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SMITHSONIAN INSTITUTION

Fiscal Year 1972

Justification of Estimates of Appropriations
To the Office of Management and Budget

(Information not to be released until
after the President's Budget is submitted
to the Congress in January 1971.)



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Office of Director General of Museums	A&I 2460	(1)
Office of Exhibits	MHT 5106	(2)
Conservation Analytical Laboratory	MHT AB071	(1)
Office of the Registrar	A&I 2170	(1)
National Museum of History and Technology	MHT 5112	(4)
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National Air and Space Museum	A&I 2660	(3)
National Armed Forces Museum Advisory Board	207 Pension Bldg	(2)
Anacostia Neighborhood Museum		(1)
Office of Special Events	A&I 1405	(1)
Freer Gallery of Art	Freer	(1)

SMITHSONIAN INSTITUTION
FISCAL YEAR 1972 ESTIMATES OF APPROPRIATIONS

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TAB i

GENERAL STATEMENT

SMITHSONIAN INSTITUTION

FISCAL YEAR 1972 ESTIMATES OF APPROPRIATIONS

General Statement

This past year has been one of measured progress for the Smithsonian Institution. Where many of the prospects of the nation seem fraught with dissent and division, where the path of education has become obscured by the divisiveness which has beset the academies, the smaller private institutions of learning seem to have survived so far relatively unscathed. Like other institutions concerned with research and study, however, the Smithsonian suffered in the past year from the general decline in grants and subventions to science as well as to related areas of study. Our problem with the declining government budgets for the support of basic science has been compounded by the tax reform act which produced a serious paralysis of will on the part of the foundations. In addition, the steadily worsening effects of inflation on the costs of personnel, research equipment, objects for the collections, as well as on the everyday supplies and materials for general museum and laboratory operations further threaten the Smithsonian's ability to carry out its traditional responsibilities.

One encouraging development has been a widening awareness that the Smithsonian's activities represent a kind of unity. In spite of the many bureaus, some of them incorporated in large buildings on the Mall and others tucked away in laboratories in Washington and elsewhere, there are a series of unifying themes which run through the Institution's activities. Our concerns remain united around the general subject of history, history of art, science and technology including the history of air and space flight, and the delineation of these histories through public exhibition. In addition, our science activities revolve generally around the compilation of statistics, information, and research about the biosphere and space. Our classical concerns in natural history and in astrophysics have come full circle so that today we can proudly claim our work to be of vital importance in the new sciences of the study of the environment on the one hand and of outer space on the other. Within these common themes there are overriding considerations for the public good. Education and public exhibition are of paramount concern for all our main buildings and for the curators and the research staff who inhabit them. Education through research and publication remains paramount in the other bureaus whose activities are not contained in the large public buildings. In addition, Joseph Henry's initial concern with bringing scholars together with colleagues in foreign countries continues to be developed and encouraged through our foreign currency program as well as research activities both here and abroad.

In Joseph Henry's view the Smithsonian existed to stimulate research in pursuit of new truths and to make these available to both the public and to professionals, in the arts, sciences, and cultural history. His favorite phrase to describe the Institution's ultimate aim was a "College of Discoverers." This is still the unifying force, the common factor in all the diverse bureaus and museums of the Smithsonian--the Institution as a "College of Discoverers" which:

- First, keeps records of knowledge through its collections;
- Second, serves as a stimulus to research, largely through its collections;

--Third, and perhaps most important, uses the collections and the results of research for public education.

These three elements may be found to a greater or lesser degree in all the bureaus of the Smithsonian, as they are today.

Increasingly, the Institution's bureaus and offices are engaged in common efforts. Notable among these are the contributions that will be made in the national celebration of the American Revolution Bicentennial and in studies of the environment. We have begun to lay-out long range plans for ecological assessments in both the New World temperate and tropical zones and in the Old World. We are uniquely equipped through processing and working with the National Collections to contribute to solutions, but we are pitifully undersupported financially to make our contributions effective.

In spite of limited appropriation increases each year, which have averaged somewhere between 6 and 8 percent, costs have continued to escalate so much that our scientists' work and our research and exhibits potential have been seriously undermined. Little has been allowed for growth, expansion and change, so necessary for a healthy concern, be it a corporation, university, or a research and museum complex. Examples of such needs are continuing additions to art, history, and science collections, modern inventory computerization for these collections, and development of new experimental ideas and fields of study.

While vigorously seeking additional federal fund support for these purposes, we are at the same time carrying out a program of self-examination of the use of our total resources with the objective of reducing or eliminating outmoded or low-priority activities.

In the case of our private finances the pressures are no less severe. The Smithsonian was founded by Congress as a private institution and operated without any federal support for nine years until 1855, when at the insistence of the government it took over the management and exhibition of the National Museum collections. Since then, of course, the continued accessions of magnificent collections plus growth of other federally-related activities have brought about an enlargement of this federal support. The growth of federal support combined in recent years with an alarming degree of inflation unmatched by growth of income from our private endowment funds has reduced our private fund support to less than 10 percent of our total, although research grants and contracts awarded to the Smithsonian added to our private income constitute about 32 percent of our total operating budget.

The fact that the Smithsonian is basically a private institution, although federally supported, is of immense importance to its ability to occupy its long-established and unique position. Its nonpolitical character allows us to maintain our objectivity and our contacts and scholarly investigations in virtually all nations. The Smithsonian is a national showplace partially supported by but not of the government and this attracts a continuing flow of valuable collections which would not otherwise be available in the nation's capital for the millions of annual visitors.

Today it is not too much to say that the private nature of the Smithsonian is threatened by the inflationary advances in costs without commensurate increase in private resources. While the Smithsonian private endowment

funds total about thirty million dollars, only about one quarter of this amount is of an unrestricted nature and the annual income from these unrestricted endowment funds is less than \$400,000, pitifully small in relation to a total annual budget of nearly fifty million dollars. During the fiscal year 1970 alone, the need to match for private employees the salary increases legislated for all United States government employees, boosted private roll salary payments by 15 percent. It will be literally impossible to keep up such a heavy pace in the future unless a commensurate increase in private resources can be achieved.

We are now making strenuous efforts to cope with this threat to the future of the Institution. As in the case of federal funds, we are also currently examining all of our private activities to eliminate the unnecessary or less important. At the same time we are striving vigorously to increase income from our various private activities such as our Museum Shops and our Associates organizations. In addition, we have launched a national campaign to build up our private endowment funds to assure a substantially greater private income in the future.

Planning is of the utmost importance in all Smithsonian activities. Growth must be brought into effective relation to the availability of resources, especially for an establishment such as ours with more than forty line items in our federal budget, each of which could very readily be expanded to meet some external or internal need. We recently constituted an executive steering committee of our Secretariat to guide the development of the planning function within the Institution and consider ways to maintain a balance between our pattern of commitments and the resources we may expect. It has been our judgement that the Institution would have to inaugurate some new programs and achieve order-of-magnitude increases in some support activities in order to function successfully for the 1970s. With inflation, the requirements for new tools and techniques, and the ever-increasing demands placed on our staff, our budget meets no more than one-half of our requirements. The elimination of remaining shortages is a priority objective in our planning. What then can be said of our plans for the next decade?

The central concerns of the Smithsonian represent national needs for the kind of sustained commitment that can be made only by an institution with a strong sense of continuity, tradition, and concentrated purpose. We believe that our first responsibility is to continue the general lines of endeavor which are traditional with the Institution: basic research in selected areas of national interest; development and maintenance of the national collections in biology, anthropology, history, and the arts; and enlightenment of the public through exhibitions and related activities.

In all this an overriding concern should continue to be the quality of the professional staff effort within the Smithsonian. We cannot too strongly emphasize the achievement of an adequate level of support of that effort. We have repeatedly appealed for the remedy of deficiencies in support of research and scholarly programs. Virtually half of the growth in appropriations since 1964 has been devoted to staffing and operating new facilities authorized by the Congress. Much of the rest has been negated by inflation. A strong effort must now be made to sustain the basic scholarly program: support for fieldwork, instruments, libraries, conservation, auto-

matic data processing, technician support, related higher and elementary and secondary education activities, better access to colleagues through scholarly publishing, and unremitting emphasis on the professional character of staff appointments, all against a background of increasing costs. Our budget henceforth will proceed on two tracks, the first a phased elimination of these shortages and the second to provide for the continued development for program entrusted to us by the Administration and the Congress.

Beginning this year the observance of the Bicentennial of the American Revolution will become a predominant factor in the development of Smithsonian programs. Within the settings of our history and art museums members of the public may seek a reappraisal of our national experience with due reference to its international setting. Fresh insights of historians should be interwoven with superb offerings of objects and art works that portray our nation's course over the past two centuries and suggest paths for our continued development.

From the studies of the sources of energy and means for its use by living systems to the explanation of biological diversity, the Smithsonian represents an unexcelled multidisciplinary array of information resources and professional scientists which bear upon critical needs to improve our understanding of the physical environment upon which human society depends. We anticipate increasing demands upon our efforts in systematic biology, anthropology, astrophysics, and environmental studies as important resources for the national effort in environmental improvement.

One of the most important unfulfilled hopes for the Smithsonian is that a great national museum might be developed on the authorized space on the Mall to recreate the experience of man's greatest adventure: flight and space exploration. We also aspire to present insights about the significance of the space age for everyday life and to communicate an understanding of the scientific discoveries originating from space exploration.

The birthright of today's citizen is an understanding of the forces shaping himself and his world. It is to museums that many people look for access to the works of artists, an appreciation of the past, an awareness of the scientific view of nature, and for portents of the future. All museums must experiment with new techniques of exhibition and embark upon training and research aimed at improving their effectiveness in popular education. The quality of our response to this democratic vista will continue to be a matter of overriding concern to the Smithsonian in years to come. Implementation of the National Museum Act through adequate funding will greatly strengthen the capability of all museums.

From the amassing of great national collections will arise difficult questions about how to guarantee access to the information they contain. This will call for innovative designs of indexes, catalogs, and ways to manage vast resources of information. Perhaps some of the techniques developed for the management of voluminous flows of data from satellite observations or oceanographic stations may be adapted to the needs of the future. In our role as custodian of the nation's collections we must try to serve the public interest in improved management of scientific and scholarly information.

The fiscal year 1972 appropriation estimates are designed to help correct many of the problems identified and to improve the Institution's capabilities in other areas. We are convinced that only by obtaining the requested additional resources can the Smithsonian meet the future of the decade.

The estimates are presented in five sections:

"Salaries and Expenses" for regular operating programs in the museums, galleries, research laboratories, and program support units	\$47,245,000
"Salaries and Expenses" for special programs of an Institution-wide nature and of unusual importance for national research and public education needs	5,833,000
"Salaries and Expenses" for the Science Information Exchange as a separate appropriation account in recognition of the unique service nature of this organization	1,600,000
Special Foreign Currency Program in archeology and related disciplines, systematic and environmental biology; astrophysics, and museum programs	5,000,000
Restoration and construction of Smithsonian buildings and facilities	9,222,000

Each of these requests is summarized below. The estimates of the Woodrow Wilson International Center for Scholars are separately presented by its Board of Trustees.

A. "Salaries and Expenses," Regular Operations

<u>1970 Actual</u>	<u>1971 Estimate</u>	<u>1972 Estimate</u>
\$28,902,000	\$34,213,000	\$47,245,000

The total increase requested for "Salaries and Expenses" for regular operations is \$13,032,000. Included in this amount is \$1,362,000 for mandatory pay and related benefits commitments, largely for current staff, that will fall due in fiscal year 1972 and are relatively uncontrollable. This increase is distributed as follows.

	(In thousands of dollars)		
	<u>1971</u>	<u>Requested</u>	<u>1972</u>
	<u>Base</u>	<u>Increase</u>	<u>Estimate</u>
<u>Science</u>	\$12,273	\$ 8,545	\$20,818

To correct serious deficiencies in the availability of technicians and other supporting staff, scientific equipment, laboratory supplies and materials, and key professional research staff in order that the Institution can continue its traditional basic investigations and educational services in anthropology, biology,

geology, and the space sciences which are fundamental to a better understanding of the environment. Includes requests for the National Museum of Natural History, the Smithsonian Astrophysical Observatory, Smithsonian Tropical Research Institute, Radiation Biology Laboratory, Office of Environmental Sciences, National Air and Space Museum, Center for the Study of Man, Center for Short-Lived Phenomena, and the National Zoological Park.

<u>History and Art</u>	\$ 4,801	\$ 1,831	\$ 6,632
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To provide essential support staff and the routine services, supplies, and equipment required for basic operations in order that the established and developing museums and art galleries of the Smithsonian can effectively tell the story of American civilization to millions of visitors annually. Includes the budgetary requirements of the National Museum of History and Technology, National Collection of Fine Arts, National Portrait Gallery, Joseph H. Hirshhorn Museum and Sculpture Garden, Freer Gallery of Art, Archives of American Art, and the National Armed Forces Museum Advisory Board.

<u>United States National Museum</u>	3,120	223	3,343
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To improve the documentation and conservation of the National Collections. Includes requests for the Office of the Director General of Museums, Office of Exhibits, Conservation Analytical Laboratory, and the Office of the Registrar.

<u>Public Service</u>	807	138	945
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To furnish additional capabilities to certain of those Smithsonian's activities which reach out to serve a wide public. Requests are included for the Anacostia Neighborhood Museum, the Office of International Activities, International Exchange Service, Division of Performing Arts, and the Office of Public Affairs.

<u>Program Administration and Support</u>	4,448	1,165	5,613
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To allow the central services to give adequate administrative and technical support to the museums, galleries, and laboratories. Includes

1971	Requested	1972
Base	Increase	Estimate
(In thousands of dollars)		

requests for the Offices of the Secretary, General Counsel, Treasurer, and Personnel, and for the Smithsonian Press, Libraries, Information Systems Division, and other important support units.

<u>Buildings Management</u>	\$ 8,764	\$ 1,130	\$ 9,894
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To provide adequate maintenance, operation, and protection services in support of the Institution's research, collections' management, and public education services.

Totals	\$34,213	\$13,032	\$47,245
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B: "Salaries and Expenses," Special Programs

<u>1970 Actual</u>	<u>1971 Estimate</u>	<u>1972 Estimate</u>
\$1,063,000	\$1,549,000	\$5,833,000

This request is aimed at strengthening the Smithsonian's abilities to perform ecological research of national significance, present important and timely exhibitions, and extend its public education services. Included are requests for program funding for the Environmental Sciences, the American Revolution Bicentennial, the National Museum Act, Major Exhibitions, Advanced Study in Programs of Higher Education, External Education Services, and the Research Awards Program.

C. Science Information Exchange

<u>1970 Appropriation</u>	<u>1971 Appropriation</u>	<u>1972 Estimate</u>
1/	1/	\$1,600,000

A separate appropriation account is requested to enable the Institution to both manage and fund the Science Information Exchange as a national information service to the federal and nonfederal research community. The requested level of funding represents no increase in federal support since the Exchange has been supported at this level by the National Science Foundation.

(¹ Funded under contract with the National Science Foundation.)

D. Special Foreign Currency Program

<u>1970 Appropriation</u>	<u>1971 Appropriation</u>	<u>1972 Estimate</u>
\$2,316,000	\$2,500,000	\$5,000,000

The need is to provide adequate support, without any dollar drain to the nation, for overseas archeological work, systematic and environmental biology, astrophysical studies, and museum programs of benefit to American institutions of higher learning. Ongoing research, based on a broadened authority to employ these excess foreign currency funds, now consumes the entire appropriation (funding for many ongoing projects has had to be reduced). New demand, however, spurred by diminishing dollar support of basic research and by greater research opportunities abroad is steadily climbing.



E. Restoration and Construction

<u>1970 Appropriation</u>	<u>1971 Appropriation</u>	<u>1972 Estimate</u>
\$4,525,000	\$6,350,000	\$9,222,000

Included in this request are \$200,000 to continue to make essential repairs to existing buildings and facilities; \$2,425,000 for the restoration and renovation of Smithsonian buildings, including completing the Renwick Gallery of Art, protecting air and space collections, providing Bicentennial facilities on the National Museum of History and Technology, and furnishing improved research support facilities at the Smithsonian Astrophysical Observatory and the Smithsonian Tropical Research Institute, and other projects; \$3,697,000 to liquidate the balance of the Hirshhorn construction authority; and \$2,900,000 for the redesign of the National Air and Space Museum.

Total 1972 Appropriations Requested \$68,900,000

Tab A

"SALARIES AND EXPENSES"
FOR REGULAR PROGRAMS

SMITHSONIAN INSTITUTION
 Summary of "Salaries and Expenses" Regular Operating Programs
 (In thousands of dollars)

	1970		1971		1972	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
<u>Regular Operating Programs</u>						
Office of Director General of Museums	7	233	9	304	9	308
Office of Exhibits	167	2,354	167	2,361	167	2,441
Conservation Analytical Laboratory	11	134	11	154	14	209
Office of the Registrar	29	327	29	301	31	385
National Museum of History and Technology	158	2,149	158	2,209	158	2,567
National Museum of Natural History	258	3,912	271	4,215	496	8,229
National Zoological Park	0	0	251	3,085	308	3,909
National Air and Space Museum	41	486	41	626	44	755
National Armed Forces Museum Advisory Board..	8	182	8	152	8	159
Anacostia Neighborhood Museum	9	124	11	125	15	180
Freer Gallery of Art	7	45	7	56	8	84
Joseph H. Hirshhorn Museum & Sculpture Garden	13	308	18	416	22	1,362
National Collection of Fine Arts	59	1,015	70	1,137	81	1,298
National Portrait Gallery	30	768	37	831	49	987
Archives of American Art	0	0	0	0	11	175
Smithsonian Astrophysical Observatory	57	2,086	57	2,064	60	2,693
Smithsonian Tropical Research Institute	40	522	45	594	59	917
Radiation Biology Laboratory	36	676	40	916	75	2,883
Office of Environmental Sciences	23	565	34	584	44	1,051
Center for the Study of Man	6	83	7	152	11	265
Center for Short-Lived Phenomena	0	11	1	37	3	116
Office of International Activities	8	118	8	125	10	164
International Exchange Service	9	118	9	120	9	138
Office of the Secretary	38	462	38	598	42	717
Management Support	43	534	43	600	46	716
Office of the Treasurer	31	573	31	604	35	713
Division of Performing Arts	7	226	7	196	7	204
Office of Personnel and Management Resources...	26	388	26	402	28	470
Office of Public Affairs	12	277	12	241	12	259
Supply Division	21	318	21	327	23	377
Information Systems Division	13	217	14	219	19	368
Smithsonian Institution Libraries	49	659	54	739	76	1,157
Photographic Services Division	20	265	20	252	21	301
Smithsonian Institution Press	23	700	25	707	28	794
Buildings Management Department	748	8,067	768	8,764	810	9,894

Total "Salaries and Expenses" Regular Operating Programs

2,007 28,902 2,348 34,213 2,839 47,245

SMITHSONIAN INSTITUTION
 "Salaries and Expenses" for Regular Programs

PROGRAM STRUCTURE BY ORGANIZATION
 (In thousands of dollars)

Program Category	1970		1971		1972	
	Pos	Amount	Pos	Amount	Pos	Amount
<u>Research and Scholarship</u>						
Archives of American Art ¹	2	55	1	175	11	175
Conservation Analytical Laboratory	4	39	4	45	4	60
National Museum of History and Technology	45	645	45	674	45	750
National Museum of Natural History	156	2,386	156	2,571	305	5,361
National Air and Space Museum	6	102	6	131	6	145
National Armed Forces Museum Advisory Board..	4	106	6	127	6	132
Center for the Study of Man	6	83	7	152	11	265
Freer Gallery of Art	7	45	7	56	8	84
National Collection of Fine Arts	12	138	15	162	15	175
National Portrait Gallery	5	112	6	142	9	190
National Zoological Park	2/	2/	12	191	22	351
Smithsonian Astrophysical Observatory	57	1,986	57	1,964	60	2,593
Smithsonian Tropical Research Institute	28	316	30	369	37	597
Radiation Biology Laboratory	24	426	32	516	61	2,428
Office of Environmental Sciences	23	565	34	584	44	1,051
Center for Short-Lived Phenomena	0	11	1	37	3	116
Office of International Activities	8	118	8	125	10	164
Information Systems Division	2	40	2	42	2	44
Smithsonian Institution Press	18	492	18	494	18	539
Smithsonian Institution Libraries	28	408	34	458	45	717
Total, Research and Scholarship.....	433	\$8,018	480	\$8,840	722	\$15,937

¹ Funding in fiscal years 1970 and 1971 provided by the National Portrait Gallery and the National Collection of Fine Arts.

² Funding in fiscal year 1970 provided by the District of Columbia.

SMITHSONIAN INSTITUTION
"Salaries and Expenses" for Regular Programs

PROGRAM STRUCTURE BY ORGANIZATION
(In thousands of dollars)

Program Category	1970		1971		1972	
	Pos	Amount	Pos	Amount	Pos	Amount
<u>National Collections Management and Use</u>						
Conservation Analytical Laboratory	7	86	7	100	10	140
Office of the Registrar	23	221	23	208	24	265
National Museum of History and Technology	64	862	64	865	64	990
National Museum of Natural History	83	1,251	94	1,349	164	2,505
National Air and Space Museum	29	236	29	345	31	425
National Armed Forces Museum Advisory Board...	2	42	1	10	1	11
National Collection of Fine Arts	20	454	24	505	33	565
National Portrait Gallery	16	462	20	472	27	553
Joseph H. Hirshhorn Museum and Sculpture Garden	13	308	18	416	22	1,362
Information Systems Division	3	55	4	65	6	137
Smithsonian Institution Libraries	17	191	16	214	24	335
Smithsonian Institution Press	3	176	3	178	3	183
Total, National Collections Manage- ment and Use	280	\$4,344	303	\$4,727	409	\$7,471

SMITHSONIAN INSTITUTION
"Salaries and Expenses" for Regular Programs

PROGRAM STRUCTURE BY ORGANIZATION
(In thousands of dollars)

Program Category	1970		1971		1972	
	Pos	Amount	Pos	Amount	Pos	Amount
<u>Education of the Public</u>						
Office of Director General of Museums	7	233	9	304	9	308
Conservation Analytical Laboratory	0	9	0	9	0	9
Office of Exhibits	167	2,354	167	2,361	167	2,441
Office of the Registrar	6	106	6	93	7	120
National Museum of History and Technology	49	642	49	670	49	827
National Museum of Natural History	19	275	21	295	27	363
National Air and Space Museum	6	148	6	150	7	185
National Armed Forces Museum Advisory Board...	2	34	1	15	1	16
Anacostia Neighborhood Museum	9	115	11	112	15	163
National Collection of Fine Arts	27	423	31	470	33	558
National Portrait Gallery	9	194	11	217	13	244
International Exchange Service	9	118	9	120	9	138
Division of Performing Arts	7	226	7	196	7	204
Office of Public Affairs	12	277	12	241	12	259
Smithsonian Institution Press	2	32	4	35	7	72
Smithsonian Institution Libraries	4	60	4	67	7	105
Information Systems Division	8	122	8	112	11	187
National Zoological Park	1/	1/	88	1,043	108	1,213
Total, Education of the Public	343	\$5,368	444	\$6,510	489	\$7,412

1 Funding in fiscal year 1970 provided by the District of Columbia.

SMITHSONIAN INSTITUTION
"Salaries and Expenses" for Regular Programs

PROGRAM STRUCTURE BY ORGANIZATION
(In thousands of dollars)

Program Category	1970		1971		1972	
	Pos	Amount	Pos	Amount	Pos	Amount
<u>Program Administration and Support¹</u>						
Administrative Systems Division	9	140	9	157	10	197
Office of Personnel and Management Resources ...	26	388	26	402	28	470
Smithsonian Archives	6	33	6	61	7	79
Duplicating Section.....	7	83	7	66	7	88
Office of the General Counsel	8	110	8	135	9	163
Supply Division	21	318	21	327	23	377
Photographic Services Division	20	265	20	252	21	301
Office of the Treasurer	31	573	31	604	35	713
Office of the Secretary	38	462	38	598	42	717
Travel Services Office	3	35	3	38	3	39
Other Central Support.....	10	133	10	143	10	150
Total, Program Administration and Support	179	\$2,540	179	\$2,783	195	\$3,294

¹ Excludes Smithsonian Institution Libraries, Smithsonian Institution Press, Information Systems Division, whose requested increases appear in Research and Scholarship, National Collections Management and Use, and Education of the Public.

SMITHSONIAN INSTITUTION
 "Salaries and Expenses" for Regular Programs
 PROGRAM STRUCTURE BY ORGANIZATION
 (In thousands of dollars)

Program Category	1970		1971		1972	
	Pos	Amount	Pos	Amount	Pos	Amount
<u>Buildings and Facilities Management</u>						
National Zoological Park	1/	1/	151	1,851	178	2,345
Smithsonian Astrophysical Observatory	0	100	0	100	0	100
Smithsonian Tropical Research Institute	12	206	15	225	22	320
Radiation Biology Laboratory	12	250	8	400	14	455
Buildings Management Department	748	8,067	768	8,764	810	9,894
Anacostia Neighborhood Museum	0	9	0	13	0	17
Total, Buildings and Facilities Management	772	8,632	942	11,353	1,024	13,131

Total; "Salaries and Expenses" for Regular Programs 2,007 \$28,902 2,348 \$34,213 2,839 \$47,245

1 Funding in fiscal year 1970 provided by the District of Columbia.

SMITHSONIAN INSTITUTION

SPECIAL PROGRAMS

(In thousands of dollars)

<u>Program Category</u>	<u>1970</u>		<u>1971</u>		<u>1972</u>	
	<u>Pos</u>	<u>Amount</u>	<u>Pos</u>	<u>Amount</u>	<u>Pos</u>	<u>Amount</u>
<u>Research and Scholarship</u>						
Advanced Study Programs of Higher Education	3	429	3	445	4	606
Environmental Sciences Program	0	0	3	150	17	800
Research Awards Program	0	400	0	400	0	800
Woodrow Wilson International Center of Scholars	8	91	0	0	0	0
Subtotal	<u>11</u>	<u>920</u>	<u>6</u>	<u>995</u>	<u>21</u>	<u>2,206</u>
		<i>91</i>				
		<i>829</i>				
<u>Education of the Public</u>						
Major Exhibitions Program	0	0	0	0	0	1,550
External Educational Services Program	15	143	17	154	22	252
Bicentennial of the American Revolution	0	0	2	400	2	725
National Museum Act Programs	0	0	0	0	3	1,100
Subtotal	<u>15</u>	<u>143</u>	<u>19</u>	<u>554</u>	<u>27</u>	<u>3,627</u>
TOTAL	<u>26</u>	<u>\$1,063</u>	<u>25</u>	<u>\$1,549</u>	<u>48</u>	<u>\$5,833</u>

1/ Woodrow Wilson International Center of Scholars is now a separate account.

SMITHSONIAN INSTITUTION
MANDATORY INCREASES IN PAY AND BENEFITS

An increase of \$1,362,000 is required for personnel compensation and personnel benefits. All operations of the Smithsonian Institution have been carefully reviewed to determine whether any portion of the requested increase can be absorbed. This will not be possible without further curtailing the research and scholarship, reference collections, and public education programs, and the protection, operation, and maintenance of the Smithsonian buildings and grounds.

The above increase will be used to finance the following items:

a. Full-year costs of the wage board increase to be granted on November 1, 1970	\$ 300,000
b. Periodic step increases in accordance with Government Employees Salary Reform Act of 1964 and with prevailing practices in the wage scales	622,000
c. To finance a new holiday - Columbus Day - as authorized in Public Law 90-363	10,000
d. To finance an extra work day in fiscal year 1972.....	100,000
e. To finance the cost of promotions.....	250,000
f. To finance the additional costs of recent legislation to increase the amount of the federal government's contribution to the employees health benefits program.....	50,000
g. To finance the cost of housing allowance for United States citizen employees of the Smithsonian Tropical Research Institute.....	21,000
h. Full-year costs of wage adjustments for wage employees at the Smithsonian Tropical Research Institute.....	9,000
	\$1,362,000 ^{1/}

In fiscal year 1966, the Smithsonian Institution account obligated 68.9 percent of the total "Salaries and Expenses" budget for personnel compensation and benefits. In fiscal year 1971 we anticipate obligating 73.6 percent of our funds for personnel compensation and benefits. We are striving to achieve a better balance in our funds between those for salaries and benefits and those for other objects of expense. Much of this imbalance has been caused by absorbing portions of legislated salary and wage increases. In order not to have to reduce other objects, further, this requested increase is of high priority. People are the Smithsonian Institution's most important asset provided by the budget process, but as modern techniques and equipment are coming into use, we must also be in a position to provide the professional research staff as well as the administrative and technical support staff with such tools as advanced equipment and computer services. This can only be done if we have some flexibility in other ob-

^{1/} This amount is distributed in the fiscal year 1972 column of the individual budget requests.

jects. Currently this is not the situation. After we have provided for the other essential costs in other objects, i. e., electricity, steam, gas, air conditioning, rent, and communications there are extremely limited amounts of funds left.

The Smithsonian Institution employs over 700 wage board employees. These employees will receive a pay increase on November 1, 1970. We are requesting \$300,000 to finance this increase in fiscal year 1972. While most Government agencies depend upon the General Services Administration to provide maintenance, operation, and protection services, the Smithsonian Institution because of the uncommon feature of our buildings being not only office space, but museums, galleries, and laboratories, maintains its own Buildings Management Department. At the National Zoological Park we have the additional feature of having live exhibits. Animal keepers are required to maintain these live exhibits. It is not possible to absorb pay increases in these two groups of employees by abolishing positions in order to finance wage increases from base resources. Additional building spaces and exhibits are creating needs for more, not fewer, such positions.

Periodic step-increases are made in accordance with the Government Employees Salary Reform Act of 1964 and prevailing practices in the wage system. This amount includes the additional portion of the fiscal year 1971 step-increases to be paid in fiscal year 1972 and the new amount to be paid to employees in fiscal year 1972. The apparent cost was determined through a position-by-position study and has been reduced to real cost by offsets resulting from employees being separated or promoted before receiving step-increases and from filling some positions at a lower grade step than the former incumbents held. Experience in 1970 showed that we paid \$191,000 in new costs which on an annual basis would have cost \$388,000. We are requesting \$622,000 for these costs in 1972. This is based on our higher employment in 1971 over 1970 and on the fact that 50 percent of 1970's experience was based on lower pay scales, and the wage systems experience was based on pay that will have been increased twice and will probably be increased again in early 1972.

Public Law 90-363 provided a new holiday - Columbus Day - which will occur for the first time in fiscal year 1972. We are requesting \$10,000 for this holiday since our museums and zoo are open every day of the year except Christmas. This is the holiday pay for the guards, policemen, animal keepers, custodians, and certain mechanics needed to keep the buildings open.

In fiscal year 1972 there will be an extra work day since February will have 29 days in that year. This will cost \$100,000 in additional salaries and benefits.

In order to hold its eminent professional research and curatorial staff, the Smithsonian Institution must be in a position to offer promotions as these men gain experience and professional competence. Within the Smithsonian Institution the historians and scientists are rated by their peers. Certain criteria have been established by these two groups in order to assess rates of professional advancement in order to obtain promotions. There are two groups known as Professional Accomplishments Evaluation

Committees. One group is composed of curators and historians in history and the arts. The other group is made up of scientists and curators in the natural sciences. These groups have to recommend a scientist's promotion to the bureau directors before any action can be taken. Even then the bureau directors and the personnel staff have to apply the standard regulations before these promotions are accomplished. In order to keep this program going and to maintain the staff of qualified researchers that have been gathered, the Smithsonian Institution is requesting \$106,000 to pay for the additional part-year cost of fiscal year 1971's promotions in fiscal year 1972 and the additional costs in that year for new promotions. We are also requesting \$144,000 to help finance the upgrading of the rest of our staff.

Recent legislation will increase the agencies' contribution from an average of 24 percent to 40 percent for employees health benefits. This bill will be effective January 1, 1971. The Smithsonian Institution will request funds to offset the additional costs in fiscal year 1971 in the supplemental for 1971. We will also need \$50,000 in order to annualize these costs in fiscal year 1972.

The Smithsonian Tropical Research Institute is the only U.S. federal activity in the Canal Zone or in Panama whose employees are not offered low-cost Canal Zone housing, Government-leased quarters in Panama, or quarters allowances. All STRI families must reside in Panama where high costs in comparison with District of Columbia costs provide the basis for State Department surveyed Foreign Quarters Allowances. STRI's U.S. staff members however, now receive only a 15 percent pay differential as do all other U.S. employees working in the Canal Zone. This differential is approximately three fifths the value of the Foreign Quarters Allowances received by all U.S. employees working in Panama. The requested funding of \$21,000 would make up the difference by enabling the agency to lease quarters in Panama and sublease these to staff members on a partially subsidized basis. This will rectify a hardship on the STRI's employees. Authorization for a longer-term solution will be sought whereby full Foreign Quarters Allowances may replace the differential.

The Smithsonian Institution Tropical Research Institute has manual employees who are maintained on a separate pay system from other employees within the Smithsonian. We are requesting \$9,000 to finance the wage adjustments for these employees. This covers \$4,000 for adjustments effective July 12, 1970 for certain of the manual employees, an anticipated six percent increase to be effective October 1, 1970 at an expected cost of \$4,000, and \$1,000 to raise the minimum wage paid in the Canal Zone from 1.45 to \$1.60 per hour.

SCIENCE

Discovering the history and development of natural phenomena and the characterization of natural events, especially as they relate to the evolution of man in response to his physical and sociological environment, represents the major scientific goal of the Smithsonian. If there is a single scholarly bond of interest among all the activities of the Institution, it is a common concern with history, the history of art, the history of technology, the history of science, and indeed natural history. Our staff of scientists is concerned with elucidating the interrelationships between organisms (including man), communities, and populations with the physical, chemical, and geological factors which play a role in forming the ecology of the earth now and in past ages. More than seventy specialties are represented by the Smithsonian's community of scientists. Activities range from astrophysical investigations that contribute to our understanding of the origin and mechanics of the universe, through investigations on microscopic organisms in the ocean depths, to the development of man as shown by his artifacts and productivity. The Smithsonian is fortunate in having this range of competence, while remaining free of specific assigned research missions.

There is a major change occurring now in the nation's general scientific effort. This change regards the type of input information more and more investigators view as necessary to further research on problems which are biological or physical in nature. While the change is a contemporary one, it is related in an important way to the basic and long-term activities of the Smithsonian and similar research institutes across the nation, and indeed the world. The change, simply stated, involves the following:

Ecological investigations concerned with identifying long-term factors affecting environmental balance increasingly are becoming dependent on analysis and information constructed around collections of objects. Systematic collections of biological and geological specimens contain standards for describing and measuring ecological changes.

Unfortunately, as of now, not enough historical information has been extracted to create "Bench-marks" of change which would give scientists accurate indices for speculating about ecological trends, and about man-made solutions to problems which would be in keeping with the natural evolutionary process.

This, however, is the type of work which the various scientific laboratories and museums of the Institution have been involved in for a century and a quarter. In recent times, systematics has not been considered one of the more fashionable of sciences. Even during the hey days of federal support for scientific research, systematics did not receive the measure of support needed to maintain a level of involvement adequate to the nation's best environmental interests. But now the demands for taxonomic information are increasing rapidly as our national programs of science and technology are redirected to cope with environmental deterioration.

The requests contained in this budget are pointed to rectifying certain support shortages in Smithsonian scientific endeavors in biology and to strengthening certain areas of the physical and anthropological sciences. The increases requested for this Science program amount to \$8,545,000 or 49 percent of the total Institutional requested increase,

These are needed increases since the Institution must intensify its efforts to catalog collections and to retrieve information about them. To do this will require increased technical assistance for our scientists to permit them to operate at their optimum level of professional competence.

NATIONAL MUSEUM OF NATURAL HISTORY

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	156	\$2,386,000	156	\$2,571,000	305	\$5,361,000
National Collections Management and Use.....	83	1,251,000	94	1,349,000	164	2,505,000
Education of the Public.....	19	275,000	21	295,000	27	363,000
Total	258	\$3,912,000	271	\$4,215,000	496	\$8,229,000

This Museum serves as a national and international center for the natural sciences. It maintains the largest reference collections in the Nation and conducts a broad program of basic research on man, plants, animals, fossil organisms, rocks, minerals, and materials from outer space. Its research is concerned with classification, distribution, analysis, and environmental and ecological relationships. Its fundamental studies in systematics and biology are providing new information required for the solution of major national problems of conservation and pollution, food production, improvement of medical knowledge, and for planning national and international programs leading to predictive ecology and environmental management. It engages in joint educational programs with universities by teaching courses, training graduate students, conducting science seminars, and providing leadership in the improvement of museum techniques, collections management, and the training of technical assistants for cooperating institutions. The NMNH has the legal responsibility (20 U.S.C. 59) to serve as the ultimate Federal repository of all collections and objects of natural history, archeology and ethnology made by agencies of the Government when no longer needed for investigations in progress. Additionally, the NMNH has become the repository for numerous extremely valuable collections obtained from other sources, such as the scientific community, academic institutions, as well as many private individuals. Because the Museum is the national repository, it has responsibilities far beyond the research of its own staff. It assists both the layman and the scientists with identification, lends specimens for research, and safeguards the tangible results of research. As the National Museum it has inherent responsibility to provide leadership for other museums and institutions. In this latter role through use of its collections, NMNH is a vigorous scientific organization devoting an increasing share of its resources of professional staff and unrivaled collections to research which is "locked into" understanding, explaining, and coping with the multitude of environmental problems which beset humanity.

For fiscal year 1972, the Museum is requesting an additional \$3,851,000 to correct imbalances that exist between the levels of professional scientific effort and support effort necessary for proper curation of the collections (\$1,220,000), and to strengthen the Museum's ability to respond to national problems by expanding and intensifying its research efforts, which

are directly associated with its collections interests in ecological and biological areas (\$2,631,000).

Museum Support Deficiencies

With the enlarged emphasis on research on the collections, which is basic to explaining the many mysteries of how man must manage his environment, many internal imbalances have resulted. Within the limited resources available to NMNH in the past it is impossible to perform adequately both the identification and care of the collections and undertake research. In this regard the efforts of the limited subprofessional staff are almost entirely devoted to performing curation and collection maintenance in the face of ever increasing numbers of specimens which seriously tax the ability of the staff to keep abreast of the workload.

The scientific staff is deeply involved in research, but lacks the necessary support required to provide for daily routine functions. This is clearly most undesirable from both the scientific and the economic standpoint.

Several typical examples will serve to illustrate the nature of this problem:

1. The lack of sufficient technicians requires that highly skilled and compensated professionals must routinely perform such menial tasks as preparing their sections for microscopic analysis. This task could be performed competently by subprofessional personnel, freeing the scientist to apply his expertise to meaningful research.
2. The shortage of technicians precludes the timely and proper provision of routine identification services to numerous requesters. Presently all departments have sizeable backlogs of requests which cannot be processed without redirecting personnel efforts from other activities. Frequently, when these services are provided the scientists must do the work so that the curation responsibilities can continue uninterrupted. The professional staff does not do this because of preference but rather in an attempt to continue the cooperative atmosphere which such consultant work promotes. This routine work can also be effectively performed by technicians.
3. The shortages of such subprofessionals as illustrators often forces scientists to prepare their own art work in order that research publications can go to press. This is a gross misdirection of scientific expertise. This work could more properly be done by lower graded employees.
4. The lending of specimens to other museums and research laboratories is a time consuming but essential process which requires the selection, withdrawal, packing, and processing of collection material both in the sending and receiving operations. Often this service is provided only by redeploying personnel from other more essential tasks. This is done to discharge the responsibility of the National Museum and to maintain close working relations with the requesters who are engaged in complementary research and who cooperate with SI in the solution of scientific problems. These services could be rendered effectively by technicians if adequate staff were available.

5. Clerical personnel are also inadequate in numbers to keep pace with the workload. This frequently forces the scientist to type answers to public inquiries, his own reports, memoranda, manuscripts, and do other routine office work.

As far back as 1953 a conference sponsored by the National Research Council called attention to the fact that "the active taxonomists are overwhelmed by the ever-increasing flood of collections crying for attention, to say nothing of the great accumulations of unworked, undetermined materials piled up in years past" and stated that the greatest needs to meet this problem were "increased manpower--more trained and experienced personnel--greater productivity on the part of active systematists and taxonomists."

In May 1969 the President's Science Advisory Committee and the Panel on Systematics and Taxonomy recommended a ratio of three support personnel (technical and clerical) to each professional employee as the optimum level for research endeavors. As shown in Table 1 the NMNH is able to provide far less than this level of support. Support deficiencies other than those which involve personnel also result in less than truly effective utilization of Museum staff and facilities.

The Smithsonian Council, an Institutional advisory body composed of twenty of the nation's leaders in art, science, and history, at its spring 1970 meeting adopted the following resolution:

In view of the present need to protect and appreciate the diversity of the environment, the Council is deeply concerned with the present trend relating to systematic biology as it affects the Museum of Natural History and strongly urges the allocation of additional resources to the Museum to promote this field.

These men, in their present capacities as research scientists, foundation directors, and university scholars, are used as a sounding board by the Institution to help integrate national needs with Institution activities.

Recently many support services which had been provided by the Institution at no cost to the Museum have been discontinued by the support units because of budgetary constraints. This has required the Museum to redirect funds from other higher priority areas to provide these essential services. Some examples of this follow:

1. The SI Library now finds it necessary to require NMNH to fund many of its purchases of reference books for the various departments as it is unable to sustain former levels of this support.
2. The Administrative Systems Division, which formerly provided cataloging forms, labels and other items essential to systematic and logical curation, is no longer able to furnish this service. The departments must finance their own needs which in some cases represent sizeable dollar amounts.
3. The Supply Division which in the past stocked most items normally required for departmental operation has discontinued some 400 items

Table 1

(National Museum of Natural History)

Ratios of Man-Years of Effort Between Technicians/Scientists

	(1)	(2)	(3)	(4)	(5)	(6)		(7)	
	Sub- Prof. Man-yrs.	Clerical Man-yrs.	Sub- totals Man-yrs.	Prof. Man-yrs.	(3)÷(4) Ratio Man-yrs.	FY 1970	FY 1971	FY 1970	FY 1971
Anthropology	14	9	23	17	1.35:1	\$35,800	\$14,800	\$2,100	\$900
Botany	9	6	15	17	0.88:1	36,700	14,400	2,200	800
Entomology	12	5	17	11	1.55:1	24,000	9,600	2,200	900
Invertebrate Zoology	13	6	19	18	1.05:1	32,000	12,100	1,800	700
Mineral Sciences	7	3	10	10	1.00:1	28,300	11,200	2,800	1,100
Paleobiology	18	6	24	18	1.33:1	37,900	15,300	2,100	800
Vertebrate Zoology	<u>15</u>	<u>6</u>	<u>21</u>	<u>13</u>	<u>1.62:1</u>	<u>34,900</u>	<u>13,900</u>	<u>2,700</u>	<u>1,100</u>
TOTAL	88	41	129	104	1.24:1 ^{1/}	\$229,600	\$91,300	\$2,200	\$900

1/ Note: The President's Science Advisory Committee and the Panel on Systematics and Taxonomy recommended a ratio of three support personnel to each professional employee.

2/ Travel for field work, equipment, laboratory supplies, etc.

with the result that the various SI operating units must now purchase these from their own already reduced funds.

4. The Buildings Management Department now requires the Museum to purchase supplies and materials used in performing many special projects requested. In the past these materials were routinely supplied.

Other financial problems are present in support areas. For instance, the shortage of specimen storage cases and specimen bottles is acute. In past years it was possible to maintain adequate inventories of bottles for specimens but the financial constraints in the last several years have prevented the replenishment of these stock levels. Specimen storage cases and drawers which in some cases represent the largest single expenditure of a department are no longer purchased on a routine annual basis but rather whenever and to whatever extent funds can be assembled from all available sources. This is neither efficient nor economical since these are not available commercially and must be constructed to exact specifications. Larger volume purchases, such as were possible in the past, would result in lower unit costs. Further, despite selectivity in acquiring specimens, accessions have grown at a rate which outstrips the availability of cases in which to house them. This often means that valuable additions to the collections are subjected to improper storage, possible damage, and, most importantly, the inability to locate specimens readily when required for study by Museum and other scientists. Immediate relief is essential to curate incoming specimens in a timely manner; to facilitate proper collection management and provide the research information when needed.

The foregoing are but a very few of the examples of conditions which would be eliminated by additional funding for support shortages. There are many areas in need of increased financial support which individually constitute problems of great magnitude and which when taken collectively represent major deficiencies preventing the Museum from carrying out effectively both its curation and research activities.

In order to correct these support shortage imbalances, an additional \$1,220,000 is being requested. Shortages of museum technicians and museum aids constitute the greatest need and are largely concentrated in areas of zoology, botany, and paleobiology (73 museum subprofessionals and \$563,000).

The current Museum ratio of support personnel to scientific professionals is only slightly better than 1:1. The requested increases, while falling short of the standards selected by the President's Science Advisory Committee and the Panel on Systematics and Taxonomy, would serve to improve this ratio to approximately 2:1. In addition, \$657,000 is requested to provide needed support for equipment, supplies and materials, travel. In this latter amount, \$339,000 is in nonrecurring costs involved in major equipment and storage items. The balance of \$318,000 is urgently needed to raise the current annual amount available for expenditures per professional from an average of \$900 to \$3,900, a figure which would permit efficient utilization of the Museum's professional expertise.

Research Program Development

A healthy research organization must have resources for growth, expansion, and change if it is not to stagnate and lose its vitality. Consequently, an additional amount of \$2,631,000 is being requested for research in the natural sciences, which involve primarily environmental, evolutionary, geological and anthropological studies. Table 2 contains a program breakdown of the requested amounts for shortages, as well as new research and collection activity. The nature of the research to be undertaken with the requested \$2,631,000 is described below in programmatic terms. The specific projects that will be included in this effort are provided in the supplement. The requested amount will provide for 30 new scientists (\$495,000), 122 support staff (\$960,000), and \$1,176,000 for nonpersonnel support. This latter amount includes \$589,000 for nonrecurring laboratory costs. The requested increase would enable the Museum to make a major research contribution in the natural sciences. Special emphasis is placed on projects of a collaborative nature involving several members of the professional research staff.

ENVIRONMENTAL STUDIES encompass investigations of the interactions of organisms with each other and with non-living aspects of their surroundings--soil structure, temperatures, water supply, day length, available nutrients, and many others. A plant grows where it does, just as an animal feeds on it, because of a complex interrelationship between the non-living and the living parts of the total environment, including man. Knowledge of these interactions is not only of great value scientifically but is also critically important to intelligent management of adequate environment quality standards in a world increasingly threatened by man's activities. An additional \$892,000 is being requested for program development.

Concern for environmental matters and the research it engenders currently pervades all of national life but the National Museum of Natural History has a unique role that has been poorly recognized and supported. The National Collections of natural history objects, now more than 50 million, are the largest data base in the nation for information on the structure, geography, and ecology of the world's plants and animals. As such, adequate support and development of the National Collections is of the highest priority. The research performed with them by the Museum's scientific staff is likewise unique in quantity and quality. The nation's research in the environmental sciences, to be successful, must draw heavily on the collections data and intellectual resources of the Museum.

Two previous Science Advisors to the President saw these relationships clearly. Dr. Donald Hornig, testifying before a Congressional committee on environmental quality, pointed out: "The increasing attention being given ecological effects of man's activities calls for additional scientists capable of identifying the multiplicity of biological constituents of an ecosystem as a prerequisite to assessing changes." More recently, Dr. Lee DuBridge stated in a letter: "Certainly the Smithsonian Institution can play a unique role in meeting our future environmental needs, particularly in the areas of systematics and basic ecology...Undoubtedly the taxonomic and systematics capability of the Smithsonian will have to be utilized if we are to know the character of changes occurring in the natural environment." The new research projects for fiscal year 1972 are designed to permit the Museum to play its "unique role" and provide the services and information needed by the scientific community.

Table 2

NATIONAL MUSEUM OF NATURAL HISTORY

Program Category	1970		1971		1972 Shortages ^{1/}		1972 New Prog.		1972 Estimate	
	<u>Pos</u>	<u>Appropriation Amount</u>	<u>Pos</u>	<u>Appropriation Amount</u>	<u>Pos</u>	<u>Amount</u>	<u>Pos</u>	<u>Amount</u>	<u>Pos</u>	<u>Amount</u>
I. Research and Scholarship	156	2,386,000	156	2,571,000	43	732,000	106	2,058,000	305	5,361,000
II. Nat'l Collections Mngmt & Use	83	1,251,000	94	1,349,000	27	605,000	43	551,000	164	2,505,000
III. Education of the Public	19	275,000	21	295,000	3	46,000	3	22,000	27	363,000
TOTAL	<u>258</u>	<u>\$3,912,000</u>	<u>271</u>	<u>\$4,215,000</u>	<u>73</u>	<u>\$1,383,000^{1/}</u>	<u>152</u>	<u>\$2,631,000</u>	<u>496</u>	<u>\$8,229,000</u>

^{1/} Includes \$163,000 necessary pay increases; requested program increase to correct shortages is \$1,220,000.

EVOLUTIONARY STUDIES, systematic biology, are directed toward answering such questions as: What is it? How does it differ from its relatives? Why is it where it is? What is its evolutionary history? What are its interrelationships with other organisms and the physical surroundings? Systematics differs from ecology initially in its emphasis on the populations of organisms recognized as separate kinds; however, it is clear that the systematics/ecology distinction is possible only at the extremes and the middle-ground is broad indeed. One of the most immediate and indispensable products of systematic studies is the cast of characters in any ecological situation, the plants and animals that constitute the living portion of the system. An additional \$585,000 is being requested for several projects. Some examples may be illustrative.

In many parts of the world, millions of people depend on fishes of many kinds for their protein intake. Yet the classification, evolutionary history, and environmental relationships remain obscure for many groups. Projects that span fossil to recent times will answer many of these questions and would be initiated if funding is provided in fiscal year 1972. The invertebrate animals and aquatic plants that comprise much of the food supply of these fishes will also be investigated. Research is planned on the internal and external structure, as well as the cytology and ecology, of these food-organisms. Similarly, research would be expanded on the biology of external parasites of fishes and other marine vertebrates from the standpoint of co-evolutionary interests and economic considerations, stemming from possible effects of parasites on hosts.

A better understanding of higher plants, especially of the New World Tropics, is of the highest priority. While great tracts of tropical lands are covered by lush growth, it is by no means a stable, pristine situation. Improper forest harvesting, industrialization, and unbridled population growth pose threats not yet fully understood. Thousands of species of tropical plants are still unknown to science. Many unquestionably have value as sources of food, pharmaceuticals and raw materials for industry and all are of evolutionary interest. For example, the grass family is the most important economically and, in some areas, ecologically. Yet the systematic biology of the more than 10,000 species, including such economically important plants as bamboo, rice, wheat, and corn, are inadequately known.

Tropical birds and mammals, present other opportunities for significant natural history research. Although the basic taxonomy and zoogeography of tropical birds have been documented by earlier workers, studies of another sort are now needed. Much of the present information on behavior, physiology and population structure is based on temperate species but the more numerous, poorly known, tropical birds are the ancestral groups that gave rise to the northern relatives. Consequently, expanded studies of the tropical forms are scientifically important.

GEOLOGICAL STUDIES in the Museum are in two general categories: (1) those that are essentially physical and (2) those that involve formerly living organisms and life processes. An additional \$345,000 is being requested for studies in these areas.

The proposed project to study volcanic eruption patterns is a good example of the first category. The objective is to develop information which would

establish a capability of predicting the eruption of volcanoes. Very few of the six to fifty eruptions that occur each year are now being studied. The events are not documented by field collection of samples and photographs or laboratory analyses of the erupted materials. This project would permit data collection on all major eruptions, which would be studied by field teams.

The drifting of the world's major continents in past geological time to their present positions has been a major puzzle to scientists throughout the world for generations. Now, both physical and biological information is beginning to accumulate which supports the theory of "continental drift". Yet, much geological and paleobiological study will be required to supply the answers to this question and provide data which would be of tremendous value in exploration of the world's oil reserves. Under the projects proposed, specialists in the geology of sea-floor spreading and on the associated fossil invertebrate animals would collaborate in an investigation of the ocean most widely considered to have been formed by continental drift--the Atlantic Basin.

ANTHROPOLOGICAL STUDIES range from a more efficient and effective system of referencing data by use of electronic data processing techniques, to the salvage of 50-120 year-old records, negatives and prints of American Indian materials, to field work for ecological and environmental studies, to the salvage of technologies and crafts now being lost by industrialization. Several are so urgent and current that, if the work is not started within the next year, the data will be irretrievable and lost forever to science and the history of mankind. An additional \$236,000 is requested to develop programs in anthropological research.

The additional funding is especially urgent for the project in ancient technologies and the recovery of specimens, data and documentation of disappearing crafts and technologies of those parts of the world where industrialization and importation of industrially-made goods is modifying the local crafts. In several regions of South Asia the governments are extremely interested in the specimens and data the Smithsonian research teams have gathered because they serve as models for their official programs of reviving crafts for which there is an increasing world market. These projects often use some excess currency monies but increased funding is needed to expand the work immediately.

Bone biology research has many potential directions but the most fruitful ones at the moment are: (1) the creation of a registry of paleopathological information on all the Old and New World skeletal collections in the National Museum of Natural History; (2) the expansion of research on the history of diseases in both ancient and modern man; (3) to record the evidence in modern skeletal materials of the absorption of various pollutants (e.g. lead) in bone; and (4) the development of finder techniques for identification of an individual and his or her life history from the skeleton. In addition to the advancement of the science of physical anthropology and biology in general, there are practical applications to criminal, medical and legal cases that require the more precise type of information now being developed with this new research. Funding on a larger scale than the present small, private research grants is required to accelerate the development of these highly significant investigations.

Study of past changes in the environment is essential to all modern ecological studies of man's modification of his natural surroundings and for planning his future course as part of the total ecosystem. Studies of this nature need a firm foundation in basic data from archeological, paleobiological, geological and paleoclimatological studies of how man lived, where he lived and in what relationships with the flora and fauna.

Archeology, in combination with these other disciplines, offers outstanding research opportunities to acquire significant data on the total environment, especially of the Pleistocene Period, with respect to how man used the fauna as an important part of his food supply, how man adapted to the environmental situation of the Period, and how extinction of such fauna might have been hastened by man. The expansion of highways, housing projects and industrial sites, the construction of flood and irrigation control systems, annual erosion, and the changing course of various streams and rivers, as well as flash floods in dryer regions, are destroying the evidence rapidly. Information from these sites must be salvaged by field research at once or the specimens and the basic information needed for understanding of long-range climatic cycles and climate changes will be lost. The cooperative palynology program between the Department of Botany and the Department of Anthropology is an essential research tool for paleoclimatological studies. It is extremely important that the funding for the palynology laboratory begin at once so that the results from field work in various parts of the New World especially can be obtained and evaluated.

The photographic collections of the National Anthropological Archives are the largest in the world relating to the American Indian. Old prints and negatives of photographs taken from 1858-1928 are on glass plates or on old paper, both of which are deteriorating rapidly. With the increased interest of our nation in the American Indian, this unique documentary collection must be saved so it can be useful for scholarly research and the recording or preservation of many important aspects of the culture and heritage of these first Americans.

Cutting across all research program lines is the need to improve access to the data in the National Collections.

Funds appropriated by Congress in fiscal year 1971 for the initial application of electronic data processing to natural history collections are being used in four projects. These projects, in the Departments of Paleobiology, Botany, Invertebrate Zoology, and Vertebrate Zoology, involve the entry into the computer of basic data on specimens in the Museum's collections. This information will provide the basis for highly useful publications, catalogs and other listings which will be furnished to research institutions in government and industry, universities and interested scientists. To illustrate, the Department of Paleobiology will prepare a complete catalog of all type specimens of conodonts, fossils which are particularly useful in petroleum and mineral explorations. In the Department of Vertebrate Zoology similar descriptive catalogs of our extensive holdings of mammal specimens will be prepared and made available to scientists throughout the world. An additional \$551,000 is being requested for these purposes.

The funds being requested for fiscal year 1972 will be used to expand these existing programs and make the automated information available on a more nearly current basis. It is also proposed to refine our data processing techniques, which will permit expansion of the program to include some of the other collections where the need for such data is demonstrably most urgent. All of these projects seek to make information associated with existing specimens of animals, plants and other natural materials already in the National Museum of Natural History collections more readily available to those who need these data. The users include research and academic institutions, scientists, scholars, industry, government, and private individuals as well as the staff of the Museum itself.

The utilization of computer technology in reaching the goals of these projects is extremely important, for the complex interrelationships of variables affecting the distribution or evolution of animals and plants can be efficiently and economically studied only through the medium of the computer.

The tremendous volume of information already in hand in the Museum, but largely in undigested form, and the increasing mass of information currently being collected, poses a staggering challenge. The proposed projects would attack discrete, select segments of this information mass to provide scientific results of immediate value and would serve as a base for future broad summation and investigation. Over the next several decades this progressive approach should result in the preparation of computer operations of the information about a significant proportion of specimens in the collections, largely as a by-product of other short term studies which have scientific merit in their own right. The insights which can be gained by computer manipulation of such highly organized data cannot be easily estimated, but it is clear from man's growing awareness of environmental interactions that such insights are already very badly needed. Because of the volume of data which must be organized, the task of ordering our knowledge about organisms and other natural phenomena cannot wait until the need is even more critical.

General Public Enlightenment and Education

The higher education activities of the National Museum of Natural History are also undertaken as an important facet of the research process. Students completing dissertations for advanced degrees, as well as young post-doctoral appointees, study in direct association with many of the research staff. In addition, graduate-level seminars are conducted by natural history scientists in the Museum and in nearby academic institutions. An additional \$22,000 is being requested to improve these efforts.

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	57	\$1,986,000	57	\$1,964,000	60	\$2,593,000
Building and Facilities Management.....	0	100,000	0	100,000	0	100,000
Total.....	57	\$2,086,000	57	\$2,064,000	60	\$2,693,000

The Smithsonian Astrophysical Observatory pursues a broad program of research in astrophysics and related space sciences. Established in 1890, the SAO was reorganized in 1955 and moved to Cambridge, Massachusetts, where it works in close association with the Harvard College Observatory. It maintains scientific facilities elsewhere in the United States and overseas. Included in these facilities are a multipurpose observatory on Mt. Hopkins, Arizona; a world-wide network of Baker-Nunn camera and laser tracking stations; camera and radar networks in the Midwestern United States for meteor studies and meteorite recovery; and joint use with Harvard College Observatory of an 84-foot radio telescope. The Observatory's goals are (1) to contribute to man's general fund of knowledge; (2) to answer questions pertinent to man's comprehension of his world; and (3) to promote international scientific cooperation. Some 50 scientists are involved in this effort.

An appropriation increase of \$605,000 is requested to continue the development of a large optical telescope to provide the kind of instrumentation essential to continued scientific achievement and to correct certain research support shortages.

By fiscal year 1972, the Observatory will regroup its activities under three major program headings: the earth as a planet; the solar system; and energetic phenomena in the universe. Including the fields of radio astronomy, gamma-ray astronomy, meteorites and cosmic dust, theoretical astrophysics, optical astronomy, meteors and comets, lunar and planetary science, and general science, these new areas recognize the overall goals and objectives of SAO's scientific research, rather than the tools and instruments of this research.

SAO's investigations of the earth as a planet are centered on the dynamics of the earth and its atmosphere. The Observatory applies the most precise laser and electronic techniques now available to monitor geophysical changes by observing the motions of artificial satellites in the earth's gravitational field. This can lead toward the prediction of earthquakes. Employing the same techniques developed for measuring satellite orbits, SAO uses its world-wide observing stations to monitor temperature and density variations in the upper atmosphere caused by solar activity. Man lives in a small and extremely fragile environment close to the surface of the earth. While the ecologist undertakes detailed studies of man's immediate surroundings, SAO's scientists are making major contributions to an understanding of his broader surroundings.

Studies of the solar system include the near-space neighbors of the earth--the moon, the planets, the comets, the asteroids, and the meteoroids--as well as the sun itself and its relationship to other members of this complex system. SAO's research program includes theoretical, laboratory, and observational studies that define the setting for the earth. For instance, laboratory studies of extraterrestrial materials such as lunar samples and meteorites that have reached the earth provide vital clues to the composition of extraterrestrial bodies, their history since the formation of the solar system, and the sea of radiation to which they have been exposed. Studies of cometary formation and behavior, using Baker-Nunn data, are yielding valuable clues to the formation and evolution of the entire solar system.

Energetic phenomena studies are concerned with the sources of radiation, including the nature of newly-discovered and largely unexplained sources of high-energy radiation far outside the solar system. For many scientists, discoveries of new high-energy astronomical sources present some of the most intellectually challenging problems in science today. More energy is being emitted from the centers of galaxies and from quasars than can be explained by any processes now understood. Most likely, the answers to these newest mysteries will be provided by the newest astronomical tools--radio, infrared, ultraviolet, gamma-ray, and advanced optical instrumentation. For instance, studies may determine chemical compounds not heretofore known to exist in space and the answers to basic questions concerning the creation of matter and antimatter in the universe.

The Observatory has made major contributions to international science in several of its program areas during the past few years. Indeed, the results of the Observatory's research have established the standards, both literally and figuratively, for other scientists engaged in similar investigations. Included in these accomplishments are the publication of the Smithsonian Standard Earth, the most accurate representation of the earth's size, shape, and gravitational field ever produced; through observations, establishing limits on the frequency and number of micrometeoroids as hazards to space flight; production of the Star Catalog and Star Atlas as standard references; and studies of the maser process to help in measuring the motions of the earth, to test the theory of relativity, and to investigate those areas of the universe where vast natural hydrogen masers operate.

Since its founding in 1890, the Astrophysical Observatory has emphasized pioneering research, striving to recognize and develop new or neglected fields of research before these topics have achieved popularity and maturity. For example, SAO recognized even before the first Sputnik was launched that artificial satellites would provide a means for studying the earth and its atmosphere in more detail than even before possible. The continuing role of SAO as a scientific pioneer depends upon determined, systematic acquisition of new instrumentation. Scientific inquiry is a dynamic enterprise, and yesterday's tools are seldom sufficient for tomorrow's problems.

The Observatory has, from year to year, applied a significant fraction of its funds to acquire new research capability. The eminent scientific position of the Observatory is closely associated with the capabilities represented by its instrumentation. This necessary policy of instrumentation advancement will be broken in fiscal year 1971. Inflation and a relatively static budget have made any major equipment purchases impossible. This unhealthy situation must be remedied in 1972 if SAO is to survive as a productive research organization.

In an effort to select the most useful new instrumentation for SAO, the scientific staff evaluated the existing national instrumentation capabilities, the requirements of the world astronomical community, and the goals of SAO's own research program. The staff were unanimous in agreeing that the most vital instrumentation needed is a large optical telescope designed for infrared astronomy and spectral photometry as well as for observations complementing the capabilities of instruments detecting high-energy radiation.

To overcome the immense difficulties and expense inherent in the manufacture of a single mirror, studies at SAO and elsewhere indicate that design advances lie in the direction of multi-element mirror arrays. A telescope of this new design can be relatively lightweight, inexpensive, and extremely accurate--incorporating provisions for small adjustments of the mirrors so that all the images fall upon each other with sufficient precision. Less than a decade ago, such a technique would have been impossible. Changes in temperature, ground tremors, and even the shifting of the telescope to observe a different sky section might have caused the delicate alignment of the individual mirrors to go awry. Modern electronics, however, now make it possible to readjust continuously and automatically the calibration of the mirrors to ensure a single image.

SAO's development efforts have included contracts to industrial concerns for feasibility studies. The design decision is also a natural outgrowth of SAO's highly successful experience with its composite-mirror gamma-ray instrument. Moreover, in developing its 60-inch telescope, SAO intentionally emphasized the design of detectors adaptable to the expected image quality of a large, multi-mirror instrument.

SAO has a unique opportunity to undertake a cooperative project with the University of Arizona to build such a large multi-element telescope. This pioneering effort will not only produce an instrument with resolving power equal to a 240" conventional telescope, but will pave the way for the scientific community to build even larger, more powerful telescopes at remarkably modest costs. The Optical Sciences Center of the University of Arizona has acquired six 72" mirrors. With DOD support, they are building six systems that will be tied together optically and electronically to function as a single but stationary optical system. At that point, the project will be completed as far as DOD is concerned. SAO plans to work with the University to design and construct a mounting and shelter so that the instrument can then be used as an astronomical telescope. If this is not done, the Nation may lose the opportunity to convert at modest cost an experiment in technology into a powerful operational scientific instrument. An amount of \$500,000 a year for three years will be required for engineering design, construction of facilities, and installation of the telescope.

Studies of the earth as a planet are hampered by the shortage of computer and engineering services. In fact, increased engineering support would improve research capability in virtually all of SAO's research programs. The theoretical study of atomic and molecular astrophysics demands extensive use of a high-speed digital computer. The professional staff working in this area at SAO has been unable to achieve its full potential because of severe budgetary restrictions on computing funds. Once research is performed, it is of little use unless promptly and clearly communicated

to the scientific community. To help correct current shortages in research support, funds are requested for three positions, an engineer, a computer programmer, and an editor, and for computer services, rent, supplies, and equipment (\$105,000).

SMITHSONIAN TROPICAL RESEARCH INSTITUTE

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	28	\$316,000	30	\$369,000	37	\$597,000
Buildings and Facilities Management....	12	206,000	15	225,000	22	320,000
Total	40	\$522,000	45	\$594,000	59	\$917,000

Established 25 years ago to achieve understanding of the tropical environment as preserved on Barro Colorado Island, Smithsonian Tropical Research Institute emphasis through the decade past and into the decade ahead is on development of a center of excellence for advanced studies by staff, advanced students, associates and visiting scientists on the causes of evolutionary success at the level of the whole organism. STRI concentrates on evolutionary strategies involving patterns of behavior within and between species, and adaptations to ecology. Studies are distributed between observational and experimental efforts, both in the field and in field-extended laboratories.

Why should public funds be directed now to fundamental questions on evolution, i. e., mechanisms of survival? Because it would seem essential to be able to predict what is happening to life on earth under conditions of increasing change. Nevertheless, evolutionary success or failure can now be predicted only poorly at best. New approaches are being derived for interpreting the importance of the diversity of life forms. Social communication and behavioral interactions between species play important roles in survival. Through precisely what patterns is being charted. Partitioning of environmental resources among organisms seems to relate importantly to competitive ability, and is being studied. It is assumed that environmental change, whether occurring naturally, or induced or accelerated by man, applies pressures on survival. Even so, models have only begun to be constructed for translating such changes into odds for biological success by communities or individuals. STRI progress for Smithsonian on these fronts is recognized by leaders in biology from around the world. Last year nine STRI staff biologists gave 25 seminars at leading universities and prepared 47 contributions in research for publication.

We study questions of fundamental biology in the tropics because complex life processes are more manifest there, strikingly so in most cases, and throughout the year. In the tropics diversities are greater, competitive processes and interactions more complex, new lines of adaptive radiation more pronounced, and field study and experimental opportunities correspondingly richer by far than in other climes. In Panama, which itself is easily accessible, a very considerable array of terrestrial and marine study habitats are within immediate reach. The Isthmus constitutes a land bridge for the biotic interchange of two continents. At the same time, with Gatun Lake, it acts as a continuing barrier to the biota of two oceans--separated by several millions of years, but only 50 miles apart. This affords an observational and experimental potential which cannot be matched elsewhere. The interdependence of ocean and continent is beginning to be recognized. STRI has one of the very few teams of scientists in the world jointly founded in the biology of both realms. Concurrently, comparative studies elsewhere in the New and Old World tropics are magnifying the value of efforts at any one locale.

In the last year alone, men and women from sixty-two universities spent 5,010 work days mining the intellectual and environmental resources at STRI. STRI harbors five laboratories for studying tropical marine and terrestrial ecology from forest and lake to seashore and mountain. Work is underway in forty different habitats on interactions between hundreds of different organisms and their environment. STRI provides a base of operations for understanding the tropics--habitat for one-half of mankind.

An increase of \$266,000 is requested to develop a balanced program of research and research support, facilities management, and administration.

Increase needs

1. Research Support During the past year 38 long-term research projects were conducted by STRI's 10 staff biologists, 18 projects ranging between one and two years by visiting post-doctoral and pre-doctoral fellows, and 40 short-term projects by visiting scientists.

Illustrative progress highlights included:

- the initial thorough investigation of primary and secondary productivity of tropical lakes in the Americas, enabling one of the world's first comparisons of the ecological efficiency of the primary production utilization by plankton consumers in temperate and tropical lakes.
- the first explorations of Eastern Pacific shores of Panama discovering large constructional coral reefs previously thought non-existent in the area, nine species of fishes new to science and eleven new to the region, hydrocorals new to the Eastern Pacific and the first reported stable populations of the coral predator, the Crown of Thorns starfish. The STRI expeditions laid the basis for a new dimension of comparative Atlantic and Pacific analysis, as well as for discerning natural controls for the predatory starfish that has been highly destructive in the Western Pacific.
- Intraspecific behavior is affected importantly by relations between species, and their adaptations, as reflected in their communication systems. Major advances were made in understanding the ways in which "messages", whether simple or highly specialized signals mediate among organisms, and with the environment.
- Survival patterns were charted of a highly venomous sea snake widespread in the Pacific but non-existent in the Western Atlantic in order to predict the colonization success of the animal should it gain access to the Atlantic through construction of a sea-level canal.
- On Barro Colorado Island, which has housed hundreds of separate studies for four decades, an accelerating recent effort including 16 long-term studies is laying the substantive basis for the development of new methods, with possible broad applicability, for predicting the effects of environmental change on the survival of organisms.

These professional efforts, and many more, have been hampered greatly in their promise and efficiency by the lack of reasonable support. Immediate needs include three field aides (marine, mainland, Barro Colorado), one marine research launch operator, for \$24,000 in salaries; rectifying a practically zero consulting and computations funding capacity (\$14,000); supply funding deficit of \$600 per scientist and fellow (\$11,000); essential equipment needs for microscopes, balances, drying ovens, freezer and one four-wheel drive research vehicle (\$16,000); for a total of four positions and \$65,000.

2. Facilities Management Support World-wide biology is being enriched importantly by a belated but increasing focus on the tropics. STRI provides a base of operations for tropical research unique in this hemisphere and is acting increasingly as a work ground and interchange point for collaborators from around the world (e. g., over the last 12 months, 18 leading biologists from the U. S. and Europe conducted advanced seminars at STRI). During the year research workers arrived at STRI from 62 universities and 46 other institutions in 31 states and 19 countries. This demand is greatly welcomed and offers promise of concerted advances on urgent biological problems of the Seventies. The effect is that STRI is crammed literally to the rafters with staff, fellows and visiting scientists. Immediate needs include one marine station janitor, one electrician for all facilities (36 structures), one messenger (only one on board now), one general maintenance laborer, for \$15,000 in salaries; make up of shortages in transportation, utilities, supplies and fuel (\$20,000); work bench construction, and equipment maintenance contract support (\$9,000); replacement of ancient furnishings (e. g., main hall chairs on BCI were surplus 15 years ago), messenger vehicle, new and replacement air conditioners, mechanical maintenance tools (\$14,000); for a total of four positions and \$58,000.

3. Synthesis and Predictive Modeling The science of biology is newly striving to develop and apply conceptual models. It has lagged far behind in this area up until now. Partly because of the very wealth of observational detail it has assembled, and the consequent awareness of how much data is yet to be brought under control. And partly because simple models do not work on the highly complex interactions studied. There simply are not enough trained workers, time or money to make feasible the continuing in the same way. The elaboration of sufficiently complex models is beyond the capabilities of nearly all presently assembled staffs of biologists. New and different capabilities must be injected. STRI joins with other major biological research centers in giving a very high priority to efforts to selectively synthesize data, to strike out for new and effective techniques to discern unifying elements, and to continue seeking new field strategies for collecting the most significant and correlatable data. A highly developed mathematical ability and trained field experimental competence are seldom combined in the same individual. A combined team effort can achieve the capability. This is imperative if with available and projected professional resources we are going to comprehend our environment in time to predict the effects of changes man is inducing upon it. STRI's immediate move in this direction includes the hire of two professionals--an ecological geneticist and a biostatistician. The former would contribute to the bridging of key areas of expertise of STRI staff and collaborators, and the second would help lead biological problem formulations toward the use of mathematical resources and the construction of predictive modeling. Many projects are now at a stage where manual versus computer techniques can spell the difference of years in getting good results into wide use. In these times of scarce funds, techniques that will assure greater economy of professional efforts are essential. Needed: salaries for two professionals (\$35,000); and minimal first year computer support,

household transportation costs, direct supplies and furnishings (\$14,000); for a total of two positions and \$49,000.

4. Program Development Additions to the STRI staff of a marine ecologist and a forest ecologist would accelerate progress in the comprehension of these two realms. Current studies would benefit from the addition of research of wide ecosystem scope including analysis of processes such as energy flow, productivity, nutrient cycling, and food webs. The increase would enable attacks on key questions such as the dynamic relationship of the environment and behavior. These capabilities would contribute to the foundation of fundamental research on which to build productive collaboration with others on determining the biological correlates of climatic and other physical environmental changes (described elsewhere in these justifications). In addition to fitting precisely within STRI's overall research plan, both scientists would assist in helping STRI meet the calls for increased, advanced training guidance in the subject fields. Salary needs are \$35,000; travel, households transportation, supplies and furnishings (\$11,000); for a total of two positions and \$46,000.

5. Interagency Research, and Administrative Support An example of inter-agency joint research interest is typified by STRI's present contract with the Federal Water Quality Administration. FWQA is concerned over the effects of oil pollution on shoreline habitats. STRI with its Galeta Point Atlantic field station and professional resources is interested in analysis of the shoreline ecology and in changes upon it. The concerns combine under the contract to permit a two-phase study of the effects of oil pollution on a tropical shore (Phase I, Baseline, and Phase II, Proposed experimental introduction of oil to determine exact effects and natural corrective factors). Many other areas of STRI capability could be brought into mutually beneficial contract relationships with the needs of other agencies.

But proposal drafting, contracts negotiation and administration require capabilities that the small hard-pressed administrative crew at STRI does not possess. Investment in a contracts administrator and one clerk would be repaid many times over, and would permit the greatly increased opening of STRI's resources to collaborating agencies.

The two positions would cost \$23,000 in salaries. Administrative travel increases are necessary to permit continued progress in tying in STRI programs with those centered in Washington (\$4,000); transportation, utility and communications, rental, supply and office equipment shortages must be met (\$11,000); compulsory dependents tuition cost hikes, duplicating machinery rental contracts and administrative equipment service contract needs require increased funding (\$10,000); for a total of two positions and \$48,000.

RADIATION BIOLOGY LABORATORY

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	24	\$426,000	32	\$516,000	61	\$2,428,000
Buildings and Facilities Management	12	250,000	8	400,000	14	455,000
Total	36	\$676,000	40	\$916,000	75	\$2,883,000

From the initial charge that it be concerned with the effects of the sun's energy on earth's life, the program of the Radiation Biology Laboratory has been devoted to the study of the responses of living organisms to various qualities and intensities of radiant energy. The research of the Laboratory consists of three principal areas: 1) laboratory oriented research in regulatory biology 2) environmental biology and 3) carbon-14 dating.

Light has been recognized as the key controlling environmental factor for the development and growth of biological systems. The storage of solar radiation as chemical energy in photosynthesis is basic for all life on earth. However, the utilization of radiant energy and stored chemical energy is regulated by subtle changing signals of light quality, duration, and intensity. A primary objective of the Laboratory's efforts is to explain the influences of the various factors in the environment--light, temperature, humidity, and atmospheric content--on the growth and development cycles of plants and to characterize the mechanisms through which the environmental signals eventually manifest their effects on the developmental processes in living organisms. This is accomplished by studying the problems in the Laboratory under controlled conditions using biochemical, biophysical, and physiological techniques and then verifying the importance of these processes in nature by monitoring these same processes in the natural, dynamic environment. Such programs of research by their very nature are long term and require the concerted team efforts of many scientific disciplines.

The Research Program

Since its inception the Radiation Biology Laboratory has directed research efforts toward understanding the mechanisms by which radiant energy is absorbed, converted to potential chemical energy, and then utilized by cells for growth and differentiation. A large portion of the research of the Laboratory has been in qualitatively and quantitatively determining the mechanisms by which cells rely upon relatively low intensity and low total energy stimuli to regulate and channel the flow of this potential chemical energy in metabolism, thus controlling differentiation and morphogenesis. From shortly after its inception in 1928 the Laboratory has occupied a position at or near the forefront of research on the effect of the spectral quality of visible light on plant growth and development. The existing experimental programs encompass a greater number and variety of plant responses to radiation than are under study in any

other single laboratory in the country and perhaps in the world. The complexity of the problems studied is demonstrated by the number of disciplines encompassed with the program, which has a range through physiology, cytology, biochemistry, biophysics, physics, engineering, electron microscopy, and morphology. The Laboratory has been credited with major contributions in the field of photobiology.

In the area of regulatory biology, the research is primarily concerned with the photoregulatory mechanisms through which small and large changes in radiant energy signals trigger biochemical, physiological, and morphological changes in the living organism. A major effort has been devoted to the isolation and physiochemical characterization of the photoreceptor "phytochrome", the pigment system responsible for regulating such diverse responses as seed germination, gross morphological development, and flowering.

Another area of emphasis has been on the study of protein synthesis in the developing chloroplast, the site of photosynthetic activity. Tracer techniques are widely used to follow the incorporation of various amino acids and to localize the specific sites of protein synthesis. In addition, by means of electron microscopy, many details of chloroplast development and structure are being revealed. Investigations are also conducted on the biochemical and physical mechanisms by which various tropic responses are effected in plant life.

Environmental biology and solar radiation monitoring is concerned with the development of instrumentation and data acquisition systems for continuously monitoring the visible solar spectrum at various stations at different latitudes. At present, two monitoring centers are operating in the Washington area and in Israel. Other stations are in the planning stage. Significant data has already been acquired demonstrating the presence and effects of pollutants in the atmosphere.

In conjunction with measuring the spectral quality and duration of total sun and sky radiation incident to the earth's surface, studies are being carried on to correlate biological responses, such as flowering, fruiting, and other morphological development characteristics, with daily and seasonal fluctuations in the color composition of sunlight. Greenhouse facilities and environmentally controlled growth rooms are used in the studies in determination of correlation between measured solar radiation changes and responses in plant development, with other environmental factors, such as humidity, nutrition, air content, being monitored as appropriate to particular investigations. The greenhouse and environment chambers, interference filter monochromators, and other instruments have been designed and developed in the Laboratory.

The Radiation Biology Laboratory serves as a calibration center for solar measurement instruments used in various parts of the world.

Also under the program of the Radiation Biology Laboratory is a Carbon-14 Dating Unit that has a research function in addition to its operation as a service facility. The unit plays a significant role in the Institu-

tion's program of dating geological and archeological artifacts of cultural significance. Its research program is twofold, including efforts toward refinement of techniques and instrumentation toward facilitating C-14 measurements.

For fiscal year 1972, an increase of \$1,075,000 is requested to correct shortages in building operation and maintenance and in support of the current research program. A further \$873,000 is requested to extend the network of environmental monitoring stations. The appended chart shows the past and current distribution of resources and indicates that the research program has remained relatively static in funding except for increases for legislated pay raises.

Correction of Shortages

The principal shortages for the current operation of the new 50,000 square foot Radiation Biology Laboratory in Rockville, Maryland, fall into four main categories (\$1,075,000):

- Insufficient personnel to carry on the current research program and to make efficient use of the new facility.
- Construction of environmental control rooms.
- Insufficient laboratory furniture and equipment to make the new laboratory reasonably functional.
- Insufficient refrigeration capacity for controlled temperatures in laboratory areas.

In the area of personnel, six additional positions are needed to maintain and operate the new building and 20 positions are needed to carry on the scientific, technical, and administrative activities. These latter positions are particularly essential for placing scientific activity and productivity in proper balance with the outlay for rent, utilities, and building operation.

In order to maintain and service the building properly, the six required positions are two general maintenance workers and four operating engineers (\$50,000).

In the area of Environmental Biology research, the eight staff shortages consist of a radiation physicist, an environmental physiologist, a physicist, a laboratory technician, a laboratory aide, two grounds maintenance workers, and a refrigeration mechanic (\$95,000).

It is to be noted that at present, the Director of the Laboratory is the only PhD level scientist directing research in this area.

In Regulatory Biology the six required positions are: a biophysicist a plant physiologist, an instrument specialist, a laboratory aide, a laboratory technician, and a chemical stock room clerk (\$66,000).

The laboratory's Assistant Director at present also directs Biophysical Research activities.

The Carbon Dating facility has a critical shortage of one laboratory technician (\$8,000).

The library at present is being maintained with great difficulty by the already short-handed office staff. A full-time librarian is essential in order to prevent the complete breakdown of periodical and book cataloging and shelving requirements (\$8,000).

Presently the laboratory's administrative load is borne entirely by the Director, Assistant Director, and members of the scientific staff, as the need arises. This has resulted in both loss in scientific productivity and inefficiencies in administration. In order to correct this situation four positions are required: an administrative officer, an administrative assistant, and two clerk typists (\$44,000).

Total cost for this shortage of 26 positions is approximately \$320,000 including the cost of personnel benefits and associated travel and office, laboratory, and buildings maintenance supplies.

Shortages in the second category (environmental control rooms) represents over 30 percent of the total basic shortages. When the laboratory relocated from the basement of the original Smithsonian Building to its new building there were insufficient funds available for completing the research facilities. Specifically, what could not be completed were the construction and equipping of seven environmental control rooms for studying the environmental parameters controlling plant growth under controlled conditions. Each of these rooms, approximately 100 square feet of floor space, requires precision control of light quality, intensity, duration, relative humidity, gas content and temperature. Current estimates are approximately \$30,000 each for the construction of the shell of each room including temperature control, humidity and gas exchange for a total of \$210,000. The lighting units which are capable of mimicking subtle changes in spectral quality as well as the natural photoperiod of daylight are presently estimated at \$20,000.00 each for a total of \$140,000. Total cost for environmental control rooms therefore is \$350,000.

Most of the laboratory furniture in the old location was cannibalized, re-finished and moved to the new location. At present many of the labs have inadequate lab furniture or no lab furniture. Also, since much of the research work requires the use of radioactive isotopes, absolute carbon filter hoods must be installed in the laboratories. An amount of \$40,000 is required for laboratory furniture and \$15,000 for five hoods.

Similarly, much of the precision equipment in the laboratory is more than 15 years old. In order to maintain the laboratory's position as a leader in the field of photobiology and environmental physiology, it is necessary to acquire new equipment and replace worn out and obsolete equipment. An amount of \$150,000 is requested for such equipment and furniture. This includes a Cary 14 recording spectrophotometer, \$22,000; a Perkin-Elmer Spectrophotofluorometer and accessories, \$11,000; a Perkin-Elmer infrared spectrophotometer, \$33,000; and a CO₂ Gas Analyzer for the environmental control chambers, \$9,000.

As the final category of support shortages, when the laboratory facilities were constructed, funds were not available for temperature controlled areas in which the environmental control rooms were to be installed, as well as temperature control for some of the laboratories and irradiation facilities. These were deleted from the construction costs and must be added before the laboratory is able to function at the same capability level as was possible at its previous location. The installation of precision control of temperature in the laboratory rooms is estimated to be approximately \$200,000.

Environmental Monitoring Network Program

Knowledge of the energy output of the sun, the solar constant, and spectral distribution of sunlight are inextricably bound to studies of atmospheric physics, meteorology, energy balance of the earth, climatology and biology. In view of concerns for the quality of man's environment, with particular reference to the uncertainty of the indirect, as well as direct, effects of pollution through changes in climate, in ocean ecology, and in large terrestrial ecosystems, it is essential to collect data in the various areas of the environment and environmental changes. In spite of the primary role of the sun in terrestrial functioning or activity, however, data and knowledge concerning the sun and radiant energy are incomplete, and for some facets, nonexistent.

Approximately ten years ago a program was initiated to develop the instrumentation for measuring the broadband spectral quality of the sunlight from sunrise to sunset on a continuous basis. The instrumentation system provides for simultaneous monitoring and recording of the sunlight bands that influence growth and development in living organisms, with focus on plants. The Laboratory's program of solar energy measurements and biological response correlation fills a significant gap in efforts to provide understanding of interacting factors that man must adjust and control in order to maintain a habitable environment. The Radiation Biology Laboratory program can be intensified and expanded to provide specific information and data over relatively long periods that will provide answers to current questions and problems. Refinements of instrumentation are being developed to add capabilities for underwater measurements of intensity, duration and spectral quality of light; spectral quality measurements before sunrise and sunset; meteorological instruments for temperature, humidity and airflow; and special instrumentation for sky cover or cloud measurement.

There is a developing awareness that a major element of importance lies in the consideration of the myriad photochemical regulatory reactions in plants and animals taken all together, and in the correlation of all environmental forces acting in concert or in sequence upon developing organisms. To evaluate the importance and the effects of the photochemical responses in plants and animals in the natural light environment, and to trace the sequence and interdependence of the various influences acting and interacting upon living organisms, it is essential to monitor and to measure the quality and the quantity of the light environment during the entire course of daily and seasonal fluctuations. The amount, the quality, and the ratio of different spectral components, perhaps particularly during the periods near sunrise and sunset when biological clocks

seem to be most strikingly affected, must be determined without equivocation as to the accuracy and delicacy of the measurements. The elements of latitude and varying climatic conditions must be identified as significant or negligible factors, in order that the determining influences may be identified.

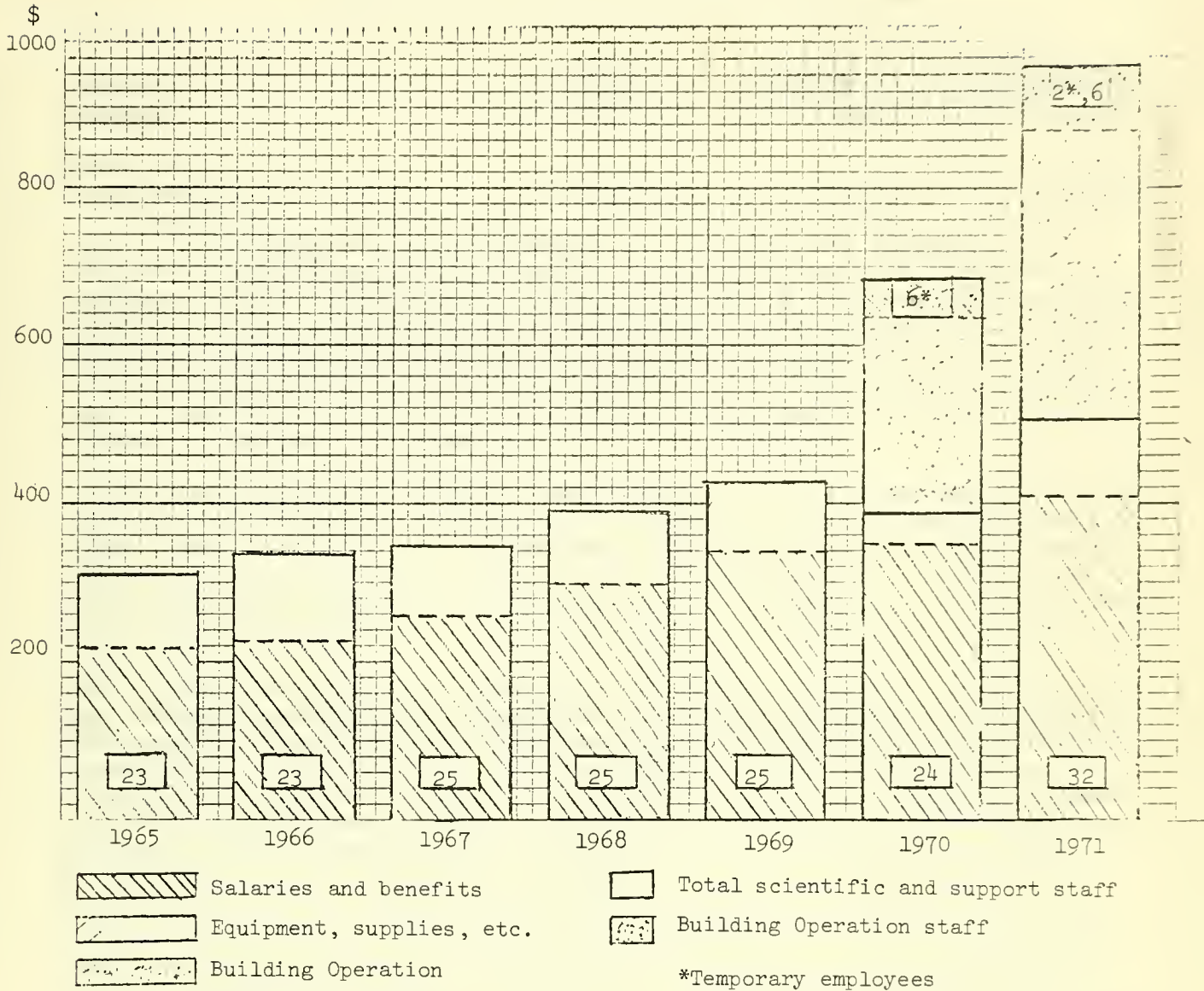
In conditions of burgeoning population, with concomitant requirements for food production, environmental rehabilitation and the maintenance of necessary natural balances within the biosphere, speculation and estimation may fall short of producing solutions to problems that may prove to be of unanticipated immediacy. The stage of scientific instrumentation technology makes it possible to achieve precise and conclusive answers as to the factors that are significant in affecting growth and development of biological organisms.

To obtain information relative to latitude, altitude, temperate regions, tropical regions, arctic regions, and biological correlation in both northern and southern hemispheres, a network of stations should be developed. These stations would be located in these various identified regions and sites would be selected with consideration for using facilities already established by other bureaus of the Institution and by other agencies for reasons of economy in time and funds. A basic monitoring system for one station requires the following funding:

1. Data acquisition system, detectors and accessory equipment	\$60,000
2. Meteorological equipment	10,000
3. Station personnel (one technician)	12,000
4. Supplies, contractual service, including computer time	10,000
5. Administration and station travel	<u>5,000</u>
Basic system and staff, one station	\$97,000

To establish an adequate base for obtaining the required information a network of a least nine stations would be necessary to cover the northern and southern hemispheres, at an estimated cost of about \$873,000.

RADIATION BIOLOGY LABORATORY



This figure graphically demonstrates that there has been no real increase in operational funds for research since 1965. The small annual increases from that date represent primarily salary adjustments and some for inflation. Although the total appropriation for 1970 and 1971 appears to have doubled over previous years, unfortunately more than half represents costs associated with the operation of the new building. It should also be noted that housing, utilities and services were previously supplied from BMD budget. The increase in scientific staff for 1971 is primarily in non-professional technical and non-technical support personnel.

OFFICE OF ENVIRONMENTAL SCIENCES

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	23	\$565,000	34	\$584,000	44	\$1,051,000

The Office of Environmental Sciences was established in order to integrate the Smithsonian programs in Ecology and Oceanography and Limnology, and to strengthen the Chesapeake Bay Center for Environmental Studies. In this establishment, it was recognized that there must be increased concern with the interface between land and water. Knowledge of land use practices as they affect waters, and of the water cycle as a vital contribution to land, becomes of first importance in environmental studies, especially of pollution.

During fiscal year 1971 a study was initiated of the environmental relationships of the Chesapeake Bay Center. Aimed at providing baseline information which could be used in planning, predicting, and evaluating the results of development of the megalopolis, this study will involve many public and private agencies and individuals in sociological, economic, and scientific investigations.

The Ecology Program has embarked on a series of studies designed to gain insights regarding the management of development projects. Guidelines are being developed to identify the ecological consequences of river basin development, highway construction, growth of cities, and establishment of large biological preserves. The Oceanography and Limnology Program working especially with offices of the U.S. Antarctic Research Program, the International Cooperative Investigations of the Mediterranean, the International Decade of Ocean Exploration, and other national and international programs, coordinates the participation of scientists of several Smithsonian bureaus and of scientists associated with the Smithsonian in exploration of the oceans. The Office also provides impartial sounding boards for public and agency examination of such issues as pollution in New York Harbor, underwater archeology, Chesapeake Bay research, and, marine natural preserves. Through its sorting centers in Washington D.C., and in Tunisia (the latter principally supported by the foreign currency program), the Office supplies marine biological and geological specimens and related data to scientists around the world.

A program increase of \$444,000 is requested for fiscal year 1972 primarily for the support of the Oceanographic Sorting Center and the Chesapeake Bay Center as national resources, and for providing for additional program management.

Smithsonian Oceanographic Sorting Center

The Sorting Center processes marine specimens from United States and international expeditions for use by more than 300 scientists from 27 countries in specimen-related research. The Center provides marine biological and geological identification services and serves as a national referral service for all kinds of specimen-based activities, from field collecting to the disposition of identified species in permanent repositories.

The Center has made concerted efforts to improve its productivity. An automatic data processing system for specimen records has been started. Many manual operations have been automated. Many instruments and scientific devices have been acquired or fabricated to improve efficiency. When possible, items have been procured through government surplus sources to save funds.

Despite improved productivity, the Center is unable to meet the increasing demand from colleges, universities, and federal agencies for specimens. Backlogs of unsorted samples now exist for specimens gathered from the Great Lakes and several important oceanic expeditions. The backlog results primarily from the inability of the present staff to process and sort the more than 10,000 samples being received annually. Unless these samples are sorted soon, many will deteriorate to the point of being useless for research.

In order to alleviate this backlog, \$50,000 are requested for four sorter-technicians, an assistant supervisor, and a registrar. Support funds in the amount of \$39,000 also are requested for contract services, supplies, and equipment needed to sort, package, and distribute specimens, and for travel and rental of equipment.

During the last several years the staff of the Smithsonian and its associated scientists have had to spend more and more time in developing responses to problems of increased productivity of lakes as a result of fertilization and pollution. It is proposed that Smithsonian talent be consciously directed to descriptions of the problems and involvement in their solutions. The Sorting Center and many scientists could make important contributions if given resources. Funds in the amount of \$75,000 are requested to employ a program director in limnology to work with the Sorting Center to devise ways to sort fresh water organisms and to support scientific staff engaged in appropriate research directed at fresh water productivity.

Chesapeake Bay Center for Environmental Studies

The Chesapeake Bay Center is a 2,000 acre natural and semi-natural area located seven miles south of Annapolis, Maryland, about equidistant from Baltimore and Washington. It was established in 1966 and a formal open-ended consortium with Johns Hopkins University and the University of Maryland was created to promote a program of research and education designed to develop ecological knowledge with emphasis on populations, communities, and ecosystems. This program demands the preservation of the land in a natural state, the development of a model watershed research and management program, and the use of the Center as a focal point for educational activities.

A major difficulty that impedes the study of natural systems is the shortage of adequate field stations and research facilities. Ecology is an outdoor science. Although important studies have been done in the laboratory, with few exceptions these have been inspired by observations made in the field. The most effective starting point for the development of ecosystem science is the establishment of natural areas to be used for research and education, with a guarantee of administrative continuity so that long-range research programs can be initiated confidently. The

fundamental importance of the Center is the fact that it constitutes the primary mechanism for both teaching and research on complex living systems.

Together with collaborating universities, federal and state agencies, the Center can be used for a model watershed program for the Rhode River. The Center has 12 miles of shoreline and occupies nearly one-half of the shoreline of the Rhode River estuary. Yet the Center has no resident capability for the study of this estuary. It is proposed that such a capability be established. A scientist would be employed and support provided for studies of the estuary. The monitoring of rates and processes of change in this environment is especially vital as the development of suburbs begins to encroach on the Rhode River watershed.

Data on land use history, ecosystem function, and socioeconomic trends and attitudes will be used in a way that will result in optimal wise use of the land and water resources of this small watershed and its adjacent estuary. This model community action program is being developed in conjunction with the Anne Arundel County Office of Planning and Zoning, the Maryland Department of Natural Resources, the Soil Conservation Service, the U.S. Geological Survey, the Department of Housing and Urban Development, and other agencies. A constructive interaction will be established with the people of the area. Such interaction will demonstrate land use planning that offers tangible environmental benefits while avoiding the undesirable elements of a rapidly urbanizing complex. The movements of fertilizers, herbicides, and pesticides, and the effects of soil erosion and estuarine sedimentation, as well as the role of marshes as filter mechanisms, and the influences of these phenomena on the land, living systems, and estuary are studies that may result in suitable control measures applicable to other areas.

The maintenance of the Center as large natural area serves educational purposes and contributes to the esthetic quality of the region. As the area between Washington and Baltimore becomes increasingly populous, the Center increases in importance as a training ground for pre and post-doctoral students, undergraduates, visiting scientists, and others. The use of the Center as a major interpretive facility for young people is rapidly increasing in volume and importance. A museum and nature trail, visual aids, lectures and "in the field" presentations assist in instilling the individual ecological perspective necessary for our future existence.

For fiscal year 1972, funds are requested for a botanist to survey the vegetation of the watershed and a security officer to protect the land and water areas \$25,000. An additional amount of \$125,000 is requested for travel, utilities, services, supplies, and equipment in support of the watershed program and other community related services of the Center.

Program Management

The present program management staff of the Office of Environmental Sciences is small consisting of three scientists-administrators. The Office is receiving increasing numbers of requests from government and private organizations for research or advice using the unique facilities, capabilities, and international relationships of the Smithsonian Institution.

In order to strengthen its role as a catalyzer of necessary Institutional research, and to bring together the various staff resources in the Institution for responding to the needs of outside organizations and agencies an increase of \$130,000 is being requested. The funds would be used to employ an additional program manager (\$30,000) and to provide special program support funds, such as for the following project.

Biological control of specific pest animals and weeds has been accomplished with great success and absence of chemical contamination of the environment. Further research on the very promising methods of biological control of tropical snails that transmit Schistosomiasis to humans is urgently required, especially since no other methods of control or treatment have been successful. Sciomyzid flies appear to have great potential as snail predators. Aquatic weed plants have also become very troublesome pests, and biological control appears very promising. Biological control of the Crown of Thorns starfish should be initiated. The Smithsonian proposes to bring its Natural History staff and associated scientists into this field and to improve present practices and develop new ones (\$100,000).

NATIONAL AIR AND SPACE MUSEUM

Program Category	1970		1971		1972	
	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>
Research and Scholarship	6	\$102,000	6	\$131,000	6	\$145,000
National Collections Management and Use	29	236,000	29	345,000	31	425,000
Education of the Public	<u>6</u>	<u>148,000</u>	<u>6</u>	<u>150,000</u>	<u>7</u>	<u>185,000</u>
Total.....	41	\$486,000	41	\$626,000	44	\$755,000

By Act of August 12, 1946, the Congress established the National Air Museum as part of the Smithsonian Institution and later by Act of July 19, 1966, added the memorialization of space flight to the functions and changed the name to the National Air and Space Museum. The functions of the Museum are to memorialize the national development of aviation and space flight; collect, preserve, and display aeronautical and space flight equipment of historical interest and significance; serve as a repository for scientific equipment and data pertaining to the development of aviation and space flight; and provide educational material for the historical study of this flight. The same Act of July 19, 1966, authorized and directed the Regents of the Smithsonian Institution to prepare plans and to construct a suitable building for the National Air and Space Museum.

The staff of the National Air and Space Museum in carrying out the Museum's functions has selectively collected the world's most comprehensive collection of historically significant aircraft, spacecraft, engines, instruments, components, and accessories. At the same time there has been assembled a large and valuable collection of documents, photographs, drawings, and publications recording experimentation, research, and development of air and space craft together with the history of the aerospace industry.

The museum exhibits a small number of the most historical air and space craft in the steel shed called the Air and Space Building and the old Arts and Industries Building which was built in 1879-81 for the United States National Museum. These are among the most popular exhibits in all of the Smithsonian museums. In 1970, 1,839,373 visitors entering the Air and Space shed and 2,557,155 entering the Arts and Industries Building.

Most of the aircraft, engines, and spacecraft accessory components, are located at the Smithsonian storage facility at Silver Hill, Maryland. About 60 of the aircraft are both unassembled and inadequately protected from deterioration. About 24 of the important aircraft are lent to museums including the Air Force Museum and the Naval Air Museum among others, under the condition that the borrowing museum will restore the planes. All exhibitable aircraft and many other space objects released to the Smithsonian Institution by the National Aeronautics and

Space Administration are exhibited by the museum or are loaned to other museums and NASA centers or to the USIA and Department of Commerce for circulation and exhibition abroad. The staff solicits as much aid from industry and federal agencies as it can obtain to assist in the restoration of the collections.

The essential programs for which an increase of \$110,000 is requested are the preservation and restoration of collections and the planning and procurement of exhibits. The restoration of aircraft is slow and costly. It is necessary to accelerate the program at the rate of two or three additional aircraft each year in order to arrest deterioration and prepare the collections to memorialize the nation's flight accomplishments in an effective and dignified manner.

For the preservation, restoration, and management of collections an increase of two positions and \$57,000 is required. This will provide for two museum aids (trainees) for warehousing duties at Silver Hill; and other funds for the restoration of two aircraft by contractual services.

For the development of exhibit units one position and \$45,000 are required. This will provide an exhibits curator to coordinate the efforts of the technical curators and exhibits designers and assist in planning exhibits. Other funds are required for travel to solicit exhibit elements from industry and for the transportation of acquisitions.

For the research and planning of the details of the new museum and for contractual services for the research required for the drafting of specifications for the restoration of additional air and space craft an increase of \$8,000 is required.

CENTER FOR THE STUDY OF MAN

Program Category	1970		1971		1972	
	<u>Actual</u>		<u>Estimate</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.....	6	\$83,000	7	\$152,000	11	\$265,000

The Center for the Study of Man is presently concentrating its efforts in three general areas of program development: American Indian Program; International Anthropological Communications Program; and the Coordination of Research on Major World Problems. Under the American Indian Program, three interrelated activities can be identified:

- Development of the 16 volume Encyclopaedia of North American Indians (successor to the original Handbook) including appropriate American Indian scholarly input and involvement.
- Development of a system for providing scholarly educational materials concerning Indians to individuals, schools, and Indian communities; and helping to coordinate educational intercommunication among Indians themselves, and with scholars and appropriate governmental and private agencies.
- Development of a legal-historical research program on the North American Indian land base.

For fiscal year 1972 an increase of \$110,000 is requested for continued development of the Encyclopaedia of North American Indians (\$83,000) and for the antropological communications and research programs (\$27,000).

The purpose of the Encyclopaedia, consisting of 15 or more volumes, is to summarize all that is known of the prehistory, history, and traditional and modern cultures of all the Indian groups north of Mexico, to bring up to date and replace the previous standard encyclopaedic work on this topic which was issued by the Smithsonian in 1907-1910. This will become the standard reference work on all aspects of North American Indian history and anthropology for students, teachers, authors, researchers, and administrators, both non-Indian and Indian, both U.S. and foreign. Preliminary planning and correspondence have shown that there are more than 1000 potential contributors throughout the nation and abroad and that a large audience for the work exists. Ever since its founding, the Smithsonian has conducted important 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 very slow, due to lack of funding. Further postponement risks the disillusionment of the academic community whose support, as authors and readers, is essential.

The requested funds will be used to hire four new personnel (an anthropologist, a copy editor, a research assistant, and a secretary-typist) and to pay for the expenses of volume editors and contributors. It is anticipated that the first manuscripts will be arriving by August 1971 and that they will increase in number as the year progresses.

The remainder of the increase (\$27,000) would go to support the International Anthropological Communications Program and the research program on topics relevant to the understanding of major world problems. For the former, \$5,000 is requested to be used mainly in support of the Urgent Anthropology Small Grants Program. The remaining funds (\$22,000) would be used to assemble a task force of human science specialists to begin a five-year research program on management of the environment.

The Urgent Anthropology Small Grants Program has been meeting the needs of the scientific community by identifying, publicizing, and financing small grants for research in geographical areas that are undergoing rapid environmental change as a result of urbanization, improved communications, better transportation, and other factors. During fiscal year 1970, in collaboration with 40 scholars and nine institutions, nine grants with a value of \$7,600 were made.

The research program on management of the environment is a continuation of efforts to assemble "task forces" of human scientists from appropriate institutions throughout the world, to work together on major world problems. This year the Center is studying and inventorying present knowledge about problems of world population growth with emphasis on discovering what an anthropological approach to this problem will reveal. Included in this effort are scientists, scholars, and persons involved in administration of programs (governmental and otherwise) concerned with this problem. Educational means (including museum exhibits, mass media communication, etc.) to provide information to the public, including governments and other appropriate organizations, are being established. It is anticipated that members of the "task force" will work together for a five-year period before publishing their final results.

CENTER FOR SHORT-LIVED PHENOMENA

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	0	\$11,000	1	\$37,000	3	\$116,000

The Center for Short-Lived Phenomena is an early alert system and clearinghouse for the reception and dissemination of information on short-lived natural events. The Center alerts scientists, agencies, and research institutions to major short-lived ecological, geophysical, and astrophysical events occurring anywhere in the world. It quickly communicates data and descriptive information on events such as large oil spills, major atmospheric and water pollution events, high biocide residue discoveries, massive fauna and flora mortalities, volcanic eruptions and major earthquakes, the birth of new islands, the fall of large fireballs and meteorite falls, sudden changes in biological and ecological systems such as animal migrations and colonizations, and any other natural or man-made phenomena that require rapid response from scientists in order that they may take advantage of research opportunities while environmental changes are occurring.

During the past two years the Center has reported over 300 short-lived events that occurred in 72 countries and all the world's oceans, including 121 earth science events, 92 biological and ecological events, 44 astrophysical events, and 8 urgent anthropological and archaeological events that led to 168 scientific field expeditions. The Center has issued over 1,000 event notification and information reports to thousands of research scientists and institutions, published 48 event reports, handled a communications volume of over half a million cable words and mail volume of 690,000 event notification and information cards.

An appropriation increase of \$78,000 is requested for the Center's operations.

Activities have continued to increase rapidly in the past year because of the overwhelming response from federal agencies and the international scientific community. At the urging of a number of agencies and international organizations, the Center has become involved increasingly in reporting significant environmental pollution events. Because of the Center's comprehensive global communications system and its reporting network that has now grown to over 2,200 scientists and scientific field stations in 129 countries and territories, the Center was able to report every major environmental pollution event, volcanic eruption, earthquake, oil spill, and meteorite fall that occurred on earth in 1969, usually within hours after the events occurred.

The Center has instituted every possible efficiency such as the development of automatic computer printouts of event notifications, but current staff and resources are severely limited. Its ability to cope with the demand for its services, particularly requests from federal agencies and international organizations for fast, qualitative information on environmental pollution events, is very inadequate. The Center has been successful in obtaining outside financial support from the Ford Foundation, from UNESCO, and from NASA for special events such as the lunar watch. It has also instituted an event notification subscription program that now has over 500 subscribers and produces revenue

of over \$20,000 per year, but the success of the Center's regular operations will depend heavily on the level of core federal funding that will be received.

The Center will begin no new activities in fiscal year 1971 and plans none for fiscal year 1972 that will use federal funds but requests that fiscal year 1972 federal support be provided for two types of current shortages: those resulting from the Center's increased commitments in environmental pollution event information communication, and those resulting from the loss of grant and contract support from NASA and NSF due to agency budget cuts.

An increase of two federal positions is requested: an event research specialist to handle a burgeoning volume of event research on ecological and environmental pollution events, and an event information specialist to assist in the collection and dissemination of event information to 160 federal agencies and scientific research centers throughout the world (\$17,000). In order to continue to operate the Center at its current level, the following increases in basic federal support for the Center also are requested: travel (\$2,000) and transportation of things (\$1,000); rent, communications, and utilities (\$25,000); printing and reproduction (\$14,000); other services (computations and information systems support)(\$15,000); supplies and materials (\$3,000); and equipment (\$1,000). The total increase requested, \$78,000, will permit the Center to continue to operate at its current level of activity in fiscal year 1972.

NATIONAL ZOOLOGICAL PARK

Program Category	1970 Actual ^{1/}		1971 Estimate		1972 Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	0	0	12	\$ 191,000	22	\$ 351,000
Education of the Public	0	0	88	1,043,000	108	1,213,000
Buildings and Facilities Management	0	0	151	1,851,000	178	2,345,000
Total	0	0	251	\$3,085,000	308	\$3,909,000

The National Zoological Park was founded in 1889 for the "advancement of science and the instruction and recreation of the people." To accomplish this, the Zoo exhibits a broad collection of animals from all parts of the world in natural surroundings; maintains an information and education program for the benefit of the visiting public from all over the United States; and promotes scientific research, including bio-medical programs, for the advancement of science and the benefit of the animals so that visitors can enjoy them in prime health. The Zoo is organized in five departments: Office of the Director; Operations and Maintenance; Living Vertebrates; Scientific Research; and Animal Health. The number of visitors increases annually. In 1970, over 5,000,000 people visited the Zoo. A significant number of these visitors are in organized school groups from the metropolitan area and more distant points. The Zoo is increasingly used as a teaching site by teachers of biology and other natural sciences. The increased visitor load intensifies requirements for patrols, trash clean-up, washroom sanitation, first aid, and other services.

Continued improvements have been made in the collection of animals, which is one of the world's largest. As the collection evolves, the Zoo will present exhibits of greater visitor interest and, at the same time, give greater emphasis to species and groups which effectively demonstrate significant points of animal adaptations and behavior. Greater emphasis will be given also to increasing zoo births by pairing unmated animals and maintaining breeding groups. Not only is this good conservation practice, but it is essential in view of the increasing scarcity of many species and the high prices that must be paid to acquire them.

For fiscal year 1972, a program increase of \$667,000 is requested primarily to staff and operate the new Hospital-Research Building; to meet the maintenance needs of buildings and grounds; to operate the new heating plant; to improve vehicle and custodial services; and to care for the animal collection.

¹ Funded through transfers of funds from the District of Columbia Government.

The Office of the Director plans and directs all Zoo programs. It also coordinates the activities and functions of the Pathology Office and the Planning and Design Office; directs the protective service program; develops and maintains the Zoo's educational program; and furnishes general administrative services. The animal acquisition program is under the direction of this office. Administrative services include personnel, budget, fiscal, supply, and procurement functions.

1. Director's Office

As the Zoo increases in popularity as a source of scientific information, the volume of correspondance (local, national and international) has increased, causing a backlog of administrative requirements. To meet the increased volume of work in the Director's Office and the Assistant Director's Office, two secretarial positions are requested (\$16,000).

Additional funds are requested for travel, largely in connection with the animal acquisition program, and for services, supplies, and equipment associated with Director's Office operations. For the most part, these funds are required to meet rising costs (\$23,000).

2. Staffing the Hospital-Research Building

The Hospital-Research Building was completed and occupied in January 1970. The Pathology Office was transferred to this building in September 1970. The plans for the coming year are to continue to improve the service to the Zoo and to undertake specific research projects by means of conventional pathologic techniques. The Zoo has the opportunity to offer outstanding research and training services. Space will be available for visiting scientists, undergraduate fellows, and trainees interested in the research potentialities of the pathology laboratory. The degree to which specific research can be accomplished will depend largely upon the availability of technical and clerical help. To expand this service, two positions, a secretary and a histopathology technician, are requested (\$16,000).

One police position is requested to permit enlarging the night shift for the protection of drugs and expensive medical equipment and for park security around the Hospital-Research complex, located in the wooded area of the Park (\$9,000).

One animal keeper position is required to care for the animals which are being used in the central laboratory animal colony and primate room for experimental purposes. An animal keeper working in this laboratory can not care for animals under other scientific studies because of a possibility of contamination. Funds for the one position, travel, supplies and equipment are requested (\$15,000).

One library technician position to assist the librarian in order to fulfill the requirement of a specialized library is requested. The new library in the Hospital-Research Building will have adequate facilities to service not only NZP staff and personnel, but students and researchers as well.

Many individuals using these facilities will need assistance in specialized research. New books must be catalogued. Periodicals must be indexed, routed, and filed in the stacks. Funds for the one position and books for the library are required (\$9,000).

3. Administrative Services

As the number of personnel in the Zoo increases and programs expand, the workload in the supply section of the Administrative Service Division increases. For instance, the availability of funds for capital renovation and repairs to existing surroundings and buildings has increased the workload. An additional purchasing agent and a clerk typist are required (\$14,000).

One clerk typist position is requested for the protective service program to perform the administrative duties now accomplished by officers who should be on patrol duties. Forms that are required to be typed cover police activities, personnel manning, park safety, and requisitions for supplies and equipment (\$8,000).

During the summer of 1969, the first phase of conversion of the heating plant from coal to gas was accomplished. The complete conversion was accomplished in the summer of 1970. The cost for operating the Hospital-Research Building has exceeded estimates. Funds are requested for utilities (\$30,000).

There are remote areas of the Park in which tradesmen, police, and professional staff must work. It is frequently important to communicate quickly with these people and telephones are not readily available. Funds are requested to replace and expand the Zoo's radio communication system on a rental basis (\$11,000).

Operations and Maint. Dept. 1971 Base: Pos 100 \$1,065,000 Inc. Pos 35 \$336,000

The Operations and Maintenance Department has responsibility for all plant maintenance and supporting services. These include:

- Operational services: automotive maintenance; operation of trucks and heavy equipment; trash collection; sweeping of streets and walks; snow removal; and janitorial services.
- Maintenance and construction: maintaining and repairing 15 major buildings and wide range of cages and other facilities. This unit also performs renovation and minor construction, and builds nest boxes, shipping crates, exhibits, and other needed items.
- Grounds: maintaining and improving the 156 acres of trees, lawns, shrubs, flower beds, and indoor plantings.
- Air-heating: maintaining all heating plants and air conditioning in the buildings throughout the Park.

1. Operations and Maintenance Management

A maintenance work order system to provide useful information on workload and maintenance costs has been in operation for three years. This

consists of a monthly summary report and a cumulative fiscal year report. Since there is no position available to perform the daily duties required to maintain these accounts and manpower statistics, the monthly report frequently falls 30 to 45 days behind reporting dates. This system provides manpower and material utilization reports and cost data necessary for developing systematic maintenance throughout the entire Zoo. It also provides vital information for budget requirements and projections. One production control clerk position is requested (\$7,000).

Funds are requested to provide all wage-board employees in this department with work uniforms and safety supplies. There are 90 regular wage-board employees in need of instant recognition by other employees and the visiting public for security reasons. Also required are travel funds for the O & M Manager and for Zoo employees transporting animals (\$15,000).

One assistant building manager position is requested to assist the buildings and ground manager by performing routine estimating, inspections, and obtaining plans, bids, prices, etc., and to act in the absence of the manager (\$11,000).

2. Maintenance and Construction

With the completion of the Great Flight Cage; Delicate and Hardy-hoofed stock buildings, shelters, and areas; new roadways and parking lots; and the Hospital-Research building, the following workload has been added to the maintenance program since 1963:

- 24 drains, 30 water outlets for hoses, 15 basins, 2 rest rooms, 16 water troughs. The Hospital-Research building will have 27,000 feet of sanitation sewer, water, and vent pipes to maintain, 116 floor drains and sink waste, 8 rest rooms, 64 hot and cold water outlets, 3 disposals, 1 sterilizer, and 27 valves and controls.
- 49,640 feet of fencing to be maintained.
- 236 locks and 348 doors which require the repair of various types mechanism.
- 293,972 square feet of asphalt roadways and parking lots to be maintained.

The wear and deterioration of the old facilities from the action of time, elements, visitors, and animals creates a normal workload. New facilities, added to the preventive maintenance demand on the present maintenance staff, leaves many of the facilities in a state of disrepair and deterioration causing a backlog in the various trades. Only one electrician, one carpenter, and one steamfitter positions have been authorized for this program since 1963.

For instance, at present, there are one lead foreman, three pipefitters, and one junior pipefitter to maintain the pipes and equipment of the Zoo's heating, water, sewage, and drainage systems. These systems are located in and around 20 buildings in an area of approximately 100 acres. Due to the condition of 75 percent of these systems, emergency

repairs seem to be the order of each day, creating a backlog of preventive maintenance. A backlog of 16,700 man-hours jeopardizes the safety and well being of the animals.

Two pipefitters, a carpenter, a welder, two asphalt workers, and two maintenance helpers are requested with funds for building and maintenance supplies and equipment purchases on a planned replacement cycle (\$92,000).

3. Tree and Garden Maintenance

There are approximately 12,000 trees in the Park. Using the International Shade Tree Evaluation Scale, the value of these trees is estimated to be \$6.5 million. There are five (including the supervisor) tree maintenance worker (climbers) positions available to prune and treat diseased trees, remove dead or hazardous trees, plant or replace trees, feed and water trees located in public areas. There is one grounds worker position available to assist in this work, which requires climbers to be used as ground workers. The tree section has a backlog of 24,000 man-hours of climbing work or 8-years of work with the present available positions. An addition of two grounds worker positions will increase the actual climbing hours per year and reduce this time to six years, permitting the tree section to start another cycle of preventive maintenance and insure the safety of visitors, employees, and animals (\$12,000).

Three additional grounds worker positions are requested to assist the Garden Section in maintaining the horticultural features in new areas created by the construction and improvement of the Zoo. The areas to be maintained are:

Hoofed Stock area.....	2.5 acres	Horticultural features to be pruned and sprayed.
Harvard Street Bridge area...	.5 acres	Lawn to be mowed, sodded, seeded and fertilized.
Hospital-Research area.....	2.5 acres	Horticultural features and lawn to be maintained.

New areas and dry seasons have tripled the watering activity, adding 2,300 additional man-hours; an increase of 1,000 man-hours in pruning activities; and a minimum increase of 1,500 man-hours must be added to the weed spraying activity. Some flower beds will have to be eliminated in order to give proper maintenance to the remaining one and to the turf and ornamental feeding (\$18,000).

One gardener position is requested to assist in maintaining the plants and general operation of a 70' X 30' greenhouse. This requires two gardeners positions to maintain, one is now available (\$7,000).

One clerk-typist is requested to perform the administrative duties of this Division. At the present time, maintaining time cards, filing records, ordering supplies and equipment, typing reports and correspondence and maintaining a horticulture library consumes 75 percent of the Chief of the Division's time. Many of these duties fall days behind and correspondence goes unanswered because of lack of clerical personnel. This would also allow the Chief of the Division to spend his time inspecting construction sites for damage to existing plants and trees; designing detailed landscape

plans; estimating costs; and setting up work orders and training programs for the Division (\$7,000).

Funds are requested for supplies and to replace the 40-foot skyworker. This piece of equipment is ten years old. A climber's life depends on the safety of this machine when operating the bucket 40-feet off the ground. The machine is checked by special mechanics of the District Highway Department every six months for efficiency and safety. Because of the lack of housing, the skyworker must be subjected to the elements, causing wear and deterioration. The new skyworker will reach 60 to 70 feet from the ground which will enable the climbers to eliminate a hazardous climb of 20 to 30 feet above the 40-foot bucket (\$26,000).

4. Air-heating

The change from prior years of air-pollution and coal scoop engineering to a sophisticated anti-pollution system, technical control of boilers, and buildings with low tolerance for climatic changes and other living conditions demands constant surveillance and planned preventive maintenance. From simple operating boilers and equipment plus emergency maintenance with preventive maintenance being performed during a few summer months, progress has been made to a system of weekly inspections with spot inspections when manpower is available. With emergency type maintenance a high factor, frequent and necessary inspections are sometimes omitted because of manpower shortages. A tight surveillance of operating conditions in buildings during all seasons is necessary to prevent over heating or extreme chilling that might cause the loss of valuable and/or irreplaceable animals. The workload is further increased by the addition of a boiler plant to operate the year around and the addition of large tonnage air conditioning for the summer months.

A comparison of manpower requirements of the present and proposed Boiler Plant operation is as follows:

	<u>Man-years Present</u>	<u>Man-years Proposed</u>
Supervisory	2.0	2.0
Main heating plant, (three complete shifts)..	4.5	4.5
Roving watch, steam tunnel and buildings...		4.0
Hospital-Research Building (three shifts)....	4.5	4.5
Refrigeration and air conditioning mechanic .	1.0	2.0
Incinerator operator and trainee.....	1.0	3.0
Total.....	<u>13.0</u>	<u>20.0</u>

Due to the increased workload and the backload of preventive maintenance four boiler plant operators, two journeyman engineers, and a helper are requested to bring the manpower up to standards for the safety of the personnel and animals and maximum operating efficiency of the boiler plants and buildings (\$53,000).

5. Operational Services

The motor pool is responsible for furnishing transportation and pickup and delivery service to all departments. It hauls ashes and debris to the Mount

Vernon Boulevard dump twice daily. Out of town trips (average one weekly) and trips to the three local airports (average four weekly) to pickup and deliver animals, require the services of an auto equipment operator. When these and other requests have first priority, the pick-up and delivery services for the departments fall behind schedule. Two additional auto equipment operator positions are requested to aid in carrying out the work that is assigned to the motor pool (\$16,000).

At present there are one lead foreman, two auto mechanics, and one junior mechanic to maintain a fleet of 26 trucks, 3 station wagons, 4 jeep-type vehicles, 13 scooters, and 9 pieces of equipment. Some trucks are on the road seven days a week and others have been in service for ten years or more. One junior mechanic position is requested to augment the present staff assigned to maintaining all zoo vehicles (\$7,000).

The amount of \$11,000 is requested to increase the vehicle replacement allotment. The cost of a truck or station wagon has increased 18 percent in the past two years. There are thirty vehicles in the Zoo fleet with an average age of 6 years. There are nine vehicles in the fleet that are ten years old or older. Replacement standards for trucks are 6 years or 50,000 miles for 1-ton or less; 7 years or 60,000 for 1 1/2 through 2 1/2 tons. Passenger cars may be replaced when they have been operated for 6 years or 60,000 miles whichever occurs first. The police vehicle must operate on a 24-hour seven days a week basis and must remain mechanically safe for operators and passengers. This vehicle should be replaced every two to three years. This request will permit the replacement of 4 or 5 vehicles each year over the period of six years.

The amount of \$4,000 is requested to replace three scooters used in police duties. Scooters have been invaluable in reducing the response time of patrolling officers to reach troubled or critical areas. An officer patrolling the parking areas, in these vehicles, appears to have a deterrent effect on the type of offenses generally committed in these areas (especially larcenies from autos).

The labor force is responsible for assisting mechanics in performance of their duties, maintaining the fifteen major buildings and twelve public restrooms and sixteen employees' restrooms in a clean, presentable and sanitary condition, and removing trash left by visitors over the 156 acres of Park grounds. The walkways in the eight public buildings are scrubbed with detergents and disinfectant once a week and swept once a day. The assigned duties of the available four custodial workers are those of maintaining the public restrooms in a clean and sanitary condition. Employees' restrooms cleaned only once a week. As the visitors increase, the demand for laborer and custodial services increases. Taking into consideration annual and sick leave and the 40-hour work-week requirement, the 17 available laborer positions and four custodial workers are not sufficient to maintain a seven-days-per-week schedule requirement. An increase of five laborer and three custodial positions and custodial supplies is requested to meet this schedule and to maintain efficiency in operations (\$50,000).

Department of Living Vertebrates 1971 Base: Pbs 77 \$918,000 Inc: Pbs 5 \$73,000

The Department of Living Vertebrates is responsible for approximately 3,200 animals of over 1,100 species, representing one of the largest and most

varied collections of exotic animals in existence. To support this collection, the Department conducts an animal care program involving feeding, cleaning of cages, and exhibition. Included in the animal care program are pest control efforts to eliminate insects and rodents and a commissary program for ordering, receiving, storing, preparing, and delivering animal food, as well as raising special food items. In addition to these major activities, the staff collaborates with the Animal Health Department, the Scientific Research Department, and the Pathology Office to improve the medical treatment of animals, collection of medical data, evaluation of medical programs, and development, investigation, and support of various research programs.

There are three zoologists who require secretarial assistance. The various headkeepers also are in need of clerical aid at various times. The services of other secretaries within the Park have been utilized when time permitted. This situation is often difficult and far from satisfactory for efficiency in over-all operations. One secretary position is requested (\$7,000).

One wildlife biologist position is requested to aid in divisional supervision of animal care. With the expanded activities in research and conservation, it is apparent that a professional approach must be followed to apply the animal management techniques that are fast becoming available to the conservation oriented zoological world. Trained biologists would supply the exotic animal management expertise not before available to this Zoo. In zoos, as in the cattle or poultry industry, there is a need for professionals trained in animal husbandry to apply scientific knowledge rather than tradition to such specialized areas as nutrition, propagation, and sanitation. The biologist would also serve important functions in keeper training, improved exhibition, and collection planning (\$12,000).

Three special keeper positions and funds for equipment are requested to assist the zoologists in research and breeding efforts. These consist of extensive incubation, hatching and rearing programs and the collection of behavioral and natural history data on special animal groups. The efforts to breed rare and endangered species demand close supervision by a keeper specialist. The collection of data is accomplished through observations, instrumentation, weighing, measuring, and animal care. Due to the compelling duties for the routine care and protection of the animals by the animal keepers, there is no position available that can be assigned to this phase of the operations (\$24,000).

The animal acquisition program is aimed at providing an adequate number of interesting and unusual specimens for a well-balanced and educational zoological collection. The present allotment for the acquisition of animals, which includes purchase prices and/or shipping charges, is \$25,000. An increase of \$5,000 is requested. There has been no increase in these funds since 1965. Animal prices have risen rapidly in the past six years. In the past, the Zoo has relied heavily on gifts and exchange. It is rarely possible, however, to stipulate the species, ages, sex, and condition of gifts; and exchanges are dependent on what other zoos have in surplus. These two methods tend to yield an unbalanced collection. The Zoo's collection objectives can be fulfilled only by purchasing animals of selected species.

Additional funds are requested for food allotment to meet steadily rising food prices. Approximately \$138,000 is now available to purchase

animal food. The Commissary makes every effort to obtain surplus food at reduced prices, but this is frequently of low quality. The replacement prices for sundry supplies and uniforms and equipment also have risen sharply. Funds are requested to cover the increased cost and usage of these items (\$24,000).

Funds also are requested to provide for travel of five zoologists to attend annual meetings of their professional societies, visit other zoos to become familiar with their operations and collections, and collect native species of birds, mammals, and reptiles for exhibit (\$1,000).

Scientific Research Dept. 1971 Base: Pos 6 \$82,000 Inc. Pos 1 \$31,000

The Scientific Research Department undertakes studies of animal behavior, reproduction and nutrition. The Zoo collection is a major scientific resource. For this reason, facilities and assistance are often provided to scientists from such federal agencies as the National Institutes of Health as well as from universities. The Zoo's own scientific studies add to man's understanding of the living world. Investigations undertaken in the Zoo and in the field have yielded numerous scientific publications. The work of the Scientific Research Department results in improved care of animals in the collection, as reflected in their well-being and reproduction. This work is also of benefit to other zoos and animal collections. In addition, the Scientific Research Department is of assistance to other organizations, including foreign governments concerned with wildlife management and conservation. The Department provides training and research opportunities for graduate students.

The new Hospital-Research Building provides facilities for extensive research necessary for caring and rearing of animals in captivity. One reproduction physiologist position is requested to collect behavioral data, and treat the data in such a way that it will generate fruitful hypotheses for analyzing the physiological mechanisms underlying certain expressed behavior; to develop studies that are required to determine growth and the ontogenesis of behavior, especially with respect to sexual behavior; and to gain knowledge of hormonal treatments and their effects on animal behavior (\$17,000).

There are two animal keeper positions available to care for the animals under study seven-days-per-week. Funds requested to provide for three temporary employees during the summer months to permit the regular employees to take leave. This is to assure that the best care is given to these animals (\$7,000).

Funds are requested to provide for the increased cost and usage of research supplies and equipment and to establish a travel allowance for the three scientists to attend annual meetings and seminars (\$7,000).

Animal Health Department 1971 Base: Pos 5 \$81,000 Inc. Pos 6 \$76,000

The Animal Health Department is responsible for the maintenance of the health of the animal collection of 3,200 living specimens of 1,100 species. This requires: clinical treatment of illnesses and injuries, prophylactic procedures; using clinical pathological data to assist in diagnosis of

diseases and formulation of effective treatment regimens; and collaboration in biomedical research directed toward a broader knowledge of disease processes in exotic animals and their treatment. The staff of the Animal Health Department consults and collaborates with investigators from governmental agencies and academic institutions in the solution of problems of mutual interest.

There are three scientific offices with working laboratories located in the Hospital-Research Building that are engaged in research and studies of all factors effecting the growth, behavior, reproduction, diseases, pathology, and therapy of the animals in the collection, many of which are on the rare and endangered list. As a center of scientific operations, one hospital administrator position is requested to coordinate the administrative activities of budget, fiscal, personnel, supplies and building management; to assist the heads of the three offices in initiating and developing special projects requiring grant funds, both private and governmental; and to assist in the organization and operation of educational programs and seminars instituted by the scientific staff (\$15,000).

In order that basic biomedical research devoted toward improvement of the care of collection animals, development of physiological norms, and more in-depth study of therapeutic regimens be broadened, three positions are requested, associate veterinarian, medical technologist and a secretary.

There is one veterinarian position available to maintain an around the clock call schedule. An associate veterinarian will alleviate the necessity of one person being on duty 24-hours when there are emergencies. Other major problems encountered are a lack of time for study, literature search, or attendance at continuing education seminars. This is the area in which new advances in treatment regimens and medical techniques are disseminated and attendance is of inestimable value. The medical technologist will develop the physiological norms in all quarantined animals as well as studying the physiological changes in those animals that come into the Hospital as medical or surgical patients. There is also a necessity for extensive bacteriological culture examination of the necropsied animals. This will provide a broader knowledge of bacterial disease agents present in the National Zoological Park and, through sensitivity testing, permit the more rapid establishment of prophylactic measures to protect the cagemates that have been exposed to the disease. Secretarial assistance is necessary to maintain the increased clerical workload on a current status as a direct result of changes being made in Hospital operations and medical record keeping. The amount of \$32,000 is requested to establish the three positions.

The increase in animal holding space will permit the hospitalization of ill patients presently impossible in the existing quarters. By hospitalization and improved observation of these animals, it is reasonable to expect a higher percentage of cure. It will assure that proper medication at regular intervals will be administered and a much closer evaluation of the patients' progress will be made. Provision of adequate, centralized quarantine facilities will insure continuing observation of quarantined subjects and permit the use of laboratory studies not presently possible with the subjects scattered throughout the Zoo in substandard quarters and with sometimes very limited observation. This facility will also protect against the possibility of the introduction of diseases into the static animal

collection. The institution of a nursery facility will centralize the hand-rearing of baby animals under stricter observation and supervision of nursery techniques. The present program of "farming out" baby animals to keepers, secretaries, and friends obviously must be stopped. With this centralized facility, particularly in the same physical location as the Scientific Research Department, a continuing study of behavioral traits of the specimen during infancy, growth and growth-rate statistics will be provided. The one keeper position is not sufficient for a 7-day-per-week operation and care of hospitalized animals. An increase of two keeper positions and supplies and equipment is requested (\$26,000).

An amount of \$1,000 is requested to meet the increased costs of medical supplies and \$2,000 to establish a travel allowance for the three professional staff members to attend annual veterinarian conferences and educational seminars.

HISTORY AND ART

The Smithsonian possesses an unequalled array of resources, both material and human, for the understanding and illumination of our country's history through its material culture, its technology, and its art. No other Institution has a greater and more exciting opportunity to demonstrate and celebrate what Americans--all Americans--have accomplished.

As the custodian of national collections comprising literally millions of historic objects and works of art, it is our responsibility to make sure that these collections are used as effectively as possible for the benefit of all. We must care for these collections, we must make them available to scholars both from our own staff and from the broader academic community, and we must use them intelligently and imaginatively to help tell the story of American civilization to our millions of visitors and, through publications and traveling exhibitions, to an even wider audience. It is also our responsibility to seek the continued growth of these national collections; as we are the beneficiaries of the foresight of past generations, so must we be the benefactors of future generations, passing on to them the fruits of our stewardship.

With one exception, the Joseph H. Hirshhorn Museum and Sculpture Garden, the budget requests in the area of history and art are modest, reflecting our determination to fulfill our obligations and to realize our opportunities as economically as possible. The increases requested for the History and Art activities amount to \$1,831,000 or 11 percent of the total Institutional requested increase. Although many history and art bureaus of the Smithsonian have received no increases in operating funds during the past two or three years, and although inflation has caused many of them to suffer in effect a decrease in funds, we have sought insofar as possible, to meet our needs out of existing resources. To this end, we have undertaken to terminate some activities and to reduce others drastically--for example, the International Art Program, the Smithsonian Journal of History, and temporary exhibition programs in all our museums. We shall continue to scrutinize all our activities with a view to maintaining a strong sense of priorities. At the same time, with the enthusiastic cooperation of our museum and bureau directors, we have encouraged cooperative efforts among our history and art bureaus in the name of efficiency and economy; shared library and conservation facilities, for example, serve the National Collection of Fine Arts and National Portrait Gallery better and more cheaply than would separate ones. Despite these efforts, which will continue, certain real needs hamper the effective operation of many of our history and art bureaus and prevent us from deriving the full benefits from the investment that has been made in them. The requested increases that follow represent, in our judgment, the minimum amounts needed to correct the most pressing of these shortages.

NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

Program Category	1970		1971		1972	
	Pos.	Actual Amount	Pos.	Estimate Amount	Pos.	Estimate Amount
Research and Scholarship.....	45	\$645,000	45	\$674,000	45	\$750,000
National Collections Management and Use	64	862,000	64	865,000	64	990,000
Education of the Public.....	49	642,000	49	670,000	49	827,000
Total	158	\$2,149,000	158	\$2,209,000	158	\$2,567,000

The National Museum of History and Technology, a systematic general museum devoted to the historical and technological achievements of the nation, is the most successful and important institution of its kind in the United States. Since its opening in January 1964, it has been visited by more than 30,000,000 people. Attendance as of September 1970, is approaching an annual rate of 6,000,000--the greatest in the world. Under its distinguished new Director, Daniel J. Boorstin, the NMHT has developed an explicit set of purposes and principles to guide its planning and its current activities:

I. To widen, deepen, and enlarge the exhibits and the visitors' museum experiences.

A. Toward a more total and more vivid, a more personal, a more participatory and a more communal recapturing of man's experience.

1. By including parts of man's experience until now neglected or ignored: food, shelter, and clothing; heating and cooling; modes of educating, self-educating, and informing.
2. By employing new techniques and the most effective forms of older techniques: by making our exhibits more selective, our interpretation more widely intelligible, and drawing more freely on all techniques of photography, sound, and sensory stimulation to reinforce and vivify the impressions of objects; by directing visitor movement in parts of the museum (e. g., by corridors).

B. Toward a more total and more vivid and more personal and more communal recapturing of the kinds of men and women who have made America, and their relation to all men.

1. By explicit demonstration of the origins, original experiences, ways of arriving and experiences after arrival, of the diverse strains of the American people.
2. By explicit demonstration of the impact of American civilization on the world, the backwash of American peoples to their places of origin.

- II. To become a more important, more attractive, more lively, and more seminal center for scholarly study, interpretation, and reinterpretation of American Civilization and the history of technology.
 - A. Toward attracting visiting scholars, immersing them in the concerns of the museum and drawing on their knowledge, imagination, and ideas for museum activities.
 - 1. By attracting the ablest and most imaginative, established scholars and the most promising younger scholars: as consultants, part-time or visiting curators, or advisers on particular exhibits and projects; as research scholars: offering them improved and attractive facilities in library, research collections, offices, and secretarial assistance.
 - 2. By numerous, current, and monumental contributions to the scholarship of American Civilization: as in the Smithsonian Encyclopaedia of American Life; pamphlets and books with the widest reach.
- III. To widen our reach to all ages and conditions both in Washington and throughout the nation and the world.
 - A. Toward a more effective, more widespread, more inclusive and more continuous reach to press, radio, television: a stream of stories of the events in the museum; planning of more and more newsworthy and widely-interesting interpretations of our activities.
 - B. Toward reaching all age groups and interest groups: preparation of interesting and understandable exhibits and programs for younger children, for visitors from abroad, and for the under-educated at home; interpretations of American history and technology more intelligible to nonexpert adults (special dramatic and other programs and a special area for younger children).
 - C. Toward a more effective connecting with holiday and festive occasions: celebration of national anniversaries, the birthdays of history-making Americans, and anniversaries in the history of the American standard of living and epochs in science and technology.
 - D. Toward a more effective tying of all events occurring in our Museum to the large and explicit purposes of the National Museum of History and Technology.
 - E. Toward a more effective orientation and guiding of all visitors: by brochures, publications, orientation center at entrances, motion pictures, live guide services, informing of guards, etc.
- IV. To make the National Museum of History and Technology a place for emphasizing the positive, discovering the extent (as well as the limits) of our national achievements, and the achievements of man.
 - A. To emphasize the greatness of individual man: by interpreting, dramatizing and explaining the careers of history-making Americans: the discovery and rediscovery of American Heroes.

- B. To explore the epochs of great achievement, and the circumstances which helped make them possible: by exhibits on creative periods of American history and of the history of technology, and the social conditions which helped make these possible, e. g. , in the exhibits, "What Makes a Creative Moment?"
 - C. To explore and remind Americans of their institutions--how they came into being and how they have changed: by a fuller exhibit of our political and social institutions, and institutions which have helped make the American standard of living (e. g. , the businessman, newspapers, advertising, labor unions, public schools, universities, museums, etc.).
 - D. To help give meaning and content to national holidays (e. g. , Thanksgiving, Fourth of July, Washington's Birthday, Memorial Day, etc.).
- V. To emphasize and dramatize and interpret the relevance of past to present.
- A. By current and changing programs of orientation.
 - B. By new programs of publication in print, on radio, television, etc.
 - C. By conferences and new exhibits and new kinds of museum experiences.

The Director and staff of the Museum believe that these purposes can be achieved with no immediate increase in personnel, if certain urgent non-personnel shortages can be corrected. At present, the Museum has available only about five percent (some \$100,000) of its appropriation for support activities. An additional \$275,000 are requested for the following purposes:

Shortages by Category of Expense

23

Rent high speed photocopying unit to replace outmoded machine \$10,000

24

Purchase photographs for research. Print exhibition catalogs 5,000

25

Contract for lectures by visiting scholars 5,000
 Training for existing professional and nonprofessional staff to
 increase competence and efficiency 3,000
 Purchase service contracts for maintenance of typewriters and
 dictating machines 2,000
 Contract with expert consultants for long-range planning of major
 programs and exhibitions 40,000
 Purchase computer time 2,000
 Contract with architectural restoration experts for reconstruction
 and restoration of period rooms now owned, but in storage 25,000

Purchase office supplies.....	15,000
Purchase photographic supplies--film, flashbulbs and chemicals.....	2,000
Purchase exhibits maintenance supplies.....	15,000

Purchase office furniture and furnishings.....	10,000
Purchase urgently needed storage cases for visible storage of collections in maximum security areas.....	20,000
Purchase storage units for offices.....	4,000
Replace worn out typewriters (10 at \$700 each)= \$7,000 Purchase 10 two-machine dictating units to increase efficiency in understaffed offices, totalling \$10,000.....	17,000
Replace worn out photographic equipment and purchase additional laboratory cameras and apparatus.....	5,000
Purchase specimens and objects for collections necessary to complete already constructed Halls and Period Rooms which cannot be opened for lack of specimens.....	20,000
Purchase specimens for completion of certain collections now on display and for research.....	25,000
Purchase books and other reference materials for curators and technical manuals for specialists and technicians.....	15,000
Purchase exhibits maintenance tools.....	5,000
Purchase laboratory equipment.....	10,000
Remodel certain offices and laboratories to alleviate crowded and unacceptable working conditions.....	20,000
Total.....	\$275,000

NATIONAL COLLECTION OF FINE ARTS

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	12	\$138,000	15	\$162,000	15	\$175,000
National Collections Management and Use	20	454,000	24	505,000	33	565,000
Education of the Public	27	423,000	31	470,000	33	558,000
Total	59	\$1,015,000	70	\$1,137,000	81	\$1,298,000

The National Collection of Fine Arts is the custodian of an ever increasing national heritage of valuable acquisitions and deposits of American Art both of the past and the present. Some 13,000 paintings, sculptures and decorative objects are included in its exhibits and reference collections. To meet responsibilities assigned by law (20 U.S.C. 76c), the museum provides a repository for Government art; carries on an active program of conservation and conservation research; lends art to the White House and cabinet offices; promotes the public appreciation of art through publication and by permanent and special exhibits in its gallery and by sponsoring traveling exhibits within the United States and abroad. Its expanding education program is being developed in close association with school curricula to provide material and study programs both in Washington and throughout the country. In addition, with its varied collections, library, photographs, and archives, the NCFA provides a research center for students and scholars devoted to the study of American art. The recent addition of the Archives of American Art, a rich repository of source information for research purposes, greatly enhances its overall capabilities in this area. The NCFA shares photographic, conservation, and library facilities with the National Portrait Gallery, and is responsible for the developing activities of the Renwick Gallery.

The requested increase of \$115,000 will be directed at strengthening curatorial support activities, the jointly funded and operated facilities of the NPG and NCFA, and to preparing for the opening of the Renwick Gallery.

The objective of the NCFA's education program is to discover the way in which schools and museums can best work together to make real to children and adolescents the creative freedom and expressive satisfaction which comes from hard work in the area of art. The gallery's activities in this regard will be exportable. A series of traveling exhibitions that can be done inexpensively will be presented, along with the production of classroom materials that will be available throughout the country. Attention is being paid to practical exhibiting procedures (such as the Children's Gallery in NCFA) and school materials to be used in conjunction with the changing needs of area and national art curricula. In 1970, it is estimated that NCFA was able to accommodate about \$14,000 of this activity within its appropriation. In current and future years, the museum

administration expects to achieve most of the new goals in education and research by the judicious use of NCFA professional staff talents and by redirecting the current level of operating funds. If success is to be realized, however, the collections and curatorial support functions, i.e. the basic housekeeping operations of the gallery which are currently underfunded, need reinforcement.

An amount of \$115,000 in new funds is needed for the following purposes: to supplement research scholar grants \$8,000; for six additional personnel in NCFA to strengthen the operation of the curatorial staff which is taking over a new role in the new reorganization of activities \$48,000; for three new personnel in joint NCFA/NPG support facilities \$26,000; for two positions in the Renwick Gallery \$13,000; \$10,000 toward increased Renwick operations costs related to the opening of the museum to the public; and a \$10,000 increase in NCFA funds for purchases of art.

Included in the NCFA personnel request is a museum technician for the Registrar's office which is charged with maintaining and organizing the museum's extensive collection of art objects in proper form. This is a critical area and is badly in need of support. Also requested are a research assistant to aid individuals conducting research on the museum's collection in the public Print and Drawing Study Room, a typist to support the Coordinator of Research who provides services to graduate scholars studying in the museum under Smithsonian Institution grants, and an assistant editor to facilitate publication for public use of completed research accomplished by the professional staff and others. The final two of the requested positions are for an art researcher and a clerk typist for circulating exhibits.

The accelerated research programs, and the efforts to make more available to the public the art, library, and archival collections of the museum, have created a need for the following additional support in the joint NCFA/NPG support offices: a library technician, a photo lab assistant, and a conservator of prints and drawings and other art produced on paper. These shared functions help both the NCFA and the NPG hold down costs since reference works and equipment needs need not be duplicated.

The opening of the Renwick Gallery is to take place in fall 1971, and the development of a permanent museum staff to accommodate the new activities of this Gallery is of high priority. Since both the semi-permanent exhibit galleries and the large public opening will then be inaugurated, a museum technician and a museum aid along with materials and equipment needed in advance of the public opening are requested. About \$100,000 is available for Renwick development in the NCFA appropriation for fiscal year 1971.

Within NCFA itself, the acquisition of works of art to supply some of the embarrassing gaps in the museum's collection has become increasingly

difficult owing to rising prices and a growing reluctance on the part of donors to present significant works of art. If the collection is to be other than simply a fortuitous conglomerate, the museum's acquisition program must be made more active and selective. A \$10,000 addition to the present level of acquisition funds would be a modest start in this direction. Only about \$45,000 were available for art acquisitions in fiscal year 1970.

NATIONAL PORTRAIT GALLERY

Program Category	1970		1971		1972	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	5	\$112,000	6	\$142,000	9	\$190,000
National Collections Management and Use	16	462,000	20	472,000	27	553,000
Education of the Public	9	194,000	11	217,000	13	244,000
Total	30	\$768,000	37	\$831,000	49	\$987,000

The National Portrait Gallery is a recently established unique national museum responsible for collecting, exhibiting, and studying portraiture in painting and sculpture of significant men and women who have contributed to the history, development, and culture of the United States. It is a museum of American History dealing with the individuals who shaped that history. Established in 1962, the Gallery is still developing its staff and must concentrate on expanding its collection by acquisition through purchase or gift of portraits of noted Americans still in private hands.

The Gallery's current activities can be grouped into four major categories: (1) expansion and care of the collection; (2) public education through programs with schools devised by its education department and through exhibition of the permanent collection and special exhibitions including borrowed works of art to illustrate a particular subject area of American history and portraiture; (3) the research, publication, and national distribution of catalogues of these exhibitions, as well as other studies on scholarly and popular levels; and (4) the compilation of a definitive Catalogue of American Portraits to be a comprehensive data bank on American history and biography comprised of entries on all portraits of historically significant Americans.

An increase of \$132,000 is requested to correct support shortages largely for the Catalogue of American Portraits and for new program developments, largely centered around the History Department and the Catalogue of American Portraits.

Objectives of the National Portrait Gallery

Staffing and spending plans during the current year and fiscal year 1972 are designed to help develop the NPG into a fully operative national museum and reference center of historical portraiture capable of serving the public through exhibitions and scholarly and popular educational publications and materials. Because of its late establishment, it is imperative that the Gallery move quickly to build a permanent collection of portraiture representative of this nation's history, while performing the above activities and services.

It is realistic to plan for a continued orderly development of personnel and material resources so that the Gallery is fully staffed to a level of approximately 50 persons by 1974. By that time the NPG will be amply equipped to participate substantively in the Bicentennial through activities in Washington and by national extension of its program and exhibition materials. By its location in an historic building in downtown Washington, it should be prepared to take part in activities celebrating the city's role in American history and the rejuvenation of the downtown area during the next several years. With its unique mission related to American history and its central location both to Washington residents and to tourists entering the city via the planned visitor center at Union Station, the National Portrait Gallery feels that the obvious goal for reaching its maturity as a fully operative museum serving the nation and the city is the middle of the present decade. This goal coincides with the culmination of many plans related to our national history and the city of Washington.

Allocation of Present NPG Resources and Activities

The distribution of NPG staff and funding by program categories is shown at the beginning of this justification. Within these programs, there are a number of recent developments and accomplishments. The NPG is expanding and upgrading its permanent collection through acquisitions from commercial galleries and private individuals, as well as by gifts. In the past two years 106 pieces were added at a total cost of \$391,640. The curatorial staff is preparing catalogues for exhibitions to be held in the spring and fall of 1971. These activities require considerable research. Where no education program existed one year ago, a new education staff is training several dozen volunteer docents to conduct educational tours. Contacts are being established with metropolitan area schools and with organizations serving schools and teachers locally and nationally. Educational materials for use by these groups are being researched and written. Two special student exhibits are being provided for the education program. Other exhibits of special items in the collection are assembled periodically.

The Catalogue of American Portraits has standardized its computer entry forms and processes and is entering information regularly obtained from correspondence and staff visits to nearby collections including Mt. Vernon. The CAP handles continuing requests for portrait information, although until available data in the backlog is entered, the speed and cross reference facilities of the computer are lacking. Forty thousand portrait prints are being sorted and inventoried. Finally, where possible, the present staff processes the backlog of 18,000 partial portrait entries gathered between 1964 and 1967 but never researched and entered into the computer. In addition, the CAP is forming a roster of possible field researchers in various locales and gathering information on the logistics of collecting widely scattered portrait data.

Research is being performed on subjects related to American portraiture by two members of the staff. Two contract scholars are researching an exhibition catalog and exhibit on portraits of the American Negro and a separate publication on the same subject to be distributed nationally. The assembled papers and archival materials will remain with the research resources of NPG.

Support Shortages and New Program Development

Shortages identified below are presently impeding Gallery progress. The "new program development" category includes those logical additions to present resources required for NPG to reach a fully operative stage during the next few years. These "new programs" are essential steps to reach maturity, not just desirable programs supplemental to basic operations. Requested new staff and programs total nine permanent and three term appointments and \$132,000.

In the category of support shortages, the absence of a secretary to the exhibits chief during the first quarter of 1971 has contributed directly to a one month postponement of the opening of this year's major fall exhibition. Without clerical and administrative assistance the chief of exhibits has had to spend 30 percent of his time making phone calls, checking suppliers, contractors, obtaining samples of rugs, fabrics, and paints and performing other tasks which prevented him from concentrating on the design and overall organization of the exhibition installation. As there is no permanent position for an exhibits staff secretary, NPG must rely on temporary appointments. These must be replaced annually, a burdensome and wasteful procedure (\$7,000).

As mentioned earlier, the Catalogue of American Portraits has a backlog of 18,000 partial records about portraits of notable Americans. These records were culled between 1964 and 1967 by three persons under contract at the Frick Art Reference Library in New York and other major sources to provide the basis of the CAP data bank. Each record has to be checked for historical completeness and consistency before entry into the computer. This process would take the present staff (seven persons), already occupied with processing incoming information about additional portraits and handling numerous public requests for portrait data, over two decades at a rate of 750 entries per year.

To assure that these partial records will be available for use by scholars and staff during the 1970s the Gallery plans an attack on the backlog by a three man team of American history catalogers on term appointments. Working on a crash basis over a three year period, the team will assure retrievable information on a wide range of notable Americans, their occupations, education, organizations skills, and other biographical data. The CAP will then provide broad services to researchers during the present decade when there will be intensified interest in American history accompanying the Bicentennial recognition. The Gallery has been assured by various distinguished authorities that the retrievable information would be a unique data bank and would be invaluable to scholars of American literature, economics, sociology, and other social sciences as well as of American biography and art history.

One clerk-typist also is needed by the CAP to operate an additional paper tape typewriter used to key punch an increasing volume of entries resulting from backlog correction, field research and other new portrait information, and to perform other basic clerical and typing support for the CAP staff. Incumbent would work at first primarily with the backlog project but would be needed permanently to help the other CAP clerk-typist meet routine clerical and key punch demands.

The costs are primarily for the term catalogers. Once the backlog is processed, existing cataloging staff will handle routine processing of new information from the field and requests from the public (\$33,000).

In the category of activity to reach maturity, the establishment of a history department (currently one person) is needed for the NPG to be fully operative and to prepare a full range of exhibits, publications, and educational materials for the public in the years ahead. As a unique museum of American history, the Gallery needs the constant services of scholars of American history to select individuals whose portraits should be acquired, to research and label the collection for the public, and to develop written and audio-visual popular and scholarly informational materials based on the collection. The history staff is an overdue component of the NPG organization. Two historians and a clerk-typist are required to develop the history department (\$32,000).

An assistant curator in the curatorial department (currently five persons) will help research the collection from an art historical viewpoint and prepare exhibitions. As the collection is small and growing, staff must be added to assure its continued growth and proper care as it expands. The assistant curator also will help research and answer public requests about the permanent collection and general information on portraiture. These requests will increase as the NPG becomes better known nationally. He will help research and prepare major temporary exhibitions, materials from some of which will circulate throughout the country. He will provide the art historical research on potential acquisitions. As the goal of the Catalogue of American Portraits is to have computer entries on all portraits of all notable Americans, its activities will assist curatorial steps to build the collection as rapidly as resources will allow. The assistant curator would perform art historical research on portraits uncovered by field researchers or by other CAP information. This is a request for \$11,000 for this department.

The conservation lab and the library are shared with the National Collection of Fine Arts. An assistant in the Lab is needed to perform technical laboratory tasks in servicing the expanding collection of the NPG and in answering other demands on the Lab by other institutions. An assistant reference librarian is needed to help service the increased use of the library by NCFCA and NPG staff, by visiting scholars studying at each museum, by outside scholars, and to help coordinate relevant activities with the Archives of American Art (\$19,000).

A requested field researcher for the CAP is the beginning of an organized effort to gather information on all portraits of persons who have contributed to American history in public and private collections throughout the country. The plan is to have six field researchers working simultaneously in different parts of the country. These investigators will be of benefit to the acquisitions program and add as well to the CAP's usefulness to scholars. The initial researchers will work in the richest areas for American historical portraits--East coast and Ohio River Valley--feeding information back for processing by CAP staff. For fiscal year 1972 the NPG is asking for funds for one researcher, travel, supplies, and necessary photographic services, each computer entry is accompanied by a photograph kept in CAP files for reference (\$30,000).

SMITHSONIAN INSTITUTION

"Salaries and Expenses"

Mandatory Increases in Pay and Benefits, FY 1972

(In thousands of dollars)

Unit	Periodic Step Increases	Promotions	Wage Board Increases	Canal Zone	Health Benefits	Columbus Day	Extra Day	Total
Office of Director General of Museums	\$ 3	1					7	4
Office of Exhibits	52	17						69
Conservation Analytical Laboratory	4	1					1	5
Office of the Registrar	6	1					6	7
National Museum of History and Technology	51	23	11					85
National Museum of Natural History	108	41	10				11	169
National Zoological Park	34	4	100			3	11	157
National Air and Space Museum	10	6					2	19
National Armed Forces Museum Advisory Board	3	4					1	7
Anacostia Neighborhood Museum	3	5					1	9
Freer Gallery of Art	2						1	3
Joseph H. Hirshhorn Museum & Sculpture Garden	9	4					1	14
National Collections of Fine Art	28	1					3	32
National Portrait Gallery	17	4					2	23
Smithsonian Astrophysical Observatory	16	5					2	23
Smithsonian Tropical Research Institute	20	2		30			2	54
Radiation Biology Laboratory	14	2					2	19
Office of Environmental Sciences	14	7					1	22
Center for the Study of Man	3							3
Center for Short-Lived Phenomena	1							1
Smithsonian Research Awards Program	0							0
Bicentennial of the American Revolution	0							0
Environmental Sciences Program	0							0
Academic Programs	7	63					1	71
Exhibits	0							0
National Museum Act	0							0
Office of International Activities	5	4						9
International Exchange Service	3							3
Woodrow Wilson International Center for Scholars	0							0
Office of the Secretary	3	13					2	19
Equal Employment Office	1							1
Office of the General Counsel	2	5					1	8
Administrative Systems Division	3	1						5
Travel Services Office	1							1
Duplicating Unit	2	1					1	4
Secretary's Files	1							1
Joseph Henry Papers	1	2						3

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SMITHSONIAN INSTITUTION
 "Salaries and Expenses"
 Mandatory Increases in Pay and Benefits, FY 1972
 (In thousands of dollars)

Unit	Periodic Step Increases	Promotions	Wage Board Increases	Canal Zone	Health Benefits	Columbus Day	Extra Day	Total
Smithsonian Archives	\$ 2	1						3
Office of the Treasurer	9	42			1		1	15 12
Division of Performing Arts	3	22			1		1	8 6
Office of Personnel and Management Resources	10	21					1	13 12
Office of Public Affairs	15	21					1	18 17
Supply Division	6	21			1		1	10 8
Information Systems Division	6	21			1		1	9 8
Smithsonian Libraries	15	74			1		2	25 21
Photographic Services Division	6	1			1		1	9 8
Smithsonian Press	9	1	287		1		1	12 11
Buildings Management Department	114	45 10	200 103		16	7	32	411 385 366
Total	\$622	250	300	30	50	10	100	1,362 1198

Handwritten notes and corrections in red ink:

- Under "Total" row: 110, 250, 300, 30, 50, 10, 100, 1,362 1198
- Under "Total" row: [300], 387, 163, 622, 250, 387, 622, 125, 45, 162, 5
- Under "Total" row: 1612

JOSEPH H. HIRSHHORN MUSEUM AND SCULPTURE GARDEN

Program Category	1970 Actual		1971 Estimate		1972 Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
National Collections Management and Use.....	13	\$308,000	18	\$416,000	22	\$1,362,000

The Hirshhorn Museum, now under construction on the Mall, will house the magnificent Hirshhorn gift to the nation of more than 7,000 paintings and sculptures. The act of November 7, 1966 authorized construction of the Museum and designated the Mall site. Building construction began in March 1970, and the estimated completion is October 1972. All phases of work are presently geared to prepare for the opening of the Museum and to place it in operation.

A requested increase of \$927,000 for fiscal year 1972 will be largely devoted to expanding the basic and continuing operations in readying a portion of the collection for the opening presentation, and for equipping and furnishing the offices, laboratories, galleries, and public areas. The latter item for equipment and furnishings consist of one-time, non-recurring costs, and are phased over two years. The attached table provides a detailed flow of projected operations for fiscal years 1972, 1973 and 1974, as related to the expected growth prior to and immediately following an anticipated public opening six to nine months following the completion of the building.

In order to bring this major new Museum into existence, a dramatic acceleration in operating program activity must take place during the two and one-half year building construction period. This will require a very substantial increase in program funds over this period in order to meet the projected public opening data. Major additional funding requirements are in two categories: ongoing preparation of the collection, and the acquisition of furnishings and special equipment for the building.

Approximately twelve hundred choice paintings and pieces of sculpture are being selected from the more than 7,000 items in the collection for exhibit when the Museum opens. These paintings and pieces of sculpture must be examined, photographed, mounted, cleaned, and in some cases restored prior to exhibit. The total cost of this effort in fiscal year 1972 is estimated at \$210,000 for such contractual services.

Of these 1,200 items, 600 are paintings and 600 are sculptures. Based on a survey of the restoration and framing requirements of these items the following funding needs, have been projected which total \$565,000. Some objects are included in two categories.

- 100 large paintings (5 to 15 feet) will need restoration at an average cost of \$1,000 (\$100,000) and 50 will require work at \$300 each (\$15,000).
- 350 small paintings will require restoration at prices ranging from \$250 to \$500 (\$150,000).
- 500 paintings must be framed at prices averaging \$200 for a total cost of \$100,000.

--400 sculpture pieces, including about 150 which are classed as monumental, will require restoration at prices averaging \$500. Estimated total cost of the job is \$200,000.

Approximately 350 paintings have been restored, conserved, and framed during fiscal years 1969 and 1970 and are now completed for initial exhibition display. These include items that required both conservation and framing.

In FY 1971 it is estimated that an additional 300 items will be completed, so that by the end of the fiscal year about 50 percent of the work for the opening will be completed.

The additional funds requested for conservation and framing in fiscal year 1972 (\$60,000) will allow for completion of nearly 90 percent of the total number of items planned for use in the opening exhibition. Fiscal year 1973 will be devoted to completing the remainder of the initial showing.

An increase in technical and support staff is required to prepare for the Museum's opening and subsequent exhibition and research programs. This staff must: 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. Four additional staff members are requested: registrar, administrative assistant, clerk-typist, and a contract clerk (\$47,000), plus funds to annualize new positions authorized only part year in FY 1971 (\$22,000).

An additional \$48,000 are requested for ~~the~~ contractual service costs related to the collections, 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. Professional visits to art museums and galleries for research will be necessary as well as other field trips.

Non-recurring Costs

Construction costs of \$16,200,000 (\$15,200,000 appropriated by Congress and a \$1,000,000 gift by Mr. Hirshhorn) will provide the Institution with the basic Museum building, including necessary utility equipment and connections. This amount does not permit the Museum to be completed to the point necessary for public opening, or for conducting its basic public educational functions. It does not prepare the galleries or public areas, or furnish the administrative office space. 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, moveable equipment, and other items be provided as soon as possible. Approximately \$1,466,000 of furnishings and equipment not included in the original construction contracts (for furnishings and equipment) and necessary to prepare and make effective use of the laboratory, gallery, and administrative space, have been identified as needed over the next two years. Funding for these items is being requested over two years \$750,000 in fiscal year 1972 and \$716,000 in 1973. The items are identified in the attached table.

<u>Operating Costs</u>	<u>FY 1971</u>	<u>FY 1972</u>	<u>FY 1973</u>	<u>FY 1974</u>
Positions	17	21	45	60
Staff Costs (Including benefits)	\$185,000	\$273,000	\$494,000	\$688,000
Conservation and restoration	150,000	210,000	100,000	40,000
Equipment & Supplies	18,000	47,000	32,000	15,000
Other (Exhibits planning, travel, rent, etc).	63,000	82,000	193,000	135,000
Subtotal	\$416,000	\$612,000	\$819,000	\$878,000
<u>One-time nonrecurring costs related to program establish- ment</u>				
Carpentry, frame, paint shops	\$ -	\$ 38,000	\$ -	\$ -
Coatroom furnishings and area lights	-	8,000	-	-
Gallery furnishings	-	210,000	-	-
Lamps and partitions	-	32,000	-	-
Storage screens	-	300,000	100,000	-
Fourth floor furnishings	-	95,000	110,000	-
Photography lab	-	27,000	2,000	-
Library shelving	-	25,000	25,000	-
Registrars office and staff lunchroom	-	15,000	4,000	-
Stone pedestals	-	-	95,000	-
Security systems	-	-	50,000	-
Exterior lighting	-	-	50,000	-
Examination lab	-	-	38,000	-
Conservation lab	-	-	65,000	-
Auditorium furnishings	-	-	67,000	-
Tour guides	-	-	60,000	-
Sales room	-	-	50,000	-
Subtotal		\$750,000	\$716,000	
 TOTAL	 \$416,000	 \$1,362,000	 \$1,535,000	 \$878,000

FREER GALLERY OF ART

Program Category	1970		1971		1972	
	Actual*		Estimate*		Estimate*	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	7	\$45,000	7	\$56,000	8	\$84,000

The Freer Gallery of Art presents one of the world's most distinguished collections of Oriental Art. Including works of art from China, Japan, Korea, India, and the Near East, the collection covers paintings, sculptures, and other objects in stone, wood, lacquer, jade, pottery, porcelain, bronze, gold, and silver. Only a fraction of the Freer's more than 10,000 cataloged items can be displayed at once in the nineteen galleries. Most of the items, together with a library of 40,000 volumes, are held in study collections and used extensively by the Gallery's staff and visiting scholars and students. The two fold program envisaged by the founder involves the continuing search for works of the highest quality that may be added to the collections and the continuing study of these works of art as keys to understanding the civilizations that produced them.

An appropriation increase of \$25,000 is requested to provide improved support to the research, collections maintenance, and exhibition programs of the Gallery.

Endowment funds provide for the development, study, care, and exhibition of the Freer collections. Traditionally, federal funds have been used for the maintenance and protection of the building and to meet some of the supporting costs of the program. Current federal employees are support staff working under the professional staff members on the private roll and assisting them with research programs. With increased use being made of the Freer's resources by visiting scholars and students and inflation in the costs of supplies and equipment, the current level of federal funds is inadequate.

For fiscal year 1972, funds are requested to provide a clerical position for the newly-filled curator of Near Eastern Art to assist with a large backlog of accumulated work. (\$7,000). An additional \$18,000 is requested for miscellaneous office and other supplies, cabinets for the storage of the collections, and computer time for research projects in the Technical Laboratory.

*Excludes approximately \$300,000 in support from the Buildings Management Department.

ARCHIVES OF AMERICAN ART

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	2	\$55,000 ^{1/}	11	\$175,000 ^{1/}	11	\$175,000

The Archives of American Art, founded in Detroit in 1954 and a Bureau of the Smithsonian Institution since May 1970, is committed to aiding research and scholarship in the history of the visual arts in this country from prior to the revolutionary war period to the present time. It acts to achieve this goal by acquiring, organizing and preserving the primary documentation needed by historians--the correspondence, diaries, business papers, and photographs of painters, sculptors, critics, dealers, and collectors, and the formal records of galleries, museums and art societies. These collections of paper are catalogued, microfilmed and made available to scholars in a series of regional branch offices and through inter-library loans.

Regional branch offices operate in New York, Boston, Detroit, and a field office was established in 1970 in Santa Fe. The processing and chief reference center of the Archives is now located in space provided by the National Collection of Fine Arts and National Portrait Gallery library. Added to the library, and to the archival material already possessed by these two museums, the Archives will make the old Patent Office building a major center for the study of American Art.

The organization expects to raise private funds amounting to about \$200,000 in FY 1971. This income is used primarily to support Archives' activities outside Washington. It is hoped that this level will be maintained. The National Portrait Gallery and the National Collection of Fine Arts have helped to offset initial costs by providing facilities and earmarking some of their funds to supplement the Archives own resources. Because the Archives came to the Smithsonian after the fiscal year 1971 budget had been submitted, it was not possible to include in that budget a request for separate funds to enable the Institution to make full use of this great collection of materials. This year, \$175,000 is being requested to be appropriated for the AAA, an amount which reflects no increase over the estimated fiscal year 1971 level of funding shared by National Collection of Fine Arts and the National Portrait Gallery.

During the past year the Archives has acquired over 100,000 individual items. Among the more important collections received were the papers of William Baziotes, Cecila Beaux, Karl Bitter, Herbert Ferber, Palmer Hayden, Ibram Lassaw, Guy Pene du Bois, and Ben Shahn. Of particular interest is a large collection of records accumulated by Charles Henry Hart, an authority on 18th and early 19th century portraiture.

The Archives' oral history program continued its activities with a series of tape recorded interviews with administrators and other figures in the New York art world. Among those people interviewed were Harvard

^{1/} These amounts reflect shared costs by NCFCA and NPG, and are included in the amounts shown for those galleries.

Arnason, Ralph Colin, Lawrence Fleischman, Henry Geldzahler, Huntington Hartford, and Gordon Washburn.

Since the objective of the Archives is to serve scholarship by providing documentation to researchers, its achievement is measured by the effective use of Archives resources in the writing of exhibition catalogues, catalogues raisonnés, articles, biographies, monographs. The Archives further approaches its goal by offering grants in aid, by publishing a quarterly Journal, and by disseminating information on its holdings to universities and museums. During the past year the Archives of American Art has responded to over 300 requests for documents from visiting researchers and another 200 from inquiries by mail. Research on the painter Stuart Davis, the sculptor David Smith, the Black Mountain College Art Department, and the federal art programs of the 1930's are a few of the more important projects now under way. Among other recent publications which depended heavily on Archives documents are Barbara Novak, American Painting of the Nineteenth Century, N. Y., 1969; Marcia M. Mathews, Henry Ossawa Tanner, Chicago, 1969; William I. Homer, Robert Henri and his Circle, Ithaca N. Y., 1969; and Sheldon Reich, John Marin; A Stylistic Analysis and Catalogue Raisonné, Tucson, 1970.

With the establishment of its office in Washington, D.C. the volume of use of Archives holdings has risen sharply owing to the need for documentation by the staffs of the National Collection of Fine Arts, the National Portrait Gallery, the National Gallery of Art, and student and faculty researchers at the University of Maryland and George Washington University. Since the Archives is still a recent arrival here, it anticipates a further increase in the use of its resources in the coming year. This increase will be greatly augmented by the establishment of the branch office in Boston and a projected one in San Francisco. These additional regional offices will also generate a growth in the volume of acquisitions of records.

Funding requested in the fiscal year 1972 budget will provide for personnel, contractual services (including microfilming), office supplies, and equipment.

NATIONAL ARMED FORCES MUSEUM ADVISORY BOARD

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	4	\$106,000	6	\$127,000	6	\$132,000
National Collections Management and Use	2	42,000	1	10,000	1	11,000
Education of the Public	<u>2</u>	<u>34,000</u>	<u>1</u>	<u>15,000</u>	<u>1</u>	<u>16,000</u>
Total	8	\$182,000	8	\$152,000	8	\$159,000

The National Armed Forces Museum Advisory Board's principal work is to advise and assist the Board of Regents on matters relating to the establishment of a National Armed Forces Historical Museum Park and Study Center to portray the contributions of the armed forces to American society and culture. A site on the Potomac River in the Fort Foote area of Maryland's Prince Georges County, within a short distance of downtown Washington, has received preliminary approval for the outdoor museum.

Envisioned for the historical museum park are outdoor displays tracing the evolution of warfare from the Revolutionary War period up to recent times; a visitor center and exhibit hall; a study center, the Dwight D. Eisenhower Center for Historical Research, for scholarly study into the meaning of war and its effect on civilization; a ship basin containing historically significant vessels; a large parade ground to accommodate parades, tattoos, and similar events; and exhibits showing historical contributions of the armed forces in a range of areas including aviation and space, polar exploration, and technological development.

No program fund increase is sought for fiscal year 1972.

UNITED STATES NATIONAL MUSEUM

This group of activities includes a major segment of the conservation and preservation efforts of the Institution, the collections documentation function, the exhibits effort and the leadership role of the Smithsonian in diffusing knowledge and training in these areas to the national museum community. For fiscal year 1972 only necessary pay increases are being requested for the Office of the Director General of Museums, the Office of Exhibits, and small program amounts for important needs in the Conservation Analytical Laboratory and the Registrar's Office. A separate request for a major effort covering exhibits projects is being requested in the special program's section, but these funds are nonrecurring in nature and are necessary to develop and improve the permanent educational displays. The increase requested for United States National Museum activities is \$223,000 or one percent of the total Institutional requested increase.

OFFICE OF DIRECTOR GENERAL OF MUSEUMS

Program Category	1970		1971		1972	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Education of the Public	7	\$233,000	9	\$304,000	9	\$308,000

The Office of the Director General of Museums provides program planning and review of the Smithsonian Institution's museum and exhibition activities with special emphasis on developing experimental and educational exhibits, surveying the impact of the Smithsonian on the visiting public, planning traveling exhibit programs, and providing assistance to other museums. It works cooperatively with museum professionals and their associations and organizations to increase the effectiveness of museums in the performance of their scholarly and public education functions. The Office of the Registrar, the Conservation Analytical Laboratory, the Traveling Exhibition Service, and the Office of Exhibits are under the jurisdiction of this office.

No program fund increase is sought for fiscal year 1972 for the operations of this office.

OFFICE OF EXHIBITS

Program Category	1970		1971		1972	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Education of the Public.....	167	\$2,354,000	167	\$2,361,000	167	\$2,441,000

The Office of Exhibits, in collaboration with museum scientists and historians, designs, prepares, and installs exhibitions in Smithsonian museums, and occasionally for the Smithsonian Institution Traveling Exhibition Service. Since its establishment in 1955, the Office has prepared over 3,500 permanent exhibit units primarily in the National Museum of Natural History and the National Museum of History and Technology and has produced hundreds of special exhibits in art, history, and science. New techniques such as freeze-drying of animal and plant specimens and new methods of presentation, including audio-visual and visitor participation devices, are developed to enhance the visitor's learning experience. Many staff innovations have been copied around the world. By counseling visiting professionals and by training museum technicians from all points of the world, the Office has had a significant effect on museum installations in many countries.

No program fund increase is sought for fiscal year 1972 for the Office of Exhibits. The base appropriation is largely absorbed by maintenance and upgrading of existing exhibits, design of new exhibits, and a modest program of changing special exhibits. New permanent exhibits, space for which exists in present Smithsonian museums, will require new nonrecurring funds for construction and installation. A request for these funds is included in the special programs section of this budget request.

CONSERVATION ANALYTICAL LABORATORY

Program Category	1970		1971		1972	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	4	\$39,000	4	\$45,000	4	\$60,000
National Collections Management and Use	7	86,000	7	100,000	10	140,000
Education of the Public	0	9,000	0	9,000	0	9,000
Total	11	\$134,000	11	\$154,000	14	\$209,000

The Conservation Analytical Laboratory was established in 1963 to serve the museums of the Smithsonian Institution. It ascertains and advises on the suitability of environmental conditions found in the buildings for objects displayed or in storage, and suggests remedial action if necessary. Advice is given to the curatorial units on conservation procedures for specific objects. Objects which present special problems or require more specialized equipment than is available in these units are treated in the laboratory.

Analysis of objects or their materials (e.g., pigments, fibers, alloys, or corrosion products) is done by advanced instrumentation to determine appropriate conservation procedures or to provide museum archaeologists and historians with basic research data concerned with dates, attribution, and ancient production methods.

Current program shortages include the following for which a program increase of \$50,000 is requested.

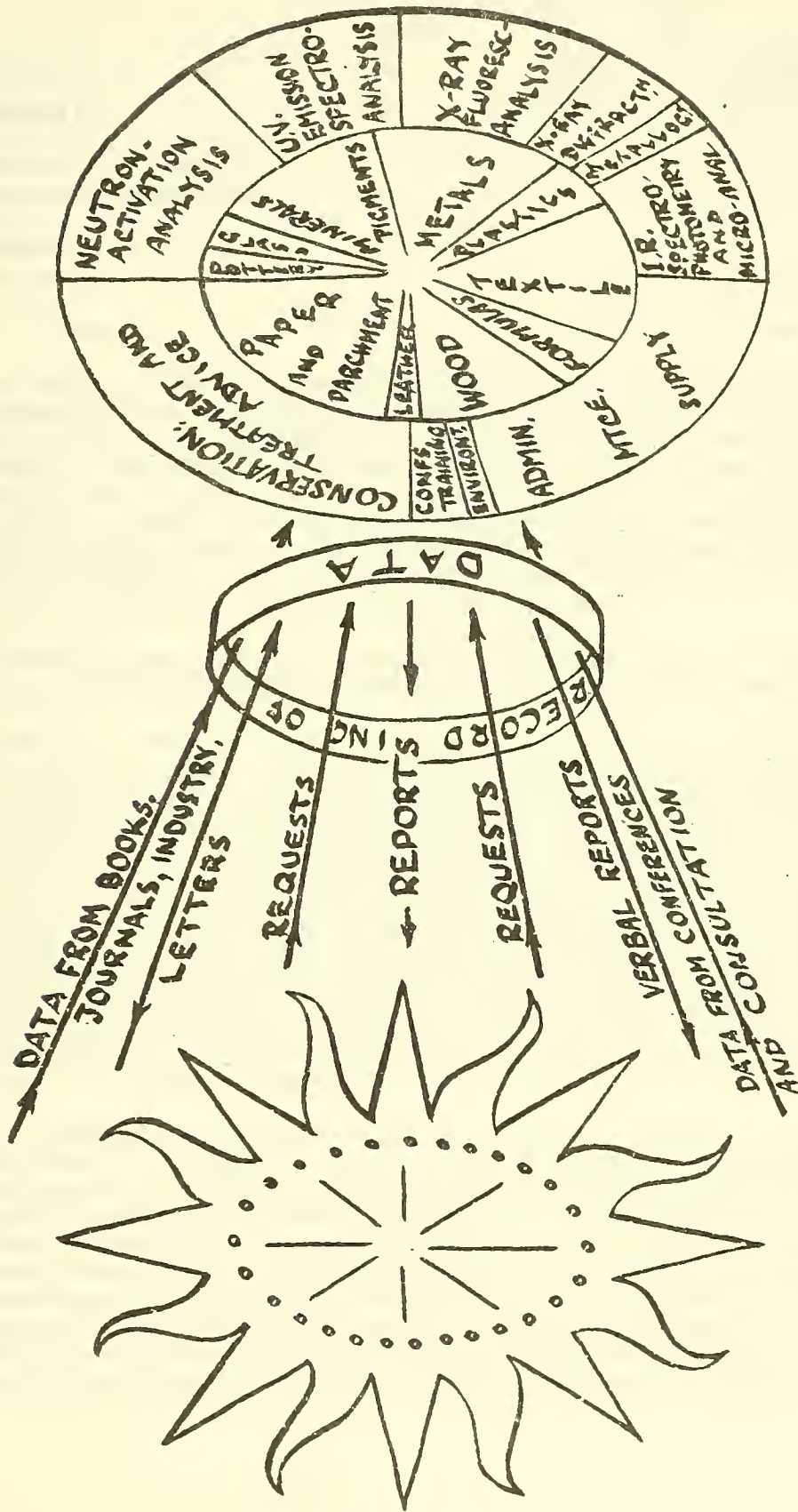
The lack of a fumatorium to sterilize all objects on entry into the Museum of History and Technology Building allows development of insect colonies within storage areas with consequent risk of serious and wide-spread loss of the collections. Over 30 reports of insect finds have been made in this one building in one year. Emergency actions taken on site to counter this risk are expensive in manpower, less than wholly effective, and inevitably add to the level of poison in the human environment. Funds are requested for a small fumatorium chamber (\$12,000) plus one technician to operate it (\$9,000) and to assist in sampling for analysis.

Conservation activity falls ludicrously short of the need. With thirteen million non-biological objects in the Smithsonian collections, if only one percent of these is in need of attention, then it would require 32 man-years in order to devote 30 minutes to each. Thirty minutes is barely sufficient time to carry an object to and from this laboratory, without allowing time for any useful treatment. CAL at present has only three positions for conservators. Two additional conservators are requested (\$17,000).

Conservation activity requires supporting specialized analytical facilities. Some increase in output without increase in analytical staff or floor space can be achieved by introducing newly-available instrumentation. An Ebert spectrograph to supersede the laboratory's present instrumentation (obtained on

surplus) will literally double output and will help to remove a bottleneck that is slowing conservation activity by existing staff (\$12, 000).

The resources available to CAL in the fiscal year 1970 were used as shown in the accompanying diagram. This division of effort reflects needs expressed by curators that were satisfied to the maximum permitted by the available apparatus, funds, staff abilities, and space. In that year, 148 requisitions (395 objects or samples) were accepted from 28 sources within the Smithsonian bureaus, and 140 requisitions (144 samples or objects) were completed, the balance being in progress at the end of the year (60 percent requisitioned treatment or advice, 40 percent analysis). In addition, training of CAL and other Smithsonian Institution personnel proceeded, national and international professional contacts were maintained, research papers published, and practical assistance given to other museums and local archaeological societies.



28 SOURCES WITHIN II
SMITHSONIAN BUREAUS

PHOTOGRAPHY, DOCUMENTS,
OPTICAL COINCIDENCE INDEX

DISTRIBUTION
OF ACTIVITIES

ACTIVITIES OF THE CONSERVATION-ANALYTICAL LABORATORY, 1969-70

OFFICE OF THE REGISTRAR

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
National Collections Management and Use	23	\$221,000	23	\$208,000	24	\$265,000
Education of the Public	6	106,000	6	93,000	7	120,000
Total	29	\$327,000	29	\$301,000	31	\$385,000

The Office of the Registrar was established officially in 1881. It has responsibility for recording and safeguarding the documents pertaining to the receipt and legal ownership of the objects accessioned into the National Collections of the National Museum of Natural History and the National Museum of History and Technology. In addition, the office provides essential service to support all units of the Smithsonian through the management of the central mail and messenger service, the Smithsonian shipping office, U.S. Customs clearances, public inquiries for the museums, and official foreign travel documents such as passports, visas, and work permits.

Current program shortages include the preservation of records, shipping, and mail service for which an additional \$75,000 is requested.

There is a serious need to preserve and restore a large backlog of valuable accession records. These are irreplaceable original papers dating from the establishment of the National Museum, which contain the prime source of documentation for items in the collections. It is proposed to approach the preservation of these in a twofold manner since it will be a long-term project. First, the entire file will be placed on microfilm as a precautionary measure against fire or other disaster. Second, a start will be made on deacidifying papers which are already fading badly, breaking, and tearing. An estimated 180,000 records require duplication and 100,000 require restoration work. A records technician is required to select, prepare papers, and coordinate the restoration work with the National Archives and Records Service (\$7,000). Other support for this effort includes contractual services for microfilming and actual restoration (\$16,000).

An important responsibility of the Registrar's Office is to transport exhibits, specimens, and related research items involved in various special museum and laboratory activity. The requests for this service have been growing rapidly in light of expanding activities of program units. A recent analysis indicates that approximately \$102,000 are necessary to meet expected transportation costs, but only about \$59,000 are currently available. This deficit situation has been brought about by continued growth in requests for services, the necessity of absorbing larger proportions of salary increases, and inflationary cost increases in other areas. An increase of \$43,000 is requested to meet growth requirements and offset inflationary pressures in the budget year.

Mail volume and public inquiries continue to grow as the public becomes more aware of the Smithsonian's activities and services. The volume received is presently surpassing the capabilities of the Office to sort, coordinate answers, and distribute on a timely basis. One mail clerk now opens, reads, analyzes, types control cards, records money, and distributes an average 115,000 pieces of mail annually. One correspondence clerk presently is responsible for critically reviewing for policy and procedure and coordinating action on approximately 400 letters and invoices weekly, as well as preparing final replies to 40 to 50 public inquiries. One additional clerk-typist is seriously needed to support the workload (\$6,000). Mail room and related additional costs are \$3,000.

PUBLIC SERVICE ACTIVITIES

The Institution has not allowed itself to rest with static presentations and exhibits of collections directed at only those persons with sufficient motivation or wealth to visit its centrally located galleries and museums. In order to be successful in conveying the richness of the nation's heritage to a wider public, and to offer additional opportunities for appreciation of its growth and development, the Institution has sought to expand its public reach. It has achieved this in a variety of ways over the last several years.

The experimental development of a neighborhood museum in Anacostia has shown that museum operations may be carried out in the crucible of the inner city, that children may learn with delight and advantage, and that the residents of the area will treat with respect what they regard as their own center for learning and recreation. The story of Anacostia Neighborhood Museum and its usefulness stands as one of the outstanding achievements of the Institution in recent years.

The activities of some of the other public service units have been no less important. There is the popular Folklife Festival on the Mall, sponsored annually by the Division of Performing Arts. The services of the Office of Public Affairs, which range through activities in the fields of information and public education, such as radio, television, documentary films, news releases, and guide pamphlets, are especially valuable. The worldwide character of the programs of the Office of International Activities and the International Exchange Service serve to bring this nation closer to the ideal of a world community through research and the dissemination of knowledge.

The increase requested for the Public Service Activities amounts to \$138,000, or one percent of the total Institutional requested increase.

ANACOSTIA NEIGHBORHOOD MUSEUM

Program Category	1970		1971		1972	
	Pos.	Actual Amount	Pos.	Estimate Amount	Pos.	Estimate Amount
Education of the Public.....	9	\$115,000	11	\$112,000	15	\$163,000
Buildings and Facilities Management.....	0	9,000	0	13,000	0	17,000
Total	9	\$124,000	11	\$125,000	15	\$180,000

The Anacostia Neighborhood Museum was established to reach out to new audiences who are unaware of museum resources, physically too far from them, or as inhabitants of low-income population density centers do not see the interest or relevance of museums. Starting in 1966, the Smithsonian sought out community reaction to the concept of a permanent neighborhood museum in the inner city. Reaction was most favorable and the desire for community involvement appeared strongest in Anacostia. The Museum was founded entirely by private donations and was opened in September 1967. Exhibits concentrated on visitor involvement and classes in sculpture, leathercraft, clay modeling, drawing, and painting have been held. In subsequent months, the Museum, in close collaboration with its Neighborhood Advisory Council, began to present exhibits which the community requested, primarily in the field of Negro history. In each case, the exhibit served as a backdrop for school programs, lectures, and concerts. Three years later, the Museum has entertained and instructed over 150,000 visitors and offers a widening array of classes and youth programs. Anacostia has linked its activities directly to the needs of the community and has assured a fresh, nontraditional approach to the role of the museum.

In exhibits and related education programs, Anacostia is now concentrating on urban problems. A recent substantial combined grant from the Carnegie Corporation, the Cafritz Foundation, and the Department of Housing and Urban Development will permit the Museum to identify Anacostia's most pressing social and economic problems through community participation and translate these problems into exhibits with related educational activities. This effort should have a wide impact since to a large degree the problems of Anacostia are shared widely by other urban centers across the nation.

A program increase of \$45,000 is requested for classroom and workshop activity, overall program administration, and general costs of operation.

Although private gifts, donations, and grants for special programs and projects continue to be made available to the Museum, no such funds are now being made available for regular core programs and administration. To illustrate this point, over \$100,000 in general purpose funds were received during 1967, 1968, and 1969; virtually none the past year. The increase provided in the fiscal year 1971 appropriation (\$35,000 of \$75,000 requested) met part of these costs. For instance, rental of the Museum building can now be paid with federal funds. This increase, however, could not fund the additional staff required for basic activities. This request is for the balance of the requirements stated in the fiscal year 1971 budget.

Community demands on the Museum for classes, workshops, and other museum-related education services have increased steadily since the Museum

opened. Part-time and volunteer help from the community has been used, but two full-time instructors (\$17,000) are required to put the class and workshop activities on a more regular basis. An assistant to the director and a clerk-typist (\$21,000) are requested to help meet community needs, and work with other groups interested in setting up similar museums. Funds in the amount of \$7,000 are requested also for custodial, exhibit, and workshop supplies and equipment.

OFFICE OF INTERNATIONAL ACTIVITIES

Program Category	1970		1971		1972	
	Actual Pos.	Amount	Estimate Pos.	Amount	Estimate Pos.	Amount
Research and Scholarship	8	\$118,000	8	\$125,000	10	\$164,000

The Office of International Activities was established in 1965 to initiate, coordinate, and oversee Smithsonian interests abroad. In this capacity, it assists the Institution's scientific staff planning research overseas, briefs American diplomats on Smithsonian activities abroad, and maintains close contact with the foreign diplomatic missions in Washington. In addition, it briefs pertinent foreign visitors and administers training programs for foreign museum technicians at the Institution. The Office also serves as the Executive Agent of the Iran-U.S. Agreement signed in 1968 to foster scientific cooperation between the two countries.

Recently the Office has become increasingly involved in the worldwide environmental and conservation interests of the Institution. It has been concerned with conservation efforts on Dominica, Aldabra, and in Honduras as well as at the Smithsonian's own Chesapeake Bay Center. It was instrumental in bringing about a symposium on the endangered species of Hawaii. An environmental symposium to be held in India is now in the planning stage.

A major role of the Office is to administer the Smithsonian Foreign Currency Program which awards grants for research abroad to American institutions of higher learning as well as to Smithsonian scientists. Since 1965 over \$10.5 million worth of PL-480 "excess" currencies have been obligated to scientists working in the four basic fields of Smithsonian scientific competence: systematic and environmental biology, archaeology and related disciplines, earth and space sciences, and museum programs. The Program is now supporting 97 projects operating in Ceylon, Egypt, Guinea, India, Israel, Morocco, Pakistan, Poland, Tunisia and Yugoslavia. A symposium on Smithsonian projects in Ceylon was held there, and a follow-up meeting is planned for the present year.

An increase of \$30,000 is requested primarily for Foreign Currency Program administration.

In fiscal year 1972 the Office of International Activities will face a critical shortage of personnel. The position of Program Officer on the staff of the Foreign Currency Program is currently being filled by a Foreign Service Officer on loan to the Smithsonian by the Department of State through fiscal year 1971. At the time of his departure it will be necessary to fill the resulting vacancy. It will also be necessary to add a clerk-typist to the staff. With the continual growth of the responsibilities of the OIA and an ever increasing number of grants handled by the FCP, additional clerical help is imperative. Since its inception in 1965 the administrative staff of the Office has grown but clerical positions have not increased. At present eight persons are employed in an administrative capacity while there are only two clerical positions. These additional personnel costs are estimated at \$20,000.

An additional \$10,000 is requested for travel and office maintenance expenses. Of this amount, \$6,000 is required for transportation and per diem expenses for members of the FCP Advisory Councils. Composed of prominent American scientists, these councils meet twice yearly to review proposals submitted to the FCP for possible funding. The remaining \$4,000 is needed for domestic travel and overseas travel related expenses of the OIA staff and for office supplies and equipment.

INTERNATIONAL EXCHANGE SERVICE

Program Category	1970		1971		1972	
	Pos.	<u>Actual</u> Amount	Pos.	<u>Estimate</u> Amount	Pos.	<u>Estimate</u> Amount
Education of the Public	9	\$118,000	9	\$120,000	9	\$138,000

Through the International Exchange Service, public and private institutions in the United States transmit their publications to other countries and receive publications from foreign institutions. Begun in 1849 as an exchange service between the Smithsonian and learned societies in foreign countries, the program was so successful that five years later it was expanded to other American libraries, scientific societies, and educational institutions. As a result of the Brussels Convention of 1886 and some 50 bilateral treaties, the Smithsonian was designated as the exchange bureau for official United States publications. Today many libraries in the United States are dependent upon the exchange program for their foreign publications.

An appropriation increase of \$15,000 is requested to help restore the level of exchange services.

In fiscal year 1967 over 1.5 million packages of publications were received from organizations in the United States for exchange with foreign libraries. By fiscal year 1970, as a result of a static appropriation, higher salary costs, and inflation in the costs of shipping and packaging supplies and equipment, the volume that could be shipped had dropped by about one-third. At present, the exchange of official publications (Federal Register, Congressional Record, etc.) is current as required by law. The exchange programs of colleges, universities, scientific societies, libraries, and medical and dental schools however, have had to be severely limited. Much of these materials are of great benefit to foreign libraries especially in the developing countries.

Funds are requested for shipping (\$13,000) and packaging supplies (\$2,000).

DIVISION OF PERFORMING ARTS

Program Category	1970		1971		1972	
	Pos.	Actual Amount	Pos.	Estimate Amount	Pos.	Estimate Amount
Education of the Public	7	\$226,000	7	\$196,000	7	\$204,000

The Division of Performing Arts is responsible for programs dealing with our national aesthetic expressions, particularly as they evidence themselves in oral, music or dance forms. By staging such events as the annual Festival of American Folklife, which in 1970 drew more than 1,000,000 persons to the Mall over a five-day period, this Division undertakes to extend and further enliven the Smithsonian's educational services to the public.

At the Festival, more than 350 Indians, cheesemakers, barrelmakers, jelly-makers, distillers, wood carvers, basketmakers, jazz musicians, folk singers, gospel groups and musicians from many regions of the United States demonstrated the survival of American folklife in performances which reminded visitors of their still-flourishing cultural heritage.

Programs in jazz and modern dance reflect contributions to world culture which are widely recognized as particularly American in origin and style. Programs in contemporary and period music, theatre and dance provide understanding of the creative view of the present and past.

The Division also offers a variety of Touring Performances such as theatre, musical concerts, puppet theatre, the American Folklife Company and lectures, which are available to other museums, universities and cultural centers throughout the United States.

No program fund increase is sought for fiscal year 1972.

OFFICE OF PUBLIC AFFAIRS

<u>Program</u> <u>Category</u>	1970		1971		1972	
	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>
Education of the Public	12	\$277,000	12	\$241,000	12	\$259,000

This Office is responsible for serving visitors to the Smithsonian and the public at large through a range of activities in the fields of orientation, information, and public education-- radio, television, documentary films, news releases, guide pamphlets, tours, public functions and ceremonies, automatic telephone information services, publications, and other programs. Included in its presentations are the Free Film Theater, the Torch newspaper, the Smithsonian Calendar of Events, and "Radio Smithsonian" now being heard over 60 stations.

No program fund increase is sought for fiscal year 1972.

PROGRAM ADMINISTRATION AND SUPPORT

Increases being requested in this section cover primarily the central administrative and technical services which operate in support of the program units. Included are the 1) Office of the Secretary, 2) Office of the General Counsel, 3) Office of the Treasurer, 4) Office of Personnel and Management Resources, 5) Libraries, 6) Press, 7) Smithsonian Archives, 8) Photographic Services Division, 9) Supply Division, 10) Administrative Systems Division, 11) Travel Services Office, 12) Duplicating Section, 13) and the Information Systems Division. As a group, the requested increases for fiscal year 1972 amount to \$1,165,000 or about 7 percent of the total requested Institutional increases. For the last several years, actual operations indicate that the costs of administering and supporting the diverse program activities have amounted to 15 percent to 18 percent of total obligations. The Smithsonian desires to keep the actual costs of the support function in this range, and the requests presented reflect what is necessary to strengthen certain areas. The expenditures of these units are viewed as necessary to cover general administrative and technical activities, in the manner of an operating overhead account, with the exception of the amounts requested for physical plant operations, maintenance, and protection by the Buildings Management Department which are presented separately.

Since the needs of the support group follow rather closely the developmental pattern of the program units, in future years' budget presentations an effort will be made to consolidate the number of organizational requests and reduce the complexity of several separate budget submissions. For fiscal year 1972, however, in order to promote an understanding of the overall operations, individual descriptions and requests are submitted for the administrative support units.

OFFICE OF THE SECRETARY

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support	38	\$ 462,000	38	\$598,000	42	\$717,000

The Office of the Secretary is composed of the immediate offices of the Secretary, the Under Secretary, the Assistant Secretary (Science), the Assistant Secretary (History and Art), the Assistant Secretary (Public Services), and the Office of Audits.

At the May 1970 meeting of the Board of Regents, the former Assistant Secretary was named to the post of Under Secretary. This was in recognition of the very substantial responsibilities of this office. In order to meet an increasing workload involving Regents matters, construction, legislation, and program and policy matters concerning the entire Institution a deputy assistant is required (\$23,000).

The July 1970 report by the General Accounting Office to the Congress on financial management activities of the Smithsonian recommended that the Internal Audit functions at the Smithsonian be strengthened. They noted that many of the Smithsonian activities and programs had not be subjected to any regular programs of internal audit, and pointed out that the Smithsonian's "Salaries and Expenses" funds had increased very substantially over the past several years. They concluded by recommending that the Secretary continue his efforts to develop an Internal Audit staff of sufficient size and competence to perform successful on-site audits of all Smithsonian functional areas. With the current audit staff of four persons, it will not be possible to audit, report on, and establish a follow-up on all functional areas on a regularly scheduled basis in an organization as complex as the Smithsonian. An additional internal auditor is required to strengthen the audit staff (\$16,000).

The Smithsonian's public information activities are being reorganized. A major element of the planned changes is to give to the individual museums and galleries a larger role in identifying and communicating important and timely program achievements to the media and to specialized journals in art, history, and science through their own specialists in a more decentralized public information program. In order to make these changes effective, yet retain overall administration of the program, especially of general policy matters, a senior public information specialist is required to coordinate the information activities of the individual museums, to handle overall information needs of the Smithsonian which transcend the interests of individual bureaus, and to assist the Secretary in press relations (\$20,000).

The Smithsonian, in identifying areas that need improved staffing and management, has recognized the need to employ an operations officer. This person would be attached to the Office of the Secretary in an advisory capacity to the Under Secretary, and would be responsible for the direction, coordination, long-range planning, and development of certain administrative

and support services of the Institution, particularly in their support relationships to the museums, galleries, and laboratories. These services include personnel administration, management analysis, procurement, contract administration, property management, buildings management, buildings security, photographic services, and other administrative and technical support units. Positions for the operations officer and a secretary are requested (\$20,000).

Although the Office of the Secretary has developed a management group responsive to the broad and complex nature of the Smithsonian, it currently has a serious deficiency of funding in other objects of expense to enable it to perform in an effective way. This is a request for essential funds for travel, computer services, advisory services, supplies and materials, and basic office equipment and furniture (\$21,000).

OFFICE OF THE GENERAL COUNSEL

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support.	8	\$110,000	8	\$135,000	9	\$163,000

In 1964, the Office of the General Counsel was established, some 118 years after the Institution was founded. Prior to that time, outside counsel was retained from time to time to handle significant legal matters for the Institution's private side affairs; the Department of Justice handled a few legal suits on the Federal side; and other questions were decided by Smithsonian administrative personnel. However, such a system was inadequate; it failed to provide the continuous legal counsel necessary for consistency in the day-to-day operations of the Institution.

As a non-Governmental establishment which nevertheless operates in substantial part with appropriated funds, the legal problems of the Institution include those arising from the operations of a private, university-like, charitable corporation, as well as those common to Government organizations. Many otherwise routine matters are complicated by the pervasive necessity of maintaining a rational, effective, and legal relationship between these two capacities in which the Institution functions. In addition, the OGC is responsible for the continuous analysis of Congressional activities and legislation and their impact on the Institution, and has a major role in the furtherance of the Smithsonian's own legislative program.

The Institution has grown considerably since 1964. There have been added to its already numerous responsibilities the Renwick Gallery, the Hirshhorn Gallery, the Cooper-Hewitt Museum, the Archives of American Art, the Chesapeake Bay Center for Environmental Studies, and the Woodrow Wilson International Center for Scholars. It has taken on such programs as the National Museum Act and the Foreign Currency Program. Each of these required OGC staff participation in its establishment and each places demands on the staff for its continued development and operation within the framework of applicable laws.

The Office of the General Counsel has grown from three attorneys in 1964 to four full-time attorneys and one part-time in 1970. During this same period, the Institution's appropriations for salaries and expenses have more than doubled, with a concomitant increase in the workload of this office. This limitation of staff has made it increasingly difficult to meet the rising needs of the Institution and has created a growing backlog of matters on which action has had to be deferred.

At the same time, funds for other objects, which averaged about 4-1/2 percent of salaries in fiscal year 1966 through 1969, have been curtailed to 3 percent during the last two fiscal years. This has been achieved by funding some necessary travel from sources which will not be available in fiscal year 1972, and by deferring the replacement of essential office equipment, which can no longer be postponed without impairing the quality and efficiency of the services provided by the office.

To help overcome these deficiencies, an increase of \$20,000 is requested: \$17,000 for an additional part-time attorney and another secretary and \$3,000 for other objects.



OFFICE OF THE TREASURER

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support.....	31	\$573,000	31	\$604,000	35	\$713,000

This office provides financial management assistance and technical services to the Smithsonian. It is composed of the Treasurer's immediate office, the Office of Programming and Budget, the Contracts Office, and the Accounting Division. Financial planning, budgeting, accounting, contracts administration, and reporting are the responsibilities of these several units.

An increase of \$94,000 is requested to strengthen the budgeting, payroll, and accounting functions, to develop and install improved financial management systems, and to meet higher postage indicia costs.

Selected staff increases and funds for program improvement are required in order that the Office of the Treasurer can provide responsive services to the Smithsonian's museums, galleries, research laboratories, and to the other organization units that are themselves providing similar technical support in the way of personnel management, buildings management, and other services. The diversity of the Smithsonian's operations and geographic distribution, and the variety of funding sources for its programs pose unusual demands on financial management services. The effectiveness and efficiency with which the program offices carry out their assigned research, curation, exhibit, and other public services depend in large measure on the accuracy and timeliness of good financial information.

Funds are requested for an additional budget analyst in the Office of Programming and Budget. Only three such positions exist now for supervision, planning, and budget analysis. Two payroll clerks (five are now available to serve the entire Institution) are requested in the face of new demands being placed on payroll systems in the way of an increasing complexity of allowed deductions. The Smithsonian with its diversity of professional, administrative, maintenance, custodial, and protection personnel has a high percentage of payroll actions which create an additional workload. Similar increased workloads are being found in the Accounting Division. To meet these needs, an additional accounts maintenance clerk is required. In addition, the Smithsonian requires continued development, monitoring, and maintenance of its accounting systems. For this, a project manager and funds for contract services to develop and implement improved systems are required. As a last item, the Smithsonian requests an additional \$10,000 for penalty mail purposes resulting from a higher volume of public mail and likely higher mail rates. This is a total request for five new positions and \$94,000 for the Office of the Treasurer.

Dear Sir,

I have the honor to acknowledge the receipt of your letter of the 14th inst. in relation to the matter mentioned therein. The same has been referred to the proper authorities for their consideration.

I am, Sir, very respectfully,
Yours truly,
[Signature]

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OFFICE OF PERSONNEL AND MANAGEMENT RESOURCES

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support	26	\$388,000	26	\$402,000	28	\$470,000

This Office has responsibility for personnel and human resources management and health services. It helps to formulate policy over a wide range of activities from manpower planning and managerial development, through employee training, performance evaluation, and labor relations. These programs generally fall into six broad categories; the table below indicates the nature of these endeavors with estimated man-years and expenditures for fiscal year 1970.

Activity	Effort and Dollars	
	FY 1970	
Manpower and Organization	.75 man years	\$ 12,000
Career Development	2.75 "	40,000
Management and Personnel Consulting	9.00 "	153,000
Technical and Administrative Support	5.00 "	34,000
Health Services	3.50 "	51,000
Recruitment and Placement	2.00 "	29,000
Admin. and Direction	3.50 "	69,000
	26.50 man years	\$388,000

Annual reports indicate that over the last few years the number of actions handled on a yearly basis by the staff has grown to 72,000. This is a sizeable workload. The ratio of staffing for carrying out personnel office functions is one personnel employee per 125 employees serviced. While no fixed standard has been developed, this is considerably higher than comparable government agencies which average approximately one personnel employee per 80 employees serviced.

The requested increase of \$55,000 will be used to correct shortages in the areas of health services and employee training.

The health services function is composed currently of two units; one is located in the National Museum of History and Technology, and the other in the National Museum of Natural History. These units are charged with the responsibility of providing health services to Smithsonian Institution employees as well as to visitors and tourists. On an annual basis, these units provide about 14,000 treatments to tourists and staff. This figure has been steadily increasing over the years. There is a critical need to expand facilities by adding another unit to service the south Mall group of buildings, which include the original Smithsonian building, the Air and Space Museum, the Freer Gallery, the Arts and Industries Building, and in future years, the Joseph H. Hirshhorn Museum. For this reason an additional \$20,000 is requested for two nursing positions, plus necessary supplies and equipment.



The Smithsonian has been administering an austere program of employee training. In fiscal year 1970, the amount spent by the office on training was approximately \$10,000, yet the needs for training have been steadily mounting. Additional funding is required just to meet programs of special emphasis with the Administration. For example, the Civil Service Commission recently has required specially tailored training for first-level supervisors. In the near future, the CSC will issue strong recommendations that equivalent training be provided for all supervisors. There are more than 400 supervisors currently in the Institution. A second area of emphasis is training for supervisors and managers in labor-management relations. A third area is "upward mobility". The present Administration is putting much emphasis on the Public Service Careers Program and other programs to provide training for low-level, low-skill individuals who are currently Federal employees. The Institution has at present more than 600 employees in the latter category, i. e., GS-5 and below and WG-5 and below. The Institution has at present no programs in the second and third areas, and only minimal programs in supervisory training. For these reasons an additional \$35,000 is being requested to strengthen training programs.



SMITHSONIAN INSTITUTION LIBRARIES

Program Category	1970		1971		1972	
	Pos.	<u>Actual Amount</u>	Pos.	<u>Estimate Amount</u>	Pos.	<u>Estimate Amount</u>
Research and Scholarship.....	28	\$408,000	34	\$458,000	45	\$717,000
National Collections Management and Use	17	191,000	16	214,000	24	335,000
Education of the Public	<u>4</u>	<u>60,000</u>	<u>4</u>	<u>67,000</u>	<u>7</u>	<u>105,000</u>
Total	49	\$659,000	54	\$739,000	76	\$1,157,000

The Smithsonian Institution Libraries provide reference and information services in support of the research and educational programs of the professional staff of the Institution. Basic library resources consist of about 750,000 volumes in the working collections of the Institution, concentrated largely in four central museum and gallery locations. The Smithsonian Institution's library program has the following basic purpose: to have at hand carefully selected documentary materials containing the best and most pertinent data and results from research done elsewhere that has a direct bearing on our own investigations and to arrange and index the information in ways that make it readily accessible. It is logical and prudent to have an information capability such as this as an adjunct to our research effort. In this manner we speed up our own research effort and make it more efficient by avoiding costly and unnecessary duplication of research.

The Smithsonian has embarked on a program of modernization of its libraries services. The following table contains information covering the requested additional amount of \$393,000 for 1972 to implement this program. The Libraries are being changed from collections of collections, some large and notably strong, but most quite small and widely scattered over wide range of subjects in art, the sciences, and the social sciences, into an integrated resource. New services are to be added, based on recently developed methods of information science. Further, the collections that hitherto chiefly served discipline-based curatorial and related research are being broadened to provide a base for information services for interdisciplinary research in newer aspects of science, sociology, and culture beyond the mere cataloging of artifacts and specimens.

In this modernization process the Institution's libraries do not expect to be entirely self-sufficient. Whenever the kind of information required permits, the Institution borrows books from other libraries, and asks other information services and reference librarians for help in gaining access to information. The Institution, in turn, offers the same service to other libraries. This is in keeping with the federal library mission statement, and increasingly is becoming an organized way of operating among research libraries throughout the nation.



The Institution's library needs, however, have long ago passed the limits of acceptability in our use of other libraries. Like many agencies the Smithsonian makes heavy use of the Library of Congress. To ease the burden on that Library's staff, the Institution has assigned three persons to work at the Library of Congress to assist the Smithsonian's professional staff make use of the resources available there. The Libraries have regular messenger service to other important libraries, such as the National Agricultural Library. Nevertheless, with annoying and time-consuming frequency, the materials required by Smithsonian staff in other libraries are already in use and thus unavailable, or in such great demand that they cannot be used by our researchers for as long as they need them. Competition among libraries for too few copies of books in great demand impedes efficient research. In other words, it is frequently more costly to buy too few books than it is to provide a modest amount of necessary duplication of titles.

LIBRARIES' NEEDS FOR FY 1972

	<u>1971 Base</u>	<u>1972 Need</u>	<u>Requested Inc.</u>
Personnel costs, including salaries, benefits, training, and travel	\$254,000	\$ 887,500 ¹	\$233,000 ¹
Positions	54	76	22
Information resources (e.g. books, journals, documents, microfilms)	51,500	153,900	102,400
Computer services, including development time.	12,000	36,000	24,000
Communications equipment & services (e.g. facsimile, special mail and transportation)	3,500	6,500	3,000
Materials preservation (current input)	5,000	35,000	30,000
Supplies, equipment and maintenance	12,500	38,100	25,600
	\$739,000	\$1,157,000 ¹	\$418,000 ¹

Of the more than 385,000 books and uncounted tens of thousands of reports and research documents produced throughout the world each year, it is estimated that the Institution must acquire about 15,000 to 20,000 titles in order to maintain information services that are sufficiently well founded to be useful. This is a modest rate of acquisition. Currently, the Libraries are about \$100,000 short of funds for the purchase of library materials, and another \$200,000 short in funds for the application of modern indexing and retrieval techniques to this material to operate this essential service.

^{1/} Includes \$25,000 for necessary pay increases.



In 1970 the Libraries acquired 16,168 books, journals, and documents for the information service files and collections and cataloged 8,158 of these for addition to the collections. This record of accomplishment is offset by severe shortages in every category of service. One quarter of the titles circulated to the professional staff of the Institution in 1969 were not in the Smithsonian's collections and had to be borrowed from other libraries, principally the overburdened Library of Congress. The 8,000 uncataloged and unindexed items considered pertinent to the work of the Smithsonian acquired in 1969 were added to the existing backlog of 59,000 uncataloged titles remaining from other years. The delays in organizing this material for use have grown to several man-years. Of nineteen major bureaus and offices of the Smithsonian, the General Library maintains staff services in only three. Bureau directors provide full staffing for two and very limited staff for six additional units. Eight bureaus are completely without local service, except as provided by the Libraries' small Central Reference and Circulation staff.

The requested staff increases indicated in the preceding table would be utilized as follows:

To create teams of information specialists and technicians to be assigned on a flexible schedule to work in the bureaus and departments of the Institution that are now unserved by the General Library (National Air and Space Museum, Radiation Biology Laboratory, Entomology, National Armed Forces Museum Advisory Board, Smithsonian Astrophysical Observatory); six library clerks (\$51,000).

To organize a team of skilled, speed catalogers and indexers to reduce the current delays in analysis of incoming literature for use from six months to six weeks (as an ideal goal); four catalogers (\$38,000).

To organize and inventory those parts of the consolidated collections now housed as the Smithsonian Institution Libraries Center at Lamont Street (estimated to be a three-year project); three catalogers; (\$26,000).

To review for cataloging or discard the collections that have not yet been integrated into the Libraries' serviceable collections; five library information specialists (\$41,000).

To bring the automated acquisition system to bear on all library materials throughout the Institution; a technical information specialist and a librarian (\$27,000).

To conduct limited developmental research in information science to improve the handling of materials and the offering of services, particularly to match the development of automated reference systems in the management of the Institution's collections of specimens; two librarians (\$25,000).

Even at this improved level of funding, the Libraries will not have achieved its objective of providing the highest quality of support to the Smithsonian's staff.



SMITHSONIAN INSTITUTION PRESS

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	18	\$492,000	18	\$494,000	18	\$539,000
National Collections Management and Use	3	176,000	3	178,000	3	183,000
Education of the Public	<u>2</u>	<u>32,000</u>	<u>4</u>	<u>35,000</u>	<u>7</u>	<u>72,000</u>
Total.....	23	\$700,000	25	\$707,000	28	\$794,000

For almost a century and a quarter, the Institution has achieved the diffusion of research knowledge principally through the Smithsonian Press. Most of the Press publication activity is considered as a fundamental extension of the basic research programs of the Smithsonian museums and research laboratories. The Smithsonian Press also produces and distributes museum guides, exhibit catalogs, and information leaflets. This is an extension of another basic Smithsonian program, public education. Finally, the Press also furnishes the Institution with a variety of internal manuals, reports, specimen labels, and directories. A recent analysis of Press operations reveals that about 70 percent of Press efforts are spent directly on research publications, 20 percent on public education, and the balance on administrative support.

Additional funding of \$75,000 is requested for research publication printing and for the development of public education materials.

Currently, about one hundred research publications a year appear in eight active series in the fields of anthropology, astrophysics, biology, geology, history, and technology. This represents the extent of the Press current funding capacity for this portion of overall activity and not what could have been published. There has accumulated over the last few years a substantial backlog of research publications generated by Smithsonian scientists and historians. At the close of fiscal year 1970, 19 major manuscripts ready for publication, with estimated printing costs of \$32,000, were withheld from the Government Printing Office because funds were not available. The situation will only worsen in fiscal years 1971 and 1972, since it is virtually certain that the research output of the professional staff will exceed the ability of the Press to fund the publishable reports. The Smithsonian is basically a research institution and support of that research is wasted unless reported on a timely basis to national users. An additional \$40,000 is requested for research publication printing.

There is an equally important need to improve the Institution's performance in the preparation and distribution of public education materials related to our exhibits and collections. In response to the current emphasis on the promise of the open learning environment, the Smithsonian has decided to expand its educational materials program designed to capture the museum learning experience for visitors and for extension

to schools and communities. This need has been confirmed by the recommendations of a visiting committee. This stepped-up effort will require additional professional competence in the Press. The addition of three staff members: an education editor, a designer, and a secretary are requested for fiscal 1972 (\$35,000). The relevance of museum learning to the crisis in education makes this program of pressing importance, yet the basic publication programs for research and museum catalogs are in such arrears that no resources can be taken from existing activities.



INFORMATION SYSTEMS DIVISION

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	2	\$40,000	2	\$42,000	2	\$44,000
National Collections Management and Use	3	55,000	4	65,000	6	137,000
Education of the Public	8	122,000	8	112,000	11	187,000
Total	13	\$217,000	14	\$219,000	19	\$368,000

This Office was established in 1966 in response to the growing awareness that the Institution had to take advantage of computer technology not only in its management areas but to gain access to masses of information associated with its collections. Currently, the Information Systems Division is comprised of an information retrieval section, a mathematical computation section, and a management systems section. While much of the Division's efforts are currently devoted to administrative and management support functions, in future years attention will be concentrated increasingly on research support and collections information retrieval. Some 350 specific and 50 general computer programs have been developed and much of the time of current staff must go to maintenance and updating.

Current program shortages include the following, for which a program increase of \$140,000⁷ is requested.

The Division is not yet able to meet Institutional needs in the management systems area. It is utilizing its present capacity in this area developing and installing new systems of library acquisitions and search, fiscal accounting, personnel, and property management. These systems are only in initial to intermediate stages of development, and a particularly large increase in actual systems implementation and programming time is required to meet the anticipated work load in 1972. To accommodate this, three additional computer specialists will be required (\$53,000), along with necessary equipment, supplies, and computer time (\$30,000).

For several years (largely with grant funds which are no longer available) the Institution has been exploring and developing automated methods for capturing museum collection information in order to make measurements of long term environmental change associated with artifact and specimen characteristics useful for controlled research purposes. The Institution is considered the pioneer in this area by concerned scientists around the nation. One objective, for example, is to recreate environmental conditions for selected animal species which prevailed during specified periods in history, and then through various analyses to speculate about changes which have occurred or will occur and result in contemporary population, distribution, and survival characteristics. The feasibility and usefulness of automation has been demonstrated to the scientific community by the joint efforts which have taken place to date between the National Museum of Natural History and the Information Systems Division. These pilot projects have concentrated on birds, crustacean, rocks and minerals. The system must now be gradually

extended and implemented throughout the Museum. Collection information systems are needed elsewhere in the Smithsonian. For instance, in the National Portrait Gallery, the Division is helping to develop a program to permit retrieval of a great variety of research data concerning portraits of distinguished Americans. To extend work in these areas, the Division requests two additional positions, a documentation specialist and a computer programmer (\$30,000), and necessary travel, equipment rent and computer time (\$27,000).



SMITHSONIAN ARCHIVES

Program Category	1970 Actual		1971 Estimate		1972 Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support	6	\$33,000	6	\$61,000	7	\$79,000

The Smithsonian Archives is both the official memory of the Smithsonian Institution and a valuable research resource for scholars in the history of American Science in the 19th Century. Exclusive of materials located in the research and curatorial areas of the Smithsonian (which should be identified and protected), the Archives' current holdings amount to over one million documents from the 1830s to the present. The Archives' staff identifies permanently valuable records throughout the Institution, preserves them for administrative, legal, and fiscal value, and provides service on these records to Smithsonian staff. This constitutes the Archives' management or service function. The Archives also makes available and interprets its holdings to the scholarly community, an activity which makes the greatest demands upon the professional capacity of the staff.

Current resources of staff and funds are distributed approximately equally among the following activities: identifying, selecting, and preserving valuable records; preparing finding aids; and providing reference services. In fiscal year 1970, about one-half of the reference service effort went to student, scholar, and federal agency users.

Current program shortages consist of one additional archivist (\$10,000) and funds for contract microfilming and supplies (\$5,000). This requested increase for fiscal year 1972 is aimed at (1) increasing the effectiveness of the Archives in meeting basic responsibilities for selecting records throughout the Smithsonian Institution for preservation; (2) increasing capacity of the staff to prepare records for use and to service records; and (3) microfilming deteriorating documents as a preservation function, and to increase the availability of these records through microfilm medium. Only about \$3,000 is currently available for contract microfilming.

PHOTOGRAPHIC SERVICES DIVISION

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support.....	20	\$265,000	20	\$252,000	21	\$301,000

The Smithsonian photographic services are unique in that the Institution's activities require more quality and custom work as compared to the photographic needs of most government agencies. The photographic work is under public scrutiny almost entirely. In view of the importance of photographic services to the entire Institution, the centralized Photographic Services Division was formed to exercise a more stable and positive control over the application of procedures and techniques. It maintains laboratories in three museum buildings.

This Division is charged with supplying all types of photographic and related services that the Smithsonian's museums and research activities may require. This involves filling photographic requests, obtaining outside contractual services, and providing technical assistance and training to Smithsonian staff members. The Division supports programs of research, documentation, and conservation of collections, exhibitions, education, training, publication, and public service.

An increase of \$40,000 is requested to provide for a laboratory technician (\$6,000), supplies, equipment, and other services (\$34,000).

The lack of technician personnel (none for 16 photographers) forces the photographers to perform routine tasks that are time consuming, such as print drying, straightening, and stamping, yet are essential in the total operation of the Division. This is a very inefficient and costly utilization of the professional photographer's time and has resulted in backlogs of up to six months for photographic work to be started, as well as long delays in the processing of work in progress. A lab technician is urgently needed to handle the more basic tasks involved in photograph processing.

In the past several years, there have been several Government-wide increases in salaries, resulting in funds being directed from other object classes and used for the payment of salaries and benefits. In fact, funds available for other object classes have decreased from \$52,000 in fiscal year 1968 to \$25,000 in fiscal year 1970. This situation is further aggravated by the fact that the prices of films, chemicals, and processing have increased 10-15 percent during this period. Equipment replacement needs have had to be deferred in order to purchase necessary supplies and materials. Many pieces of equipment are now 10 to 12 years old and obsolete or frequently in need of repair. Outside processing (color work) has been held to a minimum to compensate for the shift of funds for salaries and benefits. Additional funds are urgently needed to purchase supplies, equipment, and specialized processing services.

SUPPLY DIVISION

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support.....	21	\$318,000	21	\$327,000	23	\$377,000

The Supply Division procures supplies, materials, and contractual services, and equipment for research, curatorial, exhibition preparation, and other Smithsonian activities. It stocks and issues office, laboratory, and other supplies required in daily operations. It operates a property management program, obtaining excess property in lieu of new procurement wherever possible. The Division maintains property records and takes periodic inventories to insure adequate control and utilization of equipment items.

An increase of \$40,000 is requested for stockroom and procurement operations.

The growth in research, exhibit, and educational programs has increased demands for stockroom supplies. For economy and efficiency of purchasing, general supply items are bought centrally and stocked by the Division for issue. The Division has had to reduce its expenditures for supplies in order to absorb part of higher pay costs. About \$80,000 are available in fiscal year 1971 of which about \$18,000 will be used for duplicating supplies. 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 in small lots, making for uneconomical procurement. To save funds, the inventory has been purged of slow-moving items and items used by only one or a few units. The reserves of many items have been reduced to dangerous levels. Stock prices are rising. An additional \$26,000 is requested for stockroom supplies, equipment, and office machine repair services.

The Division's workload of purchase orders, contracts, imprest fund uses and other transactions associated with operating funds, foreign currency matters, and construction projects continues to increase. Although improved methods and techniques (a new procurement manual has been issued recently) will continue to increase productivity, it is anticipated that the procurement workload will outpace available manpower in fiscal year 1972. There is also the problem of adequate control of receiving and prompt delivery services to additional building facilities (for instance, the Renwick Gallery and the new laboratory building for the Radiation Biology Laboratory in Rockville, Md). Funding is requested for a procurement clerk and a stockroom clerk (\$14,000).

ADMINISTRATIVE SYSTEMS DIVISION

Program Category	1970		1971		1972	
	Pos.	Actual Amount	Pos.	Estimate Amount	Pos.	Estimate Amount
Administrative and Central Support.....	9	\$140,000	9	\$157,000	10	\$197,000

The Administrative Systems Division provides management analysis and system and procedures work in the development of sound business administration and management improvement programs within the Institution. This unit develops organizational, functional, staffing and flow charts, procedural manuals and other administrative issuances, makes studies and special surveys, provides management advisory services, and maintains a forms management program.

A program increase of \$35,000 is requested in order to provide for an additional management analyst and supplies for the forms management program.

In the past five years, the Smithsonian has grown considerably in size and complexity, while the number of management analysts in the Administrative Systems Division has remained essentially the same. This has resulted in a backlog of management improvement projects that cannot be completed with the present level of staffing. This backlog includes operational manuals, procedural improvements, and special studies which are needed to improve the efficiency of the Institution's operations. An additional management analyst is needed to eliminate this backlog of projects and to handle the increased workload of the office (\$10,000).

In addition to management analysis and advice, the Administrative Systems Division conducts the forms management program. As the complexity of the Institution has increased, the usage of forms has increased also. Formerly, the Institution could utilize a relatively small number of simple forms for management and reporting purposes. However, the increase in the number of bureaus and programs of the Smithsonian requires that sophisticated reporting systems including computer reports, be developed to insure that heads of bureaus and offices as well as other Smithsonian officials receive the information essential for effective management. These new reporting systems use many types of forms in relatively large quantities. Unfortunately, in spite of inflationary increase in the cost of forms the funds available for their purchase has remained constant at about \$25,000. This has now reached a point where the printing or purchase of many required forms has been deferred due to the lack of funds. An additional \$25,000 is urgently needed for the purchase of forms.

TRAVEL SERVICES OFFICE

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Administrative and Central Support.....	3	\$35,000	3	\$38,000	3	\$39,000

This Office arranges travel for Smithsonian research, curatorial, and administrative staff traveling on regular operating funds and on foreign currency program funds. Many of these arrangements, especially for travel to remote parts of the world for field studies and collections, is complex involving many modes of transportation and precise scheduling.

In fiscal year 1970, the number of air and rail reservations booked increased by 10 percent over fiscal year 1969, from 10,000 to 11,000. Travel itineraries prepared increased by 18 percent from 2,600 to 3,066. Transportation requests processed increased by 10 percent from 1,900 to 2,101. Hotel reservations booked increased by 3 percent from 674 to 695. The total dollar value of tickets purchased in fiscal year 1970 amounted to \$633,551.06 as compared to \$580,896.59 in fiscal year 1969.

Group travel arrangements were made for a large number of special activities and meetings such as the Folklife Festival, the Aviation Museum Tour of Europe, the International Symposium on the Biology of the Sipuncula in Kotor, Yugoslavia, Research Awards Advisory Meeting, Touring Performance Service of Division of Performing Arts, excavations in Israel and Yugoslavia, and travel in connection with the American Institute of Indian Studies to Delhi, India and return.

The Office needs an additional travel clerk and funds for supplies, equipment, and publications to meet this increasing workload and to make prompt and accurate arrangements (\$10,000).

DUPLICATING SECTION

<u>Program Category</u>	<u>1970 Actual</u>		<u>1971 Estimate</u>		<u>1972 Estimate</u>	
	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>
Administrative and Central Support.....	7	\$83,000	7	\$66,000	7	\$88,000

The Duplicating Section is responsible for producing a wide range of printed materials for the Smithsonian Institution. Included are administrative issuances, news releases and reports and informational materials produced by the research, curatorial, and exhibits activities.

A program increase of \$18,000 is requested to replace old and obsolete equipment.

The current budget meets the costs of essential personnel (no staff reductions can be made and meet the workload), some supplies, and essential repairs to existing equipment. No funds are available to purchase replacement equipment. Much of the current equipment is old and while well maintained frequently breaks down. One of the four offset presses is thirteen years old. When out of operation there is a loss of production as well as costly repairs. Funds are requested for a replacement offset press and for a new itek platemaker in order to reproduce photographs and other originals with greater fidelity.

The service furnished by this unit is essential to many of the overall programs of the Smithsonian Institution. The personnel are well qualified to handle this type of work and do an excellent job. Work must be kept at a current level to be of any value to those requiring the work.

OTHER CENTRAL SUPPORT

Program Category	1970		1971		1972	
	<u>Pos.</u>	<u>Actual Amount</u>	<u>Pos.</u>	<u>Estimate Amount</u>	<u>Pos.</u>	<u>Estimate Amount</u>
Administrative and Central Support.....	10	\$133,000	10	\$143,000	10	\$150,000

Included are the activities of the Equal Employment Opportunity Office, the special project involving writing and research efforts associated with producing the Joseph Henry Papers, and the internal record keeping duties for the Secretary's Files. No increases are being sought for these activities other than necessary pay, reflected in the above table.

BUILDINGS MANAGEMENT DEPARTMENT

Program Category	1970		1971		1972	
	Pos.	Actual Amount	Pos.	Estimate Amount	Pos.	Estimate Amount
Buildings and Facilities Management.....	748	\$8,067,000	768	\$8,764,000	810	\$9,894,000

The Buildings Management Department performs essential functions which contribute directly to the accomplishment of the important goals, objectives, programs, and activities of the Smithsonian Institution. These responsibilities include the protection, operation, and maintenance of eight major buildings, including the original Smithsonian Building, the History and Technology Building, the Natural History Building, the Arts and Industries Building, the Freer Gallery of Art, the National Air and Space Building, the Fine Arts and Portrait Galleries Building, (housing the National Collection of Fine Arts and Portrait Gallery), and the Renwick Gallery of Art. This Department performs various combinations of these functions for nine other research, collection, special purpose, and support facilities, for example, the Chesapeake Bay Center for Environmental Studies, the Oceanographic Sorting Center, the Belmont Conference Center, and the Silver Hill facility, which provides for the restoration and preservation activities of the National Air and Space Museum, and houses reference collections of aircraft, memorabilia, and objects of science, technology, art, and natural history.

This Department also provides utilities (electricity, steam, water, gas, and compressed air), including servicing, repairing, and operating refrigeration, heating, temperature and humidity control systems, and related machinery and accessories. It furnishes transportation and communications; performs repairs, improvements, and alterations to the buildings and facilities; and is responsible for safety, physical security, and disaster programs as well as engineering and architectural services, construction management, space management, feasibility studies, and professional services.

The Buildings Management Department also provides special custodial, protection, and fabrication services in support of research activities, exhibitions and other public events, and care of the National Collections.

An increase of 42 positions and \$716,000 is required in fiscal year 1972 to strengthen protection services in and around Mall buildings; to provide basic services to the Renwick Gallery; to meet increased costs of utilities, communications, contract work, supplies and materials, and equipment; and to improve the rehabilitation of buildings and facilities program.

Utilities and Communications \$116,000

In fiscal year 1970, the Buildings Management Department spent approximately \$1.0 million for communications and utilities (exclusive of steam). Present information on higher unit costs indicates that these mandatory expenses will increase to \$1.1 million in fiscal 1972. This amount includes \$100,000 to fund the cost of electricity which increased 5 percent in fiscal year 1970, and an additional 6.5 percent in fiscal year 1971, for a total increase in the current fiscal year of 11.5 percent. The remaining \$16,000 are needed for the Federal Telecommunications System intercity telephone services based on a projection by the General Services Administration.

Other Essential Services and Costs

\$ 60,000

This request includes a price increase of \$15,000 on contract services for the removal of trash and debris resulting from higher labor costs; and \$45,000 for an average increase of 10 percent on such items as miscellaneous contract work, supplies and materials, and equipment.

Protection, Operation, and Maintenance of the Renwick Gallery \$147,000

The Renwick Gallery was turned over to the Smithsonian in February 1969. Restoration and renovation work is expected to be completed by fiscal year 1972. The Buildings Management Department has been providing minimal services to protect the building and its contents, and provide maintenance to the heating, air conditioning, and humidity control systems in the building, on a 24-hour basis, seven days a week. Fiscal year 1971 costs will be approximately \$100,000.

The Gallery will be undergoing exhibit preparation beginning in early fiscal year 1972, and is now scheduled for opening to the public in the fall of 1971. The additional positions required to provide adequate staffing on a part-year basis in fiscal year 1972 include: 18 guards, six custodial employees, and four mechanics (electrician, painter, carpenter, and sheet-metal worker). Funds are also requested for supplies, materials, and equipment to support these necessary functions.

Adequate External Security and

Safeguard New Exhibit Halls and Galleries

\$ 93,000

The present protection staff of approximately 275 guards and supervisors provides physical security for the Smithsonian's museums, art galleries, and collection areas and for the National Collections and property housed therein, and is responsible for the overall control and security of all persons using these facilities, including general public visitors, staff, and visiting students and researchers. Five additional guards are requested to provide improved security outside Smithsonian buildings. During recent weeks there have been numerous serious attacks and muggings occurring on the grounds areas immediately adjacent to Smithsonian buildings. These additional guards are required to furnish improved outside protection and to prevent these crimes. Nine additional guards are required to safeguard the exhibits in new halls and galleries which have recently been opened to the public, e.g., Ice Age Mammals, Machine and Civil Engineering Hall, and the Adams Exhibit at the National Portrait Gallery. Funds are also requested for supplies and materials, and equipment for these additional guards.

Rehabilitation of Buildings and Facilities

\$300,000

An increase of \$300,000 is urgently needed to improve the Rehabilitation of Buildings and Facilities Program in fiscal year 1972. The funds originally appropriated for this purpose (\$200,000) have been used during the past few years to offset some of the General Schedule and Wage increases, and other increased costs, and to rent additional space in which to store many objects of the National Collections in the fields of history, art, and science. This increase is requested to accomplish a number of important projects which have been deferred during the past few years; e.g. exterior lighting on the buildings as a security and aesthetic improvement (\$52,000); repairs to the exterior and roofs of the buildings to prevent further deterioration which

involves marblwork, stonework, repairs, pointing, waterproofing, and repairing and replacing window frames and sashes on all Smithsonian buildings (\$156,000); and the installation of storm windows in the History and Technology building to prevent further damage due to the existing conditions of excessive condensation (\$25,000). The remainder of \$67,000 will be used for miscellaneous projects, such as the installation of drinking fountains in public areas, and the installation of four garage doors at the Fine Arts and Portrait Galleries Building.

Tab B

"SALARIES AND EXPENSES"
FOR SPECIAL PROGRAMS

SMITHSONIAN INSTITUTION SPECIAL PROGRAMS

This group of activities is considered to be of particular importance in implementing desired growth in the Institution's activities over the next several years. Some supplement program activities of the museums and galleries. For instance, opportunities are provided for outstanding pre- and post-doctoral investigators from across the nation to be selected for work under the supervision of the Institution's professional staff. External education services are provided by means of popular museum tours for school children and other education services. Others of the special programs provide the basis on which the Institution affects dramatic changes in its exhibits and research efforts. The exhibits program request is geared to produce three exhibits of unusual significance and timeliness in the Natural History, History and Technology, and Air and Space Museums, while the Bicentennial of the American Revolution request will advance the Institution's efforts to celebrate and portray the first two-hundred years of American history and what they may mean for the future. The environmental science program request speaks to the second year of a coordinated Institutional effort to shed light on ecological problems in the nation, and the research awards request will enhance the Institution's ability to fund especially meritorious work of its professionals. The National Museum Act request is directed at strengthening the nation's museums by means of training and improved conservation, cataloging, and exhibits techniques. The increase being requested for these programs is \$4,284,000 and constitutes 25 percent of the total Institutional requested increase.

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

Special Programs	1970		1971		1972	
	Pos	Amount	Pos	Amount	Pos	Amount
American Revolution Bicentennial Program ..	0	\$ 0	2	\$ 400	2	\$ 725
Environmental Sciences Program.....	0	0	3	150	17	800
Major Exhibition Programs.....	0	0	0	0	0	1,550
National Museum Act Programs.....	0	0	0	0	3	1,100
Advanced Study in Programs of Higher Education	3	429	3	445	4	606
External Educational Services Program.....	15	143	17	154	22	252
Research Awards Program	0	400	0	400	0	800
Woodrow Wilson International Center for Scholars	8	91	0	0	0	0
Total "Salaries and Expenses," Special Programs	26	\$1,063	25	\$1,549	48	\$5,833

AMERICAN REVOLUTION BICENTENNIAL PROGRAM

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Education of the Public.....	0	0	2	\$400,000	2	\$725,000

The Bicentennial of the American Revolution offers the Smithsonian Institution a unique opportunity and an urgent duty. We must use our vast resources, and enlist the resources of others, to help rediscover and illuminate our national achievements. The theme of the Smithsonian's Bicentennial celebration is the American Experience; its purpose will be, in President Nixon's words, "...a new understanding of our heritage."

For this effort the Smithsonian Institution is providentially well prepared. It is a remarkably comprehensive group of enterprises surveying every aspect of man's life and work--his social, political, and military institutions; his fine arts, his applied arts, his performing arts; his use of natural resources, and his adventures of exploration on this planet and into outer space. The Smithsonian Institution has a long and rich tradition of free interchange of ideas with the world of learning. It has been a center for the study of resources, natural and human, of the whole continent. The Smithsonian, as the repository for myriad objects sacred to our history and illustrative of the American Experience since the beginning, is preeminent among the museums of the world and second to none in the number of its visitors.

The Smithsonian program of Bicentennial activities is in addition to, and beyond, the Institution's normal level of day-to-day operation. It is designed to be complete in itself, to be terminal in nature, and to avoid permanent commitment of personnel and other additions to the appropriations base. The request for fiscal year 1972, \$725,000, and projected future funding is shown in Table I.

During fiscal year 1972, the greater part of the Institution's Bicentennial efforts will necessarily be devoted to the research, collecting and planning which are called for to arrive at the Institution-wide, coordinated events surrounding 1976. Preliminary work will result in some visible results such as individual exhibitions, seminars, and publications. But in general, the nature of the entire undertaking is such that the budget projection shows a steady progress from "behind-the-scenes" activities toward translation into public exhibitions, performances, and a series of major publications, as we approach 1976.

The Smithsonian's Bicentennial activities are designed to be interrelated and mutually reinforcing, but for budgetary purposes they can be viewed under three headings: Exhibitions and Performances; Research and Publications; and National Programs.

Exhibitions and Performances

In the Nation's Capital, the Smithsonian offers a uniquely effective and appropriate site for dramatizing and interpreting the American Experience. Now some 13 million people each year visit the Smithsonian museums in Washington. By 1976 this figure is likely to reach 20 million, and interest in the Bicentennial may well bring the number to 30 million. The Smithsonian will provide these

visitors with an appropriate and dramatic exposition. In January 1976 each of the Smithsonian's ten museums plans to open a major exhibition commemorating the Bicentennial, the first occasion when so many of the Institution's resources will be devoted to a single theme. At the same time a guide will be published showing the coherence of the Smithsonian's many activities in exploring and illustrating the American Experience.

The visitor to the Mall will have an unparalleled opportunity to participate in a sequence of varied and informative experiences. He will explore American history and see the expression of the American spirit through two centuries and across a wide range of subject matter.

At the National Museum of Natural History he will see the look and sense the feeling of the land and its original inhabitants at the time the first Europeans arrived, and he will see what happened to these people and the effects wrought upon the land over the centuries.

At the Arts and Industries Building, he will see the way Americans saw themselves, their past and future, at the time of the 1876 Philadelphia Centennial. In this building, constructed originally to house materials that had been assembled and displayed at the Philadelphia Centennial, the same objects will be used to recapture the optimistic mood in which Americans celebrated this midpoint in our history.

In the National Air and Space Museum the visitor will see an exhibition of what is perhaps America's greatest technological achievement, the conquest of outer space, and of the nation's future in the Space Age.

Special exhibitions at the National Museum of History and Technology will present the cultural, industrial, and political development of the United States. Examples of these are the Corridors of American Experience, a series of "time corridors" designed to enable the visitor to experience daily living at specific times in America's past. A "time machine", to be developed in the current year and tested on the public in fiscal year 1972, will transport the visitor by novel means of surveying the intervening experience.

The Price of Independence will present the risks and the opportunities of independence for the American colonists: the risks of sea trade, of potential civil war, the fear of defeat and the human and fiscal costs of war, supplemented by the problems which would result from the loss of trade with England. The second part will depict the new opportunities--political, economic, intellectual--to be found in Independence. A newly designed computerized game will allow the museum visitor to select one of several roles (such as that of a Boston merchant, a Philadelphia laborer, or a Southern planter) and test his decisions against the actual facts of history in the period 1770-1820. In this way he can relive the risks and opportunities of the Revolutionary Era. (A significant number of innovative display techniques, using new technology, will be developed. These technical advances will be made available to museums and display designers throughout the country.)

Other major activities will include an unprecedentedly comprehensive exhibit of portraits and associated objects of Americans of the Revolutionary Era, and a year-long festival of American traditional and ethnic performing arts and handcrafts (the "Grassroots American Culture Program").

Research and Publications

We believe that the commemorative activities associated with the Bicentennial should improve our understanding of ourselves and make a lasting contribution to human knowledge. When the performances have ended and the exhibitions have closed, something of use to Americans during the third century of our national life should remain.

As an important part of the Bicentennial program of the Smithsonian, we propose to undertake a number of inventories of national cultural resources. These will range from an Inventory of American Paintings to a Survey of Ethnic and Regional Cultural Forms. During fiscal year 1971 the scope and techniques of these surveys will be specified and refined, with a particular view to coordinating the activities of the scholars, students, conservationists, and photographers who will participate in them. Every effort will be made to enlist the support and cooperation of regional and local groups in this enterprise. We expect that the actual compiling of the inventories will begin in fiscal year 1972.

The first result of these inventories will be apparent in our own Bicentennial exhibits and performances, as for the first time we will be able to draw upon the entire range of America's cultural resources. The same will hold true at the regional and local level, as our efforts make people more aware of the richness and importance of their own traditions.

Equally important, however, is our plan to preserve this information in permanent form for scholars and for the public. We intend to sponsor, or to arrange for the publication of, scholarly catalogues, documentary histories, recordings and films; other data not appropriate for such publications will be retained in archival form or in computer banks for the use of future generations. We believe that these Smithsonian Bicentennial Inventories will reveal as never before the full scope of our cultural achievements during the first two centuries of our history.

During the years between now and 1976, we will also be engaged in research of a narrower kind, focused directly upon the topics of our special Bicentennial exhibits. Projects of this sort will include research on all the portraits of George Washington, on the life of a New England seaport in the mid-18th century, on the life of a midwestern town in the mid-19th century, on the contributions of various ethnic groups to American civilization. Here, too, we intend that the fruits of this research shall be made available to the public in permanent form, drawing upon our exhibits for illustrative material.

National Programs

We share the conviction of President Nixon and the American Revolution Bicentennial Commission that "the commemoration be national in scope, seeking to involve every state, city and community." For our part, we are determined that each of our Bicentennial activities, in addition to drawing upon and reflecting the entire nation, shall also bring benefits to as many areas and people as possible.

Concretely, this means that in the conception and design of all our Bicentennial exhibits and performances, we will bear in mind the need to create counterparts that can travel throughout the country during the Bicentennial Era. Drawing upon the experience and capabilities of our Traveling

Exhibition Service, and upon the talents and imagination of our Office of Exhibits, we intend to offer to American museums, schools, historical societies and other organizations a rich selection of exhibitions and performances related to our general theme, The American Experience.

TABLE I

Bicentennial Activities and Budget Forecast
(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>	<u>1978</u>
Exhibitions and Performances	\$130	\$350	\$425	\$525	\$725	\$825	\$300	\$50
Research and Publications	200	250	350	400	200	100	75	50
National Programs	50	100	200	300	500	500	700	100
Administration	<u>20</u>	<u>25</u>	<u>25</u>	<u>25</u>	<u>25</u>	<u>25</u>	<u>25</u>	<u>25</u>
Total	\$400	\$725	\$1,000	\$1,250	\$1,450	\$1,450	\$1,100	\$225

SMITHSONIAN ENVIRONMENTAL SCIENCES PROGRAM

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos	Amount	Pos	Amount	Pos	Amount
Research and Scholarship	0	0	3	\$150,000	17	\$800,000

Intelligent management of the environment by man requires understanding of the nature, cause, origin, and significance to man of fluctuations in the environment. The objective of this program is to develop biological and physical data by means of collaborative, integrated research projects that will permit the evaluation, and ultimately the prediction, of environmental change.

The Smithsonian Institution has unique capabilities including experienced personnel, the largest collections of plants and animals in the world, with detailed distribution and abundance data required, as a basis for any effective global environmental monitoring system. The Smithsonian has in-depth ability to measure natural and man-induced variation in the characteristics of solar radiation reaching the earth and the causes of such variations. It also has the capacity to study as a function of time their biological correlates, facilitated by permanent and protected field-research sites in the temperate and tropical zones.

Activity during fiscal year 1971 is being limited to the items of highest priority; i. e., those extending Smithsonian resources to monitoring rates of biological and physical change, and the use of plants and animals as benchmarks and bioindicators in the establishment of environmental standards. Also included in fiscal year 1971 activities is a comprehensive, exploratory survey of potential research sites at which work will be undertaken on broad studies in the marine environment.

In fiscal year 1972, research in the Environmental Sciences Program will include studies of tropical/temperate and marine/terrestrial environments. An appropriation of \$800,000 is requested for these studies. The work is described below as two subprograms.

Subprogram I: SHALLOW WATER MARINE ENVIRONMENTS

Drastic, ecological changes are occurring in many tropical and temperate shallow water areas throughout the world. Some scientists attribute these changes to man's interference with the natural environment but others caution that they may be wholly natural. Should the changes be natural, efforts to reverse or halt their effects may do more harm to the world's biological systems than permitting them to proceed without alteration. An evaluation of the origin of these changes cannot be made without a thorough understanding of the fluctuations and ecology of organisms involved.

Although many scientists throughout the world are studying the animals and plants in the near-shore, marine environment, these studies are fragmented and are made independently of each other. A coordinated study in selected areas susceptible to detailed examination is essential for an understanding of

the immense biological complexity and structural variety involved. The information and methodology developed from such studies will have application to more extensive environments, leading eventually to an understanding of the problems as broad as whole continental regions. All researchers will apply their particular expertise to the primary site(s), but some investigators will need to make complementary studies elsewhere to validate their primary-site data.

The development of this baseline information and its correlation with data already available in the National Collections, accumulated over many years, will enable the scientific community to identify and design solutions for the environmental problems that grow increasingly more critical.

The professional staff of the several Smithsonian science bureaus (National Museum of Natural History, Smithsonian Tropical Research Institute, Radiation Biology Laboratory, Chesapeake Bay Center for Environmental Studies, and Smithsonian Astrophysical Observatory) will perform the bulk of these studies, in collaboration with highly qualified scientists drawn from other institutions on short-term appointments to provide specialized expertise as required. The populations of marine species and their ecology will be determined and monitored for long periods.

The major objectives of the program designed to begin in fiscal year 1972 are as follows:

1. To monitor variations in the physical parameters such as solar radiation, temperature, salinity, wave action, and nutrient exchange.
2. To carry out a study of the biology of the key organisms at a selected set of sites in North America and the tropical zones.
3. To undertake quantitative distributional studies of the organisms at these sites and work out the major levels of organism interdependence.
4. To examine the possible influences of the related terrestrial environments.
5. To obtain governmental protection of these sites as conserved areas and to develop a system of periodic inspection to study the patterns of fluctuations in the populations.

Subprogram II: TERRESTRIAL ENVIRONMENTS

The last large land area available for occupation and development by man lies in the tropical zones of the world. In the New World tropics, destruction of the land is rampant and ecological data that would permit intelligent management is non-existent. It is important that these problems be attacked now, before rapidly expanding populations, industrialization, and urbanization remove all options presently available. Therefore, the first phase in this necessarily

long-term research project will be directed to a study of the New World tropics, with comparative studies being made in temperate zones and in tropical areas of the Old World to validate the conclusions drawn. This approach will greatly expand the value and increase the usefulness of the environmental data acquired in each of the phases of the project.

Historically, there has been a long-standing scientific interest in the Smithsonian Institution concerning tropical plants and animals and their inter-relationships. The millions of documented specimens in the National Collections, the resources of the Smithsonian Tropical Research Institute, and the associated scientific expertise that has been developed in the Smithsonian Institution constitute a unique national resource. It will be used fully in this integrated environmental subprogram to obtain information essential to the development of plans for the most effective long-term utilization of the land.

Studies of soil organisms, of vertebrate animals, insects, and of plant life will be conducted in coordination with monitoring of natural light quantitatively and qualitatively, of rainfall, temperature, animal behavior, and seasonal fluctuations in populations of both plants and animals. What will be sought is a number of reliable biological indicators that will provide a maximum amount of information about the structure and function of the terrestrial environments.

Functional Breakdown of Proposed FY 1972 Increases

Activity ¹	FY 1972 Increases		Totals
	Subprogram I: Marine Environments	Subprogram II: Terrestrial Environments	
Field/Laboratory Research to Obtain and Correlate Physical with Biological Data in Tropical Environments (NMNH, NZP, RBL, SAO, STRI)	\$100,000	\$125,000	\$225,000
Field/Laboratory Research to Obtain and Correlate Physical with Biological Data in temperate environment (CBCES, NMNH, RBL, SAO)	50,000	75,000	125,000
TOTALS	\$150,000	\$200,000	\$350,000

(1) Although shown separately, the activities include planning for correlating tropical and temperate data.

MAJOR EXHIBITIONS PROGRAM

Program Category	1970 ^{1/}		1971 ^{1/}		1972	
	Actual	Estimate	Actual	Estimate	Actual	Estimate
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Education of the Public	0	0	0	0	0	\$1,550,000

The Smithsonian's base appropriation for exhibits, primarily in the Office of Exhibits, is largely absorbed by the maintenance and upgrading of existing exhibits, the design of new exhibits, and a modest program of changing special exhibits. This appropriation has remained relatively static for the last several years growing only by pay supplementals to meet part of the costs of legislated pay raises. Absorption of a part of higher pay costs by the office, combined with the greatly increased costs of supplies, materials, printing, and contractual services required to produce exhibits, has virtually halted the Smithsonian's ability to continue the development of its permanent exhibits program. New permanent exhibits, space for which exists in present Smithsonian buildings, will require new nonrecurring funds for construction and installation.

The brochure submitted with the Smithsonian budget requests for fiscal year 1972 identifies and describes three proposed permanent exhibits of unusual timeliness, significance, and public interest. These are:

Corridors of History in the National Museum of History and Technology	\$750,000
Hall of Living Things in the National Museum of Natural History	500,000
Exhibits of the Future in the National Air and Space Museum	225,000
Supplementary visitor orientation and printed education materials	<u>75,000</u>
TOTAL	\$1,550,000

^{1/} Excludes numbers of personnel and funds shown for the Office of Exhibits.



NATIONAL MUSEUM ACT PROGRAMS

Program Category	1970 Actual		1971 Estimate		1972 Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Education of the Public	0	0	0	0	3	\$1,100,000

The justification for the programs authorized by the National Museum Act are found in the following extracts from America's Museums: The Belmont Report:¹

This is a report on a priceless national treasure--the works of art, the historic objects and the scientific collections in the custody of America's museums. In scope and magnitude this treasure is unmatched by that of any other nation, and it has enriched the minds and lives of countless Americans. Once lost, it can never be replaced.

Today the institutions which have this treasure in their custody are in serious trouble. The totally unpredicted popular success of American museums has strained their financial resources to the breaking-point, has compelled them to deny service to much of the public and will require many of them, unless help comes, to close their doors. Museums have arrived at the point where they can no longer preserve and exhibit the national treasure without substantial national aid.

* * * * *

Thirty years ago America's museums reported that their attendance totaled 50 million visits a year. Today the total is known to be in excess of 200 million and probably approaches 300 million. Museum attendance has increased much faster than has the population of the United States. The increase has been so rapid, and has reached such a level, that museums now have to turn down requests for service. Yet the times call for a sharp increase in the educational and cultural opportunities which museums are uniquely equipped to provide.

* * * * *

Museums base their request to the Federal Government for support on the following grounds:

(1) Museums provide educational and cultural services which no other institutions in the nation either do or can provide.

1. America's Museums: The Belmont Report; a report to the Federal Council on the Arts and Humanities by a special committee of the American Association of Museums; published by the American Association of Museums, Washington, 1969.

(2) A number of museums provide nationwide service on funds which are disproportionately local in origin.

(3) Though museums cooperate in anti-poverty and other Federal programs, they have not received appropriate reimbursement for this service from the Federal Government.

(4) Though the resources of museums are made available to schools, colleges, universities and individual scholars for research that is financed by the Federal Government, the Government has not helped museums meet the costs incidental to such service.

(5) The collections, facilities and staffs of museums produce research which the Government uses and the value of which is recognized by Federal departments and agencies. Increased Federal support for such research is in the national interest.

(6) The Federal Government has an obligation, as yet unmet, to assist in preserving, maintaining and wisely utilizing the national treasure in museums on behalf of all the American people. This report does not suggest that the Federal Government assume dominant responsibility for the financial support of America's museums, but it does suggest that the time has come for the Government to assume a partnership role.

The report lists ten major needs of museums as deserving priority, and divides them into two groups.

The first group includes needs which bear on the ability of museums to reach more people. These needs concern:

Nationwide services financed largely out of local funds;

Services provided by museums for the Federal Government without appropriate reimbursement;

Rehabilitation, expansion, modernization of museum buildings, equipment and exhibits to meet present and future public demands;

The training of professional and technical personnel required by museums;

Research by museums on ways of improving the quality and usefulness of museum services for the educational system and for the general public;

Expansion of traveling exhibits to reach people who do not have ready access to museums;

Increased use of mass media, including television, to make the resources of museums available to more people.

The second group of needs relates more particularly to essential internal functions of museums. These needs concern:

The financing of basic research in museums and the share of the responsibility to be borne by the museums and by the Government;

Special research into methods of conserving for posterity the art, history and science collections in museums, and provision for laboratory facilities, equipment and staff for such research;

An inquiry to determine the specifications of a computer network which would provide a modern method of storing and retrieving information on museum collections, which now are vast.

To meet these ten priority needs, museums are already devoting as much of their financial resources as they possibly can. They cannot begin to make a dent in these needs, however, without the help of the Federal Government.

While it is not possible at this time to state with precision how large a Federal contribution is required, preliminary estimates put it somewhere between \$35 million and \$60 million for the first year. At present, Federal grants of all kinds to museums (apart from the appropriations to The Smithsonian Institution) total only a fraction of \$35 million, and most are limited to scientific research of special interest to government departments and agencies.

The Committee on Museum Needs believes that the existing machinery of the Federal Government can go a considerable distance in meeting the priority needs of museums, if funds are appropriated and if certain amendments to statutes already on the books are made. Accordingly, the Committee submits the following recommendations:

That the National Museum Act be funded with an appropriation of at least \$1 million for the first year;

That grants to museums from Federal Departments and agencies already concerned with museums be sharply increased;

That the Federal Government, as a matter of basic policy, recognize museums as educational institutions, working in formal affiliation with elementary, secondary, undergraduate and graduate level institutions;

That the Federal Council on the Arts and the Humanities, in furtherance of the above basic policy, be asked to study the problems of museums further and to make recommendations with reference to existing legislation to the end that the Federal Government may meet its obligations to museums;

That this report be published for the information and use of all those concerned about the future of museums.

* * * * *

Once the Federal Government decides as a matter of policy to provide financial support for museums as it does for other educational institutions, what government machinery does it use? What agency or agencies can most logically and efficiently implement the policy?

For years museums naturally have had a close working relationship with the Smithsonian Institution. The Smithsonian, however, has not been a channel for massive Federal funds. Such Federal grants as have been made have come mainly from the National Science Foundation and from certain other discipline-oriented departments or agencies. The Office of Education also has been involved through its support of schools and other educational institutions. Increasingly the National Endowments for the Arts and Humanities have become concerned with the problems and needs of museums, but they have yet to receive funds commensurate with the needs.

While it is true that museums are mentioned along with other educational institutions in some existing legislation, the mention has gone almost unnoticed. As a practical matter it is extraordinarily difficult for a museum to obtain any of the benefits of Federal legislation enacted in the interests of educational institutions.

* * * * *

For the present this report suggests that the existing machinery of the Federal Government be employed to meet the urgent needs of museums. There is already on the books a National Museum Act. There are several Federal Departments and agencies which can allocate funds to museums. There are other departments and agencies which could make funds available to museums if existing legislation were amended.

* * * * *

Consider first the Smithsonian and the National Museum Act. Within the Smithsonian the United States National Museum is the unit entirely oriented towards cooperation with other museums and their associations. Its purpose is to work cooperatively with museum professionals in the United States and abroad to increase the effectiveness of museums in the performance of their scholarly and public functions.

The Smithsonian has not, however, had massive funds or grants to distribute to museums for facilities or acquisitions or for the support of continuing museum programs. Whether or not it might be assigned such responsibilities in the future, it is clear that a number of the needs relating to museums, as museums, can be addressed immediately under the National Museum Act.

This is said because there are other services to museums which the Smithsonian has long performed and which might well be expanded. Long before there was a National Museum Act the Smithsonian was supporting service programs responsive to wide museum needs. Joseph Henry, the first Secretary, organized the international exchange of information and publications between institutions and museum professionals. He gave grants for field work to non-Smithsonian anthropologists and published the works of others. Successive administrations have continued the Smithsonian's concern with broad museum problems.

* * * * *

The National Museum Act confirms the tradition of museum services performed by the Smithsonian and names the National Museum to carry them on with the cooperation of the museums of the country. To date the Congress has not made appropriations to implement the Act. An appropriation of at least \$1 million for the first year is essential. When an appropriation is made available, as the authors of this report

urge, the American Association of Museums and its member institutions can make more rapid progress in establishing museum standards and methods of accreditation, can aid experiments with museum consortiums and mutual assistance projects, and can help museums evaluate and improve the educational value of their programs.

* * * * *

In conclusion, the Committee on Museum Needs submits the following recommendations:

That the National Museum Act be funded with an appropriation of at least \$1 million for the first year;

That grants to museums from Federal departments and agencies already concerned with museums be sharply increased, specifically the National Endowment for the Arts, the National Endowment for the Humanities, the U. S. Office of Education, and the National Science Foundation;

That the Federal Government, as a matter of basic policy, recognize museums as educational institutions, working in formal affiliation with elementary, secondary, graduate and undergraduate level institutions;

That the Federal Council on the Arts and the Humanities, in furtherance of the above basic policy, be asked to study the problems of museums further and to make recommendations with reference to existing legislation to the end that the Federal Government may meet its obligations to museums;

That this report be published for the information and use of all those concerned about the future of museums.

The funds required for Museum Act programs are to meet the demonstrated needs of America's museums--not those of the Smithsonian. The urgency of the needs is known by the Smithsonian from daily experience in responding to requests for advice and aid. The urgency has been repeatedly confirmed in discussions with the Director of the American Association of Museums representing the American museum profession. He attests to the high priority of the needs to which these estimates are addressed.

The most frequently expressed need of America's museums is for trained personnel at both the professional curatorial level and the museum technician grade. Three categories of training require funding. One includes the several varieties of combined museum-university courses for graduate students preparing to enter museum work in curatorial positions in science, art, or

history. Another category of training is required for upgrading the skills of museum career personnel already serving in curatorial positions in smaller museums who would be brought up-to-date on the latest doctrines and techniques of museum work through work training in more advanced museums. The third category is for the work training of museum technicians in science, history, or art, and in conservation, exhibition, museum education, and in the management of museum collections and library and archival resources.

Training in these categories and subjects will vary in time from 3 to 12 months with an estimated average cost of \$6,000 a trainee including the support of the trainee and the expenses of the museums and universities providing the training. To train in fiscal year 1972, 45 trainees will require in other services \$270,000

Studies have begun on the development of programs and technology to catalog museum holdings in science, history, and art on a national level. All require more funds to continue the studies and to start the cataloging in coordinated and compatible systems. Museum professionals and the scientists, historians, and other scholars who use museum collections in their research are much concerned with the need to make the museum collections more accessible through more comprehensive cataloging. All are concerned that the systems determined upon will be adaptable to computer storage compatible with systems used in all parts of the United States and other countries and that the computer program will be responsive to the needs of students, scholars, writers, and administrators, and be equally usable for those concerned with the circulation of collections and the production of traveling exhibitions.

To provide support for studies of computer cataloging and data access conducted by consortiums of museums and museum associations there will be required in fiscal year 1972, in other services \$265,000

To meet a number of the described needs of museums for conservation, for exhibitions, for museum-school materials, for television and radio productions based on collections and activities, it has been proposed that museum laboratory centers be established in various locations throughout the United States. These laboratory centers would be supervised and supported in part by groups of museums or by regional conferences of museums to provide services and work on a cost-sharing basis. To determine the feasibility of such laboratory centers including the volume and nature of the support available and the volume and kinds of services museums would require from them, a study would be organized and supervised by the American Association of Museums. To support the study and to conduct pilot tests of services to museums there is required in other services \$30,000 for the study and \$100,000 to test elements of the plan \$130,000

Systematic and imaginative research is required to improve the performance of museums. Inquiry is needed into means to improve the public visitors' museum experience, to make exhibits more effective in communicating with the viewer, to enable museums to be of greater use to schools, colleges and

universities, to make museum resources available to disadvantaged people and communities, and to experiment, develop, test, and evaluate all of the museum's varied functions. To support and accelerate research in museum opportunities and practices in cooperation with museums, and their associations, there is required \$150,000 for other services for five research programs

\$150,000

A great need exists for manuals of instruction on the design and preparation of exhibits, on conservation of museum objects, on museum lighting, on museum education, on museum security, and on museum administration. The opportunity to publish manuals will stimulate experts in the field to contribute manuscripts based on their experience and knowledge. The research and surveys proposed will produce much of value for printing and distribution. For the printing and reproduction of manuals, photo essays, film strips, and other materials requires in fiscal year 1972

\$150,000

For the administration of the program, a program manager, a secretary-stenographer, and a clerk-typist are required, estimated to cost in salaries and benefits

\$35,000

An advisory committee will be formed with the advice of museum directors and museum associations to advise on the programs to be funded.

To support the staff and the advisory committee, it is estimated that there will be required in fiscal year 1972, for travel \$20,000; for transportation of goods \$30,000; for communications and data processing \$15,000; for supplies \$15,000; and for equipment \$20,000.

\$100,000

Total \$1,100,000

ADVANCED STUDY IN PROGRAMS OF HIGHER EDUCATION

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship.....	3	\$429,000	3	\$445,000	<u>1/</u> 4	\$606,000

Federal facilities developed for reference and research may serve the universities as auxiliary resources for the advanced training of students and faculty. Where such facilities are unique in the Nation, as are many Smithsonian study resources, there arises a public responsibility to guarantee that they are made accessible to scholars from other institutions. The objectives are to ensure productive use of research facilities, to avoid unnecessary duplication of study resources on the part of other institutions, and to augment Smithsonian research through temporary appointments for investigators proposing to work in areas of interest to the professional staff.

The Institution's capacity to supervise visiting investigators has greatly increased since 1967, but the number of stipends available has remained the same. Only twenty-six Ph.D. candidates can be supported each year, so that the average professional staff member could expect to supervise a dissertation only once in thirteen years. Only twenty-four postdoctoral appointees can be supported each year. Stipends for these appointments are allocated by scholarly discipline. There are only four for 69 scientists in astrophysics, only five for 98 systematic biologists, only two for 33 specialists in the history of science and technology, and similar shortages through nine areas of study.

Since 1967 the Smithsonian has perfected the administrative procedures necessary for this program and demonstrated that visitors may receive worthwhile training as they complete research projects of high intrinsic worth. As a guarantee of cooperation between the Smithsonian and other research establishments and a contribution to quality training in scarce specialties, the higher education program should be expanded to serve at least twice as many Ph.D. candidates and postdoctoral investigators for a professional staff of the present size (345) and be expanded proportionately with each increase in number of professional staff thereafter. A survey of staff interest has established a willingness to accommodate more than this number. The number of highly meritorious applications for stipends has also increased. The Institution has determined that the deficiency to be corrected is \$300,000 per year. This shortage, which has come into existence over the past four years, should be eliminated over an equivalent period. The first installment on this shortage is sought for fiscal year 1972 in the amount of \$100,000 for stipends plus administrative costs of \$15,000.

1/ Excludes approximately \$90,000 budgeted in museums, galleries, and laboratories of the Smithsonian.

The sum of \$35,000 is requested for short-term appointments for graduate students, not to conduct dissertation research but to become acquainted with the resources of the Smithsonian in specialties recommended by faculty advisors in their home institutions. Summer appointments, once supported by private funds, have been discontinued in recent years and the lack of opportunities for students at earlier stages of their graduate training is keenly felt. The Institution receives many requests to cooperate with university departments which share its interests. It is proposed to develop a system of "cooperative fellowships" whereby each participating university contributes to the student's expenses while at the Smithsonian. The George Washington University has created a "Smithsonian Fellowship" in American Studies and other universities have indicated a desire to follow suit in this and other fields. The annual cost per student is estimated to be \$2,000. The introduction of a principle of cost-sharing will be a further guarantee of the cooperative character of Smithsonian programs in higher education.

The requested \$150,000 will be used for one clerical employee and other administrative costs (\$15,000) and for fellowships and short-term appointments (\$135,000).

EXTERNAL EDUCATIONAL SERVICES PROGRAM

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>
Education of the Public.....	15	\$143,000	17	\$154,000	<u>1</u> / ¹	22 \$252,000

Against a background of deepening public concern about the quality of classroom experience, the Institution acknowledges a heavy obligation to draw upon its unconventional information resources to enrich education. As a result of a concentrated effort to increase the use of its exhibit spaces, the number of visits by school classes and teachers escorted by volunteer docents has more than doubled in the two years since 1968. This required the addition of a scheduling staff and a three-fold increase in the number of volunteer docents. A number of different arrangements are being tried to associate intermediate-level education staff with curators in the bureaus to draw upon the Institution's reserves of subject matter in the preparation of tours.

In areas where educational staff and interested curators are lacking, tours cannot be offered. This is the case in technology in the National Museum of History and Technology, biological topics at the National Zoological Park, and oceanography at the National Museum of Natural History. Based upon existing subject matter competence, using tour subjects already developed, the Institution expects in 1970-71 to maintain a level of 150 class visits per week for an annual total of some 160,000 school children. However, the capacity of major exhibit spaces would be over 400 class visits per week if new subject matter tours could be developed. With the addition of several curatorial positions, three schedulers, and six staff associates in education over the next three years, the Institution could move from the 1969-70 actual level of 100 tours per week to over 300 per week by 1973-74.

To implement this plan, the Institution requests an increase of \$95,000 in fiscal year 1972 and an approximate like amount in each of the following two years in order to create one new education-oriented curatorial position each year (one each for the National Zoological Park, National Museum of History and Technology, and National Museum of Natural History), add one scheduler each year, and broaden the range of education staff subject matter by two fields per year (for fiscal year 1972 the new fields would be the American Indian and technology). This sum would also support three additional traineeships in museum education and provide for the administrative and planning expenses of the series of international Symposia convened by the Institution--a program of curriculum development through annual assessments of knowledge in key fields. The program expenses of Symposia may continue to be met from private gifts if the Institution can provide administrative continuity for the Symposia series.

During fiscal year 1971 funds were transferred from the appropriation of the Division of Elementary and Secondary Education to enable the National Museum of Natural History to employ a curator in biological education and the National Portrait Gallery to appoint a curator of education. The program increase requested would be applied partly to strengthening the bureaus and partly to strengthening central services such as research, training, extension to schools, and evaluation.

1/ Excludes approximately \$85,000 budgeted in the museums and galleries of the Smithsonian.

The attainment of full capacity for class visits within the Smithsonian complex would be a landmark for other efforts underway everywhere in the Nation to draw upon community resources outside the schools for educational purposes. The Smithsonian program could serve as a benchmark for reference by other metropolitan school systems and museums, a welcome contribution in a frontier area of educational program development where standards for measurement have not yet come widely into use. The potential importance of museums and other community resources for education in the arts has long been established. The Smithsonian recently completed for the National Science Foundation an assessment of a similar potential in the sciences. Thus the attainment of full capacity in the use of such a major community resource is a matter of national interest.

The Smithsonian considers the utilization of the full range of potential subjects by visiting classes as being of even greater importance than the attainment of a numerical goal. The responses of visiting children to exhibits and associated learning opportunities may be observed in order to discover how best to interest children in such new subject matter fields as technology, the environment, and the humanities, which are inadequately dealt with by the schools. Museums offer an excellent opportunity to develop these subject areas for introduction to the schools not only because they possess the objects, information resources, and images required, but also because they may serve as testing grounds where through comparative observation of children's responses alternative techniques may be tested and brought to a high level of effectiveness before being offered for classroom use. Also, museum conditions approximate the freedom whereby the child explores and discovers on his own. Both the National Portrait Gallery and National Collection of Fine Arts have undertaken very worthwhile experimental programs in elementary and secondary education. Other new efforts are being planned for the National Museum of Natural History and National Zoological Park. If the novel subject matter of museums and their non-didactic open qualities may find counterparts in the classroom, museums such as those of the Smithsonian will have performed a distinctive service to education.

The requested \$95,000 would be distributed as follows: one new curatorial position for assignment (\$15,000); two new staff associate positions in anthropology and technology (\$21,000); one additional tour scheduler (\$10,000); three new traineeships in museum education (\$24,000); a director of seminars and program funds for visiting lecturers, film rental, and subscriptions \$25,000).

RESEARCH AWARDS PROGRAM

Program Category	1970		1971		1972	
	Actual		Estimate		Estimate	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Research and Scholarship	0	\$400,000	0	\$400,000	0	\$800,000

Prior to 1966, the Smithsonian Institution received funds from the National Science Foundation for research projects of individual staff members. In the fiscal year 1966 appropriation, the Congress prohibited the NSF from making grants for scientific research to other Government agencies. The NSF instituted a further limitation that it would no longer make grants to any agency or institution receiving direct Federal appropriations. The Research Awards Program was begun in 1966 by an appropriation of \$350,000 to the Smithsonian Institution for the purpose of financing new or continuing research projects formerly eligible for support from the NSF. The purpose of the Research Awards Program is to support worthy, fundamental research projects not funded by outside agencies or through the regular plans of operation of the bureaus. The following table shows the number of proposals received and funded through the Research Awards Program from inception through the current year.

From 1966 through 1970, 195 proposals were funded through the Research Awards Program. There have been more than 150 publications in the fields of biology and anthropology directly related to the research accomplished under the program. In 1971, members of the Smithsonian staff were allowed for the first time to submit proposals for funding up to three years in order to provide for better stability, continuity, and planning of research. Forty proposals were funded in 1971 in the amount of \$400,000, of which \$203,000 are multi-year and will be continued in 1972. Thirty two proposals could not be funded for lack of funds.

The large number of proposals that were not funded in 1971 and in previous years is of serious concern to the Institution. This concern is based on the fact that the work supported by the Research Awards Program is the cream of the Institutions productivity and the reason for acquiring scientists of the highest competence and imagination. If the Smithsonian can not provide this kind of support it might not attract the proper caliber of scientists nor retain them thereafter. Further, Research Awards serve as an important means whereby scientists of the Smithsonian Institution may engage in collaborative field research projects with colleagues located in other institutions. Many opportunities for participation in expeditions and other field projects would be lost were it not for the Research Awards Program providing modest, but essential, research assistance to our staff. The problem affects all the research bureaus but is especially acute in the National Museum of Natural History where most of the operational funding must go to the maintenance of the National Collections. For these reasons an increase of \$400,000 is requested which will be utilized to continue the multi-year awards and to fund worthy new projects.

ANALYSIS OF RESEARCH AWARDS PROGRAM FUNDS

(In thousands)

	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970	FY 1971
Number of Proposals Rec'd	62	66	74	60	61	72
Number of Proposals Funded	41	48	30	37	39	40
Funds Requested	\$614	\$844	\$863	\$803	\$917	\$1,655
Total Funds Received	\$350	\$400	\$400	\$400	\$400	\$400



Tab C

SCIENCE INFORMATION EXCHANGE

SCIENCE INFORMATION EXCHANGE

1970 Appropriation	0*
1971 Appropriation	0*
1972 Estimate	\$1,600,000

The Science Information Exchange, which has been in operation for 20 years, has been conducted by the Smithsonian since 1953 at the request of, and on the behalf of, the federal agencies. Funding is currently provided by the National Science Foundation.

The SIE data bank receives and processes about 100,000 one-page records (2.5 to 3 million data elements) of research planned or in progress annually. About 80 percent of the input comes from federal agencies and 20 percent comes from private foundations, universities, state and local governments, industry, and some foreign sources. From this data bank, SIE answers questions from research investigators, directors, and program administrators throughout the national science community about who is currently working on what project, where, when, and with whose support. The purpose of this national service is to help investigators and administrators avoid unwarranted duplication and unnecessary overlap of complex programs and to assist in more efficient planning and management of research projects and programs. It is one to three years from the time a project is planned and started to the time it is completed and reported. Efficient planning and management requires the earliest information about what others are doing.

Since December 1968, non-federal users have paid the cost of retrieving, synthesizing, and packaging the requested information. All users have paid for such services since July 1969. The budget request for fiscal year 1972 would pay only for the collection, processing, and storage of the data bank as a national repository and a national service. This request for \$1,600,000 as a separate appropriation account represents no increase in federal support for the SIE since it has been funded at that level by the NSF in fiscal years 1970 and 1971 (1971 at the monthly rate of \$1,600,000 for ten months because of the difference in SIE's fiscal year).

About 80 percent of the output service goes to the federal agencies, their grantees, and contractors. Their requests range from the retrieval of records (at one dollar each) to the preparation of printed annual catalogues of 1,500 pages (at \$25,000) describing the current national research effort, for example in water resources, marine sciences, and environmental quality. The total cost of all output products in fiscal year 1970 was \$211,000. SIE experienced an average increase of 200 percent in the demand for services over fiscal year 1969. This demand for services is illustrated on the following pages. In fiscal year 1968, before any service fees were imposed, the output services totaled \$650,000. The large drop in usage resulted from the imposition of user service fees without prior notice and an almost constant federal R&D budget in the face of rising research costs. It is quite obvious that early and adequate information is more essential than ever to efficient planning and management, in research as well as in any other enterprise. The increasing demand for services is expected to result in a user income of over \$400,000 by fiscal year 1972.

* Funded by contract with the National Science Foundation.

The SIE data bank is the only one of its scope and size in the world that deals with information about current research activities applicable to planning and management purposes. It is the only source of coherent and comprehensive information that can quickly define and describe the broad multi-disciplinary and multi-agency (government and private) programs of immediate national importance.

In mid-September 1970, an ad hoc committee review is underway to review the current effectiveness of SIE and to identify what it should and could be doing to increase its value. This group is composed of distinguished users representing both government and private organizations in the biological and physical sciences. Although a final report will be prepared, preliminary recommendations from the Committee are:

1. The SIE has been an effective information exchange organization in spite of many difficulties from an administrative and fiscal point of view.
2. There is both the need and the opportunity for the SIE to provide new kinds of services in response to changing requirements for information.
3. The SIE should continue under a single management organization with an adequate budget, and an advisory committee that would guide the SIE in relation to user requirements.
4. The Smithsonian Institution should become the manager of the SIE.
5. The Smithsonian Institution should take the initiative in recommending to OMB and to the appropriate Congressional committees that the Institution receive an adequate federal appropriation in the form of a special account for the support and continued improvement of the SIE as a national information exchange service for both the federal and non-federal community.
6. The SIE staff, working with the Smithsonian staff, should draft a charter expressing the recommendations of the Users Committee.

SCIENCE INFORMATION EXCHANGE
PROPOSED BUDGET FY 1972

	<u>TOTAL</u>	<u>INPUT</u>	<u>OUTPUT</u>
Personnal	\$1,366,654	1,116,000	250,654
Salaries	1,242,413	1,014,546	227,867
Benefits	124,241	101,454	22,787
Contract Services			
Travel	10,000	3,000	7,000
Transportation of things	3,000		3,000
Rents			
Telephone	9,000	9,000	
IBM	285,000	197,500	87,500
Xerox	12,000	12,000	
Building	96,500	96,500	
Other	7,000	7,000	
Printing	5,000		5,000
Other Services			
Equipment maintenance	4,000	4,000	
Other	35,000	15,000	20,000
Supplies	20,000	15,000	5,000
Acquisition of Capital			
Equipment			
	TOTAL		
	<u>\$1,853,154</u>	<u>\$1,475,000</u>	<u>\$378,154</u>
SI Services	171,846	125,000	46,846
	GRAND TOTAL		
	<u>\$2,025,000</u>	<u>\$1,600,000</u>	<u>\$425,000</u>

INPUT			OUTPUT (BILLED)									
TOTAL INPUT THIS PERIOD 5,591			P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9		
DISTRIBUTION OF CURRENT FILE			Searches (or Quest.)	Standard Rpts (or Reports)	Negotiated Requests (or Requests)	Investigator Searches (or Names)	Accession No. Retrieval # of Numbers	Quarterly Mailings (or Quest's)	Automatic Distribution (or NRPs)	Historical Searches (or Reg's)		
FY 69	FY 70	FY 71										
FEDERAL												
Agriculture	10,260	6,461	39	3				1				
ABC	1,231	987	11						91			
Commerce	1,606	1,754	45		5		41					
Congress												
D O D	15,527	11,551	318									
Air Force	4,771	3,979	(10)									
Army	4,921	4,221	(281)								1	
Navy	4,561	2,050	(15)				6					
Other	1,274	1,301	(12)									
HEW	18,928	14,817	134	10	6	402	286	31	23826			1
HUD	140	20	1		2							
Interior	5,136	5,228	19		1				160			
Justice	73	119	3									
Labor	285	201	3				3					
NASA	3,832	652	4				14					
NSF	6,897	5,015	21	3	2	1270		1				
Smithsonian	542	16	2	2	1							
State	14	92	1				56					
TVA	33	38	1									
Treasury	6	4	1									
Transportation	1,484	1,590	6									
VA	5,411	3,411	120		1	53	48		12181			1
Other	167	133	28	1	4				296			
TOTAL FEDERAL	71,572	52,089	755	19	22	2566	455	32	36554			3
NON FEDERAL	20,027	11,974	1278	4	12	121	209	46				13
GRAND TOTAL	91,599	64,063	2033	23	34	2687	664	78	36554			16
No. of NRPs (Documents)			208207	2887	16716	3689	609	17244	36554			2644

TOTAL WORKLOAD STATISTICS BY UNITS
 SIE FISCAL YEAR 1970
 (Invoiced)
 Compared with FY 1969

	<u>P2</u>	<u>P3</u>	<u>P4</u>	<u>P5</u>	<u>P6</u>	<u>P7</u>	<u>P8</u>	<u>P9</u>
Routine Inverted Searches Q.	Standard Reports	Negotiated Requests	Investigator Searches	Accession # Retr.	Quarterly Mailings Q.	Automatic Dist.	Historical Searches	
September	144	2	4	216	84	3	5540	-
October	167	2	5	168	63	10	3874	1
November	164	3	4	273	1	-	5075	-
December	153	2	2	149	34	2	4606	3
January	159	-	2	121	1	10	958	-
February	198	1	2	280	15	3	1907	4
March	186	3	6	236	11	2	2209	-
April	182	3	1	223	99	18	3200	1
May	178	1	4	226	44	1	1625	1
June	155	1	3	252	31	-	3158	2
July	202	4	1	244	9	29	1468	4
August	142	1	0	299	272	3	2934	0
Total	2,030	23	34	2,687	664	81	36554	16
FY 1969 Total Invoiced Workload	716	4	5	10,218	179	0	15464	0
% Increase	182%	475%	580%	72% Decrease	271%	--	136%	--

Output Services - During SIE FY 1970

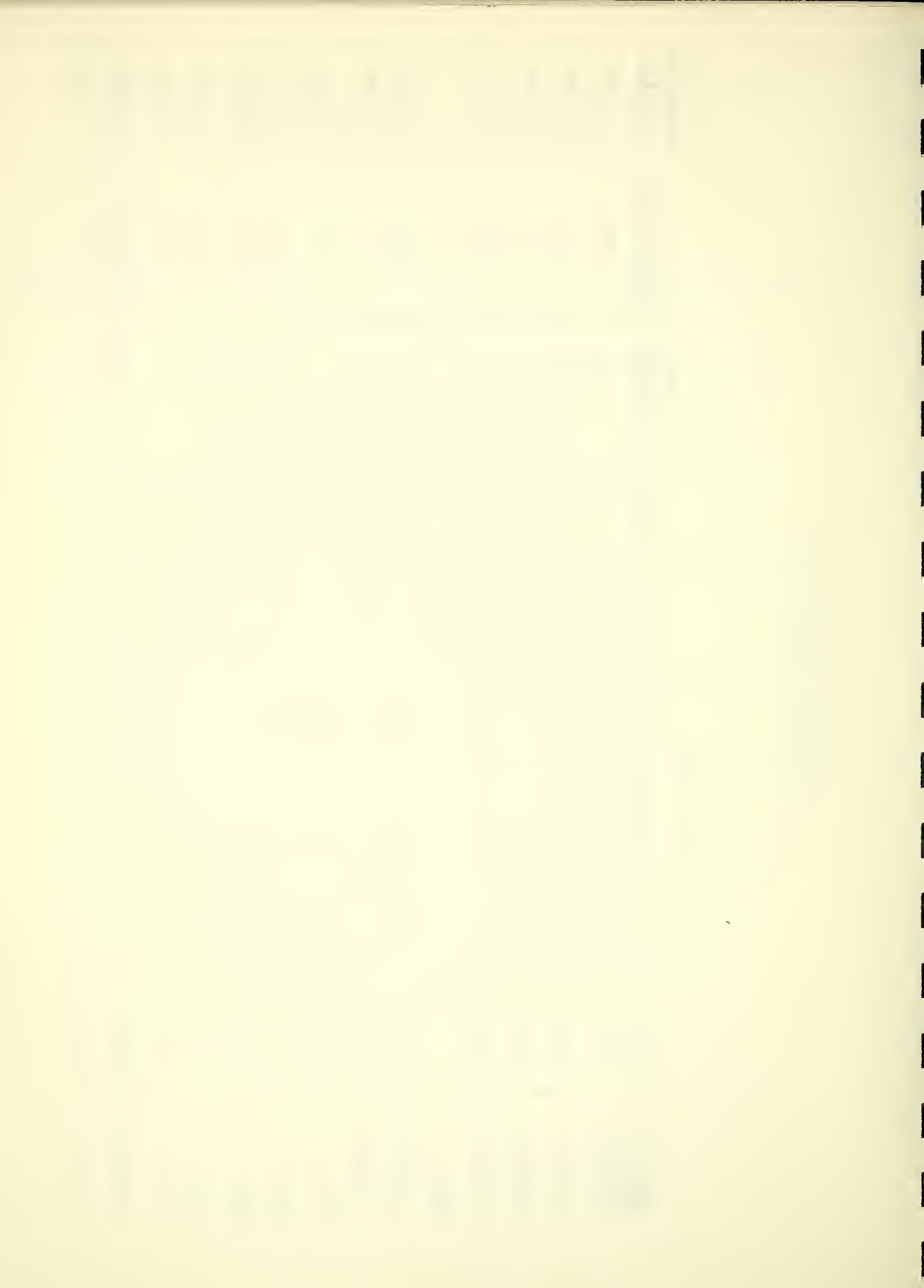
1 September 1969 - 31 August 1970

<u>Category of Service</u>	<u>Total \$ Income</u>	<u>Total No. Requests</u>	<u>Total No. of Requests</u>	
			<u>% Fed.</u>	<u>% Non-Fed.</u>
P2 Routine Inverted Subject & Administrative Searches	\$ 64,348	2,030	37%	63%
P3 Standard Report	4,216	23	83%	17%
P4 Negotiated Requests	56,399	34	65%	35%
P5 Investigator Searches	7,693	2,687	95%	5%
P6 Accession # Retrieval	726	664	69%	31%
P7 Quarterly Mailings (Selective Dissemination)	3,113	81	41%	59%
P8 Automatic Distribution	3,655	36,554	100%	0%
P9 Historical Searches	2,313	16	19%	81%
Contracts	69,060	10	100%	0%
Total	\$211,523			



DOLLAR INCOME BY TYPE OF SERVICE
SIE FISCAL YEAR 1970

Month	User Charge Income									P2-9 Total	Contract Income	GRAND TOTAL	CUMULATIVE TOTAL
	P2	P3	P4	P5	P6	P7	P8	P9	P9				
<u>1969</u>													
September	4,780	536	4,988	660	87	-	555	-	-	11,606	7,392	18,998	18,998
October	5,180	392	7,818	516	66	300	387	100	100	14,759	5,862	20,621	39,620
November	4,730	612	1,760	834	5	-	508	-	-	8,449	12,751	21,200	60,819
December	4,930	342	634	447	46	285	461	1,328	1,328	8,472	7,268	15,740	76,561
<u>1970</u>													
January	5,175	-	8,866	369	5	335	95	-	-	14,846	18,234	33,080	109,639
February	6,060	158	1,627	849	23	140	191	256	256	9,304	4,611	13,915	123,554
March	6,195	598	8,132	747	14	125	221	-	-	16,032	-	16,032	139,583
April	5,100	406	9,711	669	104	685	320	33	33	17,028	947	17,975	157,558
May	4,845	158	2,240	690	48	95	162	60	60	8,299	2,163	10,462	168,020
June	4,635	191	3,919	759	35	-	316	187	187	10,041	3,566	13,607	181,627
July	6,843	625	6,700	547	13	1,050	147	349	349	16,273	2,131	18,404	200,031
August	5,875	197	4	606	280	98	293	0	0	7,353	4,135	11,488	211,521
TOTAL	64,348	4,215	56,399	7,693	726	3,113	3,656	2,313	2,313	142,461	69,060	211,521	Av. 17,627/mo



TOTAL WORKLOAD STATISTICS BY UNITS
 SIE FISCAL YEAR 1970
 (Invoiced)
 Compared with FY 1969

	<u>P2</u>	<u>P3</u>	<u>P4</u>	<u>P5</u>	<u>P6</u>	<u>P7</u>	<u>P8</u>	<u>P9</u>
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January	159	-	2	121	1	10	958	-
February	198	1	2	280	15	3	1907	4
March	186	3	6	236	11	2	2209	-
April	182	3	1	223	99	18	3200	1
May	178	1	4	226	44	1	1625	1
June	155	1	3	252	31	-	3158	2
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FY 1969 Total Invoiced Workload	716	4	5	10,218	179	0	15464	0
% Increase	182%	475%	580%	72% Decrease	271%	--	136%	--



LIST OF CATALOGS PREPARED BY THE SCIENCE INFORMATION EXCHANGE

Volume 1. "Water Resources Research Catalog 1965"

- a. Part I. Federally Supported Research in Progress
- b. Part II. Non-Federally Supported Research in Progress. (Prepared for Office of Water Resources Research, U.S. Department of the Interior, Washington, D. C.) Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, Part I. \$2.50; Part II \$1.00

Volume 2. "Water Resources Research Catalog" 1966. (Prepared for Office of Water Resources Research, U.S. Department of Interior, Washington, D. C. (Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402)

Volume 3. "Water Resources Research Catalog." 1967 (Prepared for Office of Water Resources Research, U.S. Department of Interior, Washington, D. C.) Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402 \$6.75.

Volume 4. "Water Resources Research Catalog" 1968. (Prepared for Office of Water Resources Research, U.S. Department of Interior, Washington, D.C.) Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402 \$8.50

Volume 5. "Water Resources Research Catalog" 1969. (Prepared for Office of Water Resources Research, U.S. Department of Interior, Washington, D.C.) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (In Printing Process)

"Marine Research" - FY 1968 (Prepared for Executive Office of President. National Council on Marine Resources and Engineering Development) Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402 \$5.50

"Air Force Research Resumes 1966" (Prepared for Office of Aerospace Research, U.S. Air Force) Clearinghouse, U.S. Department of Commerce, Springfield, Virginia 22151

"Air Force Research Resumes 1968" (Prepared for Office of Aerospace Research, U.S. Air Force) Clearinghouse, U.S. Department of Commerce, Springfield, Virginia 22151

"National Bureau of Standards - Research and Development Projects - FY 1965" (Prepared for National Bureau of Standards, U.S. Department of Commerce, Washington, D.C.)

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
5708 SOUTH CAMPUS DRIVE
CHICAGO, ILLINOIS 60637

PH.D. THESIS
SUBMITTED TO THE FACULTY OF THE DIVISION OF THE PHYSICAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
BY
[Name]

DEPARTMENT OF CHEMISTRY
CHICAGO, ILLINOIS
[Date]

THESIS ADVISOR: [Name]
[Signature]

- "Water Resources Thesaurus 1966" (Prepared for Office of Water Resources Research, U.S. Department of Interior, Washington, D.C.) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 \$2.00
- "Outdoor Recreation Research 1966" (Prepared for Bureau of Outdoor Recreation, U.S. Department of Interior, Washington, D.C.) Supt. Documents, Wash., D.C. 1967
- "Outdoor Recreation Research 1967" (Prepared for Bureau of Outdoor Recreation, U.S. Department of Interior, Washington, D.C.) Supt. Documents, Wash., D.C. 1968
- "Outdoor Recreation Research 1968" (Prepared for Bureau of Outdoor Recreation U.S. Department of Interior, Washington, D.C.) Supt. Documents, Wash., D.C. 1969
- "Abstracts of Research and Demonstration Projects in Social Welfare and Related Fields 1964" (Prepared for Bureau of Family Services, Welfare Administration, HEW, Washington, D.C.) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 70 cents.
- "Viral Tumorigenesis Report" (Published semi-annually by National Cancer Institute, National Institutes of Health, HEW, Bethesda, Maryland 20014
- "Medical Research in the Veterans Administration, FY 1965"
- "Current Population Research 1966". (Prepared for National Institutes of Child Health and Human Development, National Institutes of Health, HEW, Bethesda, Maryland 20014)
- "Current Population Research 1967" (Prepared for National Institutes of Child Health and Human Development, National Institutes of Health, HEW, Bethesda, Maryland 20014)
- "Current Population Research 1968". (Prepared for National Institutes of Child Health and Human Development, National Institutes of Health, HEW, Bethesda, Maryland 20014) In Printing Process
- "Recent Research in Public Administration - A Reference 1969" (Prepared for Office of Metropolitan Development, U.S. Department of Housing and Urban Development, Washington, D.C. 20410) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 \$1.25
- "Recent Research in Intergovernmental Relations 1968". (Prepared for Office of Metropolitan Development, U.S. Department of Housing and Urban Development, Washington, D.C. 20410)
- "Recent Research in Planning 1968". (Prepared for Office of Governmental Relations and Planning Assistance, U.S. Department of Housing and Urban Development, Washington, D.C. 20410)
- "International Trade Research" (Prepared for Export Strategy Staff, U.S. Department of Commerce, Washington, D.C.) Department of Commerce January 1970



- "Neurological Disease and Blindness Catalog 1969" (Prepared for National Institute of Neurological Disease and Blindness, National Institutes of Health, HEW, Bethesda, Maryland 20014) Published by NIH April 1970
- "Sustaining University Program, NASA, 1969" (Prepared for Office of University Affairs, National Aeronautics and Space Administration, Washington, D. C. 20546) Published by NASA April 1970
- "Housing and Residential Building Research and Technology Catalog" (Prepared for Office of Urban Technology and Research, U. S. Department of Housing and Urban Development, Washington, D. C. 20410) In Printing Process
- "Food Distribution Research Projects in Progress 1969" Food Distribution Research Society, Hyattsville, Maryland February 1970

Note: New catalogs on Water Resources Research, Outdoor Recreation, and Population Research are currently in progress.

Tab D

MUSEUM PROGRAMS AND
RELATED RESEARCH
(Special Foreign Currency Program)

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

1970 Appropriation	\$2,316,000
1971 Appropriation	2,500,000
1972 Estimate	5,000,000

An appropriation of \$5,000,000 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 \$2,500,000 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 urgent field studies in the Smithsonian's traditional disciplines of systematic and environmental biology and anthropology which today are recognized as basic to an understanding of the problems of environmental quality and cultural change.

The increase is essential also to ensure support for on-going and new research which contributes to United States national programs under, for example, the International Biological Program, the International Decade of Ocean Exploration, the National Aeronautics and Space Administration, the National Academy of Sciences and the United States National Museum.

Above all, the increase is essential to provide funds for pending and new research projects from some 18 United States institutions. Funds available during fiscal year 1970, including all previous appropriations, were sufficient only to cover the cost of on-going research. The fiscal year 1971 appropriation is sufficient only to support on-going research and that only at a reduced level. There will be no money for new research.

Funds are requested for the following programs:

	<u>FY 1966-70 Comulative Commitments</u>	<u>FY 1971 Estimated Commitments</u>	<u>FY 1972 Appropriation Request</u>
Archeology and Related Disciplines.....	\$ 5,689,550	\$1,300,000	\$1,750,000
Systematic and Environ- mental Biology.....	4,143,417	1,000,000	2,500,000
Museum Programs.....	146,986	80,000	220,000
Astrophysics	519,124	106,000	500,000
Grants Administration....	51,568	14,000	30,000
	<u>\$10,550,645</u>	<u>\$2,500,000</u>	<u>\$5,000,000</u>

PROGRAM GROWTH

The Smithsonian Foreign Currency Program has grown from one that supported nine projects in its first year, Fiscal Year 1966, to one that will support an estimated 97 projects in Fiscal Year 1971. A total of 168 projects had received Program support by the end of Fiscal Year 1970. At the end of Fiscal Year 1970 also, a total of \$10,550,645 had been committed out of the five year appropriation total of \$10,564,000. A total of \$2,923,000 was obligated in Fiscal Year 1970 alone for grants to on-going research including that approved in earlier years but postponed while host country clearances were obtained. New inquiries about foreign currency uses continue to average about one a day.

This rising demand for foreign currency grants reflects both the scientists' search for alternatives to declining federal research dollars and an expanding Smithsonian Special Foreign Currency Program authority. Program authority which was limited to archeology and related disciplines in the first year, FY 1966, was broadened in FY 1967 to include systematic and environmental biology, in FY 1969 to include astrophysics and in FY 1970 to include museum programs. During the same period, the appropriation increased from \$1,300,000 in FY 1966 to \$2,316,000 in FY 1967, where it remained until FY 1971 when it was increased to \$2,500,000.

NO FUNDS FOR NEW RESEARCH

This limit on appropriations has meant that worthy projects which have sometimes required months or years to prepare and win approval for from the Smithsonian and from host country governments, cannot be supported and may be abandoned. Participating scholars, always under pressure to publish, must seek other research opportunities. A waiting list of such unfunded projects has been established. As funds become available, projects with the highest scientific ratings will be funded first. To avoid postponement of worthy research and to provide for rising demand, an appropriation level of \$6,000,000 annually is considered realistic for future years.

USE OF FOREIGN CURRENCIES SAVES HARD DOLLARS

Special Foreign Currency Program appropriations are an advantageous source of research monies. This is so because they are not new appropriations of tax dollars and because delay in the use of the "excess" accounts means continuing losses to the United States Treasury as these accounts lose value through inflation and devaluation. Moreover, these appropriations do not add significantly 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, Special Foreign Currency Program appropriations contribute to essential national research objectives abroad without contributing to a balance of payments deficit. Moreover, Smithsonian Foreign Currency grants frequently serve as dollar-saving supplements to the dollar grants of

both public and private agencies like the National Endowment for the Humanities, the National Science Foundation, the National Institutes of Health, the National Aeronautics and Space Administration, 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, laboratory fees and the like.

FOREIGN CURRENCIES SERVE NATIONAL PROGRAMS ON ENVIRONMENTAL QUALITY

Now is the time to use foreign currencies for urgent field studies of the processes of change in man's natural environment and in his culture. 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. Unrest in urban centers and among young people the world over attest to our poor understanding of these processes. Although the Smithsonian adheres to its traditional role as an institution for basic, not applied, research, its traditional biological and anthropological interests 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 to support studies of environmental quality like the following projects:

... The United States' Desert Biome program under the International Biological Program proposes studies in Tunisia of the continuing encroachment of the Sahara in spite of concerted conservation efforts. Utah State University is the headquarters for this broad study.

... Yale University and the Smithsonian are conducting ecological studies in the Gir Forest in Northwest 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.

... Smithsonian studies, together with those of 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 being prepared by the National Academy of Sciences in connection with a possible sea-level canal at Panama.

... The United States Tropical Forest Biome program under the International Biological Program proposes studies of the tropical forests, grasslands, and cultivated lands in the Ganges river valley in India. The University of Georgia is the sponsor of this research.

... 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.

Studies of cultural change supported by the Smithsonian Foreign Currency Program include:

... San Jose State College, San Jose, California studies of responses to unusually rapid modernization in a traditional Hindu temple village in India.

... University of Washington studies of the modern history of a caste in India through analysis of its experience of urbanization.

... Kansas State University studies of the nature of changes in values, attitudes, relationships in the Tamil speaking world in India under pressure of modern communications and technological developments.

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.

RESEARCH WHICH MUST BE POSTPONED

New research into the nature of the environment long in preparation which must be postponed because of insufficient funds in the Smithsonian Fiscal Year 1971 appropriation include:

... International Decade of Oceanography 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.

... Oak Ridge National Laboratory studies of deciduous forest and grassland ecosystems in Poland which will supplement similar studies under Oak Ridge's direction under the United States national plan for the International Biological Program.

... Utah State University ecological studies in the Kaziranga Wildlife Sanctuary in India as related to wildlife management.

... University of Nevada comparative ecological studies of the arid zones of Morocco.

... Prescott College, Arizona archeological excavation of the Islamic city of Sijilmassa in Morocco with emphasis on the study of the natural environment during each historic period.

... The ecology and behavior of the Hoolock gibbon in East Pakistan. The ability of this primate to change from fixed territorial behavior to mobile multi-family bands when the season dictates foraging for food will be studied.

ACCOMPLISHMENTS

Smithsonian Foreign Currency Program grants have benefitted more than 200 United States institutions in over 25 states. Accomplishments include:

... More than 67 research publications. 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 185 post-doctoral research opportunities for Americans.

... More than 140 training opportunities for American Ph. D candidates, who 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; 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. Most research projects include at least one American and one host country senior research scholar and one American and one host-country graduate student.

... Additions to research collections of the National Museum of Natural History and of other grantee institutions in the form of archaeological, ethnographic and biological specimens collected and shared with the collaborating institutions in the "excess" foreign currency country. The National Museum of Natural History is receiving specimens of handcrafts from India and Ceylon which are still being manufactured today employing methods handed down from father to son for centuries. They represent a unique source of information on the archaeology of these countries. Yale University's Peabody Museum and the Museum of the University of Colorado have benefitted 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. Research proposals promoted by this amendment are just beginning to arrive at the Smithsonian. Moreover, the change in government in Pakistan brought increased interest in collaboration in basic research under the Smithsonian program. A University of Washington proposal to study the wild boar of Pakistan has just been approved--the first for the Smithsonian in Pakistan. A Smithsonian proposal to study the marine fauna of the continental shelf of West Pakistan is currently under consideration by the Government of Pakistan. In India, the Smithsonian is sponsoring an ecological research planning symposium which will provide agreed objectives with the Government of India and open the door to a substantial program.

Direct dollar costs to the Smithsonian for its Foreign Currency Program are limited to those for administrative personnel in Washington. During fiscal year 1971, six people were employed by the Office of International Activities for this purpose at a total cost of about \$88,000. The administrative burden has grown by some 79 grants during the past year and by some 40 grants the previous 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.

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, those postponed by 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 1972. It should be noted, however, that actual implementation of these projects will be contingent upon three factors: review by the Smithsonian's national scientific advisory councils, review and approval by American embassies overseas, and appropriate cooperative arrangements with host-country institutions or Governmental authorities.

MUSEUM PROGRAMS AND RELATED RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

Commitment of Funds by Country

Fiscal Years 1970, 1971 and 1972

<u>Country</u>	<u>1970</u> <u>Actual</u>	<u>1971</u> <u>Estimate</u>	<u>1972</u> <u>Estimate</u>
Burma.....	\$ --	\$ 1,000	\$ --
Ceylon.....	661,242	--	--
Egypt.....	154,411	250,000	406,000
Guinea.....	--	5,000	10,000
India.....	475,348	600,000	1,493,000
Israel.....	946,659	750,000	602,000
Morocco.....	72,947	150,000	478,000
Pakistan.....	27,048	140,000	224,000
Poland.....	71,938	64,000	280,000
Tunisia.....	623,883	200,000	412,000
Yugoslavia.....	532,773	340,000	1,095,000
	<u>\$3,566,249</u>	<u>\$2,500,000</u>	<u>\$5,000,000</u>

Tab E

CONSTRUCTION

SMITHSONIAN INSTITUTION
BUILDING PROGRAM
PLANNING, RESTORATION, AND CONSTRUCTION
1972

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 \$9,222,000 a reduction of \$11,060,000 from the fiscal year 1971 request. The requests include:

--\$200,000 for the National Zoological Park for preventive maintenance and repairs to existing facilities.

--\$2,425,000 for the Restoration and Renovation of Buildings for, in priority order: completing the restoration of the Renwick Gallery (\$500,000); planning for the construction of Bicentennial facilities on the National Museum of History and Technology (\$500,000); planning for a museum support facility (\$80,000) and protecting air and space collections at Silver Hill (\$520,000); making sewer system improvements (\$125,000); constructing a small general purpose building at the Smithsonian Astrophysical Observatory's Mt. Hopkins site (\$150,000); constructing a new small laboratory building and making essential repairs at the Smithsonian Tropical Research Institute (\$190,000); installing a humidity control system and providing furnishings for the Smithsonian Institution Building (\$160,000); improving the Lamont Street building for library purposes (\$100,000); and for feasibility studies for future space needs (\$100,000).

--\$3,697,000 for the liquidation of contract authority for the construction of the Joseph H. Hirshhorn Museum and Sculpture Garden.

--\$2,900,000 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.

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

SMITHSONIAN INSTITUTION BUILDING PROGRAM

APPROPRIATIONS

Project	Total Cost	Available	1972	1973	1974	1975	1976	Additional Required
Zoological Park	\$20,000,000	\$8,703,000	\$200,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$5,097,000
Hirshhorn Museum	15,200,000	11,503,000	3,697,000	...	...	...	...	...
Air and Space Museum	44,775,000	1,875,000	2,900,000	40,000,000	...	...	...	...
Armed Forces Museum	45,000,000	...	...	10,000,000	10,000,000	10,000,000	...	15,000,000
Office Building	8,000,000	...	...	...	...	...	...	8,000,000
Museum of Man	30,000,000	...	...	...	...	...	...	30,000,000
Radio-Radar Telescope	42,000,000	...	...	2,000,000	30,000,000	...	10,000,000	...
Restoration and Renovation Smithsonian Institution Building	1,460,000	...	160,000	1,300,000	...	...	...	...
Arts and Industries Building	3,133,000	633,000	...	2,500,000	...	...	...	...
Museum of History and Technology Additions	6,300,000	...	500,000	3,500,000	2,300,000	...	...	...
Freer Addition	2,200,000	...	...	100,000	...	2,100,000	...	...
Fine Arts and Portrait Galleries Building	250,000	...	...	250,000	...	...	...	...
Renwick Gallery	2,870,000	2,370,000	500,000	...	...	...	...	...
Chesapeake Bay Center for Environmental Studies	425,000	...	...	65,000	100,000	135,000	125,000	...
Smithsonian Tropical Research Institute	520,000	150,000	190,000	180,000	...	...	...	...
Storage Facilities	20,000,000	...	600,000	500,000	2,000,000	2,000,000	2,000,000	12,900,000
Smithsonian Astrophysical Observatory-General Purpose Building	250,000	...	150,000	100,000	...	...	...	...
Library Modifications	150,000	50,000	100,000	...	...	...	...	...
Sorting Center	250,000	...	...	250,000	...	...	...	...
Sewer Systems	125,000	...	125,000	...	...	...	...	...
Feasibility Studies	200,000	...	100,000	100,000	...	...	...	...
	\$243,108,000	\$25,284,000	\$9,222,000	\$62,345,000	\$45,900,000	\$15,735,000	\$13,625,000	\$70,997,000

* Construction authorization required - Priority to be determined

September 1970

CONSTRUCTION AND IMPROVEMENTS
NATIONAL ZOOLOGICAL PARK

1970 Appropriation	\$600,000
1971 Appropriation	\$200,000
1972 Estimate	\$200,000

In 1963, Congress approved the concept of a 10 year master development plan for the National Zoological Park. Funds, averaging \$1.8 million a year, were appropriated from 1963 to 1968 in support of the master plan. In fiscal year 1968 Congress appropriated only \$400,000 and work was scaled down to only those improvements required to extend the useful life of the facilities not yet replaced and some minor repair projects. Improvements to the Zoo's facilities were further slowed in 1970 because the Zoo was required to reimburse the District of Columbia \$168,000 for contractor claims resulting from fiscal years 1964 and 1965 work. In addition, in February 1970 a portion of the master plan was rejected by the Commission of Fine Arts. This rejection means that the plans for the future physical development of the Zoo must be revised embodying a different philosophy of design. This will require a minimum of one to two year's design effort. In the interim, an appropriation of \$200,000 is requested to continue to work on the large backlog of deferred renovation and repair projects such as the following.

- The perimeter fence is in a bad state of repair and presently, due to vandalism, floods in Rock Creek, as well as deterioration from age, does not afford the security that the Zoo requires. In August 1970, the Zoo lost four waterbucks as the result of an attack by two stray dogs that entered through openings in the fence. The length of the present fence is 3.7 miles and crosses Rock Creek twice. Probably 70 percent of the fence will have to be replaced and some civil engineering design will be required at the points where the enclosure crosses Rock Creek in order to prevent future washouts by the creek when at flood stage.
- The addition of a new water main loop at the south end of the Zoo is needed in order to correct some water pressure deficiencies in the area of the Lion House and to insure an adequate supply of water for the boiler plant, which is currently being remodeled.
- The incinerator at the Zoo is polluting the air. Correction of this situation will require either a new incinerator facility or a method of composting manure, which accumulates at the rate of four tons per day. If it is decided that composting is feasible, adequately designed composting pits, must be built to prevent further water pollution of Rock Creek.
- Many of the existing buildings are in need of attention beyond the routine maintenance accorded them. The Commissary in the basement of the Reptile House that handles food for the entire animal population of the Zoo requires a new equipment layout along with replacement and remodeling of much of the present equipment. The old Hospital, which will be vacated

by the Animal Health Department, requires remodeling to accommodate the Department of Living Vertebrates. The Bird House area requires replacement of the existing crane, pheasant, and owl cages which are badly deteriorated and require repair.

RESTORATION AND RENOVATION OF BUILDINGS

1970 Appropriation	\$ 425,000
1971 Appropriation	\$ 950,000
1972 Estimate	\$2,425,000

An appropriation of \$2,425,000 is requested for the following projects listed in order of priority:

Renwick Gallery.....	\$ 500,000
National Museum of History and Technology Bicentennial Facilities	500,000
Museum Support Facilities	600,000
Sewer System Improvements-South Yard	125,000
Smithsonian Astrophysical Observatory General Purpose Building	150,000
Smithsonian Tropical Research Institute.....	190,000
Smithsonian Institution Building.....	160,000
Lamont Street Library Improvements	100,000
Feasibility Studies	100,000
 Total estimate for 1972	 \$2,425,000
Less amount appropriated in 1971	950,000
 Increase in 1972.....	 \$1,475,000

Renwick Gallery

An appropriation of \$500,000 is requested to complete the program of restoration at the Renwick Gallery and to install a cooling plant for air conditioning.

Using funds previously appropriated, the Smithsonian has directed its efforts at the restoration of the Renwick Gallery's basic structure. The exterior stonework, entranceways, and the interior corridors, lobbies, and galleries have been renovated to the point where the final or finishing work can be started. This finishing work, the full extent of which could not be determined until the basic structural work had been completed, includes the replacement of the sidewalks around the buildings, the iron grillwork on the roof and windows, the gilding and finishing of arches and columns, and the installation of marble in the central hall and the stairways. This work will be designed to restore the interior and exterior of the building to its original appearance.

In addition, it is necessary to install a cooling plant in the gallery. As part of the restoration process an air conditioning system was installed in the building which would use cold water supplied by the General Services Administration. The Smithsonian was recently informed by the GSA that cooling water could only be supplied on a five day a week, eight hour a day basis. In order to meet the needs of the Museum, which will be open every day of the week, it is necessary to install a cooling plant at the Renwick Gallery to supply the needs of the air conditioning system.



National Museum of History and Technology
Bicentennial Facilities

An appropriation of \$500,000 is requested for the preparation of plans and specifications for the Bicentennial facilities to be added to the National Museum of History and Technology.

As part of the Smithsonian's contribution to the American Revolution Bicentennial celebrations, the National Museum of History and Technology plans to convert the terraces of its building into usable space by the construction of transparent structures on the east, west, and north sides of the building. The purpose of these structures will be to house certain national treasures and exhibits relating to the twin themes of the Museum's Bicentennial participation--what the nations of the world gave to make the United States of America, and in turn what the United States has given to the nations of the world.

The National Museum of History and Technology will conclude a feasibility study for the Bicentennial structure project in fiscal year 1971. The completion of the study will permit the Museum to proceed on July 1, 1971, with developing final architectural plans. Construction would begin in fiscal year 1973 and be completed no later than January 1, 1975, to allow one year for installation of exhibitions. Total cost estimate of the project is \$4,000,000.

Museum Support Facility

An appropriation of \$600,000 is requested for the preparation of plans and specifications for an off-Mall central museum storage and study facility for the Smithsonian Institution (\$80,000) and to construct a collection building and pave areas at the Smithsonian's Silver Hill Facility (\$520,000).

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. A specially designed facility using modern storage and retrieval methods will permit improved management of the 60,000,000 items in the National Collections as well as making the collections more accessible for study and research. The space vacated on the Mall can be used for exhibits and other public education and service purposes.

Planning studies are now in progress to select a site for the center and to phase a development program over a ten-year period. Authorizing legislation now before the Congress is expected to be passed. The appropriation request for \$80,000 is for design funds for the first increment of a long-range program.

At the Smithsonian's Silver Hill (Maryland) Facility, some 20 acres devoted largely to the restoration and preservation of the National Air and Space Museum's collection, there is an existing shortage of about 70,000 sq. ft. of indoor storage space required to protect collections now stored in the open. Under the authority to construct support facilities, Silver

Hill should be developed as a reference collection storage area as a back up for the National Air and Space Museum on the Mall. In fiscal year 1972 a permanent, attractive, but inexpensive building providing about 20,000 sq. ft. is required at an estimated cost of \$500,000. Paving of areas for aircraft remaining outdoors and construction of open shelters over some crated materials will cost \$20,000.

Sewer Systems Improvements-South Yard

An appropriation of \$125,000 is requested to correct a serious sewer problem for the buildings on the south side of the mall.

The three Smithsonian buildings on the south side of the Mall, Smithsonian Building, Arts and Industries Building, and the Freer Gallery of Art, empty both their sanitary wastes and rainwater runoff into the District of Columbia sewage system through single pipe systems. This type of system has two serious drawbacks--overloading the treatment plants and a tendency to backflow during heavy rains. Because the rainwater runoff and the sanitary system wastes are mixed, large quantities of polluted water are discharged into the river. The District of Columbia is in the process of converting to a "two pipe" system to reduce the load upon the already overloaded sewage treatment plants. The Smithsonian must be able to tie into this system. In addition, flooding of the buildings during heavy rains, because of the limited ability of the pipes to carry off rain water, occurs frequently. By replacing the single pipe system with separate and larger sanitary and drain pipes flooding can be eliminated.

Smithsonian Astrophysical Observatory-General Purpose Building

An appropriation of \$150,000 is requested to provide for the design and construction of a small general purpose building at the Observatory's Mt. Hopkins site.

Over the past several years, operating funds have been appropriated to install observation facilities and equipment at the Smithsonian's facilities on Mount Hopkins located in the Coronado National Forest in southern Arizona. The only structures that have been erected are the small masonry buildings designed to house the various telescopes, Baker-Nunn cameras, and other observation and data collection equipment. At the present time, there are no buildings suitable to provide protection for the scientists and researchers from the harsh climate which includes long hot, dry spells, fierce thunderstorms with considerable amounts of lightning, and very cold winters with heavy snowstorms. Funds are requested to design and construct a small multi-purpose building which will be used to provide office and storage space, a small kitchen and eating area, bathroom facilities, and simple dormatory space for scientists remaining overnight. These facilities are urgently needed because of the remote location of the site and the lack of even the most basic necessities.

Smithsonian Tropical Research Institute

An appropriation of \$190,000 is requested to provide a small multi-purpose building (\$140,000) and to perform urgently needed repairs on various facilities (\$50,000) at the Smithsonian Tropical Research Institute.

A small new laboratory building of approximately 6,000 square feet will provide space for research activities by scientists using the research facilities of the Institute. With the number of scientists, researchers, and students exceeding 460 annually and remaining for an average of 11 days, the Institute cannot keep up with the demand for space. The additional space provided by this building and by the one funded by the fiscal year 1970 appropriation, which is expected to be under construction and completed in fiscal year 1971, will significantly improve the Institute's ability to support the research activities of the center.

Funds are also requested to repair several facilities at the Institute. The electrical power distribution system on Barro Colorado Island is of particular concern. This system was originally installed in 1926 and is badly in need of repair or replacement. The harsh climate has deteriorated many of the power lines to the point where they are hazardous. The sections of the power lines which were designed to the standards in effect in 1926 cannot cope with present day power requirements. The replacement of the old electrical power system with a modern system would cost approximately \$25,000. An additional \$25,000 will be used for numerous repairs to the interiors and exteriors of the 35 structures and buildings at the Institute which have deteriorated over a period of years in the hot and humid tropical climate. These repairs include the replacement of rotted or damaged wood materials in the floors, walls, and ceilings of several buildings, and the sealing and refurbishing of several aquaria.

Smithsonian Institution Building

An appropriation of \$160,000 is requested in order to provide furnishings and humidity control improvements for the Smithsonian Institution Building.

During the renovation of the Smithsonian Institution Building, several rooms cannot be restored and furnished since available funds have had to be used to complete other, more critically needed areas. The areas not finished include the former chapel, the two-story-high room adjoining it, and several smaller nearby rooms in the west end of the building. An amount of \$100,000 is required for these spaces for woodwork, carpets, drapes, and other interior furnishings chosen to match the period of the building.

A humidity control system is badly needed in the Smithsonian Institution Building. Such a system was originally included in the plans for the renovation of the building, but was deleted to reduce costs. Experience has shown that the many small corridors and rooms in the building create a serious humidity control problem. Some rooms are excessively humid while other areas are so dry that they are uncomfortable to work in. In addition, the building requires excessive heat in the winter and increased cooling in the summer to make it comfortable. By installing a humidity control system costing \$60,000, this problem can be eliminated. The cost

of the humidity control system will be offset to some extent by the savings realized from the reduced utilities needed to heat and cool the building.

Lamont Street Library Modifications

An appropriation of \$100,000 is requested to provide for modifications at the Smithsonian's Lamont Street facility to house library materials.

At the present time, the library is extremely short of shelf space for library materials. A study of available space at the Smithsonian showed that the space formerly occupied by the Department of Entomology at Lamont Street, which recently moved back to the National History Building, could be modified by the addition of some flooring, partitions, shelving and lighting to serve as an overflow facility for library materials. The library is temporarily storing about 40,000 books in cartons and boxes at the Lamont Street facility because of lack of space in the Mall buildings. With the modifications proposed, over 250,000 volumes could be handled at this facility, all of which would be easily accessible for use by researchers.

Feasibility Studies

An appropriation of \$100,000 is requested to prepare feasibility studies for the future building needs of the Smithsonian Institution.

The complex nature of the Smithsonian demands that careful planning be given to the improvement and development of its physical plant to permit the successful accomplishment of its program responsibilities. With the funds requested, work can be started on studies of the physical facilities needed for storage of the expanding National Collections, for optimum usage of available land areas for astrophysical, biological, and anthropological research programs, and for added museum space for exhibit and educational programs.

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

1970 Appropriation	\$3,300,000
1971 Appropriation	\$5,200,000
1972 Estimate	\$3,697,000

By the Act of November 7, 1966, the Congress provided a site on the Mall for the 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, \$803,000 were appropriated in fiscal year 1968 for the preparation of plans and specifications. In fiscal year 1969 \$2,000,000 were appropriated for plans and to start construction. Contract authorization was granted by language in that appropriation bill in an amount not to exceed \$14,197,000. An additional \$3,300,000 was appropriated in 1970 and \$5,200,000 in 1971 toward liquidation of the contract authority.

Construction was started in March 1970 and the excavation and foundation construction is in progress. Construction is proceeding on schedule with no major delays being anticipated at this time. An appropriation of \$3,697,000 is requested for fiscal year 1972 in order to liquidate the remaining contract authority. This appropriation, with the \$1,000,000 legally committed by Mr. Hirshhorn, will complete funding of construction contracts and finance supervision and related construction management costs. This will allow for the completion of the construction in time for the planned opening of the Museum in late fiscal year 1973.

NATIONAL AIR AND SPACE MUSEUM

1970 Appropriation	0
1971 Appropriation	0
1972 Estimate	\$2,900,000

The Act of August 12, 1946, established the National Air Museum as a bureau 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 amounts of \$511,000 and \$1,364,000 were 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 but deferred appropriations for construction until expenditures for the Vietnam conflict had shown a substantial reduction. Construction plans and specifications for the proposed museum building were completed and were accepted by the Commission of Fine Arts and the National Capital Planning Commission. The cost of the buildings, built to those plans and specifications; was estimated to be \$40 million dollars in 1965. Unfortunately due to the rising costs of labor and materials, this same building would now cost approximately \$60 million to construct.

The space program, with its Mercury, Gemini, and Apollo flights, has caused a considerable increase in the public's interest in aeronautical and aerospace matters. During 1970, almost 4.5 million visitors were counted in the Arts and Industries Building and the Air and Space Building, both of which are used to house temporarily a very small portion of the collections and exhibits of the National Air and Space Museum. With the additional space available in the new building, the National Air and Space Museum will be able to use a wide range of the more than 200 aircraft and thousands of aerospace objects in the collections to interpret the historical and technological progress of aviation and aerospace science to the millions of visitors that will come to the Museum annually. The Air and Space Museum already has in its collections such historically significant aircraft as the original Wright Brothers Flyer, Lindburghs "Spirit of St. Louis", the NC-4 (the first to fly the Atlantic), the Bell X-1 (first to exceed the speed of sound) as well as Mercury, Gemini and Apollo spacecrafts. To demonstrate and exhibit technological progress, the Museum can choose from literally hundreds of engines, power plants, and ancillary equipment ranging from simple rotary engines built at the turn of the century to the huge Saturn F-1 engine which produces millions of pounds of thrust. This collection of aeronautical and aerospace items which many consider the finest in the world, needs only the additional space provided by a new Museum to be displayed properly to the public.

In consideration of the rising costs of the building and the increased public interest in air and space activities, an appropriation of \$2,900,000 for planning and redesign, contract management, and for the specifying of programs, facilities, and installations is requested. The object of this redesign would be to utilize the latest design, construction, and exhibit techniques to lower the cost of the building to approximately

\$40 million, while still providing outstanding facilities to display properly the many unique aeronautical and astronautical items in the collections. The Senate Committee on Rules and Administration has advised that a request by the Smithsonian for redesign funds would be consistent with the Committee's 1966 recommendation regarding construction funding.

SMITHSONIAN INSTITUTION LIBRARIES



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