air and spacecraft--but also scholars, historians and professionals in many fields of learning will come to work with the Museum's unrivaled reference collections. Thus will be created a center of educational and historical research.

This Museum will open a new dimension in research in air and space science, technology, and history. For the first time in our Nation's history these developments and achievements will become accessible and apparent to the scholar and to the general public alike.

Functioning as a center of exposition and education, the building will provide capacity both for large crowds of visitors and for a comprehensive array of air and spacecrafts, instrumentation, engines, models, and historical reference documents. Exhibitions will be changed periodically. The building design will provide excellent flexibility for its functional requirements. The location on the Mall as designated by the Congress is

most appropriate, being immediately adjacent to the other Smithsonian Institution museums where it will be convenient to the crowds of visitors. The location is adjacent, also to the headquarters of the National Aeronautics and Space Administration and the Federal Aviation Agency.

The Congress has directed that the national development of flight shall be memorialized; that air and space objects of historical and scientific significance shall be preserved and displayed; and that educational material for the study of air and space history and development shall be provided. The Congress has dedicated the site for the Museum and has appropriated funds for the preparation of plans and specifications.

With the appropriation now requested, a completely new design will be prepared which will reduce the total cost as well as provide a great museum.

RADIO-RADAR ASTRONOMICAL TELESCOPE FOR THE SMITHSONIAN ASTROPHYSICAL OBSERVATORY

| | |
|--------------------|-------------|
| 1969 Appropriation | 0 |
| 1970 Appropriation | 0 |
| 1971 Estimate | \$2,000,000 |

An appropriation of \$2,000,000 is requested for planning and site acquisition for a radio-radar astronomical telescope contingent upon passage of authorizing legislation.

Legislation now being considered by the Congress would authorize (1) the Board of Regents of the Smithsonian Institution to acquire lands by gift, purchase, exchange, condemnation, or otherwise to be used as a site for a radio-radar astronomical telescope; (2) the heads of executive departments and independent agencies of the Government to transfer to the Smithsonian, without charge, real and personal property under their custody, control, or jurisdiction for the purpose of the Act; (3) the Smithsonian to design a radio-radar astronomical telescope for purposes of scientific research and knowledge; (4) the Secretary of the Smithsonian to employ the necessary administrative staff to carry out the purpose of the Act; (5) certain establishment of an advisory committee on the design and construction, operation, and use of the telescope; and (6) the appropriation of not to exceed \$2,000,000 through fiscal year 1971 to carry out the purposes of the Act.

Initial studies for a large-diameter antenna have been supported by the National Science Foundation and substantial funds have been granted for this purpose. With detailed design and site studies to be accomplished with this appropriation, firm cost estimates and schedules can be prepared which will provide a sound basis for an ultimate decision on whether to proceed with a request for construction authorization.

Radio and radar astronomy are two new fields of science which have contributed surprising and dramatic new discoveries about the solar system and the universe, and have fundamentally altered and enlarged our basic knowledge. No other period in the history of astronomy can compare with the last decade in the flow of new discoveries made possible by radio and radar observatories. The radio telescope can perform either as a radar or as a radio. When used as a radar device, it is equipped with a transmitter that beams a powerful signal toward the sun, moon, planets, and other objects in the solar system and receives an echo. The radio telescope can analyze the radar echo and extract new information about the body in question. During the last decade this process has been able to measure the scale of the solar system to unprecedented accuracy; to measure the diameters of important planets; to map the surface of Venus, even though it is totally obscured by a complete and continuous cloud cover, and to reveal unexpected and

precise rotation rates of planets. For example, after radar observations, Mercury was discovered to be "locked" to the sun in a completely unexpected manner--and the rotation of Venus is actually controlled by the Earth. The radar observations have also opened new methods to test the general theory of relativity. These are examples of what we may expect in the future, because each step toward telescopes of larger sizes and more advanced electronics systems has invariably led to unexpected and highly significant new results.

When the radio telescope is used as a receiver only, its scope of radial vision expands to reach beyond the solar system to the most distant objects known in the universe. Sensitive radio receivers operate at the focus of the radio telescope much as the eye or photographic plate functions in an optical telescope. Through the use of this technique, we have discovered more powerful energy sources than any before known to man. The quasi stellar radio sources, quasars, and the pulsating radio sources, pulsars, have generated enormous excitement in the fields of astronomy and physics, which can be compared only with the excitement in the scientific community when it received the original news of the splitting of the atom. The discoveries made through radio and radar devices on radio telescopes continue to contribute to our basic knowledge of the universe. Future discoveries will pose new problems of interpretation which, when solved, will add to our understanding of the fundamental processes in nature, and possibly the discovery and control of new sources of energy on the Earth.

In the United States there are a number of small, 85- to 90-foot diameter, radio telescopes in various institutions throughout the country. A 130-foot diameter radio telescope operates at Owens Valley, California, and a 140-foot diameter radio telescope at Green Bank, West Virginia. Canada has a 150-foot telescope at Algonquin Park. At Parkes, Australia, there is a 210-foot diameter radio telescope. Great Britain has a 250-foot diameter radio telescope at Jodrell Bank. At Bonn, West Germany, a 328-foot diameter radio telescope is now under construction; and plans are nearing completion for a new 400-foot diameter radio telescope (Sir Bernard Lovell's current project) in Great Britain. Thus the United States is the only major Western country that still lacks a large and powerful radio telescope.

The radio and radar scientists in the United States, who attended a meeting at the Smithsonian Institution on November 30/ December 1, 1968, clearly recognized this situation and expressed their hope that national initiative could be taken to obtain a large radio-radar telescope for this country.

With funds provided by the National Science Foundation conceptual design has been completed for a 440-foot radio telescope enclosed in a protective space-frame radome which supports fiberglass panels. The radome isolates the antenna from the environment. The construction of

so large an antenna can be accomplished with the use of the light-weight materials because of the controlled environment within the radome. This controlled environment also permits the construction of a very precise parabolic surface on the antenna itself, which is a fundamental objective for the radio and radar scientists. The Smithsonian Astrophysical Observatory, as one of the world's pre-eminent observatories, believes that construction of this instrument is essential to national research in the field of radio and radar astronomy. The nation's scientists need this instrument as a major undertaking in astrophysics, continuing a century-old tradition in the Smithsonian Institution.

The Institution proposes that the instrument, if constructed, be shared by astronomers from all academic and research organizations throughout the country. This means that benefits from the Federal investment would be shared not only by the astronomers of the Smithsonian Institution, but also by scientists throughout the United States.

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