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BY THE SMITHSONIAN INSTITUTION

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HEARING

BEFORE THE

COMMITTEE ON

RULES AND ADMINISTRATION

UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

ON

S. 1029

TO AUTHORIZE THE SMITHSONIAN INSTITUTION TO
CONSTRUCT MUSEUM SUPPORT FACILITIES

APRIL 12, 1978



Printed for the use of the Committee on Rules and Administration
United States Senate

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1978

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CONSTRUCTION OF MUSEUM SUPPORT FACILITIES
BY THE SMITHSONIAN INSTITUTION

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(II)

SMITHSONIAN INSTITUTION

SMITHSONIAN INSTITUTION

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CONSTRUCTION OF MUSEUM SUPPORT FACILITIES BY THE SMITHSONIAN INSTITUTION

WEDNESDAY, APRIL 12, 1978

U.S. SENATE,
COMMITTEE ON RULES AND ADMINISTRATION,
Washington, D.C.

The committee met, pursuant to call, in room 301 of the Russell Senate Office Building, at 10:02 a.m., the Honorable Claiborne Pell (the chairman) presiding.

Present: Senators Pell, Allen, Williams, Clark, Hatfield, and Griffin.

Staff present: William McWhorter Cochrane, staff director; Chester H. Smith, chief counsel; Martin B. Gold, minority staff director and counsel; Winfield Major, counsel (elections); Stephen L. Crow, minority counsel; John K. Swearingen, director, technical services; Raymond N. Nelson, professional staff member; Jack L. Sapp, professional staff member; and Peggy L. Parrish, chief clerk.

OPENING STATEMENT OF HON. CLAIBORNE PELL, CHAIRMAN OF THE COMMITTEE ON RULES AND ADMINISTRATION

The CHAIRMAN. The Committee on Rules will come to order.

I am very pleased to welcome the Secretary of the Smithsonian Institution, Dr. Ripley, and his colleagues, to this hearing on S. 1029.

The Smithsonian has, over the years, become fondly known as the Nation's Attic; and I have often referred to it as our Nation's museums' museum. But throughout it had great growing pains. Since I came to the Senate in 1961, three wonderful museums of the Smithsonian, the Museum of History and Technology, the Air and Space Museum, and the Hirshhorn, have all been built on the Mall area.

It does raise the question of whether the Smithsonian will ever stop growing, and whether it should. I suppose the question answers itself: it is almost impossible for a great museum of this sort to stop expanding. Nevertheless, it seems to me that the acquisition of treasures and artifacts of man and of our Nation and its culture and the collecting of specimens and the accepting of gifts to house and store for the future is no longer enough alone.

Rather, it would seem to me, we must start turning an increasing attention to the conservation and preservation of our great treasures and collections. For much of my life, as one interested in art and the expressions of our culture, I have become increasingly interested in

the problems that environment and pollution and climate have caused for artifacts. In fact, I have often heard it said that we lose each year more artifacts to the ravages of climate than we create. Therefore, we need a vastly increased number of conservators and technicians.

And I would hope that the Secretary and his colleagues would particularly address this question this morning in detail and in specifics. I know my enthusiasm for this bill depends in part on this proposed new facility in Suitland having a conservation training center which will train conservators and technicians in large numbers, not only for the Smithsonian and its collections, but also act as a training center for conservators and technicians to go out throughout our land and to the world at large.

The responsibility is great. It has been said that "many museum directors are presiding over the gradual disintegration of their holdings." And it is up to us and the Smithsonian to prevent this. Fortunately, there are means. I have in mind, among other ways, the recently constituted Institute of Museum Services in HEW, which Congressman Brademas and I took the lead in getting developed, and which I hope will take a great interest and give direction in helping to train and support conservation.

When we speak of conservation, we talk of many things, not only classical paintings, but also the care and preservation of sculpture, of wood, of fabric, of books and of paper—although that responsibility is very much shared with the Library of Congress, who is the lead agency in that connection—and of buildings.

I have been informed that the dimensions of the problems of museum support for the Smithsonian are great, although not publicly visible. I understand that exhibit space has been taken up for storage and research, and I am interested in learning more about this problem.

An amendment to this bill is proposed to include language providing for the transfer of construction funds to the General Services Administration for management of the project.

So, Mr. Secretary, we would be very interested hearing from you on these points, with particular emphasis upon how many conservators and technicians you see being put forward on an annual basis when this project is completed.

Senator Allen, do you have anything?

Senator ALLEN. I have no comments, Mr. Chairman.

The CHAIRMAN. Without objection, at this point in the hearing record, I will insert the text of S. 1029.

[The text of S. 1029 follows:]

S. 1029

IN THE SENATE OF THE UNITED STATES

MARCH 17 (legislative day, FEBRUARY 21), 1977

Mr. JACKSON (for himself, Mr. PELL, and Mr. GOLDWATER) (by request) introduced the following bill; which was read twice and referred to the Committee on Rules and Administration

A BILL

To authorize the Smithsonian Institution to construct museum support facilities.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That (a) the first section of the Act entitled "An Act to
4 authorize the Smithsonian Institution to plan museum sup-
5 port facilities", approved September 19, 1975 (Public Law
6 94-98), is amended by inserting ", and to construct,"
7 after "to prepare plans for".

8 (b) Section 3 of such Act is amended by striking out
9 "such sums as may be necessary to accomplish" and in-
10 serting in lieu thereof "\$21,500,000 to carry out".

The CHAIRMAN. Dr. Ripley, you may proceed.

STATEMENT OF S. DILLON RIPLEY, SECRETARY OF THE SMITHSONIAN INSTITUTION, ACCOMPANIED BY PAUL N. PERROT, ASSISTANT SECRETARY FOR MUSEUM PROGRAMS; AND ROBERT ORGAN, DIRECTOR, CONSERVATION-ANALYTICAL LABORATORY

Dr. RIPLEY. Mr. Chairman, this is a very welcome moment for us to be here again in this great hearing room and to be able to speak this time to yourself as the chairman. I want to congratulate you on behalf of the Smithsonian as well as myself for having assumed the chairmanship of this important and significant committee which has the authorizing and other functions of the Smithsonian so much at heart.

It's a thrill to us to be present before you today, knowing that you have played such a seminal role in the development of the Government's concern about the arts, the humanities, and, not least, education.

I am very happy to add the word "education," because when I came here in 1964, museums were thought not to play a particularly important role in education. And one of the blessings of these past few years has been the recognition of how important museums are in this basic function.

The CHAIRMAN. To interrupt there, as chairman of the Education Subcommittee, I have been able to get that thought into the authorizing legislation so that museums can be given similar treatment to classrooms, and I think this concept is important.

I would add that one of the side effects of assuming the chairmanship of the Rules Committee has been that I felt obligated to give up my regency in the Smithsonian Institution, which, as I wrote you, Dr. Ripley, filled me with great regret, because for 15 years I had wanted to be a regent at the Smithsonian and sought to be a regent at the Smithsonian, and have enjoyed it very much—but I felt there was a conflict of interest between being both a regent, which I much enjoyed—maybe even more sometimes than being chairman of the Rules Committee.

Dr. RIPLEY. We couldn't be more sympathetic with this situation and the implications which are so present in the world today of conflicts of interest at every hand. And we miss you greatly. We have welcomed your colleague, Senator Morgan, as your replacement, and we look forward to devoted years of service by himself as a regent in your stead.

I have brought with me, Mr. Chairman, before this committee today, a number of my colleagues—Mr. Paul Perrot, whom you know well, I believe, Assistant Secretary for Museum Programs; Mr. Robert Organ, our chief expert on conservation who is here with us today; Mr. John Yellin, my budget assistant; and Mr. Phil Reiss, our construction head.

I am very pleased to be here again on another count, for it is nearly 10 years now—or nearly 9 years, I beg your pardon—that we have been discussing the prospect of being able to develop a refined and sophisticated method—offcampus, so to speak, away from the Mall—of taking care of a variety of needs which our museum faculty deems to be of the utmost importance.

You mentioned the subject of conservation, and I know how dear to your heart it is. I am struck by the fact, when you speak of the implicit and urgent need for conservation today, by the change in the manner of creation of objects in the world. During the centuries preceding this one, objects were constantly being made by hand in a way that prevented the consciousness of museum curators and directors of really focusing on the problem of conservation. Nowadays the reverse is true: the objects made by hand are diminishing at an astonishing rate due to new factors of pollution and environmental destruction, which, combined with the fact that objects are not made by hand any more to any great extent—means that there are no replicas or no replacements for those very objects which we possess. It has been brought home, then, to museum directors in a way as never before that the kinds of objects which they are cherishing and attempting to harbor and safeguard against the ravages of time will never be seen again.

And this whole assumption of technology as a dominant factor in creation and manufacture has helped to compound the problem of the museum storage and the museum curation of objects already in their care.

During these hearings, some years ago, we initially sought the authority in the pending measure, and both the Senate and House committees responded favorably on the original bills, which seemed to me always managed to clear the Senate, but the rule was not granted in the House. Subsequently, on two occasions, this committee recognized the implicit need in our request for such facilities and authorized planning and land acquisition. Finally, in 1975, the House concurred, and in the current budget year, initial funding has been received so that we can proceed with design and engineering concepts.

I will not speak of the difficulties engendered by inflation, the lapse of time, and the increasing costs. These are too well known to your committees, Mr. Chairman, to need repetition. However, what we have been trying to do in these ensuing years is to keep on with our first request and at the same time refine and, as it were, de-escalate against the increase of costs, so as to come down in scale and attempt to maintain an assumed budget for the entire operation which would be within the realm of possibility of the Smithsonian itself and the consideration by the Congress.

All of this time, of course, museums have been added and collections continue to be added to the Institution, and our overall needs continue to grow, and the need for this support facility especially. The storage problem on the Mall in halls otherwise used for transportation, in halls otherwise used for exhibit purposes, continues to lay upon us, in fact almost defeat us at times—the accretions continue to grow. And as they grow in Mall spaces, the access to them, then, is implicitly cut off, and the work of conservation, recall, storage, assessment, becomes more difficult.

You may recall, Mr. Chairman, speaking at the hearing in 1969 of the destruction and deterioration of museum objects in general, and the urgent need for conservation. The report, accompanying the 1975 legislation, made clear that any such facility planned by us must include not only areas for the conservation of our own collections, but space as well for the broad national need of training for conservators to serve in other museums and collections.

I am particularly aware of this, Mr. Chairman, having served as a trustee of the Winterthur Museum for over 15 years, and having seen the sophisticated way in which they have attempted to meet the needs of their own collections. I also have been in close touch with Williamsburg and have a feeling that their need is very great, and that they would welcome the assumption by the Smithsonian of leadership in this regard.

I am happy to report, Mr. Chairman, that the elements to do with conservation have been consistent components of our planning effort, that we have constantly been in touch with those museums and institutions who are working hard in this particular vineyard, and that we have attempted constantly to assess the potential needs and assess against that the potential space and possibilities of training these conservators-to-be.

And we believe that the proposed facility will be a very sophisticated means of integrating many of the aspects and broad problems of conservation as a whole.

I would now like, if I may, Mr. Chairman, to turn over the testimony to my colleague and friend, Mr. Paul Perrot. I might say that in the years that I have known him since before he came to us from the Corning Museum of Glass, I have been very conscious that uppermost in his mind was this very problem of conservation. In his service initially along with me and subsequently representing me on the International Council of Museums and in other international organizations concerned with conservation and restoration and historic preservation, he has become a peer figure. He is indeed our Mr. Museum—our Mr. International Museum.

And it is a great pleasure for me to ask him to speak, if I may, at this time.

[The prepared statement of Dr. Ripley follows:]

PREPARED STATEMENT BY S. DILLON RIPLEY, SECRETARY,
SMITHSONIAN INSTITUTION

Mr. Chairman, thank you very much for the opportunity to be with you this morning and to testify in support of S. 1029 which would authorize construction of museum support facilities.

You may recall, Mr. Chairman, that eight and a half years ago a joint hearing was held on several measures relating to the operation of the Institution, and at that time we initially sought the authority contained in the pending measure. Both the Senate and House committees reported favorably on the original bills, which cleared the Senate, but a rule was not granted in the House. Subsequently, on two occasions, this committee recognized the need implicit in our request for such facilities, and authorized planning and land acquisition, finally in 1975 the House concurred and in the current budget year initial funding has been received so that we may proceed with design and engineering concepts.

We have, by no means, however, been idle in the years since our first request. During that period two major new museums have opened on the Mall and our over-all institutional needs for a support facility have grown. Concomitantly, our view of the uses of such a facility and its relationship to installations on and off the Mall has been more fully assessed and more finely honed.

Additionally, Mr. Chairman, you may recall speaking at the hearing in 1969 of the destruction and deterioration of museum objects and the need for a conservation facility. The report accompanying the 1975 legislation made clear that any facility should include not only areas for the conservation of Smithsonian collections but space as well for the training of conservators to serve other museums and collections. I am happy to report, Mr. Chairman, that these

elements have been consistent components of our planning effort, and that we envision the proposed facility as a sophisticated means of integrating many aspects of conservation into a total system.

Mr. Chairman, at this time I would like to ask my distinguished colleague, Paul Perrot, the Smithsonian's Assistant Secretary for Museum Programs, to share with you and the Committee more details about our needs and their potential for resolution under the pending legislation.

The CHAIRMAN. Mr. Perrot?

**STATEMENT OF PAUL N. PERROT, ASSISTANT SECRETARY FOR
MUSEUM PROGRAMS, SMITHSONIAN INSTITUTION**

MR. PERROT. Thank you, Mr. Chairman, Mr. Ripley. The facility that we propose, and its purposes, were outlined beautifully in your opening remarks. It is not a storage, it is not a warehouse facility; it is one that, in the broadest sense of the word, is concerned with conservation. It is a result of almost a decade of study, study of the needs of the Institution as well as the needs of the profession at large, as these needs have been brought to our attention by our repeated contacts through museums, professional organizations, and with our colleagues around the country.

The manifesto that you presented at the opening is one which, before I continue, I would like to express my gratitude for on behalf of the museum profession, because it is with this kind of commitment, this kind of assistance, that the museums of America and, indirectly, the museums of the world will be able to meet their responsibility. Your words were deeply encouraging to me, as I am presenting to you this morning our rationale.

Ten years of planning have led us from a rather diffused warehouse-storage, conveyor-belt facility, to be built possibly in Suitland, Md., to what we now present as a refined concept which includes the elements of storage, which includes the elements of research on collections, which includes the elements of conservation on our collections, on training, in addition to the elements of being good neighbors to the community surrounding Silver Hill.

We are proposing a structure or set of structures of some 338,000 square feet, Mr. Chairman, in which we plan to relocate a large proportion of the collections of the Museum of Natural History, to start with, collections which today are housed, as Mr. Ripley alluded to, in galleries, in attics, in stairwells of the Museum of Natural History, and are subject neither to the kind of controlled environment that would lead to their safe survival nor to the kind of security control that may assure to us and to the future that the objects will indeed still be there.

There is a desperate need on the part of the Museum of Natural History, a need which is echoed to a lesser extent by our other museums, but which no doubt, will be coming to a head in the decades that follow. But, for the present our primary concern is with the collections of the Museum of Natural History.

We propose to move to Silver Hill collections in anthropology, botany, entomology, vertebrate zoology, mineral sciences, and paleobiology. In addition, we propose to remove from temporary rented quarters the Oceanographic Sorting Center, a major research center dealing with marine life.

These collections, including the scientific support staff that is needed to curate them and study them, are now, as I have indicated, housed under conditions that are far from conducive to efficiency or safekeeping.

In the study of these collections, the element of conservation is implicit. I know that it is not in those areas of conservation that you are primarily concerned—but I do want to make it clear for the record that in the study of biological specimens, in their handling for research purposes, the conservation element is implicit.

We propose to have some 187,000 square feet devoted to the purpose of storage, plus 27,000 square feet of laboratory space, and additional support space for offices and administrative use.

In addition in this facility, we plan to have 28,000 square feet allocated to the National Museum of History and Technology for their collections, as well as some 24,000 square feet for other support services and the minor use of some of our other museums.

The major traditional conservation element of the support center will consist of some 43,000 square feet, of which 31,000 will be devoted specifically to the Conservation Analytical Laboratory. This laboratory, as you know, has achieved international reputation in the very modest facilities that it now occupies on the Mall. These facilities are so crowded that it has been very difficult for us in the past to retain—or to lure away from other organizations—the necessary staff. The Conservation Analytical Laboratory is concerned with what I might say are the higher levels of conservation in the Institution, the scientific aspects of conservation, the development of new techniques and, particularly, with testing materials, a function which today is not performed on any systematic basis by any museum laboratory in the country.

We propose to have the Conservation Analytical Laboratory expand its horizons, build upon its present achievements, and concentrate to a greater extent than it has in the past on the vast new field of archeometry; to develop an understanding of the basic properties of material, how the manner of manufacture affects these materials, and how man has been able to expand his vision by an understanding of the properties of materials. Through these studies we hope to understand more, not only about the constructive aspects of how objects are created, where they came from, what enlightenment they provide on the societies that produced them—but we also expect to learn a great deal about the processes, ineluctable, and unavoidable, that lead to their gradual disintegration. And by this means we hope to be able to find the means to palliate the effects of time.

Actively we plan to pursue a training program. Mr. Chairman, I know of your enthusiasm and I know of your desires—and I would like to say most strongly how warmly we endorse the principles you have advocated and the numbers that you have aspired to. I regret to say at the moment we do not foresee the possibility of graduating 150 conservators a year, but I can assure you that within the basic plan that we have presented, and within a relatively short time after the construction of the Museum Support Center, we will be able to train some 45 to 50 conservators who will be concerned not only with some

of the basic aspects of archeometry, but will also be concerned with the conservation of paper, the conservation of metal, the conservation of wood, and other subjects.

We also plan to train technicians, technicians who will meet the needs of the Institution in the proper handling of the collections which are either stored or on display throughout our 10 museums—and those technicians that may be made available to other organizations.

The major handicap that we are facing in training is not the desire to train, but the lack of trainers to do the training. We propose to put a major emphasis, in the early years of the training component of the Museum Support Center, on the training of those trainers. We expect to enlist the support of area universities, to work very closely with universities, colleges, and the various training centers which are already in existence, such as Winterthur at Cooperstown, or New York University, and at the Fogg Art Museum, as well as encourage an interchange that is bound to be most constructive with the regional conservation centers that are now being created and funded around the country through the enlightened policies that have been adopted by the National Endowment for the Arts.

We envisage our role not as being a single training organization, but one that will provide the basic support which we need for our own collections and that will cooperate with other organizations in providing advanced training.

Mr. Chairman, we are faced with perhaps the greatest priority for the future well-being of the Smithsonian's collections. For 10 years we have felt the need—there were hearings in the late 1960's, as you will recall, which put in very high relief the needs of many of our collections for adequate facilities. We have made some progress since then.

But as we have made progress we have also added to the collections. We are adding at the present time at a level of about a million specimens a year. Granted, some of these specimens may be no larger than a fly, but some may be as big as a whale.

It is no longer conscionable for us to continue to assume a leading role, as the keepers of the national collections, as the custodians of such an immense part of man's tactile heritage, whether natural or man-made, without making every effort possible to provide the facilities to do so in an adequate way. This is a top institutional priority.

I would like, if you wish, to expand on some of the conservation aspects, on any other aspects if you would care to have me do so. I have brought some charts which show the various evolutions of our planning, evolutions which have been based upon budgetary considerations as well as programmatic needs.

I did not say that the facility that we plan is about 7 miles from the Mall, in Suitland, Md., with easy access via the Suitland Parkway. It is expected that at some future time that there will be a subway link in the vicinity so that there will be adequate transportation not only for our own scholars, but for scholars from all parts of the country, as well as students, who will come to use the facility either for the study of the collections or for continuing their work in conservation.

[The prepared statement of Mr. Perrot follows:]

PREPARED STATEMENT BY PAUL N. PERROT, ASSISTANT SECRETARY,
MUSEUM PROGRAMS, SMITHSONIAN INSTITUTION

Mr. Chairman and members of the committee, it is a pleasure for me to appear before you to testify in support of S. 1029 to authorize the Regents of the Smithsonian Institution to construct museum support facilities on Federally-owned land within the Washington metropolitan area.

The principal purposes of the facility, which we refer to as the Museum Support Center, would be to house and care for the national collections, provide for museum support and maintenance services, permit increased public utilization of the museum buildings on the Mall, and allow us to initiate a program of training for museum conservators.

In 1846 Congress established the Smithsonian Institution to administer the trust obligations of the United States—"for the increase and diffusion of knowledge among men"—under the will of James Smithson, an English scientist who died in 1829. In carrying out this mandate the Institution is, among other things, responsible for the development, preservation, study, exhibition, and interpretation of the national collections. These are, of necessity, expanding activities. The collections which the Smithsonian preserves and documents are examples of man's culture and creativity, and the diversity of the planet. As more of the natural world is destroyed, as civilizations change, and as habitable space decreases, museums such as the Smithsonian's have increasing responsibilities for preserving the material documentation of man's history. I hope that the Congress will join with us to preserve this record of growth, achievement, and change for the public's enjoyment and education, and for the scholar's study and interpretation.

Even though acquisitions are rigidly screened, the rate of increase of the national collections over the past two decades has averaged about one million objects and specimens a year. The selective growth of collections is an essential part of the Smithsonian's mission to increase and diffuse knowledge. Like books in a library, the specimens, objects, and artifacts in these collections are available for the information and enjoyment of the citizen, and for the research of the scholar.

In conjunction with the development of plans and estimates for the Center, the Institution was requested by the Office of Management and Budget to undertake a study and prepare a report on the policies and practices controlling management and growth of collections. The study, completed in September, 1977, provided an opportunity for the Institution to review its existing collections management policies and to develop a program leading to the strengthening and refinement of those policies to assure responsiveness to current and future needs. The study brought together much new information and resulted in a series of recommendations for improved methods of administering the collections. Also, special attention was given to the question of collection growth, a matter intimately associated with space and conservation requirements. The information thus far produced will enable the Institution to improve and develop new practices and policies related to space and other resources as well as to the scope and quality of its many and diverse collections.

The Smithsonian can attest particularly to the growth of natural science collections. Today, they overflow into corridors and stairwells of the Natural History building. Curators and visiting scientists work in cramped and poorly ventilated areas surrounded by collections. Approximately forty thousand square feet of space designed for exhibits are closed to the public and occupied by collections and laboratories.

Space also is required for the Smithsonian Oceanographic Sorting Center, support activities, the expansion of the Smithsonian's conservation program, and to meet urgent remedial needs of the Museum of History and Technology for its musical instrument and transportation collections.

Conservation is an example of an essential museum service now severely hampered by crowded laboratory and work spaces in Smithsonian museums. The construction of the support center will provide space for development of conservation programs to meet the needs of Smithsonian collections more adequately, and to assist other museums in solving their conservation problems by evolving new techniques and by offering training for conservators.

America's museums have documented and testified to the need for many more conservators than are being trained today. Few of these more than 5,000 museums have conservation programs adequate to preserve the objects and artifacts of

our national heritage which are in their care. It is estimated that even with substantially improved support and the expansion of all the existing training programs in the United States, the number of new conservators trained in the next ten years will be fewer than those needed to replace conservators leaving the profession and to fill expected new positions.

The Smithsonian has been urged to employ its expertise and the variety of its conservation work to train more conservators. It is a responsibility we welcome, but, at present, eight trainees and interns are the maximum number with which we can work effectively under existing conditions. If we are to do the job this number must be increased. The Smithsonian proposes to develop a larger training program within its conservation function which would consist of a student body of approximately 47 at any one time, in addition to already practicing conservators who may come for short periods to perfect their skills. The most urgent priority in training is to teach the trainers. Indeed, the development of an appropriately trained faculty for the numbers of students cited above may restrain the full development of the program for several years.

The conservation training program will be developed in conjunction with the laboratory facilities for the Conservation Analytical Laboratory, the Conservation Laboratory of the Department of Anthropology, and the Restoration Laboratory of the Division of Musical Instruments. These laboratories, which will occupy approximately 43,710 square feet, will be dedicated to work on the national collections. They will be designed to maximize ease of treatment and to permit the involvement of trainees at the highest level of conservation science and at the vital technician level as well.

In the past it was possible to construct new museum buildings on the Mall and to expand existing ones. However, only one complete building site remains on the Mall, and we believe that should be preserved for direct public use. With no space for further additions to existing buildings, another approach is required. Our experience has convinced us that the establishment of a museum support facility within a reasonable distance from the Mall will provide the best long-range solution to the museum space problem.

The Institution's experience of the past twenty years, developing and operating a depository and shop facility at Silver Hill, Maryland, to supplement some Mall activities, has demonstrated the feasibility of concentrating additional storage, research, and conservation efforts there. The present facility, devoted primarily to the Air and Space Museum, has been developed with one-story, prefabricated metal buildings which have high ceilings and open interiors. It is well suited to the preservation and study of large air and space craft, activities which will be continued there.

The location of the proposed Museum Support Center is adjacent to the existing facility, 6½ miles from the Smithsonian Institution building. It can be reached by car in 15 to 20 minutes. The two units could be administered as one, sharing a number of operational services such as security, maintenance, and transportation.

The General Services Administration has included the Smithsonian's need to expand its support facilities in the Master Plan concept for the development of the Suitland Federal Center. That concept contemplated the transfer, which has now been completed, of 82 acres of various parcels of land adjoining the Silver Hall facility and including a buffer zone of wooded areas adjoining the Suitland Parkway.

Several boards or commissions having interests in the development of the area have reviewed the General Services Administration Master Plan Concept. The Prince Georges' County Planning Board at its meeting on January 30, 1974, endorsed the recommendation of its staff and recommended the concurrence of the Maryland National Capital Park and Planning Commission, which was granted at a meeting on February 13, 1974. The National Capital Planning Commission at its meeting on March 7, 1974 endorsed the Smithsonian portion of the Suitland Federal Center Master Plan concept.

As the Museum Support Center develops it will include activities of interest to visitors, and the staff will collaborate with local schools, as is the Smithsonian practice, to enhance instruction in science, history, and art. Curators and visiting scholars studying the collections housed at the Center, and the practitioners of other sophisticated skills, such as conservators, are expected to have implicit benefit to the community.

It is estimated that 142 professional and technicians will be employed at the support center when completed. Many of these are existing positions. In addi-

tion, we envision the relocation there of the scientists and technicians now staffing the Smithsonian Oceanographic Sorting Center which receives fishes, algae, plankton and other oceanographic specimens from more than 100 sources, including marine research and collecting expeditions. The Center sorts, counts, and records the specimens in the samples, and distributes them to other museums and to university scientists specializing in the study of certain groups of organisms. Work is performed for the National Science Foundation and the Navy Oceanographic Office, and the Center is a major distribution point for data collected by national programs such as the U.S. Antarctic Research Program. The new facility will provide efficiently laid out space, well equipped for the effective operation of the sorting, documentation, and distribution processes.

Collections maintenance and preservation is the fundamental purpose of the Support Center and reflects the priority need to reclaim in the Museum of Natural History exhibits space, attics, hallways, basements, and laboratory spaces now encumbered with specimens and objects that are poorly and hazardously housed and frequently inaccessible. The Museum staff currently expects the following percentages of its collections will be transferred to the Center:

| | | |
|----------------------|-------|----|
| Anthropology | ----- | 95 |
| Botany | ----- | 25 |
| Entomology | ----- | 60 |
| Invertebrate Zoology | ----- | 20 |
| Mineral Sciences | ----- | 50 |
| Paleobiology | ----- | 20 |
| Vertebrate Zoology | ----- | 20 |

Relocation of these collections will release approximately 40,000 square feet of prime space and thereby greatly enhance the Museum's ability to present exhibits to an increasing audience which, now numbers over 4.5 million a year. Other benefits include the freeing of space on the Mall for education and research activities, and provision for better overall care of the national collections.

Second only to collection housing requirements is the need to provide a strong research and study program. This will be addressed by including approximately 34,000 square feet of office workrooms and 35,000 square feet of laboratories for the professional and technical staff that will be directly associated with the collections.

Development of the support center concept has been undertaken primarily by the Smithsonian staff, although assistance from outside sources has been sought from time to time. In fiscal year 1967 \$22,700 were spent for a feasibility study that considered the project in the context of storage only. Internal analyses through the years advanced the current concept, and in fiscal year 1974 \$35,000 were expended for site studies and additional conceptual assistance. In fiscal year 1975 an appropriation of \$75,000 for preliminary support facility planning was received. Approximately \$8,000 of this sum were devoted to a survey by three curators from the National Museum of Natural History who visited academic and industrial sites here and abroad to study the latest systems and methods in the management of collections and inventories. The remainder was utilized for a contract of six months' duration for advance planning studies, emphasizing the relationship and integration of the multiple systems inherent in this complex undertaking.

In recent weeks, the Institution has initiated discussions with the General Services Administration regarding the design and construction phases for the Museum Support Center. At the present time, negotiations are proceeding toward an agreement with GSA to provide technical and management services for planning and design.

GSA has provided preliminary cost estimates which indicate that a facility containing the amounts and types of space required can be constructed for the \$21.5 million requested. During the design phase the space and program requirements will be studied carefully and refined to insure that the final plans provide for a facility which does, indeed, fulfill all of our requirements.

Mr. Chairman, legislation for the purpose now under consideration was initially introduced in 1968. Time has increased rather than mitigated the dimensions of the Smithsonian's space requirements, but it has also provided us with an opportunity to analyze more carefully the nature of those dimensions and to find a reasoned response to the problems they pose. I respectfully ask your approval of S. 1029 to authorize construction of a long-term solution for the

Smithsonian's needs and responsibilities for the development, conservation, and employment of the national collections.

The CHAIRMAN. Thank you very much indeed, gentlemen. I have a series of questions which I will look forward to your expanding on them. Because there are quite a few, I would appreciate brevity in your responses. And then also I have a couple of general questions in connection with the Smithsonian as a whole not directly related to the Suitland project.

What is the time schedule ahead for construction if this bill is passed?

Mr. PERROT. We are now in the process of negotiating, Mr. Chairman, with GSA an agreement for that organization to take over the construction coordination and contracting obligation. We expect to have RFP's—requests for proposal—out within the next 6 weeks to 2 months to select an architect. Pending the approval of this committee and of the House, we would then go out for bid and expect to have the building completed by 1981 or 1982, at the latest. We would expect then to start initiating the conservation activities as well as be ready to move the collections in an orderly fashion.

If I might digress a moment on the collections. The collections now, particularly at the Museum of Natural History, are housed in such inadequate conditions that it is very difficult even to make an inventory to find out what's where. We plan to bring to Suitland collections in absolutely topnotch order—from a record point of view, identification point of view—and to phase this within the latter part of 1982, 1983, and 1984.

The CHAIRMAN. Do you see the Suitland facility meeting all the needs of the Smithsonian through this century, through the year 2000?

Mr. PERROT. Mr. Chairman, this is a very sensitive question. Undoubtedly, through the year 2000, the Institution will be in immeasurably better condition by having the Suitland facility, but also, undoubtedly, as our collections grow, as the needs of other museums become more manifest, we will be facing a space crunch. We would expect the support center in its first phase to be responsive to our needs through the next decade. Toward the end of the next decade undoubtedly we will have to plan for other additions. These additions, however, will be integrated conceptually into the original plan. In other words, we are not planning a succession of functional pods in Suitland, but rather a totally integrated, organically developed plan that will permit additions as the need becomes pressing.

The CHAIRMAN. Why do you believe that the GSA should take this on? Why are you supporting this amendment?

Mr. PERROT. Mr. Chairman, we have an Office of Facilities Planning and Engineering Services which is very competent, but it is small. GSA has had vast experience, which I need not relate, nationally—and, of course, we have had experience with them through the construction of the Air and Space Museum and the Hirshhorn Museum. These and our contacts with them have been extremely fruitful in the past.

We would expect, Mr. Chairman, to retain the professional overview and, if I might use the word, control on those aspects of the program that relate to the functions. But we believe strongly that their expertise would lead to more economical construction, better

phasing—and I might say that the Administrator of GSA has been most responsive to our needs up until now, and has assigned some top personnel to help us in these preliminary stages.

The CHAIRMAN. Recognizing that the Suitland facility may have additions built on it as time goes on, but would this be basically the last construction that the Smithsonian foresees in this century? I guess that is more directed to Dr. Ripley.

Dr. RIPLEY. This is the major construction that we see. The only other request that we are likely to come before committees such as this one with, Mr. Chairman, during this century, that I can visualize, is the refinement of the facilities at the upper part of the Museum of History and Technology, which you may have heard about, and in which we hope eventually to develop an appropriate library facility within our science and history libraries. We do not plan further construction on the Mall at this time. We are obsessed with the concept of consolidating what we already have, and, at the same time, making sure that our conservation and sophisticated recall and retrieval powers are maintained at the highest level.

The CHAIRMAN. Again, on a separate subject, but carrying out that line of thought, do you have any views with regard to the acquisition of the African Museum? Have you taken a position one way or the other?

Dr. RIPLEY. Mr. Chairman, the regents have expressed themselves as being willing to accept the African Museum if the Congress votes that it should be given to the Institution. Beyond that, I have no strong impression.

The CHAIRMAN. With regard to the buildings of the African Museum—the collection I think is truly unique—but with regard to the buildings, if the Smithsonian acquired the African Museum, would you contemplate keeping those buildings and using them for exhibition purposes, or disposing of those buildings and putting the exhibition in perhaps a more museumlike or exhibitionlike atmosphere?

Dr. RIPLEY. We are not really prepared to say definitely what we would like to do. We would like to be confronted with the situation and then face up to it in a realistic way, and we would like to come back and report to the Congress our opinion about how best to manage such a museum. The collections in themselves, of course, could be displayed almost anywhere, and we have no strong predilection one way or the other.

On the other hand, there is a problem that the Douglass house is an historic landmark, and that house in itself should be kept in some way, not necessarily by the present organization, but in some way. We would like to have the flexibility and the leeway to decide these in due course, and especially in reporting to the Congress our best estimates of maintenance and care, because, of course, there is a financial obligation in assuming such a museum for the Congress, in addition to the money that the museum organization already is raising quite effectively.

The CHAIRMAN. I would like to press you on that, because we are going to have a hearing on the African Art Museum. I have assured the supporters of it that we will have a hearing. I think the collection is unique and I would like to see it taken on by the Smithsonian.

But would you give us, before the end of the month, your estimate what the cost would be to the Smithsonian of operating it in its present

form, and also your thoughts with regard to moving it from the present, I think, very inappropriate series of buildings where you have little rooms that require lots of guards, and are not appropriate for museum display—what your plans are with regard to the collection. I would agree with you, the Douglass house must be preserved—although that really is not a responsibility of the Smithsonian. Some other means should be found to do that, either through the Department of Interior or some other means.

But I would be interested in a memorandum from you in that regard, so that when we have the legislative proponents of it with us we will have this information on what we are talking about.

Dr. RIPLEY. Mr. Chairman, we will do our best, but the problem is that we are not alone in making any such decisions, nor are we faced with the ultimate authority at this point, because, of course, the museum has its own organization, its own trustees. And how to marry, as it were, the wishes of those trustees with the pending legislation would, I think, imply a very open negotiating series of discussions over several years.

I could not visualize that we could tie the hands of the trustees in advance while attempting to pledge a firm schedule for the use of those buildings.

The CHAIRMAN. What I am requesting is an estimate—not a pledge—an estimate of what it would cost the Smithsonian to operate it in its present form, and also what it would cost if you found space available for the collection and then operated that way, not in those buildings.

Dr. RIPLEY. Within those constraints, Mr. Chairman, we will make our best estimate.

The CHAIRMAN. In other words, what the cost would be of exhibiting the collection if it were done as your other collections are, and what the cost is of maintaining it in that warren of buildings.

Dr. RIPLEY. I understand, Mr. Chairman, we will make our best effort to do so.

The CHAIRMAN. Thank you. Most of the emphasis that I noticed in your presentation in connection with the proposed Suitland project seems to be concerned with the needs of the Museum of Natural History. I notice, for instance, in the number of conservators, going through, you have “general conservation” 16, and then broken down beyond that.

Why is there so much emphasis on the anthropological and natural history side of conservation as opposed to giving equal billing to painting and sculpture?

Mr. PERROT. Mr. Chairman, there are two conservation laboratories planned for Suitland. One, to occupy a major part of the space, is the Conservation Analytical Laboratory, some 31,000 square feet; the other, with 10,000 square feet, is the Anthropological Conservation Laboratory—this is a laboratory in the Department of Anthropology, which operates under a separate administration, closely linked to the Department of Anthropology of the National Museum of Natural History. We expect to have these two laboratories adjacent to one another sharing, wherever possible, basic equipment, but maintaining their own autonomy, because each has a different function. The Conserva-

tion Analytical Laboratory will be training in the areas which are of primary concern to you. For that laboratory we envisage a staff consisting of a general supervisor, four conservation supervisors, six conservators—these are people who will be doing work on objects—a radiographer, a paper conservator, a painting conservator, two furniture conservators, a textile conservator, an X-ray analyst, a microscopist, three information specialists, administrative officers, and secretaries and typists. These persons will be involved with the Conservation Analytical Laboratory and will be the major conservation staff as well as the major faculty for the training program.

In addition to this will be the functions of the laboratory of the Department of Anthropology. This laboratory is primarily concerned with the collections of ethnography and archeology of the Museum of Natural History. It carries out a very different kind of conservation, not as research oriented, but more practically oriented.

At the present time this laboratory has an arrangement with George Washington University by which it trains a large number of technicians, many of whom have then found positions in museums and research organizations around the country. We would expect to continue that program in the Laboratory, and expand it, and share with it, whenever possible, the basic lecture courses that will have to be given by the other laboratory.

I did not mention that we expect to link the laboratories at Suitland through close-circuit television not only among themselves, but with the facilities on the Mall, so that certain specific operations can be observed by a wider audience.

The CHAIRMAN. To answer my question specifically, you have, I notice, in your project description of student conservators and technicians 28 in a 2-year program, which is less than 45 or 50 I understood you to say; and then you have only one for painting.

Why is that?

Mr. PERROT. This is a senior paintings conservator, that is, somebody who is highly trained in all aspects of painting conservation. And, if you would like, I could ask Mr. Organ, who is with us today, to elaborate on this aspect.

The CHAIRMAN. It's not so much elaboration—I am trying to find out why—really two questions here—why, one, it is only 28 in the 2-year program, when I understood you to say it was 45 to 50 in your statement?

Mr. PERROT. I can explain that, Mr. Chairman. One is training conservators, and the other one is training conservation technicians.

The CHAIRMAN. But you say in your statement conservators and technicians, both, will be ultimately—on page 5—will ultimately be enrolled and rotated through a 2-year program, so you are counting them both, as I read it, correct? Page 5 of your own statement. I am sorry, page 5 of your supplementary information memorandum.

Mr. PERROT. In general conservation we have 28.

The CHAIRMAN. No; where you say “. . . the following number of students conservators and technicians . . .”—and that adds up to 28.

Mr. PERROT. This is a lack of clarity in the way I presented the paper; Mr. Chairman, because we have 28 students in addition to 16

technicians primarily trained in the Anthropological Conservation Laboratory, and another three in the Musical Instruments Laboratory. In other words, we plan that these laboratories would train between 45 and 50 persons. Now, there is some interchange between them, as I mentioned, because certain basic subjects may be shared, while specific ones are dealt with by either one or the other of the laboratories.

The CHAIRMAN. We are trying to keep this as succinctly as we can. As I may read it, then, there are 28 conservators and technicians, plus 16 more, is that what you are saying?

Mr. PERROT. That is correct.

The CHAIRMAN. All right, that still does not add up to 45, or 50, but almost.

The question comes up: Why is there no conservator in sculpting and only one in painting out of that number, or am I wrong in what I read here?

Mr. PERROT. If I could ask Mr. Organ, who prepared these figures, Mr. Chairman, to come forward.

The CHAIRMAN. Certainly. Mr. Organ?

Mr. ORGAN. This is based upon the collections that are present in this area, Mr. Chairman. The single painting conservator in the Suitland area is concerned mostly with the museums in the Smithsonian which do not have their own conservators of painting, and he would carry that load.

The CHAIRMAN. Why are there not sculpture, bronze, conservators?

Mr. ORGAN. Because those are handled in the Hirshhorn which has the largest collection of those.

The CHAIRMAN. But aren't you losing sight here of the basic mission that we have here—it is not a series of ateliers to look after the collections at each museum; what we are seeking to develop here is an institute or a school to develop conservators who go out.

And it is not a correct answer to say that, well, the paintings will be done at the museum—the painting collection—or the Hirshhorn will do the bronzes, because it is still not training the people from the institute, and those people who are there should be giving instruction to the institute.

Mr. ORGAN. Mr. Chairman, that could probably be arranged by the faculty or expert in that area. One very important part of conservation training is to enable the student to see the work done as it has to be done in the atelier before he has to go up and set up on his own to do that work in his own museum where he would be employed.

So it is necessary for students to go around and serve as interns in various areas.

The CHAIRMAN. What I don't like is to see the absolute absence of them in this general institute that would be being set up. Just a couple of weeks ago I spent a very interesting 2 or 3 hours in the Norton Simon Museum in Los Angeles.

The chairman mentioned that the British Museum is able to send abroad a team of skilled bronze conservators, while the United States apparently, according to the views of the curator of the Norton Simon Museum, can't do this. I believe Peter Smith is the name of one of the British bronze conservators.

As I mentioned earlier, my own enthusiasm for the whole project is directly related to the idea of getting some national institute of conservation. I really feel that you could have gone a little bit further than this.

Dr. RIPLEY. Mr. Chairman, may I interject a comment here?

The CHAIRMAN. Please.

Dr. RIPLEY. I think that what the confusion that exists within our own presentation of this subject derives from is the fact that as an institution we view conservation in a group of concrete spaces, and that as an institution we have the capacity to do what you say, but, talking about this museum support facility, we think of it as another in effect concrete space in which the conservation would be directly associated with the thrust, in the first instance, of the objects to be placed there.

We have concurrent conservation already going on in the other concrete spaces, as it were. And I would visualize myself that we would wield these forces of people together to perform an overall institutional service, using, of course, the new space, but not specifying it directly in this presentation, which is essentially for a building and for money to build it.

The CHAIRMAN. Well, I am confused and would ask you, then, to submit a supplemental statement—and we will hold up action on the bill—showing your total output of conservators and technicians, breaking them down so that it is not just one for painting, zero for bronzes and sculptures, and as you see the project—and then maybe I can get a better grasp or feel of where you are going.

Dr. RIPLEY. I quite agree, Mr. Chairman. I think we have failed in this respect to point out to you specifically the broad capabilities that the Institution has overall, and, I might add, of course, that there are adjunct people in the city as well whom we would draw on in any such an institute.

The CHAIRMAN. It's not only your capabilities—you certainly have them, and that is why I have such faith in you, belief in you, and why I want to see the institute under your roof.

But what I am interested in seeing is not your capabilities, but in specific and clear language your firm plans, thoughts, as to how many conservators you will be graduating and putting through your process in the different specified subjects when you are going full blast in 5 years.

Dr. RIPLEY. I think this is our fault, Mr. Chairman; I think we narrowly focused too much on this particular building for these particular specified purposes.

The CHAIRMAN. Now, in regard to this particular building, could you define for me the rough square footage that will be devoted, first, to conserving Smithsonian's collections; second, to the general training of conservators, if they can be broken out; and, third, obviously the remaining amount which is devoted to the storage—or do you have those figures at hand?

Mr. PERROT. I have them, Mr. Chairman. In response to your earlier remarks, may I say that there was some ambiguity in the statements that I provided, for which I apologize. I did refer to requesting visiting specialists and visiting scientists from other conservation labora-

tories. I should have specified that by this I meant "from the other conservation laboratories of the Institution." For example, in bronze, the Freer Gallery has a laboratory which is reputed around the world as being the foremost for the study of that material. It has done fundamental work on the conservation of Chinese bronzes, which is one of the most complex subjects. This laboratory has been working on that material for the last 30 years, and its publications have been exemplary.

The CHAIRMAN. How many people do they send out each year into the broad world?

Mr. PERROT. The Freer Gallery does not have a training program. We would expect to use the staff of that museum, namely, Mr. Chase and Mr. Winter, to be adjunct faculty at the support center's conservation training.

The CHAIRMAN. Then you would have in this list here, somewhere down here, you would have sculpture and bronzes.

Mr. PERROT. These figures apply only to the permanent staff of the laboratory.

Dr. RIPLEY. That is, the physical space, but not to the—

The CHAIRMAN. No, forgive me, these figures are students, you say—these are not the staff.

Mr. PERROT. I have two figures, Mr. Chairman. I cannot see on which page—

The CHAIRMAN. I am sorry, we are talking about the ones we mentioned earlier, page 5 of your memo.

Mr. PERROT. On page 5 I have the students, on page 4 I have the staff, which consists of 27 persons.

The CHAIRMAN. But I am still focusing on the students.

Mr. PERROT. I appreciate this, Mr. Chairman, and we will provide you a supplemental statement concerning the total conservation staff of the Institution, of the museums of the Institution, and suggest how this staff will be integrated in the program prepared at Suitland. At the same time, we will provide a breakdown on the student body and try to define for you what proportion of their time might be spent at the central facility at Suitland as well as the proportion of their time spent in the field laboratories.

Might I just add one word—that in the teaching of conservation, obviously the theory is important; but the theory is only one minor aspect—it is the hands-on aspect which is of primary value. And we expect to do this where it can best be done. There would be very little sense for us to develop a major bronze facility at Suitland when we do have one of the world's renowned laboratories at the Freer and the staff there. We would expect the bronze students to interact with the staff of the Freer at the Freer.

The CHAIRMAN. My recollection is I went to the Freer atelier once—and it's quite small. So you would have to have enlarged space, and I would think that you would either have to enlarge the space at the Freer or they would have to come over to the Suitland facility.

But, in any case, what I am driving at is. I would like to see the number of students—45 to 50 is what you said; I think that's too few, but that would be a good big step in the right direction—but how that would be broken down. And when you say 45 or 50, did you mean 45 or 50 graduating each year or in your total student body.

Mr. PERROT. This would be the total student body.

The CHAIRMAN. So, in other words, it would be only 25 or so would graduate—20 or so would graduate each year?

Mr. PERROT. This nearly matches the national figures since less than 30 conservation students are graduated a year in the United States at the present time.

The CHAIRMAN. Which obviously is far too little—and, as I say, is why Mr. Simon has had to send to Great Britain to get this group from there—and he is a very interesting man, his name is Peter Smith—they have a group of 16 individuals who received their training all in the British Museum and then flaked off for higher salaries and work all around the world, and do a very effective job. There is no reason why we should not be able to.

Dr. RIPLEY. Is this Norton Simon's Museum in Pasadena?

The CHAIRMAN. Yes, exactly.

Dr. RIPLEY. I haven't visited that museum, Mr. Chairman—I am sorry. I know, however, that it is capable, if it spends enough money, of buying almost anybody. And we don't have at the present time the potential of dollars to be able always to buy the people, as it were, that we need. So that is an important adjunct.

There are museums in the Los Angeles area, like Norton Simon's and also the Getty Museum, which are capable of buying anything—and that includes people as well. And, of course, we are in competition there. I know that our best painting and gesso restorer at the Freer was stolen by the Los Angeles County Museum, simply because they could give him equipment and a better salary.

The CHAIRMAN. I was just taking up Mr. Perrot's point that he said the Freer had the best bronze people—I thought you said in the world, maybe in the country. Well, surely, it's not a question of dollars; they can compete with ease. But the trouble is their knowledge is being devoted exclusively to the use of the Smithsonian. And that is what is wrong. If they are the best, it's a sin that you don't have a school that can translate that knowledge into the museum world.

Dr. RIPLEY. And we hope they will when we get this facility.

The CHAIRMAN. It's a sin we haven't done it before; it's a sin we have to send over to England to get people to do it, if we have the people here that you say we do have.

Dr. RIPLEY. I have to say it's a sin—we have been talking about this since 1969.

The CHAIRMAN. Exactly. That was when you took me through all the ateliers, and we haven't move 1 inch since. That's why I am very disappointed.

But, in any case, a memorandum of that sort would really interest me very much, and is necessary for us as we arrive at a decision, as we move ahead.

Now, in the student body, do you visualize a few non-Americans as well, or do you visualize it as an all-American student body?

Mr. PERROT. We would envisage a mix, Mr. Chairman, depending upon the submission of applications from other training organizations. The Rome Center, for example, has some 15 students a year who study the basic aspects of conservation. There may be some of those who might want to expand their knowledge and do an internship or take a full set of courses with the Institution. We have not in any sense declared this to be exclusively for American citizens.

The CHAIRMAN. Good.

Mr. PERROT. Conservation is an international need, and there is great advantage in having different points of view and different needs mixing together in a training program. And Mr. Organ, as you undoubtedly have perceived, is one of those from the British Museum who was brought first to Canada and then to this country.

The CHAIRMAN. Well, you were going to tell me—or were you going to submit it for the record—the square footage devoted to the training of conservators as opposed to the conservation within the Smithsonian itself. Could you break that down?

Mr. PERROT. Mr. Chairman, in the personal report that I gave you some time ago, I listed in appendix I the net assignable square feet. Now, a substantial part of conservation training consists of observation and actual work on objects. It is difficult to separate that space from the space that is used in the general course of conservation on objects belonging to the Institution, on loan to it, or, for one reason or other, being worked upon. We have set aside specific demonstration areas as well as seminar rooms which are specifically devoted to the student body, either for the major demonstration that Mr. Organ suggested, which would be given in an amphitheater-type, very steep room.

The CHAIRMAN. Excuse me, all I am asking is what is the square footage?

Mr. PERROT. For that it is 3,300 square feet.

The CHAIRMAN. 3,300 for students.

Mr. PERROT. 3,300 for students—specifically only for students.

The CHAIRMAN. That's nothing; that's the number of square feet in my house.

Mr. PERROT. But as I was saying, Mr. Chairman, the students would also be working on work bench modules, of which we have 4,800 square feet; they will be working in the photo studio, learning photographic techniques that apply either to the use of infrared or ultraviolet examination, or X-ray radiography; they will be working on paper in the special environment that is required to do proper work on paper—that is, very exact tolerance in air-conditioning and humidity; they will be working in the textile room; and then we have also a room that is described as a large-objects room for those objects that are particularly unwieldy, and that require a very high ceiling.

The CHAIRMAN. Well, for instance, a rough estimate of the size of this room is 1,800 feet. So, in other words, you are saying only twice the space of this room would be devoted to the home desks, whatever you want to call it, plus the lecture hall, whatever it would be, for the conservation institute. That would be the smallest such institute in the world, I would think.

Mr. PERROT. The total area given to conservation in the laboratory is 21,710 square feet, in addition to 10,000 square feet for the anthropological laboratory. From that we deduct some 3,500 square feet, or 3,800 square feet, for administrative purposes, leaving a balance of some 18,000 square feet for conservation which includes the classrooms, includes the study carrels, and includes the workbenches.

Dr. RIPLEY. The access to students will be roughly 28,000 square feet.

The CHAIRMAN. But, again, just thinking of it in terms of where we are right now—alas, there's nobody here but Smithsonian people, as far as I can see—no press, nobody else is very interested in the subject. But this room is about 2,400 feet, give or take a little bit—2,500 feet. You are talking about a space that is about eight times larger than this room in toto; that's nothing.

Mr. PERROT. In addition to the anthropological area.

The CHAIRMAN. And that would be for all conservation and for the training.

Dr. RIPLEY. If you add the anthropology, that is another 10,000.

Mr. PERROT. The total comes to 43,000 square feet.

The CHAIRMAN. I would think it would be more to your advantage to have more space for training living technicians to preserve objects around the United States, and less space for the storage of dead objects.

Mr. PERROT. Mr. Chairman, much of the work that the conservation laboratory will be doing will be on those objects which are in need of attention. One either spends a dollar to prevent damage, or one spends a dollar to correct the damage. We have tried to establish a balance in the facility, providing the environments, providing the retrieval methods, which will assure the safekeeping of these objects without the need of conservation. Conservation in the sense of a laboratory is a remedial action; the responsibility that we have is to prevent the need for remedial action to the extent that it is humanly possible to do so.

And that is why the facility as a whole is so important and so intimately linked to the conservation function.

The CHAIRMAN. Amongst the 47 students being enrolled at one time for a 2-year period, how does that break down between the conservators and the technicians?

Mr. PERROT. It's about between 25 and 30, on the one hand, and 15 and 18, on the other hand.

The CHAIRMAN. Will the conservators generally be for a 3-year course and the technicians for 2, is that your thought?

Mr. PERROT. We haven't fully worked that out, Mr. Chairman. It is generally the recommendation of the conservation profession that whatever academic and whatever laboratory studies are done, that these then be supplemented by internships elsewhere, so the student can be confronted with the realities of the workplace.

The CHAIRMAN. Is it your present thinking that this number will be static, or do you envision more students in the 5th class, in the 10th class?

Mr. PERROT. Mr. Chairman, we would expect the figure to increase as the number of trainers available increases.

The CHAIRMAN. How many do you envisage in the 5th class and the 10th class specifically?

Mr. PERROT. I am not ready to give a formal estimate on this.

The CHAIRMAN. Could you submit it for the record?

Mr. PERROT. I will attempt to do so, Mr. Chairman. I will say that there is a great deal of crystal-balling in this.

The CHAIRMAN. I realize that, but it means that we will have these targets which your successors and my successors will have in mind as goals and pointing toward, because we will long since be the dust we are talking about as these projects really get going, I think.

Mr. PERROT. I would say, Mr. Chairman, that as conservation awareness is increasing around the country, as our colleagues in the museum world are being forced by the decay of their collections as well as by their increased knowledge to put further emphasis on the conservation function, then there will be undoubtedly more conservation training going on elsewhere. We would expect to orchestrate our resources and our program with this.

The CHAIRMAN. This brings up in mind the parallel with the Library of Congress, which is the library's library, and you have a particular responsibility as the museum's museum—and I have supported your interests for many years, 18 years now, with other museums—sometimes you are not loved as much as I think you should be, but you have an obligation in return to train people and send them forth.

Now, with the memorandum that you will submit for us, show you how you break these students down, how many actual bronze people, how many actual painting conservators, you would see in the first or second class.

Mr. PERROT. We will try to provide a total autopsy of the subject, Mr. Chairman.

The CHAIRMAN. That would be the number and the breakdown and whether they are conservators or technicians, roughly. And you give me your assurance there will be at least a couple in statues and bronzes?

Mr. PERROT. They are already there, Mr. Chairman.

The CHAIRMAN. But they are not being trained.

Mr. PERROT. We will show them clearly; we will put the spotlight on them.

The CHAIRMAN. Because they are nowhere in here in this memorandum.

Mr. PERROT. They are implied. I regret to say that they were not spelled out. This is a lapse.

The CHAIRMAN. Would you like to submit to the record your letter to me of March 21 and your supplementary memorandum there?

Mr. PERROT. I would be pleased to do that.

The CHAIRMAN. Without objection, that will be put in the record.

[The material referred to above follows:]

SMITHSONIAN INSTITUTION,
Washington, D.C., March 21, 1978.

Hon. CLAIBORNE PELL,
The U.S. Senate,
Washington, D.C.

DEAR SENATOR PELL: It was extraordinarily kind of you to receive us on such a busy day, and one which is so important to the future well-being of the Nation. I am profoundly grateful.

This meeting was extremely helpful to me, and I hope in my attempt at presenting our program and the facts relating to it, I was able to convey, as well, the extraordinary admiration and gratitude that we at the Smithsonian, and in the museum profession in general, have for your continuing pioneering efforts on behalf of conservation.

There is no question of the importance of developing further opportunities for the training of conservation personnel. It is a moral priority as well as a practical one.

I hope that the enclosed summary of what we propose will allay your fear, and that you will recognize that we are putting conservation training as a highest priority, while, at the same time, ministering adequately, at last, to the great needs of our collections.

As a student of the Institute of Fine Arts of New York University, and one who has been following the development of the Conservation Center since its conception, I was interested in your remarks. By coincidence, within an hour of returning to my office, I received a call from Norbert Baer, and I asked him if he could kindly give me up-to-date data on the number of students, costs, faculty ratio and so forth. I hope you won't mind if I relate these, because I believe they are fairly significant.

First, all of the students of the Institute, or practically all, are at the post-graduate level. Those that do not have an M.A. in Art History must take the full four-year curriculum leading to an M.A. Those who do can take the conservation part in three years.

In the past, as I mentioned, approximately six students had been admitted per year. The number in 1978-79 is being increased to eight. In addition, they have two postgraduates and two "special problem" students, i.e., art historians who are taking conservation as a minor, but integrating it into their thesis, and two foreign students or guests, from the United States or abroad. There will be only eight regular students, bringing the total per year to 32. This is eight or so more than there have been in the past.

Stipends are given to virtually all students. These range from \$2,500 for first year students, \$3,500 for advanced students, and \$4,500 for interns from other organizations. Special stipends of \$1,100 are available for summer work. The 1978-79 budget of the Center is \$375,000, which excludes building maintenance, utilities, etc. The cost per student is \$13,400 a year.

Approximately thirty students, from the regular art history departments of the Institute of Fine Arts, are required to take a course at the Conservation Center, but these are not training as conservators.

While the conservation profession urges a one to one relationship between faculty and students, this does not necessarily mean a ratio. It is the relationship during work periods that is counted. Hence the ratios range as follows: for the first year, during which the majority of the teaching is theoretical, it is ten to one. In the apprenticeship phase, which follows, it is between two and three to one.

I am informed that cost per student is roughly similar elsewhere. In Coopers-town it is slightly lower, and in Winterthur, higher, the latter charging to the cost of operating the conservation activities and the maintenance of the building.

I hope that you will find the enclosed responsive to your request, and I shall be most happy, if you would like, to meet with you or members of your staff prior to the hearings, so as to clarify any uncertain points.

Again, thank you for your warm reception.

With kindest regards, I am,

Sincerely yours,

PAUL N. PERROT,

Assistant Secretary for Museum Programs.

SUPPLEMENTAL INFORMATION ON THE CONSERVATION COMPONENT IN THE MUSEUM SUPPORT CENTER OF THE SMITHSONIAN INSTITUTION

The proposed Museum Support Center, to be erected on Smithsonian controlled land in Suitland, Maryland, is essentially a total conservation facility. It is being built in response to an urgent, indeed, desperate need to provide for a large proportion of the Smithsonian's research collections—primarily those concerned with ethnography, archaeology, other areas of anthropology, and natural history—new facilities that will assure their proper transmission to future generations, and, at the same time, make them more easily accessible to the scholars of the Institution and to those from around the world who come to Washington to study these unique resources.

It is intended that the storage component will be equipped with the most advanced environmental and protection controls that current technology allows. For many of the Institution's holdings, this will be the first time that they can be placed in dust free areas under optimum and rigorously controlled conditions of relative humidity.

It has been said with justification that many museum directors are presiding over the gradual disintegration of their holdings. This is due not to the lack of personnel or of laboratories in which to carry out conservation procedures: it is also to a great extent due to the lack of facilities needed to assure that objects which have been given proper conservation treatment do not gradually decay because of adverse environmental conditions.

In addition to providing the necessary environment for the collections, the Support Center will include:

1. laboratories for the study of specific collections, such as in anthropology, botany, and entomology;
2. work spaces for cataloging and interpreting;
3. study facilities where scholars can pursue their research in a mode conducive to maximum achievement.

However, this is only part of the rationale for the Support Center. Another major part is to provide, for the first time, adequate laboratory facilities for the conservation activities of the Conservation Analytical Laboratory, for the Conservation Laboratory of the Department of Anthropology and a laboratory for the restoration department of the Division of Musical Instruments. These laboratories, which will occupy approximately 43,710 square feet, will be dedicated to work on the collections stored in Suitland, or which may be brought to that location for treatment.

The last, and perhaps most important part from a national standpoint, is the training of conservation personnel. The laboratories will be designed in such a way as to maximize ease of treatment and, at the same time, permit the intimate involvement of the trainees, both at the highest level of conservation science and at the lesser academic, but vital, technician level.

THE CONSERVATION ANALYTICAL LABORATORY (CAL)

This laboratory is the major conservation research unit of the Institution. It carries out basic work in the principal fields related to archaeometry, in the development of new examination and conservation techniques, and in complex practical applications that cannot be handled at the workshop level of the various curatorial departments.

The bulk of archaeometrical research will continue to be carried out on the Mall. However, there must be a strong scientific presence in the new facility to assist in conservation work and to actively participate in training.

Special areas will be dedicated to radiography, chemistry, laser treatment and other special techniques. Work areas will be subdivided to accommodate the special needs of paper, textiles, paintings, and furniture. The layout of these spaces will be carefully designed to accommodate the special requirements of teaching. Seminar rooms with closed circuit television linked to various locations on the Mall will permit remote viewing, and special procedures will be recorded on video tape or film to be used in didactic presentations to be made available to other conservation organizations—like the 80 video-taped programs produced by the Conservation Information Program, and listed on the attached brochure. These tapes are circulated widely on loan, and several complete sets have been acquired by conservation centers in this country and abroad for use in their own training programs.

A suggested space allocation for the principal functions of CAL is attached to this statement.

The staff of the Laboratory will include about 27 persons: 1 general supervisor, 4 conservation supervisors, 6 conservators, 1 radiographer, 1 paper conservator, 1 painting conservator, 2 furniture conservators, 1 textile conservator, 1 X-ray analyst, 1 microscopist, 3 information specialists, 1 administrative officer, 2 secretaries, and 2 typists.

This staff will constitute the basic faculty for teaching purposes, to be supplemented, as required, by the scientific staff of the archaeometry department situated on the Mall and by visiting scientists and specialists from other conservation laboratories.

It is foreseen that the following number of student conservators and technicians will ultimately be enrolled in and rotated through a two year program that may be extended to three in certain specialties:

| | |
|----------------------|-----------|
| General conservation | 16 |
| Radiography | 2 |
| Paper | 2 |
| Painting | 1 |
| Furniture | 1 |
| Textiles | 2 |
| X-ray analysis | 2 |
| Microscopy | 2 |
| Total | 28 |

The number of persons taught will be larger than appears since the curriculum will be diffused through closed circuit television, whenever appropriate, and by video tapes, film and slide programs, supplemented by printed materials.

The student body will consist, no doubt, of some Institution personnel, and others from local universities or transferred from other conservation training institutions.

ANTHROPOLOGICAL CONSERVATION LABORATORY

This will be adjacent to CAL and will total about 14 persons who will share with CAL basic scientific equipment, such as X-ray machines, and certain work areas where needs are similar, as, for example, textiles.

The staff will consist of: 1 supervisor, 1 assistant supervisor, 1 secretary, 1 typist, 1 information specialist, 4 conservators, 4 technicians, and 1 storeroom clerk.

At least 16 student-technicians in a two year program will be enrolled. These will share in some of the curriculum offered by CAL.

MUSICAL INSTRUMENTS

Most of the research in material and techniques will be done by CAL. The Musical Instruments Laboratory will primarily be concerned with the application of these techniques to the artifacts.

The staff will consist of: 1 supervisor, 3 conservators, and there will be an average of 3 student interns.

Thus, the total student body at any one time may be 47, in addition to already practicing conservators who may come for short periods of time to perfect this or that technique.

All agree that it would be desirable to increase the number of students and while, with experience, the figures given above may be somewhat exceeded, it would be unrealistic to suggest that a much greater number could be effectively trained.

The most urgent priority in training is to teach the trainers. Indeed, the staff numbers listed above in all probability will not be reached before 1985-86. It should be added that present Civil Service rules greatly handicap the recruitment of first class conservators since the classification system does not accommodate the special requirements of the discipline. The refinement of the conservator classification and liberalizing of rules that would permit recruitment abroad are urgent needs. In addition, if the conditions affecting career potential are not made more favorable to the conservation profession it is unlikely, once highly motivated and qualified personnel have been trained, that it will be possible to retain them for service in the Institution either as instructors, conservators, or technicians.

Intimately linked to the activities of the laboratories will be the shared computerized information/documentation center that will analyze reports and provide data for use by qualified conservators in the U.S. and abroad. This in essence will become a National Institution for Conservation Information.

Serving all of the conservation departments in the Support Center will be the central registrar, the information/documentation center and its specialists, fumigation facilities, a reception area and receptionist, and the collection managers charged by the various curatorial departments with handling the objects in storage. These, in a sense, will be the eyes of the conservation department, providing a vigilant overview on the millions of objects and specimens maintained in the Center.

A number of seminar rooms and work areas will also be shared as will be a fully equipped small highrise amphitheatre that will allow, as in medical schools, complex demonstrations to be easily seen by trainees, and which can also be televised to other audiences, as well as recorded on video tape.

The Smithsonian Institution has never been a degree granting organization. However, it has awarded certificates of attendance for certain of its own presentations. Academic credit has been given by cooperating local universities to students who have participated in programs offered by the Institution. We expect, between now and the opening of the new building, to have entered into agreements with local universities so as to encourage the participation of students at the graduate level in our programs and anticipate that courses, workshops, and internships given here will be fully recognized as integral to an academic program.

The Institution has already tacit agreement from other training programs to send interns to Washington, and our own students will be accepted by other organizations, for short periods of time, in order to take advantage of whatever specific expertise might be available elsewhere.

In conclusion it should be stated that these are not the vague hopes of the Institution but rather a conceptual commitment. It should be noted that this commitment can only be translated into fact if the Congress is responsive to providing necessary authorization and increasing appropriations for all conservation activities at such time that this becomes necessary. Annual staff costs alone for the Conservation Analytical Laboratory at the Support Center and the Anthropology Conservation Laboratory, combined, are estimated at \$470,000. Many staff positions will have to be recruited against strong competition, equipment acquired, and students provided with stipends or fellowships, since experience has shown that without such incentives, students tend to turn to other careers offering greater financial support and, ultimately, often leading to substantially higher incomes than are generally available to conservators.

SUPPLEMENTARY DATA ON THE SMITHSONIAN INSTITUTION'S
CONSERVATION ABILITIES AND GOALS

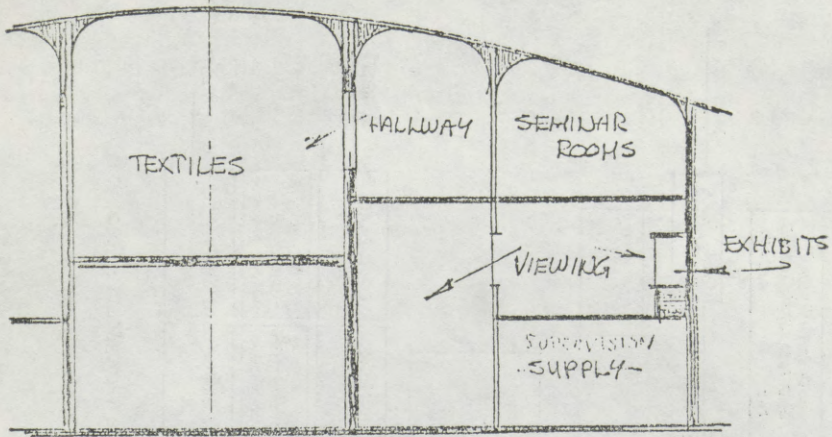
APPENDICES

1. Conservation at the Museum Support Center—Revised Space Distribution.
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Conservation Analytical Laboratory,
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Freeze-Dry Laboratory, and
Smithsonian Institution Libraries.
10. Conservation at the Institution: Space and Cost Distribution by Unit.

APPENDIX 1

| Conservation analytical laboratory: | <i>Net assignable square feet</i> |
|---|---------------------------------------|
| Administrative area: | |
| Administrative/clerical ----- | 1, 190 |
| Information center ----- | 2, 000 |
| Study carrels and video ----- | 240 |
| Visitor reception ----- | 500 |
| Work area: | |
| Work bench modules (16) ----- | 4, 800 |
| Storage ----- | 1, 000 |
| Photo studios/examination ----- | 1, 300 |
| Radiography/thermography (shared) ----- | 900 |
| Paper room ----- | 850 |
| Furniture room ----- | 850 |
| Paintings room ----- | 850 |
| Textile room ----- | 2, 000 |
| Large object room ----- | 1, 300 |
| Science area ----- | 630 |
| Demonstration areas: | |
| Theater ("Uppsala" type) ----- | 2, 300 |
| Seminar rooms (shared) ----- | 1, 000 |
| Total ----- | <u>21, 710</u> |

| | <i>Net assignable square feet</i> |
|--|---------------------------------------|
| Anthropology conservation laboratory : | |
| Administrative area : | |
| Administrative/clerical ----- | 465 |
| Library (shared) ----- | 250 |
| Work area : | |
| Main work room ----- | 2,565 |
| Archaeology room ----- | 1,065 |
| Textile room (shared) ----- | 765 |
| Metals/microscopy room ----- | 100 |
| Large object room ----- | 1,065 |
| Photography room (shared) ----- | 100 |
| Analytical room ----- | 100 |
| Radiography room (shared) ----- | 100 |
| Airbrassive room ----- | 100 |
| Specimen storage room ----- | 600 |
| Supply storage room ----- | 400 |
| Outgoing specimen room ----- | 500 |
| Demonstration areas : Lecture and Seminar rooms (shared) ----- | 1,825 |
| Total ----- | <u>10,000</u> |
| Musical instrument restoration | |
| Administrative area : Administrative/clerical ----- | 250 |
| Work area : | |
| Clean work room ----- | 900 |
| Dirty work room ----- | 400 |
| Examination/documentation ----- | 300 |
| Tuning room ----- | 150 |
| Total ----- | <u>2,000</u> |
| Registrarial, receiving, and handling | |
| Registrar offices ----- | 1,000 |
| Handling, receiving and holding rooms ----- | 7,000 |
| Fumigation ----- | 2,000 |
| Total ----- | <u>10,000</u> |
| Grand total ----- | <u><u>48,710</u></u> |



HYPOTHETICAL ELEVATION

The CHAIRMAN. In general, I am interested in the project, as you know—we have talked about it for a long time. I will look forward to the memorandum that you will send me.

I am still, as you gathered, not content about the size of the conservation program; it is far short of what we talked about in 1969. But I realize the limits you have, too, and the need for more trainers. So I would hope that this mission of conservation would remain very forward in your mind, and Suitland would be called, rather than an attic, it would be called more a classroom—and we could think of it in those terms, recognizing that there will be supplementary classrooms at the Freer, at the National Portrait Gallery, at the other Smithsonian Institutions.

Dr. RIPLEY. You mentioned, Mr. Chairman, the point about other museums, and I think it is extremely important to recognize that this is a slow educational process also, just as education in general is a subject of ours. We have to work slowly and cooperatively to make sure that the museum fraternity understands fully our dedication to their assistance and help.

The problem always is that you are dealing in museums with people who by training tend to be individualists, or loners, and highly acquisitive. Any proper museum person is very acquisitive; he wants to collect things; he wants to get them. But implicitly he wants to get them for himself.

So whether it is a collection that he wishes to acquire or a person who, let us say, is a curator or a conservator, the best in the field, that he wishes to acquire—he is single minded and bent on getting that person, and implicitly doesn't want to be interfered with by any other

organization of a kindred bent. And that creates naturally not only acquisitiveness but jealousy. And jealousy is as endemic in the museum field as it is in the academic field. Throughout, every university wants to have the best department of classics or the best department of mathematics or what not, or a Nobel Prize winner in physics; so every museum wants to have the best curator of invertebrate paleontology or the best conservator in bronzes. And as you travel about the country, Mr. Chairman, you will undoubtedly be aware of these waves that are generated by these common human instincts which all of us have—in connection with acquisition of things or of people, in order to develop the biggest, best museum, let us say, in Los Angeles, or the biggest, best museum somewhere else. And often rather shortsightedly our colleagues lose track of the fact that cooperation is the sole answer today in museums as well as in so many other aspects of life.

The CHAIRMAN. I share, as you know, your enthusiasm for museums, and your belief in them. I would like to see this bill reported out—for action to be taken on it, it has to be reported to the Senate floor before May 15.

So the sooner you submit this memorandum, the more helpful it will be to us. And if you can see any way to satisfy the committee, or at least the views we have discussed today, try to enlarge your plans for conservation, even at the detriment of some storage space. I still think that your ratio of space—it seems awfully small. It would be a factor in our decision with regard to this proposed legislation, which really we should get underway with fairly quickly.

There is a rollcall vote going on, so I will recess the hearing in a moment. I would thank Dr. Ripley and Dr. Perrot for being with us. And my enthusiasm for this cause does not in any way deter from my admiration and regard for Dr. Ripley and the work that he has done, and my sympathy for him in the abuse that he has suffered—and I think that the Smithsonian is a very live and vital institution and one that I hope continues to keep this vitality and inspire so many of our Nation's citizens, because you can go out across the length and breadth of our Nation and nearly all of our citizens will have taken a White House tour and been to a couple of the Smithsonian Institution museums—and the outreach of you and your magazine is tremendous. I am just delighted you are here, and hope you bear with my foible in trying to really see that we could have the world's best conservation center right here under your roof, which is what I would like to see happen.

Dr. RIPLEY. We appreciate your interest and your dedication, Senator. Thank you very much.

The CHAIRMAN. Thank you very much. Thank you, Dr. Perrot, Dr. Ripley.

The meeting of the committee is recessed, to be resumed following the rollcall vote.

[After a brief recess, the committee reconvened and proceeded with legislative and administrative business.]

The CHAIRMAN. * * * The next meeting of the committee concerns sunset legislation. We will be meeting next Wednesday, April 19.

The meeting is adjourned.

[The committee adjourned at 11:14 a.m.]

[In response to questions by Chairman Pell, the following letter enclosing additional information was subsequently received:]

SMITHSONIAN INSTITUTION,
Washington, D.C., April 15, 1978.

Hon. CLAIBORNE PELL,
U.S. Senate,
Washington, D.C.

DEAR SENATOR PELL: In response to your request, I am enclosing additional and detailed information concerning the scope of the Institution's commitment to conservation, the extent of the professional expertise at our disposal, and the number and nature of our laboratories and the current level of training activities. Also enclosed are revised analyses on the space that we intend to allocate to this important subject in the Museum Support Center, and the nature of the curriculum that will be developed. I hope that this documentation will be responsive to your request. It provides as close to an autopsy of our conservation capabilities as we were able to bring together in the short time available. It presents as well, and I hope in a more intelligible fashion, the role the Institution intends to play in helping the nation to meet staffing needs in conservation at the highest possible level of quality.

It was a great pleasure for me to present our case to you. I am grateful, not only for your personal kindness, but as well for your splendid championing of the conservation cause. I hope the enclosed is testimony to the fact that we have heeded your hopes in a sufficiently comprehensive fashion.

I should be delighted to elaborate on this verbally at any time if you wish me to do so.

With kindest regards, I am,
Sincerely,

PAUL N. PERROT,
Assistant Secretary for Museum Programs.

Enclosures.

SUPPLEMENTARY DATA ON THE SMITHSONIAN INSTITUTION'S CONSERVATION
ABILITIES AND GOALS¹

The Smithsonian Institution, as the keeper of the national collections, and as an organization devoted to "the increase and diffusion of knowledge among men," has a vital stake in conservation. Indeed, it can be said that the mission of any properly constituted museum is to conserve the testimony of the past for the enrichment of the present, and in order for the future to better understand its origins.

Conservation pervades virtually every aspect of the Institution's activities. It must be admitted, however, that in spite of this profound concern for the subject, conservation has not benefited, in the past, from sufficient resources, space, personnel, or funding. Consequently, the Institution has been unable to pursue aggressively the development of new methods and the creation of new laboratories which would be responsive to evolving conditions.

For the last ten years, in an attempt to correct this situation, the Institution has studied its storage and conservation-laboratory needs, and ways of providing to its staff, and to the nation at large, a means to take advantage of its unique conservation expertise and of the opportunities for learning which are offered by its vast collections.

The proposed Museum Support Center is to be essentially concerned with the conservation of collections, primarily those of the National Museum of Natural History, and of the Division of Musical Instruments of the National Museum of History and Technology. The Center will contain a number of research laboratories and the most up-to-date retrieval facilities so that access to the collections can be achieved with the maximum of speed and the minimum of hazard to the objects.

A major component of the Museum Support Center is to be dedicated to the practical aspects of conservation training and research.

To these purposes, some 49,000 square feet have been set aside. This space will contain the Conservation Analytical Laboratory's Workshop, the Conservation Training Center, the Conservation Laboratory of the Department of Anthropology of the National Museum of Natural History, and its training component,

¹ Detailed figures relating to this general summary are appended.

and the Restoration Laboratory of the Division of Musical Instruments of the National Museum of History and Technology.

The training offered at Suitland will be orchestrated with the training that has always been given in the other conservation laboratories and workshops of the Institution. These, aggregating some 22,000 square feet of space, are located at the National Museum of History and Technology, at the National Museum of Natural History, the National Collection of Fine Arts, the National Portrait Gallery, the Hirshhorn Museum, and the Freer Gallery of Art. Some of these laboratories are world renowned and have achieved extraordinary sophistication in the practice and teaching of conservation methods. It is intended that the "faculty" of these laboratories will participate fully in the training program offered at Suitland and that these laboratories, in turn, will be the classrooms where students will be taking internships of various length, depending on their needs, in order to sharpen their skills with the foremost practitioners in the subject.

In developing plans for the Support Center, particular attention has been given to the training function. This is envisaged to be at two levels of proficiency: to train Conservators and Conservation Technicians. Appropriate courses will be developed for each in the basic principles of conservation, in the various scientific subjects relating to conservation, and in practical work.

The planned arrangements would also permit highly specialized advanced training or continuing education for a few practicing conservators or students who have completed conservation internships elsewhere.

The curriculum will be coordinated very closely with the academic offerings at a nearby university and by the time the program is instituted, arrangements will have been completed to insure that it will be a recognized degree program.

In the distribution of space, particular attention has been paid to the need for classrooms and lecture-demonstration areas, and to the individual needs of students for spaces specifically dedicated to their uses. However, a large proportion of the total space, by the very nature of conservation training, must be shared with the work spaces assigned to conservators.

The test of conservation training is in the doing, and the doing cannot be done in a vacuum. It must be carried out virtually on a one-to-one basis, between trainee and trainer, the one observing and working in close harmony with the other, on original objects, collectively diagnosing the nature of the objects' needs and carrying out the required treatment.

There are many advantages in having such a distribution of activities, so long as this distribution is within a fairly narrow geographical confine. It provides variety, avoids boredom, and assures the students that they are not studying in a synthetic atmosphere, but where the action is and where quality can be found.

We expect that 62 students will be in training by the fifth year, and that this will increase to 74 by the tenth.

These students will be subjected to a rigorous curriculum, tailored to their career goals, either as conservators or technicians. It is anticipated, and sincerely desired, that some of the students may wish to continue for an additional year and it may be that there will be some who will wish to go on to a higher degree whether related directly to the practice of conservation, or to the more scientific aspects of archaeometry.

By melding the various training opportunities in conservation that the Institution currently offers into one cohesive program, and by taking full advantage of the special expertise available in members of our staff, we expect to provide a curriculum that will be unmatched in diversity and unexcelled in quality.

To attain this aim, however, increased operating funds will be necessary to staff the laboratories to a level compatible with the number of students served.

Sufficient resources must be at hand so that the practice of conservation on the Institution's collections is not overshadowed by the training aspects. The two are vitally interlinked and must prosper together. It is because of the Institution's vast collections and the complexity of the work being done on them, that this training program acquires a special value.

In addition, the Institution intends to continue offering opportunities for internships to trainees from other organizations and expects that its own trainees will be completing internships elsewhere, since there is no substitute for practical, supervised, on-the-job experience.

In refining the Center's space requirements, an examining spaces available in other parts of the Smithsonian campus, close attention has been given to spaces occupied by other training and conservation programs across the nation:

TRAINING INSTITUTIONS

The Conservation Center of the Institute of Fine Arts, New York University plans to have a total of 9,500 square feet when its new facility is completed.

The Cooperstown Graduate Program in Conservation has 5,880 square feet.

The University of Delaware-Winterthur program has 18,000 in its new building.

MUSEUMS AND LIBRARIES

The Conservation Laboratory of the Art Institute of Chicago has 6,800 square feet.

The Los Angeles County Museum of Art has 3,000 square feet.

The Boston Museum of Fine Arts, including all of its "archaeometrical" space, has 30,000 square feet.

The Asian Art Museum in San Francisco, which specializes in oriental subjects, has 3,150 square feet.

The Metropolitan Museum's new laboratory has 14,800 square feet.

The Library of Congress has approximately 13,840 square feet in its present facilities with plans to increase to 19,380 square feet when the Madison Building is completed.

Hence, the Institution's proposed total of 71,610 square feet compares very favorably indeed. One might add to this figure, merely for information purposes, the vast restoration laboratories of the National Air and Space Museum. These, however, are not concerned with conservation in the traditional sense, and due to the enormous size of the objects that are worked on, the area occupied has not been included in our statistics since this would distort the figure and possibly lead to misconceptions. Nevertheless, even excluding that acreage, it is clear that the Institution is far from being a "laggard" nationally or indeed internationally since, in the aggregate, it almost certainly combines the largest budget, commitment to Conservation as well as the largest amount of space in any single organization in the world.

While no one questions the great need for trained conservators, it is true that the resources currently available to the nation's museums to hire conservators are extremely limited. In the last few years, the output of trained conservators has kept abreast of the number of openings. From 1975 to March 1978, 50 positions were advertised, while approximately the same number of students graduated. While it is hazardous to match one figure to the other, since many of the vacancies advertised were for experienced personnel, the closeness of the two is indicative of a tight market. It is expected that between now and the first graduating class, the impact of the Institute of Museums Services, the continued concern of the National Endowment for the Arts, the expansion of the Regional Conservation Centers, as well as a greater awareness of the ethic of conservation, and the imperative that this ethic places upon the higher levels of museum management, that more resources will be available to give gainful employment at a level commensurate with their talents to the conservators who will be emerging from the Institution's training program and those offered by other organizations throughout the United States.

APPENDIX 2

Conservation at the Museum Support Center—Revised space distribution

| Conservation Analytical Laboratory: | <i>Net assignable square feet</i> |
|---|---------------------------------------|
| Administrative area: Administrative/clerical..... | 1,190 |
| Work area: | |
| Work benches, General (metals, ceramics, wood, etc.)..... | 4,800 |
| Storage..... | 1,000 |
| Photo studios/examination..... | ¹ 1,400 |
| Radiography/thermography..... | ¹ 1,000 |
| Paper room..... | 850 |
| Furniture room..... | 850 |
| Paintings room..... | 850 |
| Textile room..... | ¹ 2,765 |
| Large object room..... | 1,300 |
| Science area..... | 630 |
| Subtotal..... | <u>15,445</u> |

¹ Shared.

Conservation at the Museum Support Center, etc.—Continued

Conservation Analytical Laboratory—Continued

| | <i>Net assignable square feet</i> |
|--|---------------------------------------|
| Student lecture and demonstration areas: | |
| Theater ("Uppsala" type)----- | 2,300 |
| Seminar rooms----- | ¹ 2,825 |
| Information center and library----- | ¹ 2,450 |
| Study carrels and video----- | 240 |
| Student reading room and lounge----- | 1,500 |
| Student laboratories----- | 1,500 |
| Rough work room----- | 1,000 |
| Specialized materials shops----- | 2,000 |
| Subtotal ----- | 13,815 |
| Total ----- | 30,450 |

Anthropology Conservation Laboratory:

Administrative area: Administrative/clerical----- 465

Work area:

| | |
|-----------------------------|-------|
| Main work room----- | 2,565 |
| Archaeology room----- | 1,065 |
| Textile room----- | (1) |
| Metals/microscopy room----- | 100 |
| Large object room----- | 1,065 |
| Photography room----- | (1) |
| Analytical room----- | 100 |
| Radiography room----- | (1) |
| Airbrasive room----- | 100 |
| Specimen storage room----- | 600 |
| Supply storage room----- | 400 |
| Outgoing specimen room----- | 500 |

Subtotal ----- 6,495

Total ----- 6,960

Musical Instrument Restoration Laboratory:

Administrative area: Administrative/clerical----- 250

Staff and student work area:

| | |
|--------------------------------|-----|
| Clean work room----- | 900 |
| Dirty work room----- | 400 |
| Examination/documentation----- | 300 |
| Tuning room----- | 150 |

Subtotal ----- 1,750

Total ----- 2,000

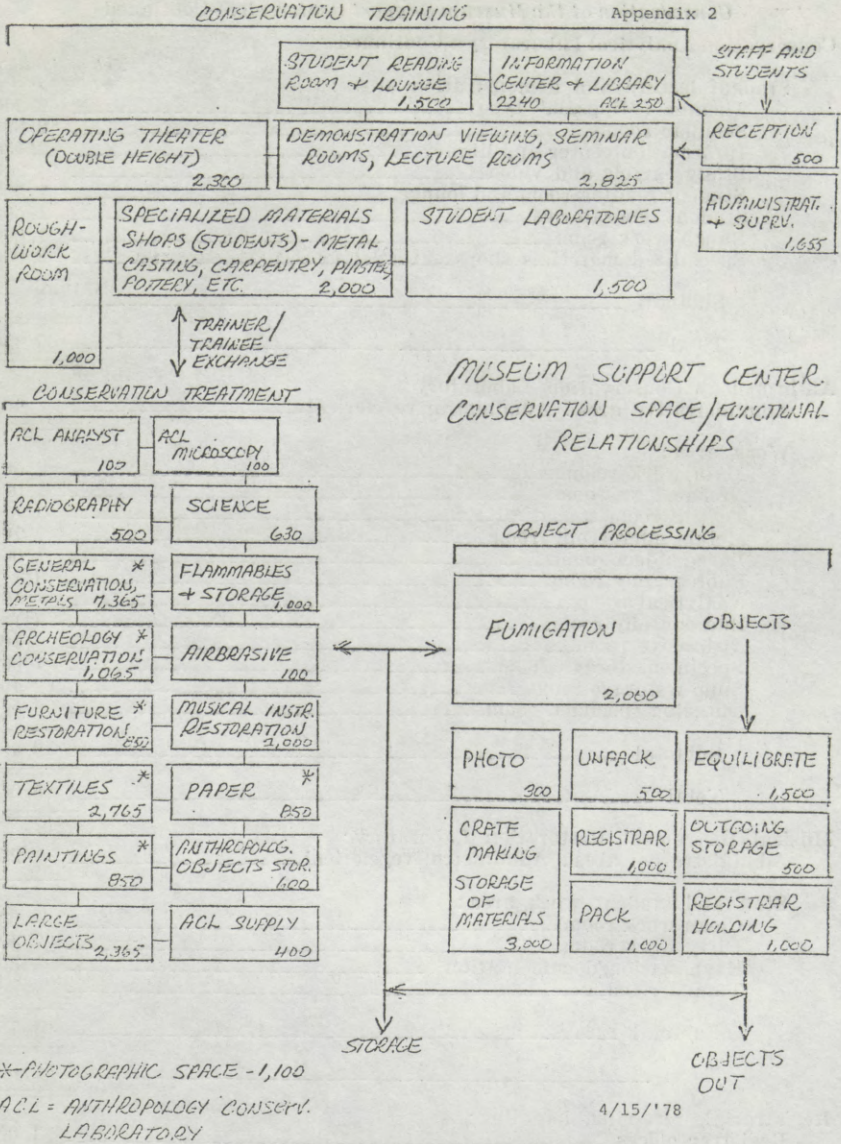
Registrarial, receiving, handling:

| | |
|---|-------|
| Registrar offices----- | 1,000 |
| Handling, receiving, holding rooms----- | 7,000 |
| Fumigation----- | 2,000 |

Total ----- 10,000

Grand total----- 49,410

¹ Shared.



APPENDIX 3

CONSERVATION TRAINING

COURSE OUTLINES

Course I: Conservator

Entrance requirements.—Bachelor's degree with major in relevant discipline (e.g., art history, anthropology, archaeology), or equivalent. Candidates must show motivation, have a feeling for art, history, archaeology, etc., have an idea of the nature of materials, and academic proficiency.

Candidates with non-academic backgrounds, but with fully developed skills such as musical instrument maker, scientific instrument maker, or furniture restorer, may also be accepted.

Orientation.—6 weeks at the Center.

Definitions, purpose, history, philosophy and ethics of conservation.

Systematic circulation as trainees through all operations of the Center: registration, condition reporting, fumigation, storage, information center, exhibits, etc. Introduction to functions of other museum units as desirable.

(Entrants at the post-Conservation Program level will omit the following and proceed to internships in conservation laboratories.)

Subjects; Materials science.—6 months. (Lectures and related lab work will be accomplished in cooperation with a local degree-granting university. This phase of training will require six months with the time divided between the Center and the university.)

Workshops.—Hazards, safety systems and practices; fire prevention and control.

The object and its environment.—Temperature; humidity; air pollution—its significance, measurement and control; climate within buildings. Effect and control of climate during packing, transportation and display.

Light and its sources.—Properties; effects on objects; control; measurement.

Organic chemistry.—Structure; solubility and miscibility; liquid organics; solid organics; synthetic resins.

General lab techniques.—Cross-sectioning; measurement; mechanical properties; miscibility and solubility; acidity; emulsions; polymerisation; thermosetting resins; molding and casting; accelerated aging.

Biology.—Terminology; microbiology; biologically-caused deterioration; preventive treatment.

Wood.—Structure and properties; deterioration; conservation and restoration; water-logged wood and fibrous material.

Textiles.—Structure and fabrication; deterioration; conservation and restoration.

Paper.—Structure and fabrication and ink; deterioration; conservation and restoration.

Ceramics and glass.—Structure and fabrication; deterioration; conservation and restoration.

Porous material and stone.—Structure and workshop techniques; deterioration; conservation and restoration.

Leather and skins.—Structure and preparation; deterioration; conservation and restoration.

Metal.—Structure and working techniques; deterioration; conservation and restoration.

Associated practical work directed toward full understanding of materials and of processes applied to them. These include casting processes, washing, chemical and electro-chemical processes, protective coatings, consolidation, mechanical cleaning, etc.

Examination of objects.—6 weeks at the Center. Theory and practice of methods of examination appropriate to various kinds of complex objects in museum collections. Checklists. Reporting: purposes, standards and repositories.

Simple analytical techniques for identification of materials; preparation of a report.

“Non-destructive” examination by instrumentation; report.

Analytical methods used by the scientists; report.

Structure of objects.—1 year at the Center.

Duplication of part of an actual complex object by correct techniques. Aging of another student's creation by accelerated methods to show understanding of deterioration processes. Full procedures for treatment of another's damaged synthetic object, working alongside staff member. Full report.

Repeat on other classes of complex objects, e.g., bronzes; panel paintings; decorative art; ethnographic and cultural objects of wood, leather, skin, bone, metal, etc. Performance will be evaluated for carefulness. (Some preference for specialization may be exhibited by trainees at this point.)

Internship.—1 year shared between Center and museum laboratories.

If skills are found acceptable, trainees will pass forward to interning on a variety of museum objects in a chosen specialization in conservation museums at the Smithsonian or in other museums.

Upon completion of the intership, qualified students may elect to continue with advanced studies in Conservation Science or Archaeometry in laboratories on the Mall or in other museums or university laboratories in the United States and abroad.

Course II: Conservation technician

Basic curriculum for Conservation Technicians is the same as for Conservators (Course I) but at a less advanced level, and with particular emphasis on practical application and the development of manual dexterity. It is expected that technicians will be working under the supervision of conservators on well defined projects but to do so effectively it is necessary for them to understand basic scientific principles.

The proposed course for Conservation Technicians will require two years:

- Orientation: 6 weeks—Center,
- Materials Science: 6 months—Center/University,
- Examination of Objects: 6 weeks—Center,
- Structure of Objects: 6 months—Center, and
- Internship: 6 months—Center/Museum.

APPENDIX 4

CONSERVATION AT THE INSTITUTION—STAFF SUBJECT MATTER EXPERTISE

NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

Chemistry, Ship Models, Textiles, Vehicles, Machinery, Costumes, Metals, Graphic Art, Musical Instruments, Photographs, Photographic Instruments, Guns, Stamps, Coins and Medals, and Uniforms.

CONSERVATION ANALYTICAL LABORATORY

Furniture, Paintings, Wood, Decorative Art/Objects, Paper all varieties, Ceramics and Glass, Textiles, and Plastic.

Advanced scientific analysis:

Spectrography/Metallography, Pigments, Fibre Identification, X-radiography, Microanalysis, X-ray Fluorescence, X-ray Diffraction, Infrared Spectrophotometry, and Neutron Activation.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

Painting, Paper, Sculpture, Bronze, and et cetera.

SMITHSONIAN INSTITUTION LIBRARIES

Bookbindings.

ANTHROPOLOGICAL CONSERVATION LABORATORY

Ethnographic and Archeological: skins, ceramics, wood, fur, fabrics, textiles, stone, glass, and composite objects.

FINE ARTS AND PORTRAIT GALLERY

Paintings, Paper, and Canvas/Panels.

FREER GALLERY OF ART

Bronzes, Paper, Oriental scrolls, screens, etc., and Pigments.
Specialized scientific techniques, especially Microscopy.

APPENDIX 5

SUMMARY LIST OF CURRENT STAFF EXPERTS

NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

Chemistry: Jon Eklund, Associate Curator, Department of History of Science, Division of Physical Sciences. Taught one year of chemistry at Cooperstown Graduate Program.

Ship models: Howard Hoffman, Museum Specialist, Department of National History, Division of Naval History.

Textiles: Rita Adrosko, Curator-Supervisor, Department of History of Technology, Division of Textiles. Doris Bowman, Museum Specialist, Department of

History of Technology, Division of Textiles. Lois Vann, Museum Specialist, Department of History of Technology, Division of Textiles. Katherine Dirks, Museum Specialist, Department of History of Technology, Division of Textiles. Grace Cooper, Consultant, formerly Head of Division of Textiles, and member of the Committee advising the Conservation Analytical Laboratory.

Vehicles: John Stine, Museum Specialist, Department of History of Technology, Division of Transportation. Martin Burke, Museum Technician, Department of History of Technology, Division of Transportation. Trained at International Centre, Rome and in the Conservation Analytical Laboratory.

Machinery: William Henson, Museum Specialist, Technical Laboratory, Department of History of Science. Prepared all of the machinery for the A&I "1876 Exhibit", with the assistance of his staff.

Costumes: Claudia Kidwell, Associate Curator-Supervisor, Department of Cultural History, Division of Costumes. Has a strong interest in conservation and recently arranged lectures by two conservators, both European trained, who hold opposite views on acceptable methods of treatment. Karen Harris, Museum Specialist, Department of Cultural History, Division of Costumes. Has just published a book on methods of display for costumes which will not abbreviate their lives.

Metals: William Henson, Martin Burke, see above.

Graphic art: James Spears, Museum Specialist, Department of Cultural History, Division of Graphic Arts. Uses approved methods of storing prints, drawings, etc.

Musical instruments: James Weaver, Associate Curator, Department of Cultural History, Division of Musical Instruments. Has made a detailed study of the philosophy of restoring instruments. Scott Odell, Conservator, Department of Cultural History, Division of Musical Instruments. Has an international reputation for his work and is running a training program.

Photographs: Eugene Ostroff, Curator-Supervisor, Department of History of Technology, Division of Photographic History. Has published on photographic conservation, has taught at courses supported by Eastman Kodak and has been concerned with the American National Standards Institute in standardizing storage methods.

Photographic instruments: Harry Patton, David Haberstick, Museum Specialists, Department of History of Technology, Division of Photographic History.

Guns: Craddock Goins, Curator-Supervisor, Department of National History, Division of Military History. Harry Hunter, Museum Technician, Department of National History, Division of Military History.

Stamps: Reidar Norby, Associate Curator, Department of National History, Division of Postal History.

Coins and medals: V. Clain-Stefanelli, Curator-Supervisor, Department of National History, Division of Numismatics.

Uniforms: Donald Kloster, Associate Curator, Department of National History, Division of Military History.

CONSERVATION ANALYTICAL LABORATORY, OFFICE OF MUSEUM PROGRAMS

Furniture: Walter Angst, Conservator. Has lectured on scientific methods of treatment of furniture.

Metals: Robert Organ, Chief of Laboratory.

Paintings: Temporary vacancy.

Decorative art: Walter Angst, see above.

Paper. Eleanor McMillan, Supervisory Conservation specialist.

Ceramics and glass: Temporary vacancy.

Textiles: Mary Garbin, Conservator.

Leather: Mary Garbin, Conservator.

Plastics: Robert Organ, see above.

Spectrography: Harold Westley, Chemist.

Metallurgy: Martha Goodway, Metallurgist.

Fibers and pigments by microscopy: Martha Goodway, see above.

X-radiography: Joan Mishara, Conservation-Scientist.

Micro-analysis: Walter Hopwood, Chemist.

X-ray diffraction: Joan Mishara, see above.

Infra-red spectrophotometry: Walter Hopwood, see above.

Neutron-activation analysis, and multi-variate statistics: Jacqueline Olin, Research Chemist.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

Painting: Laurence Hoffman, Chief Conservator.
 Bronze and other sculpture: Steven Tatti, Conservator.
 Paper: Constance Wanke, Assistant Conservator.

SMITHSONIAN INSTITUTION LIBRARIES, OFFICE OF MUSEUM PROGRAMS

Bookbindings: Johannes Hyltoft, Conservator.

ANTHROPOLOGICAL CONSERVATION LABORATORY, NATIONAL MUSEUM OF
NATURAL HISTORY

All materials: Carolyn Rose, Supervisory Museum Specialist.
 Bone biology: David Von Endt, Research Chemist, Department of Anthropology.
 Fur: Francis Greenwell, Museum Specialist, Department of Vertebrate Zoology.
 Stone: Robert Fudali, Geochemist, Department of Mineralogy.

FINE ARTS AND PORTRAIT GALLERY

Paintings: Thomas Carter, Senior Paintings Conservator. Stefano Scafetta, Paintings Conservator.
 Paintings and sculpture: Felrath Hines, Conservator, National Portrait Gallery.
 Paper: Katherine Erik, Paper Conservator.

FREER GALLERY OF ART

Bronzes: W. T. Chase, Head Conservator.
 Oriental Paintings: John Winter, Conservator.
 Archaeological objects and radiography: Lynda Zycherman, Conservator.
 Pigments: Elisabeth Fitzhugh, Conservator-Scientist.
 Chemical analysis: Ilona Bene, Conservation-Scientist.
 Oriental scrolls and paper: Takashi Sugiura, Restoration Specialist.

APPENDIX 6

PROJECTED 5TH AND 10TH CLASS STUDENT LEVELS AND SPECIAL TIES DISTRIBUTION

| Specialties | 5th year | | 10th year | |
|--|-------------|--------------|-------------|--------------|
| | Technicians | Conservators | Technicians | Conservators |
| Modern paintings | | | 1 | 1 |
| Modern sculpture | | | 1 | 1 |
| Paper | | | 4 | 6 |
| Rare bookbinding | | | 1 | 1 |
| Ethnography/archeology | 8 | | 16 | |
| Costumes | | 2 | | 1 |
| Textiles | | 6 | | 7 |
| Vehicles | 2 | | 3 | |
| Machinery | 3 | | 4 | |
| Photographs | | 1 | | 1 |
| Musical instruments | | 2 | | 2 |
| General (metal, ceramics, glass, wood, etc.) | 8 | 8 | 8 | 8 |
| American paintings | | 7 | | 7 |
| Oriental studies | | 1 | | 1 |
| Conservation science | 6 | | 6 | |
| Furniture | | 1 | | 1 |
| Subtotal | 27 | 35 | 37 | 37 |
| Total | | 62 | | 74 |

APPENDIX 7

PROJECTED COSTS FOR CONSERVATION TRAINING PROGRAM

It is estimated that the average annual cost for training one student, at either the Conservator or Conservation Technician level, expressed in 1978 dollars, will be \$15,700. This estimate is based upon a stipend of \$3,500 per student plus prorated costs for faculty, overhead and supplies. Based upon this estimate, the total annual cost for the entire student body of 62, in the fifth year of operation, will be \$973,400.

Comparative per student costs for other conservation training programs are:

| | |
|---------------------------|----------|
| Cooperstown | \$11,560 |
| Fogg Art Museum | 24,000 |
| New York University | 14,000 |
| Winterthur | 17,000 |

APPENDIX 8

A SAMPLING OF CONSERVATION TRAINING PROGRAMS IN OTHER ORGANIZATIONS: SPACE AND BUDGETS AT TEACHING FACILITIES

| Organization | Square feet | Budget | Students in residence plus interns |
|--|-------------|-----------|------------------------------------|
| Fogg Art Museum | 2,500 | \$144,000 | 6+0 |
| New York University Institute of Fine Arts | 9,500 | 375,000 | 22+6 |
| Copperstown Graduate Programs | 5,880 | 346,783 | 20+10 |
| Winterthur-University of Delaware | 18,000 | 510,000 | 20+10 |

*Conservation laboratory space in some other organizations*¹

| | Square feet |
|--|-------------|
| Chicago Art Institute | 6,800 |
| Los Angeles County Museum of Art | 3,000 |
| Boston Museum of Fine Arts | 30,000 |
| Asian Art Museum, San Francisco | 3,150 |
| Metropolitan Museum of Art | 14,800 |
| Library of Congress: | |
| Now | 13,840 |
| Upon completion of Madison Bldg | 19,380 |

¹ Figures are rounded off.

APPENDIX 9

CONSERVATION ANALYTICAL LABORATORY, OFFICE OF MUSEUM PROGRAMS

The Conservation Analytical Laboratory is administered by the Office of Museum Programs, but is housed in the National Museum of History and Technology. It serves any of the Smithsonian bureaus which present requests and is, therefore, organized to provide a particularly wide variety of services. Its 5,000 square feet are divided into three areas as follows:

1. Information (staff of 2)—a library on conservation and analytical techniques with computerised access to information and a series of several hundred information sheets which answer the most common questions received.

2. Analytical (staff of 6)—separate minute laboratories for ultra-violet emission spectrography; X-ray fluorescence analysis with dedicated mini-computer; X-ray diffraction and diffractometry; X-radiography suitable for metal objects and for paintings; microscopy in a special clean room, for metals, pigments and fibers; infra-red spectrophotometry for organic materials and pollutant gasses; micro-chemical analysis; neutron-activation analysis carried out in collaboration with Brookhaven National Laboratory and the National Bureau of Standards.

3. Conservation (staff of 4 to 8)—two small areas specialized for furniture and paintings and the remainder adaptable to treatment of any kind of object that can be brought in.

Collectively, the Conservation Analytical Laboratory is staffed with specialists possessing skills in paper, leather, textiles, ceramics, furniture, metals, paintings and for investigating the unknown.

The missions of CAL are: to advise on environmental control; to advise on conservation procedures; to treat objects that cannot be treated in individual museum laboratories; to provide analytical services to conservators and curators; to run archaeometry programs; to provide conservation information.

Interns who have passed through the laboratory in the past are now: an objects conservator with Parks Canada; two general conservators to a museum in Denmark; the head of a regional conservation center; two conservators of

textiles with the National Parks Service; two conservators of paper; and a conservation scientist.

ANTHROPOLOGY CONSERVATION LABORATORY—DEPARTMENT OF ANTHROPOLOGY,
NATIONAL MUSEUM OF NATURAL HISTORY

This laboratory, of 1,500 square feet, operates in conjunction with the Collections Processing Laboratory for archaeological and ethnographic collections. Its single Conservator, with the assistance of a Museum Technician, cleans and prepares for exhibition many hundreds of objects annually. The laboratory also utilizes the services of students from the George Washington University Museology Program (up to nine), a small group of volunteers and a few paid contractors. The laboratory is equipped with student microscopes, fume extraction hoods, some sinks, and grit-spray equipment. Space for mending and cleaning operations is severely limited. Analytical aid and X-radiography is available within the Department of Anthropology and the Department of Mineral Sciences. Specialized analysis and specialized library facilities are provided by the Conservation Analytical Laboratory in the National Museum of History and Technology. The Conservator of the Anthropology Conservation Laboratory also lectures in the George Washington University Museology Program.

CONSERVATION LABORATORY, HIRSHHORN MUSEUM AND SCULPTURE GARDEN

This laboratory serves only the museum, which contains a variety of paintings and art objects of great complexity. Since many of the sculptures are out-of-doors, they are subject to considerable stresses and require constant vigilance.

It is a small laboratory (850 square feet), but well equipped for its purposes.

Its three conservators specialize in paintings, sculpture, and paper, and are assisted by two technicians.

Many hundreds of works are inspected or pass through the laboratory for treatment each year.

CONSERVATION LABORATORY, NATIONAL COLLECTION OF FINE ARTS AND
NATIONAL PORTRAIT GALLERY

These two collections share one building and a single conservation laboratory in which separately salaried staffs work on paintings and sculpture (4,325 square feet) and on prints and drawings (575 square feet). The laboratory is well-equipped with hot tables, spray booth, X-ray unit, cameras with infra-red and ultra-violet illuminators, microscopes and testing equipment.

There are four paintings conservators and one paper conservator. Recently, the laboratory has accepted a single intern per year from a graduate conservation program.

TECHNICAL LABORATORY, AND ORIENTAL PAINTINGS RESTORATION LABORATORY,
FREER GALLERY OF ART

The objects in this collection may not leave the building, so the laboratories have an unusually wide range of responsibilities. The Oriental Restoration Laboratory (400 square feet) began in 1923. Its single conservator works on silk, paper and lacquer, using traditional methods, and has accepted one intern from time to time.

The Technical Laboratory, founded in 1951 (850 square feet), has a staff of three conservators and four assistants (three part-time), and is very well equipped for the scientific study of bronzes, paintings and archaeological objects. Techniques available include microscopy, X-radiography, X-ray diffraction, Microchemistry, and Metallography. Thermoluminescent Dating and Radiocarbon Dating services are obtained from other laboratories.

The Technical Laboratory has developed a world-wide reputation, especially for its work on pigments and on the materials and construction of oriental bronzes. A single intern is accepted from time to time.

CONSERVATION ACTIVITIES AT THE NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

This museum has enormously rich and varied collections divided among curatorial departments. Many of these departments have individual staff members who carry out conservation functions, some in small specialized laboratories,

e.g. Musical Instruments, 1,500 square feet; Technical Laboratory, 1,200 square feet; and the Textiles Laboratory, 1,400 square feet. Others work in storage areas or wherever space can be found. The total area applied to conservation in the Museum is 6,700 square feet.

Faculty available to participate in conservation training include:

| | |
|---------------------------------------|---|
| Departmental of Cultural History: | |
| Division of Costumes..... | 3 |
| Division of Domestic Life..... | 2 |
| Division of Graphic Arts..... | 3 |
| Division of Musical Instruments..... | 6 |
| Department of National History: | |
| Division of Naval History..... | 1 |
| Division of Political History..... | 8 |
| Division of Numismatics..... | 2 |
| Department of History of Science: | |
| Division of Mechanisms..... | 2 |
| Division of Physical Sciences..... | 2 |
| Department of History of Technology: | |
| Division of Photographic History..... | 1 |
| Technical Laboratory..... | 6 |
| Division of Textiles..... | 4 |
| Division of Transportation..... | 3 |

Some of the more complex needs are met by the Conservation Analytical Laboratory. The storage areas and storage procedures of some of the Divisions are models of conservation understanding and are frequently demonstrated for this reason. The Division of Musical Instruments already operates a training program, the only one of its kind in the United States. It includes lectures presented by the staff of the Conservation Analytical Laboratory. Newly hired staff of the Technical Laboratory also attend these lectures.

THE FREEZE-DRY LABORATORY—OFFICE OF EXHIBITS CENTRAL

This laboratory is housed in the National Museum of Natural History. Instead of removing the skins and stuffing them as is done in taxidermy, freeze-drying animal specimens preserves internal features of potential scientific interest. The laboratory is very specialized, containing a high vacuum chamber large enough to accommodate the largest specimen that can be safely treated by this technology together with vacuum pumps, preparation areas, and deep-freeze chambers to contain specimens awaiting the drying operation.

The manager of this laboratory has spent ten years developing his methods, and his experience is matched by only one other specialist, who is in London.

SMITHSONIAN INSTITUTION'S LIBRARIES CONSERVATION SERVICES AND LABORATORY

The Smithsonian Institution Library supplies and catalogs the books located in the various conservation areas. It will shortly provide a computer-access terminal to various technical bibliographic services needed by scientific conservators. Its recently appointed conservator, plus one assistant, has a laboratory (1,180 square feet) for the rebinding of rare books and rebinding and encapsulation of pamphlets. The laboratory is about to accept one trainee.

APPENDIX 10 CONSERVATION AT THE INSTITUTION: SPACE AND COST DISTRIBUTION BY UNIT

| Museum | Square feet | Personnel | Salaries | Supplies and equipment | Current student interns |
|---|-------------|-----------|-----------|------------------------|-------------------------|
| Hirshhorn Museum and Sculpture Garden..... | 800 | 5 | \$84,000 | \$9,000 | 1 |
| Smithsonian Institution Libraries..... | 1,100 | 2 | 36,000 | 8,000 | 0 |
| Anthropological Conservation Laboratory..... | 1,500 | 3 | 51,400 | 6,000 | 2 |
| Office of Museum Programs (Exhibits Central)..... | 1,350 | 1 | 36,000 | 70,000 | 0 |
| National Museum of History and Technology..... | 6,700 | 14 | 236,900 | 14,000 | 3 |
| National Collection of Fine Arts..... | 4,900 | 4 | 90,300 | 5,800 | 1 |
| National Portrait Gallery..... | (1) | 2 | 32,100 | 1,300 | 0 |
| Freer Gallery of Art..... | 850 | 5 | 117,500 | 22,600 | 1 |
| Conservation Analytical Laboratory..... | 5,000 | 16 | 474,000 | 152,000 | 0 |
| Total..... | 22,200 | 52 | 1,158,200 | 288,700 | 8 |

¹ Shared with NCFA.



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