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**DEPARTMENT OF THE INTERIOR AND RELATED  
AGENCIES APPROPRIATIONS FOR 1994**

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**HEARINGS**  
BEFORE A  
SUBCOMMITTEE OF THE  
COMMITTEE ON APPROPRIATIONS  
HOUSE OF REPRESENTATIVES  
ONE HUNDRED THIRD CONGRESS  
FIRST SESSION

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SUBCOMMITTEE ON THE DEPARTMENT OF THE INTERIOR AND  
RELATED AGENCIES

**SIDNEY R. YATES, Illinois, *Chairman***

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TOM BEVILL, Alabama  
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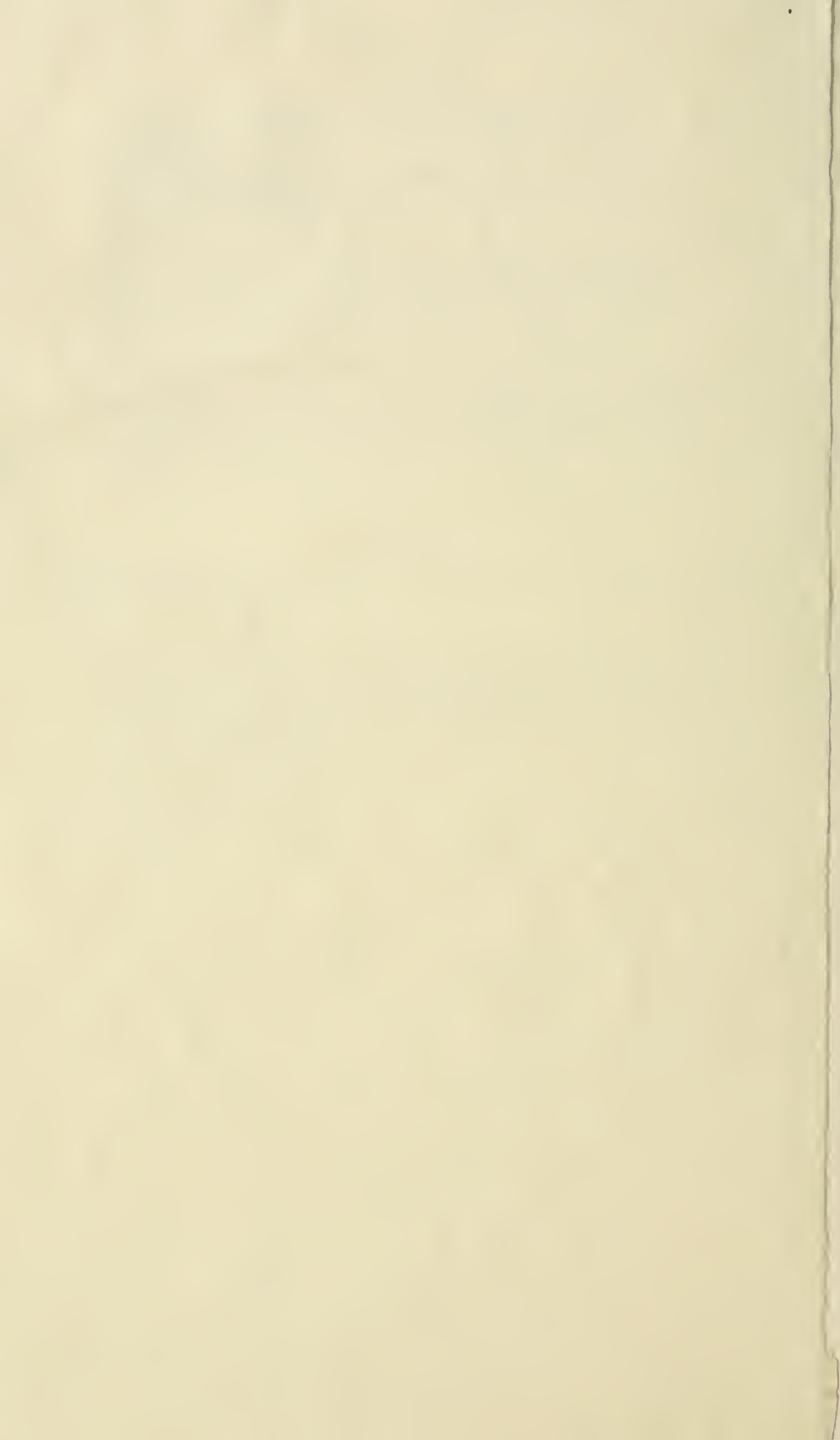
D. NEAL SIGMON, KATHLEEN R. JOHNSON, ROBERT S. KRIPOWICZ, and LORETTA BEAUMONT,  
*Staff Assistants*

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THURSDAY, FEBRUARY 18, 1993.

SMITHSONIAN INSTITUTION

WITNESSES

ROBERT McC. ADAMS, SECRETARY  
 CONSTANCE B. NEWMAN, UNDER SECRETARY  
 ALICE G. BURNETTE, ASSISTANT SECRETARY FOR INSTITUTIONAL INITIATIVES  
 JAMES C. EARLY, ASSISTANT SECRETARY FOR EDUCATION AND PUBLIC SERVICE  
 TOM L. FREUDENHEIM, ASSISTANT SECRETARY FOR ARTS AND HUMANITIES  
 ROBERT S. HOFFMANN, ASSISTANT SECRETARY FOR SCIENCE  
 NANCY D. SUTTENFIELD, ASSISTANT SECRETARY FOR FINANCE AND ADMINISTRATION  
 THOMAS E. LOVEJOY, ASSISTANT SECRETARY FOR EXTERNAL AFFAIRS  
 RICHARD L. SIEGLE, DIRECTOR, OFFICE OF FACILITIES SERVICES  
 MICHAEL H. ROBINSON, DIRECTOR, NATIONAL ZOOLOGICAL PARK  
 L. CAROLE WHARTON, DIRECTOR, OFFICE OF PLANNING AND BUDGET  
 RICHARD KURIN, CHAIRMAN, COUNCIL OF INFORMATION AND EDUCATION DIRECTORS  
 STEVEN C. NEWSOME, CHAIRMAN, COUNCIL OF BUREAU DIRECTORS

OPENING REMARKS

Mr. YATES. This is the hearing on the budget for the Smithsonian Institution, the revered and distinguished Smithsonian Institution, for the fiscal year 1994 budget. Unfortunately, we don't have a formal budget yet. [Laughter.]

But as is said in the trade, we will wing it.

Appearing in support of that budget is the distinguished Secretary, Mr. Robert McCormick Adams.

Ms. Burnette, where are you, Ms. Burnette? Hiding back there. Come on up. Mr. Early? Where are you, Mr. Early? There you are, sure, hiding behind that nice lady here. Tom Freudenheim, hiding behind his beard. Mr. Hoffmann, the Assistant Secretary for Science. Ms. Sutzenfield, Assistant Secretary for Finance and Administration.

Tom Lovejoy, there he is. Mr. Siegle, Director of the Office of Facilities Services. Hi, Mr. Siegle. Mr. Robinson, of the National Zoo. Ms. Wharton, Director of the Office of Planning and Budget. There you are. Mr. Kurin, Chairman of the Council of Information and Education Directors. That's a new one to me. Hi, how are you. And Mr. Newsome, Chairman of the Council of Bureau Directors. Are these new titles?

Mr. ADAMS. No, they are not the functional titles of their normal administrative duties, but these are important organizations, representing groups of bureaus and offices.

Mr. YATES. Mr. Adams' statement may go into the record at this point without objection, to be followed by the biography of Ms. Constance Berry Newman.

[The information follows:]

STATEMENT BY

ROBERT McC. ADAMS

SECRETARY

SMITHSONIAN INSTITUTION

BEFORE THE

SUBCOMMITTEE ON INTERIOR

COMMITTEE ON APPROPRIATIONS

U.S. HOUSE OF REPRESENTATIVES

WASHINGTON, D.C.

FEBRUARY 18, 1993

THANK YOU MR. CHAIRMAN. I AM PLEASED TO APPEAR TODAY BEFORE THE MEMBERS OF THE SUBCOMMITTEE TO TESTIFY ON BEHALF OF THE SMITHSONIAN INSTITUTION.

LAST MARCH, IN CONJUNCTION WITH THE INSTITUTION'S BUDGET REQUEST FOR FISCAL YEAR 1993, I HAD THE OPPORTUNITY TO OUTLINE FOR THIS SUBCOMMITTEE THE MANY STEPS UNDERTAKEN BY THE SMITHSONIAN TO IMPROVE OVERALL MANAGEMENT, ESTABLISH INSTITUTION-WIDE PRIORITIES, REORGANIZE AND, ULTIMATELY, RESTRUCTURE FOR THE FUTURE. THE GOAL OF THIS EXERCISE WAS, AND REMAINS, TO BRING FINANCIAL EQUILIBRIUM TO BOTH THE FEDERAL AND TRUST BUDGETS IN ORDER FOR THE INSTITUTION TO FULFILL ITS MISSION. I AM PLEASED TO REPORT SIGNIFICANT PROGRESS IN ALL OF THESE AREAS.

LET ME RECOUNT SOME OF THE EVENTS WHICH LED US TO UNDERTAKE THIS PROCESS. PHASE ONE OF THE REORGANIZATION PLAN WAS DEVELOPED UNDER THE STEWARDSHIP OF THE LATE CARMEN TURNER AND SHARED WITH CONGRESS IN THE SPRING OF 1992. AS WE BEGAN FISCAL YEAR 1993, IT BECAME READILY APPARENT THAT CHANGES NEEDED TO BE MADE SOONER RATHER THAN LATER IN ORDER TO ADDRESS THE LONG TERM NEEDS OF THE INSTITUTION. WITH THE REALITY OF THE BUDGET SITUATION, BOTH FEDERAL AND TRUST, IT WAS CLEAR THAT PROMPT ACTION WAS NECESSARY IF THE DESIRED RESULTS WERE TO BE ACHIEVED IN THE FUTURE. WHILE THE CONGRESSIONAL APPROPRIATION WAS GENEROUS FOR FISCAL YEAR 1993, POSTPONING THE TOUGH DECISIONS INTO THE FUTURE WOULD HAVE ONLY MADE THEIR ULTIMATE IMPACT HARDER TO ACCEPT.

IN THE SUMMER OF 1992, CONSTANCE NEWMAN CAME ON BOARD AS UNDER SECRETARY AND TOGETHER WE CONTINUED THE COMPREHENSIVE REVIEW AND ASSESSMENT OF INSTITUTION PROGRAMS AND ACTIVITIES WHICH WOULD ALLOW US TO ESTABLISH PRIORITIES AND BEGIN THE PAINFUL PROCESS OF RESTRUCTURING IN ORDER TO MEET THE REALITIES OF THE PRESENT AND THE CHALLENGES OF THE FUTURE. THIS EXERCISE REPRESENTED A THOROUGH AND COMPREHENSIVE REVIEW OF THE SMITHSONIAN'S UTILIZATION OF FEDERAL AND NON-APPROPRIATED TRUST FUNDS WITHIN THE CONTEXT OF ITS PRIORITIES.

COLLECTIVELY, THE INSTITUTION ESTABLISHED THE FOLLOWING SIX CORE PRIORITIES WHICH HAVE GUIDED ITS DECISION-MAKING DURING THE PROCESS:

- 1) THE CARE AND CONSERVATION OF ITS COLLECTIONS AND FACILITIES;
- 2) THE RETENTION OF A VIBRANT, BROADLY APPEALING EXHIBITION PROGRAM (PROBABLY RELYING MORE HEAVILY ON ITS OWN COLLECTIONS);
- 3) THE MAINTENANCE OF MOMENTUM IN THOSE MAJOR RESEARCH PROGRAMS WHERE THE INSTITUTION HAS A STRONG TRADITION AND COMPARATIVE ADVANTAGE, WITH PARTICULAR EMPHASIS ON FELLOWSHIPS, INTERNSHIPS, AND MINORITY ACCESS;

- 4) THE MEETING OF MANDATED RESPONSIBILITIES, INCLUDING BUT NOT LIMITED TO THOSE RELATED TO ENVIRONMENTAL MANAGEMENT, SAFETY, AND ACCESS FOR PEOPLE WITH DISABILITIES;
- 5) THE PROVISION OF AN ADEQUATE ADMINISTRATIVE AND SERVICE BASE TO PLAN FOR AND HANDLE A TRANSITION TO DOWNSIZED PROGRAMS AND OPERATIONS, WITHOUT SACRIFICING PRESENT STANDARDS; AND
- 6) THE RETAINING OF RECOGNIZABLE SALIENCE, TO THE FULLEST EXTENT THAT THESE OTHER PRIORITIES PERMIT, FOR KEY OUTREACH PROGRAMS TO EDUCATE, WIDEN AND DIVERSIFY ITS AUDIENCES, AND FOR THOSE CONTRIBUTIONS TO AN UNDERSTANDING OF GLOBAL CHANGE THAT LIE MOST DIRECTLY WITHIN THE SMITHSONIAN'S AREA OF EXPERTISE AND RESPONSIBILITY.

AFTER ESTABLISHING THE INSTITUTION'S CORE PRIORITIES, THE UNDER SECRETARY LED FRANK DISCUSSIONS AMONG SMITHSONIAN MANAGEMENT OFFICIALS ON ALL PROGRAMS FUNDED BY TRUST AND FEDERAL ACCOUNTS THAT MIGHT BE TARGETED FOR ELIMINATION, REDUCTION, SUSTAINING, OR STRENGTHENING. THE PROCESS PROVIDED FOR WIDELY INCLUSIVE AND INFORMED DIALOGUE AMONG SENIOR MANAGEMENT, ASSISTANT SECRETARIES, AND HEADS OF BUREAUS AND OFFICES TO EXAMINE PROGRAMS WITH RESPECT TO THEIR CENTRALITY TO THE INSTITUTION'S MISSION, QUALITY AND EFFECTIVENESS, COST EFFECTIVENESS AND OPTIMUM FUNDING REQUIREMENTS.

THIS IS AN EXTREMELY DIFFICULT AND PAINFUL PROCESS TO IMPOSE UPON ANY INSTITUTION -- BUT ONE THAT WAS CRUCIAL TO FULFILLING THE SMITHSONIAN'S MISSION "FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE." WHILE VIRTUALLY EVERY PROGRAM OR ACTIVITY WITHIN THE INSTITUTION HAS BEEN BENEFICIAL AND WORTHY OF SUPPORT, IN TIMES OF LIMITED RESOURCES PRIORITIES MUST BE ESTABLISHED AND RESOURCES ALLOCATED IN A WAY THAT SUPPORTS THOSE PRIORITIES. THEREFORE, THOSE PROGRAMS AND ACTIVITIES WHICH DO NOT MAKE A SIGNIFICANT CONTRIBUTION TO THOSE PRIORITIES, HOWEVER INHERENTLY WORTHY, MUST BE REDUCED, RESTRUCTURED OR ELIMINATED.

I AM PLEASED TO SAY THAT SMITHSONIAN MANAGERS PARTICIPATED ACTIVELY IN THIS PROCESS. EACH HAD AN OPPORTUNITY TO DEFEND AND PROMOTE HIS OR HER PROGRAMS IN THE CONTEXT OF THE ESTABLISHED PRIORITIES. IN ADDITION, EACH WAS GIVEN THE OPPORTUNITY TO COMMENT ON OTHER PROGRAMS OR ACTIVITIES WITHIN THE INSTITUTION. THE DECISIONS FINALLY MADE THUS REPRESENT THE OUTCOME OF A PAINSTAKING AND OPEN PROCESS OF DELIBERATION INVOLVING ALL OF THE INSTITUTION'S SENIOR MANAGEMENT. I BELIEVE THEY REFLECT THE FULL COMMITMENT OF THIS GROUP TO WORK FOR THE SUCCESS OF THE INSTITUTION AS A WHOLE RATHER THAN FOR ITS INDIVIDUAL COMPONENTS.

MANY OF THE DECISIONS BEING MADE IN THE RESTRUCTURING PLAN WERE BASED UPON THE PREMISE OF THE NECESSARY FLEXIBILITY PROVIDED BY A MULTI-YEAR IMPLEMENTATION SCHEDULE. OVER SEVERAL YEARS, IT IS MY HOPE THAT THE INSTITUTION CAN REDIRECT RESOURCES FROM AREAS OUTSIDE OF THE ESTABLISHED PRIORITIES WITHOUT INCURRING UNDUE HARM TO THE REMAINDER OF THE INSTITUTION. STRENGTHENED SUPPORT OF THESE

PRIORITIES, THROUGH RESOURCE SUBSTITUTION, WOULD PERMIT THE INSTITUTION TO MAINTAIN AND EVEN STRENGTHEN ITS PROGRAMMATIC CORE DURING THIS PERIOD OF RESTRUCTURING.

IN CONJUNCTION WITH THE ESTABLISHMENT OF PRIORITIES AND SUBSEQUENT PROGRAM RESTRUCTURING, THE INSTITUTION HAS ALSO IMPLEMENTED SIGNIFICANT MANAGEMENT REFORMS WITH AN EYE TOWARDS SPENDING RESOURCES MORE ECONOMICALLY. THESE REFORMS AFFECTED CENTRAL ADMINISTRATIVE FUNCTIONS AS WELL AS BUREAU AND OFFICE PROGRAMS AND PROCEDURES. IN AN INSTITUTION WHICH RELIES ON CREATIVITY AND QUALITY OF EFFORT, ANY PERCEIVED MOVEMENT TOWARDS GREATER BUREAUCRACY AND MICROMANAGEMENT CAN BE HARMFUL. BUT AT THE SAME TIME, THERE ARE REAL SAVINGS TO BE MADE BY EXPLOITING OPPORTUNITIES FOR IMPROVED EFFICIENCY. IN THIS SPIRIT, WE HAVE REVIEWED BOTH DIRECT PROGRAM AND INDIRECT ADMINISTRATIVE AND SERVICE COSTS ACROSS THE INSTITUTION. STEPS ARE BEING TAKEN TO GET MORE OUT OF EACH DOLLAR BY REQUIRING GREATER ACCOUNTABILITY, AND BY A MORE CONSIDERED EVALUATION OF OTHER OPTIONS FOR PROGRAM AND SERVICE DELIVERY. MANAGEMENT REFORMS THEMSELVES ARE NOT A PANACEA TO CONSTRAINED RESOURCES, BUT THEY DO INDUCE INDIVIDUAL SMITHSONIAN COMPONENTS TO SEEK BETTER METHODS OF DOING BUSINESS AND REQUIRE THAT THE MEASURED EXPENDITURE OF RESOURCES BE A KEY COMPONENT OF ANY PLAN FROM THE OUTSET.

ADDITIONALLY, OUR INTERNAL OVERSIGHT CAPABILITIES HAVE BEEN GREATLY ENHANCED THIS PAST YEAR. THE RESULTS OF BOTH INTERNAL AND EXTERNAL AUDITS ARE REVIEWED REGULARLY NOT ONLY BY THE AUDIT AND REVIEW COMMITTEE OF THE BOARD OF REGENTS, BUT ALSO BY THE UNDER SECRETARY OF THE SMITHSONIAN. THE UNDER SECRETARY MONITORS PROGRESS IN CLOSING OPEN AUDIT RECOMMENDATIONS AND WORKS WITH THE MANAGERS RESPONSIBLE FOR THE AUDITS TO ENSURE THAT PROPER DOCUMENTATION IS TRANSMITTED TO THE OFFICE OF THE INSPECTOR GENERAL. IN JANUARY OF THIS YEAR, THE UNDER SECRETARY BEGAN TO ISSUE MONTHLY STATUS REPORTS ON THE AUDIT RECOMMENDATIONS AND TO DISTRIBUTE THESE REPORTS TO ASSISTANT SECRETARIES AND OTHER KEY MANAGERS.

MORE THAN 80 PERCENT OF OPEN AUDIT RECOMMENDATIONS ISSUED SINCE 1991 HAVE BEEN RESOLVED. THE REMAINING AUDITS, WHICH IN THE MAIN HAVE TO DO WITH UPDATING COLLECTIONS MANAGEMENT POLICIES FOR SELECTED COLLECTIONS IN THE MUSEUMS OF NATURAL HISTORY AND AMERICAN HISTORY AND UPGRADING ACCOUNTING PROCEDURES AND COMPUTER NEEDS, ARE BEING AGGRESSIVELY WORKED ON BY SMITHSONIAN STAFF. WORK IS UNDERWAY TO CLOSE OUT ESSENTIALLY ALL OF THESE THIS YEAR THROUGH DISCUSSIONS WITH MANAGEMENT AND THE OFFICE OF THE INSPECTOR GENERAL AND INTENSIFIED FOLLOW-UP AND IMPLEMENTATION.

WE STRONGLY BELIEVE THAT THE REFORMS ALREADY INSTITUTED AND THOSE WHICH WILL BE IMPLEMENTED IN THE NEAR FUTURE WILL ASSIST THE INSTITUTION IN ACHIEVING THE GREATEST RETURN FOR EACH DOLLAR SPENT.

TO PUT IN PERSPECTIVE THE CHALLENGES THAT FACE THE INSTITUTION, THE PRESENT BACKLOG OF ESSENTIAL MAINTENANCE AND REPAIRS TO SMITHSONIAN FACILITIES TOTALS \$225.7 MILLION. THE



BACKLOG REPRESENTS THE LISTING OF KNOWN BUT AS YET UNFUNDED WORK CURRENTLY REQUIRED TO REPAIR OR PRESERVE FACILITIES, ASSURE CONTINUED OPERATION OF BUILDING SYSTEMS AND EQUIPMENT, OR BRING BUILDINGS INTO COMPLIANCE WITH LIFE SAFETY AND HEALTH CODES AND STANDARDS.

FINALLY, THE INSTITUTION HAS RECOGNIZED THE NEED TO SEEK OTHER SOURCES OF NON-APPROPRIATED FUNDS IN ORDER TO KEEP PACE WITH THE EVER-GROWING DEMANDS ON THE INSTITUTION. THERE ARE NEWLY MANDATED IMPERATIVES, SUCH AS ENVIRONMENTAL SAFETY AND HANDICAPPED ACCESS, AND GROWING DEMANDS FOR PUBLIC SERVICE THAT IN THEIR OWN WAY ARE TESTIMONIALS TO THE VALUE OF WHAT THE INSTITUTION STANDS FOR. AS YOU KNOW, THE SMITHSONIAN INSTITUTION MUST NOW, MORE THAN EVER, LOOK TO INDIVIDUAL DONORS AND THE PRIVATE SECTOR TO ASSIST IN ITS MISSION. FOR THE FIRST TIME, THE BOARD OF REGENTS APPROVED THE POLICY OF HAVING THE INSTITUTION, ON A DEMONSTRATION BASIS, PROVIDE AN OPPORTUNITY FOR VISITORS TO MAKE VOLUNTARY CONTRIBUTIONS AT SELECTED MUSEUMS. THE PROCEEDS FROM THIS DEMONSTRATION WILL BE STRICTLY EARMARKED FOR EXHIBITIONS AND OTHER PROGRAMS THAT PRESENTLY REQUIRE ADDITIONAL RESOURCES AND ARE OF DIRECT BENEFIT TO THE PUBLIC.

ADDITIONALLY, THE SMITHSONIAN'S NATIONAL BOARD, WITH THE APPROVAL OF THE REGENTS, HAS ESTABLISHED THE "SMITHSONIAN FUND FOR THE FUTURE" WHICH WILL SEEK TO PROVIDE ADDITIONAL RESOURCES TO THE INSTITUTION THROUGH THE DEDICATED EFFORTS OF BOARD MEMBERS. THIS EFFORT WILL FOCUS ON CREATING AN ENDOWMENT TO PROVIDE UNRESTRICTED FUNDS WHICH ARE SO CRITICAL TO THE INSTITUTION'S PROGRAMMATIC ACTIVITIES.

AS I STATED AT THE OUTSET -- THIS IS A TIME FOR CAREFULLY SETTING PRIORITIES, AND FOR ASSESSING THE QUALITY, BREADTH OF OUTREACH, AND RESPONSIVENESS TO SCIENTIFIC NEED AND PUBLIC DEMAND FOR WHAT WE DO. WE WILL CONTINUE TO RESTRUCTURE AND DOWNSIZE, BUT IT WILL BE DONE TO PROVIDE VISION AND FLEXIBILITY--FIRST TO STRENGTHEN THE BEST AND MOST CRUCIAL OF OUR CURRENT ACTIVITIES, AND ULTIMATELY TO MEET THE NEW NEEDS AND OPPORTUNITIES THAT WILL SURELY PRESENT THEMSELVES AS THE NEXT CENTURY APPROACHES.

IN TESTIFYING TODAY, I WANT TO EMPHASIZE THAT THE ADMINISTRATION IS CURRENTLY FORMULATING THE PRESIDENT'S FY 1994 BUDGET. ACCORDINGLY, I AM NOT ABLE TO PROVIDE YOU WITH THE ADMINISTRATION'S POSITION ON FUNDING FOR THE SMITHSONIAN. AS SOON AS THE PRESIDENT'S BUDGET IS RELEASED NEXT MONTH I WOULD BE PLEASED TO PROVIDE YOU WITH THE SMITHSONIAN'S VIEWS.

I THANK THE MEMBERS OF THE SUBCOMMITTEE AND WILL BE PLEASED TO ANSWER ANY QUESTIONS YOU MAY HAVE.

## CONSTANCE BERRY NEWMAN

Constance Berry Newman became Under Secretary of the Smithsonian Institution in July, 1992. She was Director of the Office of Personnel Management from June, 1989 to June, 1992. For more than 20 years she managed public and private organizations. Among her major management positions were: Assistant Secretary of the United States Department of Housing and Urban Development, Director of VISTA, and President of the Newman & Hermanson Company. She was also Commissioner and Vice-Chairman of the Consumer Product Safety Commission.

From 1987 to 1988, Ms. Newman worked for the Government of Lesotho as a Cooperative Housing Foundation consultant to a committee established for the purpose of advising the Ministry of Interior regarding the establishment of a housing corporation to receive World Bank funding.

During her public career which began in 1961, Ms. Newman worked in 12 Federal government agencies with four Presidential appointments, three of which were confirmed by the Senate.

Ms. Newman was a Woodrow Wilson Visiting Fellow from 1977 to 1985 and a member of the Adjunct Faculty at the Kennedy School, Harvard University from 1979 to 1982. She has received an Honorary Doctor of Laws from her Alma Mater, Bates College, Amherst College and Central State University. In addition to receiving an A.B. from Bates College, she received a Bachelor of Science in Law degree from the University of Minnesota Law School. In 1985, she received the Secretary of Defense Medal for Outstanding Public Service. She is a life member of the National Association for the Advancement of Colored People and has served on numerous civic boards and committees.

## SECRETARY'S OPENING STATEMENT

Mr. YATES. All right, Mr. Adams, your statement is in the record. Tell us how the Smithsonian is doing, and not doing.

Mr. ADAMS. Mr. Chairman, I have only a single statement and as it's in the record, I don't know that I want to repeat it.

Mr. YATES. All right, we will go right into the questions if you would prefer that.

Mr. ADAMS. Unless you want to hear it again, and I doubt that you do. [Laughter.]

Mr. YATES. No, I don't want to hear it again. I don't know about my members and my colleagues.

## KOMODO DRAGON

Mr. YATES. I think before we do anything else, let's bring Mr. Robinson to the floor, and his friend there, who apparently is—does this dragon have a name besides Puff?

Mr. ROBINSON. It's called Kracken, which you will recognize, and the important thing, I think, and I don't want to make a speech, of course—

[Laughter.]

Mr. YATES. Why not?

Mr. ROBINSON. This is the first time Komodo dragons have ever been bred outside of Indonesia, so it's a big Komodo from the island of Komodo. They are a highly endangered species. We had 26 eggs laid last year, of which 13 survived. There is a nine month incubation period, so after the eggs are laid, we have got a long patient wait to see what's going to happen. Animal keeper Walsh is going to get the baby Komodo out. It's now six months old. You can see how large they have to be when they emerge from the egg. You might get a dramatic bite.

Mr. YATES. Is that still growing, Michael?

Mr. ROBINSON. They will grow to about 18 feet long. They are the largest lizards on earth, hence the name "dragon." We are very proud to be the first people to ever breed them outside Indonesia, and we are now in the process of distributing them to zoos throughout the United States.

Mr. YATES. Well, we're glad to have this introduction.

Mr. WALSH. It's a first for him, too. [Laughter.]

Mr. ROBINSON. The same female we loaned to the Cincinnati Zoo and she has there laid 24 eggs, and they are being incubated here at the Zoo. It's a great second step.

Mr. YATES. What happened to the father?

Mr. ROBINSON. The father is here. There is another male in Cincinnati, so we are mixing up the genes by having another blood line, so to speak, which is very good for zoo practice and which we try to do with as many kinds of animals as possible, so we can kind of keep a dating service to make sure that we arrange the right magic pairings. [Laughter.]

Mr. YATES. They don't have a voice in this, do they?

Mr. ROBINSON. The female is always in a position to reject the male.

Mr. YATES. Oh, okay. [Laughter.]

All right.

## APPROPRIATIONS HISTORY

Mr. YATES. We don't have a budget, so we are forced, we were compelled to review the project. And as I reviewed it, I was struck by several statistics, the first of which was in the report by the September Board of Regents which showed that your 1992 appropriations was \$100 million greater than your budget in fiscal year 1987, a five year difference. That's a lot of money, \$100 million. What happened to all that money? Where did it go?

Ms. NEWMAN. I can start, then Nancy can complete it.

Some of the demands on the Institution as a result of pay raises, as a result of inflation, uncontrollable costs that we must absorb were taken up with that increase. In addition, there were some specific programs that added to the organization's responsibility, which used the resources and didn't necessarily allow us to put the money into the base for the ongoing activities. So what I'm saying is, you notice the increase. But at the same time, there were major increases in the pay which we had to absorb.

Mr. YATES. How much of the \$100 million?

Ms. SUTTENFIELD. Of the \$100 million, \$70 million went directly into the cost of pay raises, benefit increases, utilities expenses and rental costs. The other \$30 million went into additional new programs that were authorized by Congress, most of which is for the new Museum of the American Indian.

Mr. YATES. How much did you put to that?

Ms. SUTTENFIELD. At the end of fiscal year 1992, that accounted for \$11 million of the \$100 million.

Mr. YATES. In this respect, I just assumed that, when Mr. Adams said that I was familiar with the statement, I just assumed others were familiar with the statement. Is there any general questioning you want to make as a result of having read the statement?

Mr. COLEMAN. No, go ahead.

Mr. YATES. Mr. Packard? Mr. Regula?

Then you had significant increases for new programs, including \$14 million in 1991 and \$20 million for so-called "other earmarked increases." Now, I know that we in the Congress do a lot of earmarking. But what do you mean by an earmarked increase?

Ms. SUTTENFIELD. Funds that were appropriated for specific programmatic operating expenses. For example, some of the quinquennial programs. For example, there is an Inventory of American Sculpture program at the Museum of American Art. Those would be examples of specific earmarking.

Mr. ADAMS. Another example, Mr. Chairman, would have been about a \$5 million increase in the funds for repair of major facilities.

Mr. YATES. How much?

Mr. ADAMS. About \$5 million.

Mr. YATES. That's fixing the glass roof?

Ms. SUTTENFIELD. Yes.

## CONSTRUCTION PRIORITIES

Mr. YATES. How are the glass roofs, Mr. Siegle?

Mr. SIEGLE. They're all done.

Mr. YATES. They're all done.

Mr. SIEGLE. All done, complete.

Mr. YATES. That's good. So you have no problems. [Laughter.] Does the Renwick still have the perpetual scaffolding around the driveway?

Mr. SIEGLE. They're all down.

Mr. YATES. All down or all done?

Mr. SIEGLE. All down and all done.

Mr. YATES. All down and all done. Well, it sounds good. Well, what does that mean? Does that mean no other capital expenditures for construction? It doesn't mean that?

Ms. NEWMAN. No, it does not mean that.

Mr. YATES. What does it mean, then?

Ms. NEWMAN. We have a series of priority items. One, we have the American Indian Museum Custom House renovation. We have the—

Mr. YATES. Which will cost how much?

Ms. NEWMAN. Over time, \$25.7 million.

Mr. YATES. Over what time?

Ms. NEWMAN. We have planned the prior Federal funding of \$7.4 million, and we have outside funding \$16 million, and in 1994 we have planned \$0.2 million for equipment. Mr. Siegle, please correct me anywhere along the way.

Mr. YATES. Maybe you ought to come and join us at the table, Mr. Siegle.

#### NATIONAL MUSEUM OF THE AMERICAN INDIAN—SUITLAND FACILITY

Ms. NEWMAN. We have the American Indian Museum in Suitland. That's the storage facility. It's a separate item as part of the American Indian Museum, but the storage is separate. And we believe that we need \$50 million for that.

Mr. YATES. Over what period of time? Now, explain something to me. I have a picture of Suitland in my mind consisting of storage cells or storage areas. Why, then, do you have to pay \$50 million to store something there?

Ms. NEWMAN. I will begin the answer. But the facility in Suitland for the American Indian Museum requires more than traditional storage. We need a place where the artifacts can be revered, where research can go on with the artifacts. The American Indian community expressed a very strong preference for there to be recognition of respect for the artifacts. And that requires more than the traditional storage.

Mr. YATES. What does that mean by respect for the artifacts?

Hi, Rick, how are you?

Mr. WEST. Hi, Mr. Chairman.

Mr. YATES. I sense now, I gather from what Ms. Newman said, you are building a whole new museum there to rever the artifacts. Fifty million dollars is quite an expenditure.

Mr. WEST. The figure that was originally projected for that, before we even had the architectural program, was very close to that figure. So the figure that came out of the architectural program is not really that different from the figure which came to Congress initially for that facility, which was around \$45 million or \$44 million or so.

Mr. YATES. Where are the artifacts now?

Mr. WEST. They are housed in the research annex of the National Museum of the American Indian up in New York. It's a part of the Heye Foundation facilities.

Mr. YATES. Okay, they're up there. Now, why do you have to move them down here until your museum is built?

Mr. WEST. The present situation for their storage is really not satisfactory. The artifacts are compressed by a factor of somewhere between five and seven to one beyond the compression they should be under. And so it is very important for us to get the artifacts out of that facility as soon as we can into a more commodious one.

Mr. YATES. Will you explain what you mean by compression?

Mr. WEST. There are approximately 20,000 square feet of storage space in the research annex of the museum in New York. The conservationists and other collections managers who have looked at that collection have consistently said that they are compressed some five to seven times more than they should be and that they need to be decompressed.

Mr. YATES. What is this—you mean by air conditioning?

Mr. WEST. Their packed storage, I'm talking about the physical storage.

Mr. YATES. They're packed in boxes?

Mr. WEST. Yes. And they are just literally, as you know from when you were up there, stacked on top of one another in very, very compressed circumstances. Physically they need to be loosened up and stored in much more commodious space.

Mr. YATES. But this is the way they have been stored for years.

Mr. WEST. It is, and they suffer damage for it.

Mr. YATES. What kind of damage have they suffered? How many of the artifacts have been damaged? What percentage of the artifacts have been damaged?

Mr. WEST. I don't know that I could give you an exact percentage, Congressman, but I think it's clear that especially certain kinds of materials—your organic materials, leathers, feathers, which of course are a significant part of that collection—have suffered damage simply because they have been so compressed and have not had the kind of ongoing conservation that they really need.

Mr. YATES. But Rick, wouldn't it be better to take the \$50 million toward your museum and get that built and put the artifacts in there rather than spending the \$50 million for storage?

Mr. WEST. We can't put the artifacts on the Mall. We simply don't have the space for that. Because that—

Mr. YATES. Oh, I don't mean now. I mean when the new museum is constructed. You're going to put them on the Mall, aren't you?

Mr. WEST. The artifacts?

Mr. YATES. Yes.

Mr. WEST. Oh, no. This is a permanent facility in Suitland. There are two facilities down here that are authorized by our authorizing legislation.

Mr. YATES. Oh?

Mr. WEST. This is not a temporary facility we're building out here. This is a very permanent facility.

Mr. YATES. Well, this is a museum, in other words.

Mr. WEST. They are two parts of the same whole. In other words, the Suitland facility and the Mall facility are two parts of the National Museum of the American Indian.

Mr. ADAMS. Mr. Chairman, I think there is a further point to be made that grew out of the studies that were conducted after the legislation was completed. The available space on the Mall and the restrictions on the size of the building that can be constructed there have made it plain that there will be an enormous crowd load, so to speak, in this museum. And there is no way in the world that a collection of the magnitude of the Heye Foundation Collection could be in the main place on exhibit on the Mall. There is no possibility of doing that.

Mr. YATES. Well, if this is true, Mr. Adams, what does this do to the original figure that was given to us for the construction? If my memory is right that was about \$75 million, of which Smithsonian was supposed to be—you're shaking your head.

Mr. ADAMS. It's a little bit more.

Mr. YATES. That's for the Mall. Now, I was really never aware that you wanted another \$50 million for the storage out in Suitland.

Mr. ADAMS. Well, in the legislation it speaks of \$44 million. So it has gone up a little. But I don't think that's—

Mr. YATES. But who's going to see it in Suitland? This is very much like Mr. Skaggs' extension of Air and Space, isn't it?

Mr. WEST. Mr. Chairman, let me just respond to it this way. What came out of the architectural program for the Suitland Park of the National Museum of the American Indian is a very different kind of facility. It is not simply a warehouse for the artifacts. And I think that what has come out of it is a facility that makes this vast collection much more available to the public and much more accessible to the public. And I think that is its big plus.

What happened was that we indeed had to build into the plan, the architectural program for that facility, other areas that accommodate this increased public access. It is also a facility, I would emphasize, that is at the heart of our effort to distribute the information that is in that museum, electronically and otherwise, to the far corners of this hemisphere. So it is a very important part of the public face of this museum. And it will make this material much more available than it would normally be.

Mr. YATES. What's the total cost going to be of that facility out in Suitland?

Mr. ADAMS. Our proposal is \$50 million for this facility, as opposed to \$44 million in the original.

Mr. SIEGLE. Of which \$2.3 million has been appropriated by you.

Mr. YATES. Well, I originally thought the extension of Air and Space was going to be a structure like a shed housing the Enola Gay, you know. But it turned out to be much bigger than that. Apparently I have the same impression of the Suitland facility as being a storage area like the other storage areas. But that's not true of this.

Mr. ADAMS. There obviously have been changes in conception as has been explained here. But the cost of those has been, I think, kept really very close to the original estimate during the years that have passed since then. I think we have been cognizant of the

budgetary problems, and have not done serious damage to the original request.

Mr. YATES. Have you asked OMB for the \$50 million?

Mr. ADAMS. We have no approval at this point from OMB for our budget.

Mr. YATES. How much have you asked them for?

Ms. NEWMAN. We had asked for \$16 million of the \$44 million estimate, and have advised them of the additional \$6 million required. They are aware that there were some changes in the view of what that facility needed to do.

Mr. YATES. What are we talking about there?

Mr. SIEGLE. For 1994?

Mr. YATES. Yes.

Mr. SIEGLE. Thirty-five point one million for the entire construction program.

Mr. YATES. Mr. Regula.

Mr. REGULA. Thank you.

Nice to see you. Two questions, or one question, two parts. One, what do you estimate the annual operating costs of this facility when it's built, exclusive of personnel, and secondly, what do you estimate the additional personnel costs will be for this, if it's built?

Mr. ADAMS. You're speaking of the entire museum complex, the Mall and the—

Mr. REGULA. No, I'm talking about just the \$50 million addition.

Mr. ADAMS. The MAI facility in Suitland?

Mr. REGULA. Yes. What do we have to anticipate in annual operating costs for personnel and/or heat, etc., in the event this building is constructed?

Mr. SIEGLE. We have that figure, but I don't have it here with me. But we can get that and send it to the Committee. We do have that figure, it's been developed.

Mr. REGULA. Well, if you don't have it, please submit it for the record. Because we're going to be on tight rations here, as the President made it clear last night, for probably many years to come. And whenever you build a building, that's just the beginning.

[The information follows:]



# NMAI CULTURAL RESOURCES CENTER

ESTIMATED ANNUAL OPERATING COSTS IN 1998 DOLLARS  
(\$000s ESCALATED AT 4.5% AVERAGE ANNUAL RATE)

	NMAI	SIL	OPlants	OPS	OTHER	TOTAL
<b>ANNUAL BUREAU EXPENSES</b>						
Program staff	7,850	220				8,070
Administrative costs	1,250	530				1,780
Building management contracts	250					250
<b>SUBTOTAL</b>	<b>9,350</b>	<b>750</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10,100</b>
<b>ANNUAL FACILITIES AND SUPPORT EXPENSES</b>						
Utilities			740			740
Maintenance (OPlants)			800			800
Security				710		710
Overhead expenses (SI support)					490	490
<b>SUBTOTAL</b>	<b>0</b>	<b>0</b>	<b>1,540</b>	<b>710</b>	<b>490</b>	<b>2,740</b>
<b>TOTAL</b>	<b>9,350</b>	<b>750</b>	<b>1,540</b>	<b>710</b>	<b>490</b>	<b>12,840</b>
<b>TOTAL NEW STAFF</b>						
	156	4	13	19	7	199

**351**

Prepared by the Office of Facilities Services

03/26/93

## NATIONAL MUSEUM OF THE AMERICAN INDIAN—NEW YORK FACILITIES

Mr. REGULA. One other thing. Where are these things now that you are going to put in there?

Mr. ADAMS. These are now in the research facility in New York.

Mr. REGULA. Oh, that's the one. All right.

Mr. YATES. Where they are being compressed. [Laughter.]

Mr. SIEGLE. One other thing I would like to add, too, is that in that building, which is a 1920s era building, there is no sprinkler system. And the HVAC system is not an adequate HVAC system for the collection items.

Mr. YATES. Correct me if I'm wrong, but I have the impression that most of the museum people don't want sprinkler systems in the museum, because floods are worse than the fire in most cases.

Mr. SIEGLE. We have sprinklers in almost all of our museums. There are a few places we don't. But in the majority of them, we do.

Mr. YATES. Mr. Regula.

Mr. REGULA. Are you paying rent in New York now?

Mr. ADAMS. No, the building belongs to the Heye Foundation, and became a part of the general agreement.

Mr. REGULA. So the building is no cost, but are there operating costs being paid by the Smithsonian?

Ms. NEWMAN. Yes.

Mr. REGULA. And this new building would just be for that material, nothing additional.

Mr. ADAMS. That's right.

Mr. YATES. In other words, the collection is so large, it needs two buildings, virtually. Is it possible you need three? Would the collection be such that you may need three buildings rather than two?

Mr. ADAMS. I think our studies have been very careful, and this is what we have come up with.

## DEACCESSIONING OF COLLECTIONS

Mr. YATES. Mr. Regula.

Mr. REGULA. Do you ever go through and say well, given the increasing volume, some things have to be discarded? There's no limit to how much you can store. It's like your attic at home. If you move into an apartment, you do some real prioritizing. Do you ever do anything like that, or do you just keep building more?

Mr. ADAMS. Well, the problem of deaccessioning in the museum world is a very contentious problem. I think we may have discussed it here on previous occasions. It differs greatly from one part of the Institution to another.

Mr. REGULA. I can understand.

Mr. ADAMS. I think there would be an enormous outcry if this extraordinary collection would be broken up by any pattern of sale or discard. It's a collection which can never be repeated. I would oppose it strongly and I think the museum world as a whole would regard that as a terrible thing to do.

Mr. YATES. Does your legislation require that the second building be constructed at Suitland?

Mr. ADAMS. I believe it mentions it as being at Suitland, yes.

Ms. NEWMAN. Yes, it does.

## SMITHSONIAN TRAVELING EXHIBITIONS

Mr. YATES. I have in mind the same question that Mr. Skaggs has been wrestling with for some time, as to whether or not the Smithsonian should go national in some of its extensions and expansions, rather than accumulate all of the Smithsonian artifacts and wonders in this local region here, whether the extension ought to be in Colorado or California or Oregon or wherever.

The Smithsonian is a national institution. This exhibit is so spectacular, it occurs to me that perhaps SITES ought to be expanded in another way. I think SITES does a marvelous job, really, in extending the wonders of the Smithsonian throughout the country. And I was delighted to learn that in addition to its usual practice, SITES is now going to use public libraries throughout the country, which I think is a wonderful idea, and small museums for the purpose of showing the people of the country who can't get to Washington what's on view at those museums.

So the second building, having these beautiful collections in there, and they will be on view to the public, if I understand Mr. West correctly, they will be on view to the public, whether that view ought to be Suitland, Maryland, or whether it ought to be some other place. Suitland, Maryland isn't across the street from the Smithsonian.

Mr. ADAMS. I think there are two issues here. With regard to traveling exhibits, there is every expectation that materials from this great collection will circulate through SITES and directly through the initiative of the museum itself. I have no doubt that that will happen. That will not make significant inroads on the storage problem, because the cost of preparing and circulating exhibitions is very large. And with a collection of a million objects, it would be quite exceptional to find more than a few percent of that collection moving at any one time. So that won't significantly change the storage problem.

## DISPERSION OF COLLECTIONS

But the second question you raised probably could change the storage problem, and that is if one were to anticipate a dispersion of the Smithsonian's own resources to Denver or whatever other place it might be, I should say here that the Regents have taken a policy position on that that I won't enunciate that resists moves outside of Washington. But obviously that's a matter which is subject to reconsideration if the Congress decides to—

Mr. YATES. Well, it does have institutions outside of Washington. There is a very fine Smithsonian Institution in New York City.

Mr. ADAMS. There is, indeed.

Mr. YATES. Two of them, now. Because you have the Customs House as well. And you have Ms. Pilgrim's institution, the Cooper-Hewitt Museum.

Mr. ADAMS. Those are regarded by the Regents as an exception rather than as a pattern that they propose to follow.

Mr. YATES. Well, it may be an exception, but it's still the Smithsonian.

## NATIONAL MUSEUM OF THE AMERICAN INDIAN—SUITLAND FACILITY

Let me ask another question. How much of the \$50 million for the second building is allocated for this year's budget?

Ms. NEWMAN. We have requests in 1994. Now with regard to 1994, we were advised not to talk too much about it. But I'll give you a general idea. OMB has requested, since we really haven't gotten past that passback, that we not try to defend 1994. So I just want to be careful about how I give you these facts. I'm not defending anything.

Mr. YATES. Oh, okay. [Laughter.]

No, you're just elucidating. [Laughter.]

Ms. NEWMAN. In 1994, there will be a request for \$5.1 million for planning and design, and \$10.9 million for construction.

Mr. YATES. And what will it be for the following?

Ms. NEWMAN. And then 1995 would be \$16.0 million for construction, and 1996 would be \$6.1 million for construction and \$9.6 million for equipment.

Mr. YATES. All right.

Mr. SIEGLE. Mr. Chairman, the building at Suitland, the collection will be stored in compact type shelving, similar to what you have in a library, where the objects are on shelves and they are compacted so it's—

Mr. YATES. You can't do that. Mr. West won't let you do it. [Laughter.]

Mr. SIEGLE. No, that's the way it's been worked out with Mr. West.

Mr. YATES. What about the tightness?

Mr. SIEGLE. We're talking about shelving. There's a big difference. They're not sitting on top of each other like they are up there now.

Mr. YATES. What about the sideways?

Mr. SIEGLE. That's all right. Sideways is all right, but not on top of each other.

When you say accessible to the public, the objects will for study purposes and so will be accessible to the public and to scholars. But they will not be on display. This is not a display building, it's not a museum in the way that I think that you're thinking. These objects are behind locked doors and they are on shelving.

Mr. YATES. I had an entirely different impression. I thought the public was going to be able to look at these.

Mr. SIEGLE. They will. But not in a museum type setting. They will be accessible if someone wants to see a particular object—

Mr. YATES. You'll unlock the door in order to see it?

Mr. SIEGLE. And take it to a special room with someone there where they can then see the object and so forth. So it's not something where the public would be able to walk through and see the objects on display.

## SIGN IN LAFAYETTE LOUISIANA

Mr. REGULA. My staff tells me that there is a sign in Lafayette, Louisiana that says "Future Site of Smithsonian," building, I assume. What's that about?

Mr. ADAMS. It's news to me. I'm sorry, we—

[Laughter.]

Ms. NEWMAN. That's Link Port.

Mr. TALBOT. Some time ago, the University of Southwestern Louisiana at Lafayette, asked us if we would allow them to put forward a program which linked with our marine station—the Smithsonian Marine Station in Florida—and develop a combined wetland program. And that wetland program is important.

We do this now in Florida, but there are 41 percent of U.S. wetlands lying in Louisiana. So they said "Come and join us, do it here." We discussed this with the Secretary and Under Secretary. They said "Well, you can if it's not damaging to other programs," I think it was said at a previous hearing that we would support it.

We did not put up that sign, I should say.

Mr. YATES. What would the expense of that be, Mr. Talbot?

Mr. TALBOT. I think it was about \$20 million.

Mr. YATES. Paid for by whom?

Mr. TALBOT. They would have requested funding from Congress.

Mr. ADAMS. This plays no part in any planning we have done, or any budgetary—

Mr. REGULA. They are certainly holding it out. They have your logo on it.

Mr. ADAMS. We have brochures that were presented to the Regents not long ago by the city of Arlington, Texas, that spoke of the Smithsonian Museum of Physics. And it came as news to the Regents that that had even ever been conceived by anybody. Logos are available.

Mr. REGULA. You don't control people putting up signs that indicate a future facility of a Smithsonian facility?

Mr. TALBOT. Mr. Regula, I just heard about it a few weeks ago. And I was embarrassed.

Mr. REGULA. Well, you probably want to suggest they take the sign down. And the Fish and Wildlife Service does have a major facility there right now. If there is going to be any kind of program it seems to me that the way to do it would be to co-locate within their facility.

Mr. TALBOT. The concept was that the two buildings are side by side. There is a third building planned by NOAA. We were to do the collection end and help the Fish and Wildlife Service.

Mr. REGULA. Thank you.

Mr. YATES. Thank you, Mr. Regula.

It looks like you may become national after all, doesn't it?

Mr. ADAMS. Well, the question of the long-term trend of the Smithsonian is one that might indeed involve dispersion at some point. As I say, the policy of the Regents at the moment is clearly to resist it. But those things may change over time.

Mr. YATES. In a sense it's how far you interpret the word diffusion, isn't it?

Mr. ADAMS. Let me make clear that the resistance of the Regents is directed toward managing and owning and financing facilities. It's not directed toward various other forms of outreach and cooperation and participation and through SITES or some other—

Mr. YATES. Is it cheaper to run the extension of Air and Space in Virginia?

Mr. ADAMS. We certainly argued very strongly in a number of hearings that we thought it was.

#### SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

Mr. COLEMAN. I was just going to say, I have heard both of you use the term SITES. So it's a word of art, now?

Mr. ADAMS. I'm sorry, it's the Smithsonian Institution Traveling Exhibition Service.

Mr. COLEMAN. That was in fact, I'm aware of the Arlington thing, I was made aware of it by your staff, Mr. Chairman, I thank them for that. I understand and recognize the direction with which you approach that. It would be difficult to discuss and propose dollars for such facilities. At the same time it seems to me then that the term SITES as you used it is critical. I am an advocate of that, and I very much believe that traveling exhibits to local museums are a critical part of what you do. And I was curious about how museums apply to participate in your programs.

Mr. ADAMS. Well, I think it's perhaps the largest such program in the world. I have here some totals of the number of exhibits that have gone to individual states over the last five years under this program, and Mr. Regula, I note that Ohio had 45. Colorado had 21, and one could go on, Illinois had 33.

Mr. COLEMAN. How did Texas do? [Laughter.]

Mr. ADAMS. Texas had 46. In fact, California had more, it had 75. But Texas is second.

Mr. YATES. You should point out that these are rentals.

Mr. ADAMS. They are rentals, but they are rentals at rates that are in fact subsidized, so that it is possible, mainly through the action of this Committee, in fact, for small museums and so on to participate in a way that wouldn't be possible in an unsubsidized rental.

#### FOLKLIFE PROGRAMS

Mr. COLEMAN. How much of a priority is given to the folklife programs and exhibit? Do any of these programs travel? I'm very impressed with the ones here. I would say to you that it reflects ethnic diversity in the United States and I commend you for it. Do any of those travel?

Mr. ADAMS. Mr. Kurin, do you want to speak to that?

Mr. KURIN. The folklife program—each program that's been on the Mall, after it's been on the Mall, especially over the last five or six years—has gone back to the State and been remounted on that basis. New Mexico just introduced legislation last week to remount that program held last summer. Michigan has been doing it since 1987, and many other States too. We work closely with the States doing it. Usually it involves in-kind collaboration on our part, local fund raising, some State appropriations, private support—a kind of a patchwork.

Mr. COLEMAN. Is it possible for you to do a sheet of paper or analysis for us of where that's been, where it's headed? I think disseminating that kind of information would be important. And I think indeed, in order to benefit from the Smithsonian, quite hon-

estly, nationwide, if we had information like that made more available. I think very few people are aware of it.

Mr. KURIN. Sure. In fact, this year we are doing a program on the U.S. Mexico border lands and working with Texas Folk Life Resources and others.

Dispersal of the Festival of American Folklife  
Beyond Washington, D.C.

Remounting sections of the Festival of American Folklife "back home" has proven an effective way of sharing the resources of the Smithsonian with non-Washington audiences. It gives a labor intensive event a second life by reusing its research, design, and its museum quality signs, banners, and publications; it trains people in diverse parts of the country in the art of presenting traditional culture to a broad public audience, and it allows for tradition bearers to receive much deserved honor in their home state.

Recent Festival of American Folklife programs to be remounted back home include Michigan (1987), Massachusetts (1988), Hawai'i (1989), and the U.S. Virgin Islands (1990). There was not a state or territory program in the 1991 Festival, but a portion of the Family Farm program from that Festival was remounted in the Festival of Michigan Folklife in the fall of 1991. Legislation is currently before the New Mexico legislature to remount the successful 1992 program back home. Some of these Festival restagings, as in Michigan, have provided the impetus for year-round cultural research, educational and public programs. Others, as in the U.S. Virgin Islands, have led to legislation and the establishment of local cultural institutions. Generally, the Smithsonian provides in-kind staff support to these efforts, funded largely by states and private sources. We plan to continue to encourage the remounting of Smithsonian Festival programs back home. For example, discussions are underway to restage the 1993 Borderlands program at the Chamizal Festival in El Paso, Texas.

All of the states and territories participating in the Festival receive complete copies of all the research done in preparation for the Festival program and documentation of their participation. The Festival has generated significant documentary collections now housed in many state archives and universities.

Other ways have been found to share the research and documentation done for the Festival with people outside the Washington area. Numerous Smithsonian Folkways recordings with extensive liner notes have been produced from every Festival since 1988. These recordings have proven valuable tools in the classroom for teaching about traditional and grassroots culture. The level of their quality is reflected in several Grammy Awards and nominations.

Every year the Festival generates ancillary projects that stretch the energy and funds put into it. For instance, the 1984 Black Urban Expressive Culture from Philadelphia program led to a traveling exhibition, an exhibition catalog, a National



Geographic article and a training program for young African American documentary photographers. The 1986 program on the occupational culture of American Trial Lawyers is still traveling to county fairs around the country. A 1992 program on White House Workers is being developed into a film and a traveling exhibit for the Presidential libraries, and another 1992 program on Native American music is being transformed into an exhibit for the National Museum of the American Indian.

Numerous interns, undergraduate and postdoctoral fellows have used the Festival and its archives for research and publication. Additionally, the Center originated a Folklore Summer Institute which brings together selected lay scholars from minority communities around the country for training in research, documentation, proposal and grant writing and the presentation of traditional culture. By coinciding with the Festival it allows the students to use the Festival as a living laboratory and as an opportunity for meeting other tradition bearers and professionals in the field of traditional culture. The National Park Service has held its training program for Native American park interpreters in Washington during the Festival for the last two years so that it can utilize the event in the same way.

A list of the traveling exhibitions, books, films, recordings, educational kits, PBS documentaries and articles produced from and about the Festival would be lengthy and include scholarly honors, Academy and Emmy award winners. Proud as we are of the Festival on the Mall and the multicultural tradition bearers it honors, the Festival is just the tip of the iceberg. The federal funds expended on it come back many times over in private, state and income generated funds that support cultural education projects around the country and even around the world.

## INSTITUTE OF THE AMERICAS

Mr. COLEMAN. Does that have anything to do with that Institute of the Americas?

Mr. KURIN. I think a logical tie-in is they both grow out of quincentenary funding, which ended up establishing a lot of ties between the Smithsonian and institutions across this country, as well as the hemisphere, interested in cultural programs.

Mr. ADAMS. In a direct way, the answer is no. The outgrowth of the Quincentenary funding with regard to the Institute of the Americas is that that is now a study that's about to get underway on what form of programs the Smithsonian ought to develop for the long run with regard to Latinos in this country. There will be a study of that, but that's independent of the Folklife program.

Mr. COLEMAN. I wonder if you have established any priorities in that area? Have you done that yet? Are we at that stage?

Mr. ADAMS. At this point, we're bringing together a committee that will make recommendations on options and priorities and so on, and I don't want to go to that committee, which will be a national committee, with a predetermined set of options. So really, we had better come back to that next year, I think, rather than pursue it now.

Mr. COLEMAN. I assume that we're dealing with the expert, perhaps, in our own hemisphere, then, in this institute. I'm interested. I think it's critical as well. I represent the borderlands region, and I can tell you that one of the difficulties has been the education of my colleagues. It is difficult to make them understand some of the cultural diversity that causes even legislation to affect us in a very different way.

It's too difficult to explain, you just don't have enough time. You can't do it in 30 seconds, you're not going to convince anybody of anything. That seems to be the way we do things. So I'm one of those that thinks that you can actually do great assistance to a region of the country in what you do by educating others. So I'm really very interested in this institute.

Mr. ADAMS. Mr. Coleman, knowing of your interest now, I would be happy to stay in touch with you as the plans for this may go forward.

Mr. COLEMAN. Well, I did send you a letter last year, and I was interested at that time in the cultural heritage issues of the Southwest, particularly that of Hispanics and Mexican Americans. I want to put my letter into the record, if I might, Mr. Chairman, at that time, so that we could get your thoughts. I'm not interested in instant answers, but if you would review it, my concern certainly is to how we might effectively highlight the Hispanic contribution in America to this country.

Are there plans to build any museums that you know of for example like those that have been done for Native Americans and African Americans? Any plans to do that with respect to—

Mr. ADAMS. I'm not familiar with any of that. It would surprise me if some plans didn't emerge. But none have been brought forward to us.

Mr. COLEMAN. Thank you, Mr. Chairman.

Mr. YATES. Mr. Skaggs.

## GEOGRAPHIC DISPERSION

Mr. SKAGGS. Thank you, Mr. Chairman.

Good morning. I wanted to pick up a little bit, coming as no surprise to you, on the question of geographic dispersion. Correct me if my memory is wrong, it's been a couple of years now since your letter appeared in the magazine, trial ballooning, an inappropriate characterization, but at least raising the issue.

Mr. ADAMS. Raising the issue, yes.

Mr. SKAGGS. And you have stated that the Board of Regents has come down squarely in favor of a Washington presumption about the facilities. Is there any dissent on the Board about this? Have your discussions literally been pretty much unanimous on the point?

Mr. ADAMS. It hasn't been customary for the Board of Regents to take votes. And there wasn't a vote on this matter. But several speakers indicated strongly their views, such as those I have described. And there was no dissent that was expressed. There seems to be a consensus, yes. And that's been discussed at several Board meetings from time to time. It's come up several times, yes. Not always with extensive discussion, but in comments that were made, yes.

Mr. SKAGGS. When threats appear?

Mr. ADAMS. I don't know about that. [Laughter.]

Mr. SKAGGS. Are the minutes of the Board public documents?

Mr. ADAMS. Maybe I should have Mr. Powers comment on that.

Mr. POWERS. Well, they are made available to this Committee, to Mr. Yates.

Mr. ADAMS. I can quote you from the minutes the policy that was adapted by the Regents on this matter. It's really quite brief. "The Board of Regents considers it to be the policy of the Smithsonian Institution to support other museums by supplying technical assistance, guidance and advice . . . but not to be responsible for the operation and maintenance of such facilities." That is the present position of the Board of Regents. It's a reiteration, I might say, of the policies that I think have emerged in a somewhat similar way almost to the time when Cooper-Hewitt was acquired.

Mr. SKAGGS. I take it that was voted on.

Mr. ADAMS. This was—there was no show of hands, but there was a consensus that this was the feeling of the Board, and no opposition to that exists.

Mr. SKAGGS. An interesting way of establishing policy on such a fundamental question.

Mr. ADAMS. Well, different boards operate in different ways. I don't think anyone is loath to speak up at this setting of the board meetings, and it was certainly done without objection.

Mr. SKAGGS. If the minutes are available, I don't know if it would be easier for your staff or our staff to do this, but I would just be interested in what would be the analog to a legislative history of discussions of this point over the last say, three years, that it has become a focus of discussion.

Mr. ADAMS. We'd be happy to do that.

Mr. YATES. We have them in our Committee files. Staff keeps them and you can see them at any time you like.

Mr. SKAGGS. I was just hoping for help in extracting the relevant portions. And whoever is in a better position to do that—

Mr. ADAMS. Let us do it, it's very simple.

Mr. SKAGGS. And Mr. Chairman, I don't know whether you want to go on to other matters.

Mr. YATES. Sure, go ahead. Explore as you will.

#### FREEDOM OF INFORMATION ACT

Mr. SKAGGS. Thank you.

Last year there was a Federal court decision about Smithsonian's being subject to the Freedom of Information Act. Is compliance with that decision going to cost you very much, and do you have any plans to appeal that decision?

Mr. ADAMS. The question of an appeal is a highly technical one on which I will have to ask Mr. Powers to comment. I think because of the nature of the decision itself, it really is not possible to appeal it. But I will ask him to explain why that is so.

I should say, however, that in general, the Smithsonian, without believing that it is subject to the Freedom of Information Act, has in fact operated as if it were, and has made information available. But Mr. Powers, I wonder if you would explain the legal problem.

Mr. POWERS. Well, Mr. Skaggs, the issue in the case was a request for two or three documents put out by the Inspector General's office. And using our policy of following the Act and the exceptions thereto, it seemed clear to us that reasons of privacy precluded the offering of those documents.

The Justice Department had the case and raised the question of jurisdiction. The judge said "Well, I think we have jurisdiction, and now we'll go on to the merits." We got to the merits and he said "Yes, you properly withheld those documents." We had hoped to appeal the jurisdictional question, but when you win, you can't appeal. [Laughter.]

Now, the present posture of the case is that the plaintiff's attorneys have requested a rather substantial amount of attorneys' fees, even though they lost part of the case. And that is before the district judge right now. And should he grant some of the attorneys' fees, that will present an appealable issue.

Mr. SKAGGS. That does then get to the jurisdictional question?

Mr. POWERS. Yes, and the Justice Department is going to appeal it, I'm sure, if that happens. So we'll get it straight.

Mr. SKAGGS. So we really don't know where it's headed, the fundamental question of jurisdiction?

Mr. POWERS. Not now. But as the Secretary said, we have not had a tremendous rush of requests for information. There are always a few outstanding and some of them are substantial and take a lot of work. But we are carrying on in the same way we have for 25 years.

Mr. SKAGGS. I just thought it might be determinative of what I think we have all recognized to be a kind of ambiguous status that the Institution enjoys.

Mr. ADAMS. Suffers from or enjoys. It changes from time to time. [Laughter.]

## VOLUNTARY CONTRIBUTIONS

Mr. SKAGGS. I was also wanting to ask you about the I'm sure very painful decision to start asking for contributions. The up front cost of that was reported, I think, at \$60,000. I assume you are optimistic that that's going to be more than recovered in the first year, and this will net the Institution significant additional resources. If you could parse out a little bit for us what the rationale was for which museums would be selected to request contributions, does that money stay in their accounts or is it available to the Institution overall? How are you going to approach that?

Mr. ADAMS. Well, let me say first with regard to the general decision that the absence of any opportunity to make contributions to the Smithsonian is something that has been noted by hundreds and hundreds of visitors over time who have come forward. And at a time when the Federal budget is obviously under strain, I don't think that the Smithsonian is credible not to explore the question of whether this is a significant form of supplemental funding.

It's because of the sense that really here is a heavily subsidized, Federally subsidized program that people enjoy that is comparable to the national parks, in fact, where you have to pay to enter these days. It's some test of public response to donations. It's something that we have an obligation to pursue. We don't know. We really don't know. We have looked at a lot of prepared material, and it doesn't help us very much because the circumstances are so special, how much will emerge from the program.

And clearly if there isn't a substantial return over and above the cost of running the program, we would want to discontinue it. There is no point in asking the public to provide funds to maintain a donation program that's merely sustaining itself, or not doing much more than sustaining itself. So we start off with an understanding that this is an experiment. It's a test. We call it a demonstration. But there is a significant possibility that we will continue it, based on the way the results turn out.

As to the choices of places to test it, we obviously were interested in seeing what would happen in our largest, best attended museum, the Air and Space Museum. But we were also concerned not to have donation boxes so located that visitors would encounter them one after another in their normal course. That's what led to the suggestion that try it at the Zoo, for example, or to spread out the places where it was being tested in such a way that each would likely be a fully independent encounter, presenting a visitor with an opportunity to make a donation.

That's the basic principle.

Mr. SKAGGS. And the monies collected will remain at that profit center, if you will?

Mr. ADAMS. Basically not. They will remain for a public service in the exhibition program and related activities. But not necessarily in those particular places.

Mr. SKAGGS. I know in my business, for instance, to the Metropolitan Museum of Art in New York, which has a voluntary contribution, voluntary in quotes, there is a sense of, I think, fearsome intimidation that one encounters upon coming up to the contribution counter. And I'm delighted to make my contribution. I just

wonder about those that really want to get in that are not as able to contribute as I may be, and how you are going to deal with the psychology of this.

Mr. ADAMS. We are conscious of the Metropolitan example as something that we do not want to follow. And it has been made clear in the Regents' deliberations and in all of the staff preparation for this that donation boxes will be nowhere near the entry doors. They will be in the interior of these museums, and you will come to them as an entirely separate encounter. They will be unattended. It isn't that someone will be there seeing whether you put anything in or not.

So I think we have separated this entirely from the tendency of the Metropolitan.

Mr. YATES. I think that is a mistake. I think that the people who were going to contribute may not contribute if you got them inside. If you got them at the entrance it calls their attention to the fact that it's up to them, without the compulsion that I encountered, too, when I visited Metropolitan. They've got an armed guard there daring you. [Laughter.]

Mr. SKAGGS. You have to show your tax return.

Mr. YATES. That's where people would expect to make the contribution, and I think that after they have seen all your exhibits, they are not likely to make a contribution.

Mr. ADAMS. Well, you may be right, Mr. Chairman. I think the choice to separate it substantially from the entrances reflects our ambivalence about it.

Mr. SKAGGS. And I ache for the kind of predicament that you are in on this. My question, intended it or not, was not intended to be critical of the experiment but of wanting to understand how you are going about it. I wonder if there is a happy medium that would avoid the intimidation and not be so submerged that it may not get results. I also wonder whether you could maybe have two boxes, one for regular contributions and one for people who support dispersion of the collection. [Laughter.]

Mr. ADAMS. I don't think our discussions have spoken of the number of feet that would separate the boxes from the door. Perhaps somewhere in the course of the experiment we will try edging it a little closer to the door.

#### DISTRIBUTION OF VOLUNTARY CONTRIBUTIONS

Mr. YATES. May I ask a question on this subject? The Smithsonian, if I remember correctly, the Smithsonian museums pool their funds for acquisitions.

Mr. ADAMS. That's right.

Mr. YATES. One museum gets a little bit one year, another museum gets a little bit. Is the same principle followed with the collections? Do museums all get their share of whatever the collections may be? Are these collections going exclusively to the museums because they are the ones making the collections?

Mr. ADAMS. You're speaking now of the collections in the donation box?

Mr. YATES. Yes.

Mr. ADAMS. No, that will become——

Mr. YATES. That goes into the general treasury of the Smithsonian?

Mr. ADAMS. For purposes of exhibition and support of public programs.

Mr. YATES. Thank you.

Mr. SKAGGS. On this point again, a freshly positive thing that the Metropolitan does is give you one of those little lapel pins. One can demonstrate one's philanthropy a little bit for the day, anyway, with that. I would think there might be some marketing advantage. I don't know if you have any plans along those lines.

Mr. ADAMS. For the moment, Mr. Skaggs, we have rejected the idea. That becomes a little bit more compulsory than what we are testing here. We may move in that direction at some point.

Mr. YATES. I think it's a good idea. Not only that, I think it advertises the Smithsonian.

Mr. ADAMS. There is that advantage as well.

Well, we'll be glad to brainstorm with you—

Mr. SKAGGS. You have the support of this Committee for—

Mr. YATES. Well, when you have the insignia of the Smithsonian, I mean, if you were to ask the person where he got it, he would say "I paid for it." But that's fine.

Mr. SKAGGS. You would have to staff boxes and all the rest.

Mr. ADAMS. We need to know more about how the whole question of donations to the Smithsonian is perceived by the public, which probably believes that it's paying for the Smithsonian through its taxes. I think we need to know more.

Mr. YATES. We have always taken the position, we in this Committee have taken the position, Ralph isn't here, that Federal museums are to be free. But then the Park Service had so many expenses that we gave in on the parks. Because they needed the money. And then I assume, as I look at the expenses of the Smithsonian, there is no doubt you're beginning to feel the pinch, too, and you need money that we can't afford to give you through Federal appropriations and which you haven't been able to get through private donations, the kind you have enjoyed in the past.

Mr. ADAMS. Well, let me say that I think we are doing very much better with regard to private donations, and I think with the new Smithsonian Fund for the Future that our National Board has agreed to set up it will do still better.

Mr. YATES. We will take that into account as we make our appropriation. [Laughter.]

#### ETHNIC DIVERSITY

Anyway, I just want to supplement what Mr. Coleman has asked about, the ethnic question. You have received a request from Congressman Torres, who had certain questions submitted to you for reply into the record, and I'll provide that now.

[CLERK'S NOTE.—Congressman Torres's questions to be included with those of the subcommittee and other Congressmen.]

#### UNCONTROLLABLE INCREASES

Mr. YATES. Mr. Packard.

Mr. PACKARD. Thank you very much, Mr. Chairman. It's a pleasure to sit with the distinguished people of such a remarkable institution. And I presume it's difficult for this Committee to say no on budget issues to such a remarkably popular program. It's probably a little bit awkward, but it is hard to say no on budget issues in the past.

I am concerned, though, as I become an appropriator, when I see uncontrollable increases listed. I need to know what uncontrollable increases, are. And also, I would be interested in some of the new programs you had listed in your last year's budget and your program increases. But particularly, what do you list as your uncontrollable increase?

Ms. SUTTENFIELD. Actually, a more descriptive term for what these uncontrollable increases represent is "mandatory costs" that we must cover, such as mandated salary increases (i.e., cost of living increases, what is referred to as step increases that are given to employees), escalating costs of health insurance, the costs that we must cover to take care of utilities (i.e., heat, light, power and so forth), and rental costs that we have for leased space where periodically there is a certain amount of escalation that we must cover. So it's really mandated cost increases and that's where the term uncontrollable comes in. We really have little ability to control these costs.

Mr. ADAMS. Some of these, Mr. Packard, are moving targets. Take for example some of the regulations with regard to employee and visitor health and so on. As the standards are changed by EPA for the amount of lead that is permissible in drinking water, facilities that were adequate under the older standards now need to be changed. So you have problems of that kind that are also mandated.

Mr. PACKARD. Last year, if my calculation is correct, your request was about a 17 percent increase over the previous year's appropriated levels. I don't know what your request to OMB is this year for the 1994 budget, I didn't see it in your statement. Did you make a request at this point?

Ms. NEWMAN. We made a request, and we are expecting a passback. When we get the passback, we will go back to them in the context of the 1993 appropriation plus our restructuring proposal. So what I'm saying to you is, there was a request made to OMB.

Mr. PACKARD. What was the request?

Ms. NEWMAN. Well, it was about—yes. We would have to—

Mr. PACKARD. Make that available for the record, please.

Ms. NEWMAN. At some point. I was serious when I said earlier we had some instructions from OMB that we should not be out talking about it.

[CLERK'S NOTE.—Smithsonian's FY 1994 Budget justification will be submitted following the President's Budget submission.]

#### SMITHSONIAN RESTRUCTURING PROCESS

Mr. PACKARD. I think you have set out on a downsizing process. And obviously that's appropriate because of what President Clinton said last night. I think every agency needs to feel that there are simply not going to be the funds available for virtually any pro-



gram as attractive and popular and as useful as they are. Could you explain where you are at on that process and what we can expect and when we will see a final report?

Mr. ADAMS. I think I will ask the Under Secretary to begin with, to talk about restructuring as the objective.

Ms. NEWMAN. I guess first of all I would say that, how do you restructure an organization such as the Smithsonian in the face of declining resources or in the face of changing priorities. You have one option, of waiting until you actually have the number and then acting on that. The other is planning ahead and recognizing that it is better for an institution over a period of time to restructure so that it has control over what in fact is the outcome.

The Institution has begun a process of asking tough questions about whether or not the priorities of the past represent the priorities of the future, whether the organization is structured in a way to address those priorities, and do we actually have the resources to support the structure as it has been in the past. The process has been one of the Secretary meeting with the assistant secretaries and the bureau directors.

At first, the first set of meetings were looking specifically at the trust fund. But then following that, there were a series of meetings that I had with the bureau directors and with the assistant secretaries. I met with all of them with regard to their views of how they would handle a 10 percent reduction, how would they handle a 10 percent increase, to what extent do they have views about other parts of the organization and how that ought to be restructured. Based on those conversations, we put together a proposed restructuring and reprogramming set of recommendations that then we submitted to the bureau directors and to the assistant secretaries for their views.

And as you can imagine, we had very strong defense of the positions that the bureau directors had originally submitted, defense of their existing programs. And there is an obligation in the process, though, at some level, to make tradeoffs. Within the bureaus, they have to make tradeoffs within their departments. In the Institution, tradeoffs have to be made. And in the discussion of the tradeoffs, part of what you look at is the extent to which at any given time an organization can meet its priorities without total disruption of that organization.

So if you look at the set of recommendations that were made to the Secretary, you will find recommendations for reductions in certain areas and add backs in certain areas having absolutely nothing to do with the quality of work that was going on, or any assessment of the extent to which people were managing well, but rather the extent to which they represented the Institution's priorities and they had an ability to restructure without major disruption of the organization.

We recognize that over a two or three year period of time the Institution is going to have to restructure. The Museum of Natural History, for example, has recognized its needs and has conducted on its own a series of studies by external evaluations to determine whether or not the research represents the research of the future.

What I am suggesting to you is that we knew, given the budget levels from the Federal Government, from our income from busi-

nesses, from fund raising, that in addition to our having to ask questions about priorities, we were going to have a different ability to fund those priorities. And we were going to have to look at a different way of doing business. And we are in the process of waiting now for Congressional approval or some signal back from Congress with regard to the proposal that we had for reprogramming.

I would say that if you talk with many of the bureau directors here they would agree that they had some involvement, but they would not agree that they had total impact on the outcome. And I think that that is human nature. Because if the outcome does not necessarily reflect the requests of each and every organization, which it cannot, if you have limited resources, there will be people who will probably view the process as somewhat flawed.

I think the most that we can do is to continue to have open discussion and debate and involve the assistant secretaries and their judgment and the Secretary's judgment on how do we make the proper tradeoffs. And it is not easy.

Mr. PACKARD. Do I take from that, then, that you have no definite completion time for the report?

Ms. NEWMAN. We have a report that is here with regard to 1993. If that recommendation is approved, it will have some impact on what we will be asking for in 1994. And I will say one other thing. When we were going through this process, we realized that there were a series of questions for which we did not have answers. So that in addition to our having a set of recommendations, we have a series of studies.

Now, I know people get tired of studies, and they say we already know that. But it was our feeling that we needed to pull together the information that was already available and look at it in the present context to help us decide with regard to 1994 and 1995 and 1996 how we ought to address certain issues that came out in the discussion of the Institution's financial situations. Those reports had dates assigned to them. We can make the due dates available to you. And they will help inform the process for the future.

Mr. ADAMS. Mr. Packard, may I add just a note to that?

I think what we have done in effect is to put a process into place that does involve general discussion, but also involves attention to priority setting and so on. We now will need to be responsive to the direction of the White House and the Congress as to the level that is set for us by these larger forces that are clearly at work in the economy as a whole. And without our taking this restructuring step, we would have had no way of intelligently responding to these pressures. I think we will obviously do what we have to do under the new circumstances.

Mr. PACKARD. I think it's very appropriate that priorities be left to the agencies, and then let us work within those priorities if we can.

President Clinton announced last night and even previously that he has made significant cuts at the administrative level. Has that affected your agency?

Mr. ADAMS. We're waiting to get a passback so that we know what number—

Mr. PACKARD. I'm talking about personnel cuts now.

Mr. ADAMS. We're assuming that there will be a scaling back of personnel in the Institution. We're hoping that it can be done by attrition, but until we have some real numbers to work with, I can't answer that.

Mr. PACKARD. Thank you, Mr. Chairman. There's a vote on.

Mr. YATES. Do you want to go vote? I'm coming back. I told Mr. Skaggs to go and he can ask some questions while we're voting and coming back.

Mr. PACKARD. That will be fine.

#### DISPERSION OF SMITHSONIAN FACILITIES

Mr. SKAGGS [assuming chair]. I will try in reconvening not to ask questions that go beyond those at the table, since most of those at the table have left for a moment.

Mr. Secretary, I wanted to pursue at a little bit greater length not only what may have happened with the Regents, but more broadly your current thinking about the issues inherent in dispersion and fulfilling the Institution's national responsibilities. So if you have some further thoughts on that I would be glad to hear them.

Mr. ADAMS. Well, I would be happy to enlarge on this. I think you understand that the policies of the Institution are laid down by the Regents, and I have described what those policies were as they exist now. But let me say that the Smithsonian is a living institution, and it changes through time and we need to recognize that very little is engraved in stone, so to speak.

#### 1947 REPORT ON SMITHSONIAN FUTURE

I recently had occasion to look at the brief report of a distinguished outside committee that was appointed by the Regents a little less than 50 years ago, in 1945, looking at the future of the Institution and reported back in 1947, 45 years ago. The interesting thing in that report was that it viewed the Smithsonian's museum responsibilities as essentially those of maintaining national collections for specialists, and not as a great museum for the public, which will come as a complete surprise to those of us who live in Washington today or who come to Washington from all across the country.

Similarly, the committee expressed its skepticism that the Smithsonian ought to engage in the National Zoo. That was a public spectacle. Its research implications, its conservation implications, were totally unrecognized at the time and it was seen therefore as something that was more in the nature of entertainment and not within the scope of the Smithsonian.

I mention these two examples only to say that we evolve at a rate which is really quite extraordinary over time and then find ourselves surprised to look back and see what was taken for granted some years earlier.

Mr. SKAGGS. This was 50 years ago?

Mr. ADAMS. This was 45 years ago. And I say that because it seems to me that questions will unquestionably arise over less than a 50 year period, and I would guess substantially less about whether the Smithsonian remains exclusively in Washington, except for

these New York ventures, or whether it becomes a different kind of a more nationally distributed institution. I don't want to predict how that will come out.

There is a National Capital Planning Commission study that is ongoing and I believe soon to be made public, that will discuss the long term plans for the development of Washington. It seems to me rather unlikely that for the indefinite future, no matter how the definition of the Mall changes, museums will continue to be added in Washington rather than some other town for what is after all a national resource paid for with the taxes of the entire country.

At the time of the proposal that you made with regard to Stapleton Airport at Denver, I had a letter from the Western Governors Association expressing some disquiet over the concentration of museum resources in Washington. Sooner or later, that issue will arise and become one of real concern. I don't think we're at that point at the moment.

But I certainly wouldn't want to say that this is something that has been settled for all time. That's not the way the Smithsonian has developed across the years. In the initial focus of the Smithsonian, 145 years ago, there was little thought of its being a museum at all. That happened rather accidentally. Obviously, I'm reflecting my own ideas on where this might develop over a lengthy period of time. I'm not trying to change the existing policy of the Regents as it exists at the present.

Mr. SKAGGS. I don't know whether there is a population geographer in the audience or not. My memory is that the population center of the country is now somewhere in Kansas or western Missouri, which says something about that western more than half of the country. And as you know I have both a parochial interest but I hope also a generic interest in finding a way to address the issue rationally so that to the extent any of these things can be planned and not accidental, if you are able to do that, you might not merely have some site somewhere picked by Congress and forced down your throat that may be way less than ideal as a first step in exploring a different philosophy.

#### PROBLEMS FACED BY SMALL MUSEUMS

Mr. ADAMS. May I follow that up in a somewhat different direction? One issue of course has to do with distribution of the dispersion of major facilities. But another issue that may very well be the direction in which we move through time, involves a recognition of the special problems and challenges that small museums face.

Small museums in many ways have limitations on resources that are quite extraordinary. One could at least imagine that the direction in which we developed involved networking more effectively with small museums. That's a pattern which is likely to be the case with the African American museum, for example, because there is an African American museum association with mostly rather small museums involved in it.

And one could see a pattern of dispersion involving special linkages with smaller museums rather than development of major free-standing facilities, so to speak. I think that would be also the case

with regard to Native Americans, because the legislation again anticipates that we will have special linkages with Native Americans.

#### SMITHSONIAN DISPERSION—INFORMATION TECHNOLOGY

Mr. SKAGGS. One of the problems that you all identified as we debated the question of the Air and Space annex was its stretching of resources past, what you identified as sort of an efficient, cost-effective point. I still have some questions about that, as you know, but I just wanted to use that as the predicate for a question to you about whether you have any longer range planning activities underway that really would look 10 years down the road, particularly at where we will be with communications and information technology and the extent to which those developments might largely address the concerns that you've had about people on site spread around the country.

Mr. ADAMS. I think we are very cognizant of the enormous impact that microelectronic advances are going to have on many of the ways in which we do business and communicate information about our collections and so on. In fact, this was a subject of discussion at the last meeting of the Regents, and I have just finished another column for the magazine that pursues this question.

So it's very much on our minds. We have a number of systems in place now that affect our library and that affect certain aspects of our collection that are still very small scale, and only beginning to develop the potential here. It's an expensive thing to develop, and it can develop only over time, and I doubt personally that we are going to be in the forefront of it, because the constraints on our resources are such that I think we will probably be relying on other kinds of ventures to make the primary discovery of new software and introduce the fiber optic cables that make this all possible and so on.

But clearly it's going to change the way in which the Smithsonian operates in far less than 50 years.

Mr. SKAGGS. One thing you're looking at, not just in terms of making your artifacts and information more accessible, but I was trying to take the tack of looking at it as a management extension tool so that your hurdles that you pose—

Mr. ADAMS. I understand your point. It's an interesting suggestion. We haven't had any studies that touch on that. But it's quite obvious that there will be an impact on the way in which more remote facilities will be or could be operated. I wouldn't want to predict what that is at this moment.

Mr. SKAGGS. Our debate would perhaps be even better informed if you had been able to do some head scratching about that.

Mr. ADAMS. I think that's a useful subject to pursue at some length. But I certainly can't pursue it here today.

#### NATIONAL AIR AND SPACE EXTENSION

Mr. SKAGGS. No, I meant in perhaps a couple of years, if we're all still around here then.

What are the Institution's plans as far as requesting any Air and Space annex planning and construction plans for 1994?

Ms. NEWMAN. Well, as I did not answer the earlier question, we would really be looking at a million dollars.

Mr. SKAGGS. Same as we got last time.

Ms. NEWMAN. Yes.

Mr. SKAGGS. Is that site specific to Dulles?

Ms. NEWMAN. We would be looking for a million.

Mr. SKAGGS. That is site specific to Dulles?

Ms. NEWMAN. I didn't say that. [Laughter.]

Mr. SKAGGS. So it's not site specific?

Ms. NEWMAN. I didn't say either. [Laughter.]

Mr. YATES [resuming chair]. I think I'll stay and enjoy, too.

Mr. SKAGGS. Mr. Chairman, it reminds me of the way we have handled the reserved water rights question on Colorado wilderness. It neither is nor isn't, and if anybody tries to go to court to prove it, they don't have any jurisdiction. [Laughter.]

#### SMITHSONIAN FACILITIES AT SUITLAND

Mr. YATES. I have to go back to the money. Let's talk about other facilities than the Indian Museum. We haven't talked about traditional storage space at Suitland. And at the recent Regents' meeting, the Board approved a first phase of a storage and research facility of 400,000 square feet to serve seven bureaus, American History, Anacostia, American Art, the Portrait Gallery, Hirshhorn and Sackler.

Now you want \$5 million in this budget for this new enterprise. You were not here, Ms. Newman, when we built the original installation at Suitland. I remember it very well as do some of the others who were here. I think Mr. Ripley was the Secretary then. It was supposed to take care of the needs of the Smithsonian almost into perpetuity. Somebody is shaking their head back there.

Mr. ADAMS. I'm just surprised to hear that.

Mr. YATES. Well, no, I remember, as a matter of fact, Mr. Ripley came to me, they cut their request, they cut Smithsonian's request, Smithsonian cut its request from \$27 million to \$22 million, and I put the extra \$5 million back. I said "You're going to need this for further storage." And they were building these shells out there that they could add to, but they didn't think they would have to. But now apparently you have to. Because if I understand correctly, you want to spend, for the next decade, \$197 million for this.

Mr. ADAMS. Mr. Chairman, as you no doubt know, we experienced some tornadoes out at the Suitland complex.

Mr. YATES. I wasn't really aware of it. You mean it tore down your buildings?

Mr. ADAMS. It tore down the sides of some buildings and tore the roofs off some and so on. So I have had occasion to go through the conditions of storage of part of the collection of American history and some of the other bureaus that keep material in World War II steel sheds out there.

Mr. YATES. When did this tornado take place?

Mr. ADAMS. In November.

Mr. YATES. I really wasn't aware of it.

Mr. ADAMS. Well, you will be when you get the bill. [Laughter.]

Mr. YATES. You mean, there's extra beyond this?

Mr. ADAMS. There are major repairs we have had to conduct out there. And there was a problem with asbestos contamination as a result of the tornado.

Mr. YATES. How did that happen?

Mr. ADAMS. These sheds were lined with asbestos back in the 1940s. And when the roofs blew off, it blew the asbestos all over the neighborhood.

Mr. YATES. Well, that's impossible, because these weren't constructed in the 1940s. That's why I'm so surprised when you tell me that there is asbestos out there.

Mr. ADAMS. These are not the buildings—no, no, these are temporary storage sheds in which a large part of the collection—

Mr. YATES. I'm sorry. There are two groups of buildings you have out there. I'm talking about the new storage. You mean you still use the old storage as well as the new storage?

Mr. ADAMS. Yes. And that would have been during Mr. Ripley's day. And I don't know how it emerged that we would never need any more.

#### STORAGE CAPACITY AT SUITLAND

Mr. YATES. Well, because apparently you had the old ones, I should have known about the old ones, too. But the new ones were supposed to take care of it.

Mr. ADAMS. Perhaps we could ask Mr. Talbot to speak to that.

Mr. YATES. Mr. Talbot wasn't here then, either.

Mr. ADAMS. No, but as to the availability of storage space.

Mr. TALBOT. Just to say that when they put forward the requests, as I have been told by my own staff, it was to last for 20 years, until the turn of the century. And looking at the problems that we face now with the biodiversity issues and collecting in rain forests and trying to find out what's out there, we probably will run short again in about eight to ten years. And that is beyond the original life of the building which was 20 years.

I think it's legitimate to say that if you run big museums you do face storage problems. That's why I think we will run out of storage space about that time. And I'm sure other bureau curators who also use it will confront the same issue.

Mr. YATES. I guess a major part of the problem is the fact that the Smithsonian is a growing institution. You just can't hold it back.

Mr. ADAMS. Well, it's particularly the case, Mr. Chairman, in the field of the studies of global change and all the concern that's arisen over biodiversity and so on. This is the largest collection in the world, has great importance as a standard and as a place to which people can come for reference material and so on. So I think it would be an inconceivable loss to science to see any attempt to prune that collection. That storage problem is going to grow, and should grow.

Mr. PACKARD. Mr. Chairman?

Mr. YATES. Mr. Packard.

Mr. PACKARD. Just curiosity again, someday I'll have to go visit your storage places. It's probably like going through another museum. One of your pictures showed some automobiles there.

Well, I hadn't even thought of that being a storage item for the Smithsonian. I suppose you do store virtually everything.

Mr. ADAMS. There's nothing you won't find somewhere under Smithsonian storage.

Mr. YATES. You should go through their gem collection. It's a gem. [Laughter.]

Mr. PACKARD. I'll bet.

#### FIVE-YEAR CONSTRUCTION ESTIMATES

Mr. YATES. It's an amazing institution, just amazing. And it's becoming an expensive institution, and really necessarily so. Because it is one of the great intellectual as well as aesthetic institutions of the country, of the world, rather than the country. If you look at these figures you become somewhat frightened, because you see—if this book here is correct—Choosing the Future, you propose to spend \$197 million at least over the next 10 years. Is this a correct estimate still?

Mr. SIEGLE. Mr. Chairman, since Ms. Newman has come we have formed a capital planning board which she chairs, made up of the assistant secretaries. And there has been a five-year plan put together for capital development. And we have those figures on the next five years, 1994 and the next five years after that.

We have also—

Mr. YATES. And what figures are they?

Mr. SIEGLE. Four ninety-two.

Mr. YATES. Four hundred ninety-two million dollars?

Mr. SIEGLE. Right.

Mr. YATES. Explain that figure. I am a little startled by that.

Mr. SIEGLE. Can I give him the 1994 figure?

Ms. NEWMAN. Yes, go ahead.

Mr. SIEGLE. The 1994 figure is \$35.1 million, and then 1995 is \$34.8, 1996 is \$34.1, 1997 is \$56, 1998 is \$66 million dollars. Those include the projects such as the Museum of the American Indian, the East Court infill, the first building at the collection and storage facility at Suitland, and then our less than a million dollar alterations and modifications projects that are about \$4.5 million per year.

Mr. YATES. I think, as I review these figures, we had better look at your figures after we get the budget from OMB, really. See what OMB does with those figures. They are presented with the same problems that we are faced with for making the original cuts. I want to see what they do. So I think I will defer further questions on construction items until we do get that budget from OMB.

#### STATE OF SMITHSONIAN MUSEUMS

So I do think I ought to go to what's happening with the Smithsonian. I think perhaps I ought to ask Mr. Freudenheim, what's happening with your museums, Mr. Freudenheim?

Mr. FREUDENHEIM. Well, I would say that in spite of the gloom and doom of the figures, the museums are all really thriving. They are wonderful places, and the directors can speak about them more eloquently than I can. But every one of them has great programs and in spite of its fiscal constraints, they have good exhibits. Most



of them manage the collections well and are in basic good health, I would say. I want to make sure we get that on the table along with all the other news.

Mr. YATES. That's good news, a contrast to what we have been hearing up to now.

Are you curtailing your activities? Would you have expanded, did your museums expand their operations? Did you have more money?

Mr. FREUDENHEIM. I think it differs from museum to museum. Yes, in some ways there are curtailments that we think are capable of being absorbed without a lot of problems. For example, exhibits running longer than they used to. That's been going on for some time, and you need to talk with the directors about that. The Museum of African Art has had longer exhibitions. The Sackler Gallery has had exhibitions on for a longer time. The Cooper-Hewitt has had exhibitions on for a longer time.

That means that we don't have to keep changing it, because the costs of doing all that go down. And we don't think there is a great deal of damage to the impact on audiences, because especially in Washington we are dealing with a very large number of people who are one-time visitors, although for people that like to come back all the time obviously there is some impact.

So in that sense, yes, I think some of our museums are curtailing presentations of various kinds. But I think, I'm very proud of our museums, because I think they are learning to do as much or more with fewer resources, and it's part of the challenge of working in this particular climate. And I believe our responsibility is not to make this problem evident to the public. In other words, it's an internal problem, we all know about it, we all have to deal with it.

But it's our job, we're a public institution, and we can't lay that problem on the visitor walking through the door. And I really believe that in general, we have succeeded at that very well. And that's a tribute to the quality of the people we have in our museums.

Mr. YATES. I don't think there is any doubt about that. We have a wonderful group of people who do that.

#### NATIONAL AIR AND SPACE MUSEUM

Perhaps I ought to ask your associates about this. Air and Space, for example. Mr. Harwit, can you echo Mr. Freudenheim's words on this? Are you doing as well as could be expected? Are you doing as well or better with less money?

Mr. HARWIT. Well, I think we have to be more ingenuous in raising more money. Most of the exhibitions we put on are largely funded by private donors or industry. And we have found in the last couple of years because of the economy, where Europe was not in as great straits as we were in this country, that we have had contributions from foreign sources as well.

We have been able to put on some striking exhibitions. This year we had one that dealt with some of the really interesting sociological questions that come out of science fiction and how they influence public thought. It was based around the television series Star Trek. Within 11 months, we had close to 900,000 visitors, making

this the most popular exhibition the Smithsonian has ever had. We had to erect a new system of free passes so that we could watch safety regulations and not have too many people in the Gallery at any given time.

We have now opened a new exhibition with the help of the Kingdom of Spain that deals with the future of space exploration, asking what would Columbus do if he were living today. What would he think of for the next 500 years? What are the problems that humans and machines will face if we seriously think about space exploration?

For example, we all know about the stresses on the human body due to weightlessness, due to energetic particles in space that penetrate the space capsules and can give you radiation dosages as large as those that you would have had at Hiroshima, whenever the sun has a major outburst of radiation. That sort of thing sets youngsters' minds going.

So we try to not give a glossy picture of space exploration in the future, but ask what is in store for this Nation, what will the future of this Nation be in terms of the solar system exploration, or exploration of the whole galaxy. The latter would have to be an enterprise that would have to require millions of years, just because of the vast distances. Is it desirable, even?

Mr. YATES. Right. We're going to have that fight on the floor over here over the space station.

Mr. ADAMS. Not our space station. [Laughter.]

Mr. HARWIT. You have to be thought provoking and balanced.

Mr. YATES. I was wondering whether Mr. Smithson's admonition about the diffusion of knowledge extends to space.

Mr. HARWIT. Sure. [Laughter.]

Mr. YATES. He would have had to give a lot more than half a million dollars. [Laughter.]

Mr. HARWIT. Curious and wonderful things.

The place where we are hurting is where we have the least control, and that is in the collections that we have, and taking proper care of them. And I thought it might be a good thing for you to see what we are really talking about. For example, here is a picture of the Caroline, President Kennedy's personal plane when he was President. Here is a plane, a 1912 Benoit plane which we restored—

Mr. YATES. You mean this was not Air Force One?

Mr. HARWIT. He used it during his campaign.

Mr. YATES. Well, then it wouldn't be Air Force One.

Mr. ADAMS. Air Force One was the Government plane.

Mr. HARWIT. This is a plane which we restored in 1982, and already the bad conditions of the storage that we have out at our Garber restoration facility have led to deterioration and damage.

Mr. YATES. Is this the same plane?

Mr. HARWIT. No. This is a 1912 Benoit, a French plane. We restored it in 1982, but because of the storage conditions out there, it's already in bad shape.

Mr. YATES. The storage conditions out where?

Mr. HARWIT. At the Garber facility in Suitland. This is the engine of the Enola Gay where birds have nested, because they can come into the building—

Mr. YATES. It's a much better use——

[Laughter.]

Mr. YATES [continuing]. Than dropping the atomic bomb.

Mr. HARWIT. This is what looks like a 1890s sweatshop where we do the etching and acid baths for cleaning the metal frames. Here's another shot of it.

Mr. YATES. I thought your facilities at Suitland were much better than those.

Mr. HARWIT. No, these are typical out there. There are cracks around all the doors where insects come in.

Mr. YATES. Is that Mr. Siegle's fault? [Laughter.]

Mr. HARWIT. No, I don't think so. [Laughter.]

It's simply that these buildings were built as temporary buildings in the 1950s. They are now 40 some years older. There are holes in the ceilings which are rusting. The rust drops down on the airplanes; there is corrosion.

Mr. YATES. That's why you need the \$197 million, isn't it?

Mr. HARWIT. So storage is our main problem.

Mr. YATES. Do these artifacts deserve to be saved?

Mr. HARWIT. Absolutely.

Mr. YATES. They do.

Mr. HARWIT. You asked earlier about whether there is any kind of a plan. Our museum did two studies, one by the Aeronautics Department, on a collections plan that reaches out to the year 2025. We were able to do that because when airplanes come into use these days they are built for about a 40 year lifetime. So we know what we possibly could be collecting until 2025. And our curators selected something like 70 airplanes that would represent different times, different historic impacts that society will have felt. The wide body airplanes, for example, which have revolutionized——

Mr. YATES. You mean the 800 passenger plane?

Mr. HARWIT. No, because that's not on line yet. And would never come out of service by then anyway. And might not be needed. We haven't given that a thought. But we have talked about a 747, because it has revolutionized the way people live. And I think we need to document the impact of the 20th Century on the way that people live and the way that they think about the globe. I think there is no doubt that, because people have traveled as extensively as they have, that their whole world view and the ecological thought and philosophy has changed. A new thought pattern has emerged in the latter decades of the century, influenced by the fact that people have traveled.

We would like to be able to pursue that as well as the history of the Cold War. So, we have selected a number of airplanes, 70 altogether, as contrasted with 350 planes that we already have reflecting the past history of our age.

Mr. YATES. Is the Smithsonian's astrophysics activity wrapped up in your museum?

Mr. HARWIT. No, but we work very closely with Irwin Shapiro and exhibit a lot of the results that come out of the Smithsonian Astrophysical Observatory. We do have a laboratory for astrophysics at the Museum. Its main purpose is to provide us with front line scientists who can bring to the public an understanding of the universe.

For example, right now we're planning an exhibition on the universe, what its contents are, what we know about it now, what people knew about it 1,000 years ago, just to show what the progression of thinking has been, to give people an idea that even those things that we feel we know today are ephemeral and will probably be overtaken by even deeper insight in the next few decades.

#### NATIONAL AIR AND SPACE MOVIES

Mr. YATES. Has your argument or dispute over your movies been taken care of?

Mr. HARWIT. Are you talking about the Iwerks and Imax dispute?

Mr. YATES. Yes.

Mr. HARWIT. We have made a lot of headway there. The original request from Iwerks was for permission to downprint our films so that they could reach a larger segment of the American public. We worked very hard with Imax to get that done and put in place. And we now have an agreement that seems to have been reached between the two companies as far as the American market goes. There is some disagreement still on the price, and that's purely a business arrangement.

Mr. YATES. Right.

Mr. HARWIT. There has been a new element introduced on foreign market rights, which never were mentioned originally, and which only came to the surface within the last month. We feel that this is really out of the domain of what the original request was, which was understandable in terms of the involvement of taxpayers' money and free rides on NASA shuttles.

The question of foreign rights is quite different. And we are still working through that. We don't know what the answer to that is going to be. But it's a new question that's been thrown in, and we feel it's one that is a business question rather than one that ought to perhaps be solved at a governmental level.

Mr. YATES. Okay. I'm going to put into the record the letter I received dated February 17th from Mr. Adams relating to this controversy, without objection.

[The material follows:]



SMITHSONIAN INSTITUTION  
*Washington, D.C. 20560*  
U.S.A.

February 17, 1993

Honorable Sidney R. Yates  
Chairman  
Subcommittee on Interior  
Committee on Appropriations  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Mr. Chairman:

I would like to take this opportunity to update you and the Members of the Subcommittee on the status of the issue of downprinting the IMAX films "The Dream is Alive" and "Blue Planet." Since this past fall, there has been considerable progress toward resolution of the question of downprinting the films into the smaller Iwerks format.

During this period, I have assured you and your Senate colleagues that the Smithsonian is doing everything in its power to obtain the agreement of the IMAX Corporation, the exclusive distributor of these films, to "downprint" the films and thus, as was argued by Iwerks, to make them more widely available to the American public. As you will recall, IMAX had refused our initial request because they felt there would be a degradation of film quality and because there were only two operating Iwerks theaters in the country, wider availability was negligible.

Since early 1992, Smithsonian staff and representatives from the Lockheed Corporation, co-owners of the films, have met several times with IMAX. This intense effort resulted in IMAX's agreement, based on the potential to make the films more widely available to the American public, to meet with Iwerks and negotiate an agreement concerning downprinting.

As a result, IMAX and Iwerks have indeed met and have exchanged written proposals and counter proposals at least twice. Moreover, in October and November, Smithsonian and Lockheed representatives met with IMAX and its Washington counsel to review these proposals and to urge IMAX again to bargain in good faith to bring the negotiations to closure.

I am pleased to advise you that there has been considerable progress and movement by both sides. Many issues have been satisfactorily resolved. However, the remaining stumbling blocks are the amount of guaranteed revenue Iwerks must pay - a strict dollar and cents issue - and the distribution of the downprinted films internationally.

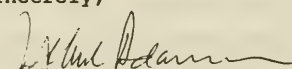
This last issue was raised by Iwerks late in the negotiating process, and on it, unfortunately, the two sides have yet to reach agreement. The issue of foreign distribution was never raised during the many months of negotiations between the parties and was never germane to the argument of wider availability to the American public. You will no doubt recall that Iwerks' many letters to Members of Congress have stressed that these films must be made available to the many American markets not served by, or which cannot afford, an IMAX theater.

Obviously, the raising of this issue by Iwerks at this late date comes as a surprise to both IMAX and the film owners, and has served to delay further these negotiations. I feel the Smithsonian has met its promise to the Congress. We have succeeded in getting the business parties to the bargaining table, and good faith negotiations are in fact taking place.

It is our hope that the parties can come to an equitable business agreement. We will continue to act as "honest brokers" in this regard. However, both the Smithsonian and Lockheed remain steadfast in our belief that the remaining issues are purely of a business nature, and therefore must be resolved through business negotiations. We shall continue strongly to encourage these negotiations, but we have no legal basis to impose their outcome.

I have attached, for your information, a history of the issue and a summary of the IMAX-Iwerks negotiations. If I may be of further assistance in this matter, please do not hesitate to call.

Sincerely,



Robert McC. Adams  
Secretary

## IMAX-IWERKS UPDATE

Shortly after opening in 1976, the National Air and Space Museum installed an IMAX large screen theater in its facility. In 1976 there was only one other IMAX theater in the U.S. and no competing large screen technology.

In July 1984, an agreement to produce the film, "The Dream is Alive" was signed by the IMAX Corporation, the Lockheed Corporation and the Smithsonian Institution. The film cost approximately three million dollars to produce. Net profits from the film are divided according to the owners contractual arrangement.

The contract grants IMAX the rights of distribution as a result of the cost incurred in working with NASA to develop, produce and test cameras and other hardware for use on the Space Shuttle and used in the production of the film.

In 1989, a second agreement using a similar production arrangement was signed by each party to produce the films "Blue Planet" and "Destiny in Space" for \$15 million.

Since May of 1991, the Smithsonian's National Air and Space Museum and the Lockheed Corporation, owners of the IMAX film "The Dream is Alive," have acted as catalysts in response to a request by the IWERKS Corporation to downprint the film to an 870mm format in order that it may be shown in theaters on IWERKS manufactured equipment throughout the U.S.

While this request was initially rejected by IMAX, after considerable prodding by the Secretary of the Smithsonian and Lockheed, in March of 1992, IMAX agreed to begin to negotiate an agreement on downprinting with IWERKS.

While it was agreed that the film would be downprinted, the owner and distributor, would have to be granted a level of revenue comparable to the lease of the film to two IMAX theaters. Additionally, a number of issues including geographic distribution rights would need to be negotiated.

On June 12, 1992 owners met with IMAX to discuss the IWERKS proposal for downprinting the film into the 870 format. On June 15, 1992, a letter was sent from IMAX to IWERKS stating that IMAX would distribute the film in the 870 format based on the following criteria:

\*IMAX will arrange and supervise all post-production activities of the downprinting with all expenses to be paid by IWERKS.

\*IMAX will negotiate all distribution agreements, comparable

to leases with IMAX theaters in the same markets.

\*The theaters must meet specific minimum quality standards, to be developed jointly between IMAX and IWERKS.

\*The distributor may decline to lease the film to any theater which infringes on the IMAX tradename or trademark in any way through its operation or use of theater name.

\*IWERKS will assume full responsibility for the costs, potential liability and possible damage to the original film arising from the creation of 870 negatives, including adequate insurance coverage.

As a result of the untimely departure of former IMAX President, Fred Klinkhammer, negotiations were suspended from July 1992 until October 1992.

In October 1992, IMAX presented an offer of \$350,000 per year for five years for guaranteed revenue to IWERKS. IWERKS made a counter offer of \$150,000 per year for three years. According to Mary Ruby, the IMAX negotiator, IMAX met IWERKS in the middle by asking for \$250,00 per year for five years. If IWERKS meets their obligation for the first three years of this arrangement, they will receive a waiver of payment for the last two years and they will receive the interest on the funds which will be held in escrow during the first three years.

When the issue of revenue guarantees on downprinting was initially presented IWERKS had intended to open at least five theaters in the U.S. In reality, only one has opened in Houston, Texas, where a IMAX projector has been installed in the same theater.

IWERKS recently initiated the issue of international distribution and contends that it had always discussed international distribution in its negotiations. The IWERKS position on this issue is inaccurate and international distribution of the film was not previously part of the ongoing negotiations. As far as the owners are concerned, we have only discussed the issue of domestic distribution of the film.

On December 12, 1992, the owners met again in Washington to consult with one another and to encourage IMAX to move to resolve the outstanding issues with IWERKS. In a letter dated December 18, 1992, Mary Ruby presented the aforementioned arrangement on revenue guarantees to IWERKS.

On January 26, 1993 Dr. Martin Harwit, Director of the National Air and Space Museum received a letter from IWERKS which outlines its objections to the IMAX position on international distribution and the level of guaranteed revenue to IMAX.

As an owner of "The Dream is Alive", the Smithsonian



Institution remains steadfast in its efforts to urge both parties to negotiate an equitable agreement. However, IMAX is under no obligation to give IWERKS the rights to a product that it took years and many millions of dollars to develop. This is a business arrangement between two competing entities. While Smithsonian remains an catalyst in urging both parties to negotiate an agreement, it cannot affect the terms of an agreement between IMAX and IWERKS.

## AMERICAN FESTIVAL PROJECT IN JAPAN

Mr. YATES. Mr. Harwit, last year there was a question of sending one of your space capsules to Japan. And I note that the Smithsonian is going to participate in an American festival project in the summer of 1994 in Japan, which is sponsored by NHK, the Japanese broadcasting company and the corporate arm, and Yomiuri Shimbun, Japan's largest daily newspaper. Smithsonian participants will include the National Museum of American History as well as your museum. And can you tell us what will the Smithsonian be sending? Well, first, is this a done deal? Is this festival going to take place?

Mr. HARWIT. I think the Secretary can answer that.

Mr. ADAMS. I would be happy to sketch the answer in general terms, but Mr. Freudenheim is the person who probably could give you the fuller information on it. We do have a contract with the Japanese; we do propose to proceed on it. It involves an escape clause if the Japanese are unable to put together the money that we need in order to meet the full expenses of this tour.

Mr. YATES. What do these expenses total?

Mr. ADAMS. I think—is it \$15 million in total? Fifteen million. It's a major exhibition. Let me say, Mr. Chairman, that—

Mr. YATES. You're going to spend \$15 million in assembling and sending—

Mr. ADAMS. We're not spending it, no.

Mr. YATES. Well, no, they're going to spend it. Or they're going to give you what your expenses are.

Mr. ADAMS. That's right.

Mr. YATES. What are you supposed to send there?

Mr. ADAMS. Well, I think perhaps Mr. Freudenheim should speak to that. Most of the collection will come from American History. There are some objects from Air and Space, and you might want to ask Mr. Harwit about those now. But most of it has been, the initiative has rested with the Museum of American History.

Ms. NEWMAN. The \$15 million is the total festival, and \$5 million of that covers the Smithsonian portion of it. But there is more to the festival than the Smithsonian.

Mr. YATES. How much will you be receiving then, Ms. Newman? Is there a rental agreement, too?

Ms. NEWMAN. Yes.

Mr. YATES. How much will you be receiving then, Ms. Newman.

Ms. NEWMAN. It's the overhead; 18 percent is built into the agreement.

Mr. YATES. Can you tell us what's going there, Mr. Freudenheim?

Mr. FREUDENHEIM. I will defer to my colleague, Spencer Crew, the Director of the Museum of American History, who has been working more directly with the exhibition. Because the primary group of artifacts will come from there.

Mr. YATES. Mr. Crew.

Mr. CREW. Basically the idea behind the exhibition is to introduce the Japanese to the history of this country. What they have done is planned an overall view of American history from the colonial period to the present, and made a very careful examination of

the collections looking at materials that are not on display, that are stored away but haven't been used in a while, and we have worked it out with the Japanese to use icons that display aspects of American history that they identify with, some of the automobiles, some of the clothing that represents American life during this period, to give them a sense of how we have evolved over time and the diversity of our country, to have a sense that we have had our ups and downs.

I think the area of discussion has been over a clear understanding of how American society has evolved over time and the disagreements and discussions that have occurred as opposed to Japan's picture of our country, which is one that believes a very even progression has taken place over the years.

So the idea is to find those materials in the collection that represent our country very clearly but are not on display in the museum, as well as anything we plan to do in the near future.

Mr. YATES. Can you give us examples of what you think will be sent?

Mr. CREW. I know that there are some automobiles that they have in mind, and some of the materials from the political history collection. The specifics I am not as clear on myself, because they are still negotiating those things. I think what they want to be careful about is that it doesn't disrupt our operation or disrupt any of the plans we have over the long term for these collections.

#### NATIONAL MUSEUM OF AMERICAN HISTORY

Mr. YATES. When did you come aboard as a director?

Mr. CREW. December 1st. I took a term as Acting Director.

Mr. YATES. We'll have to get his biography, then.

#### BIOGRAPHY OF SPENCER CREW, ACTING DIRECTOR

Spencer Crew has been the Museum's acting director since December 1992. He was deputy director of the Museum from November 1991 to December 1992. Prior to that he was chairman of the Museum's Department of Social and Cultural History and curator of "Field to Factory: Afro-American Migration 1915-1940."

Dr. Crew holds a doctorate from Rutgers University and a bachelor's degree from Brown University. He has worked at the Smithsonian since 1981, as a supervisor and curator in the Division of Community Life. In addition, he was a historian in the Archives Center and head of its Collection of Advertising History. Before coming to the Smithsonian, he taught American and Afro-American history at the University of Maryland, Baltimore County.

He has given numerous papers on topics related to Afro-American urban history, particularly the migration of African Americans into northern cities and the development of the black community in the 20th century. More recently, his research has concentrated on the history of black land grant colleges.

Mr. YATES. Have you had enough time to know what the condition of your museum is?

Mr. CREW. I think so. I have been there for thirteen years. So I'm not a newcomer to the museum, and have been acting as Deputy Director for the past year. So I have a sense of it.

The condition of the museum, I think I would agree with Mr. Freudenheim that our public face has not changed dramatically. We have had to take steps to sort of keep that from the public's eye. And what we have done is take steps like slowing down our exhibition process, that lets exhibits run longer. We have looked more carefully at how we do exhibitions and what things we can

approach, how we can present them in a way that's still engaging to the public but has less of an impact upon the staff over the long term.

We have also looked very carefully at our collecting process and have tried to put into place a system which is a very rigorous effort to slow down the rate at which new collections come into the museum, but we still have the problem of collection storage, even using that kind of process to cull out materials that come to the museum. So I think basically our public face is working very well. But we're having to work very hard behind the scenes to make sure we can do all of the things for the public in terms of public inquiry, care of the collection and future planning in a way that allows us to go forward in a very coherent fashion.

#### CONDITION OF COLLECTIONS AT THE AMERICAN HISTORY MUSEUM

Mr. YATES. Tell the Committee about the condition of the artifacts. Are they deteriorating because of the temperature?

Mr. CREW. I think we have worked very hard at trying to allay that. I think that what's happening in this situation is that conservation work that we would like to do for the materials has suffered because time is being drawn out so that it will have some impact on the collections in terms of just our ability to get to materials and to care for them in the proper fashion. All of this will have an impact which we're trying to minimize.

#### BOOK PRESERVATION AT THE SMITHSONIAN

Mr. YATES. Do you have a collection of books or photographs? I know you have a collection of photographs.

Mr. CREW. Yes. Each of the divisions within the museum has its own collections of images and books that go along with the artifacts that they bring into the museum.

Mr. YATES. The reason I asked you the question is, is there a deterioration in those artifacts because of age, because of the quality of the paper?

Mr. CREW. I think that's a natural part of the life span of those materials, and certainly that is occurring. Again, we do have conservationists who try to get to them as they can, within the realities of the budget and the realities of the staff.

Mr. YATES. One of the reasons I asked that question is in other parts of our Committee, we are engaged in ways in which to preserve the books that are practically extinct now as a result of deterioration of the paper. The Library of Congress has been doing that, and there is a group consisting of the libraries of the universities of the country which is engaged in that. We are helping them with some funding. Is that occurring in the Smithsonian?

Mr. CREW. The process of its—

Mr. YATES. Are you also engaged with that group in trying to protect your things?

Mr. CREW. Our conservationists are involved in all the national activities that are taking place. Those kinds of objects do not make up the bulk of our collections.

Mr. YATES. I know.

Mr. CREW. So that while they are engaged in that process, they are very concerned with the proper preservation activities. I am not sure they are as engaged as are the libraries of other kinds of historic societies.

Mr. YATES. Are there no specific problems, then, that you want to tell the Committee about?

Mr. CREW. I'm not aware of any in my museum, but I wouldn't want to speak for any of the others.

Mr. YATES. Well, let's not talk about their museums.

Mr. CREW. Right. Not that I'm aware of at this time. We do have an archive center, but it's largely a documentary collection.

Mr. YATES. That's what I was going to go back to Mr. Adams about. Thank you very much.

#### LIBRARY ACQUISITIONS

Mr. Adams, on this question of the destruction of books and documents, because of the quality of the paper, most of your documents were made with rag paper, I think, though, because of their age. Is that not true? I'm not sure about your books.

Mr. ADAMS. We certainly have a conservation problem, and it's a serious one. Perhaps the head of our Smithsonian Libraries, Barbara Smith, ought to speak to it in detail. The problem is of course that it's a very expensive thing to cope with. The need to address that problem comes at the same time that we face this enormous escalation in the cost of acquisitions for the library and the cost of serials for the libraries and so on. So we're feeling—

Mr. YATES. Tell me about that. That I haven't heard of.

Mr. ADAMS. All libraries are encountering—I've forgotten what the current rate has been—but for several decades it's been on the order of 18 percent a year or something. The problem that all major libraries face is extraordinary in terms of keeping up with acquisitions. I don't mean to say that that has necessarily a higher priority than preserving the older materials, but you do have to deal with both these needs simultaneously. It's often the more recent material for which there is a greater demand. This is a very tough issue to deal with.

Mr. YATES. Where are your expenses for that operation contained in this year's budget?

Mr. ADAMS. In the Smithsonian Library's budget.

Mr. YATES. For both the books and the documents. That's your library. Do any of your museums have libraries that they have to worry about?

Mr. ADAMS. Some of the museums have their own independent libraries. But I think that the maintenance is still within the library budget as a whole.

Mr. YATES. I see.

#### FOSSIL PALM FROND

Mr. ADAMS. Mr. Yates, before you leave the question of museum exhibitions, you have gotten a rather rosy picture, but I do think it would be appropriate to have you pursue the question with the Natural History Museum.

Mr. YATES. I was going to ask Mr. Talbot.

Mr. ADAMS. He has a much more serious problem.

Mr. YATES. I know, I know. He has construction problems.

Mr. Talbot, would you take the hot seat, please, and tell us about the condition of the Natural History Museum and your problems, other than monetary ones?

Mr. TALBOT. Can I show you something nice first?

Mr. YATES. Oh, sure. We would love to see something nice.

Mr. TALBOT. I just wanted to show you those stones, very old stones. Dr. Wing leads the program. This is a fossil palm frond, and it comes from an area way north in the U.S., and indicates a very much earlier warm period.

And using this kind of record, we can now learn about how the climate system works and how global warming affects plants and animals. And it's not as we might have thought. We originally thought that you would get perhaps a temperature change or a drying climate, and very steady, even changes. But what we're finding is that things work stepwise, and there are sudden, massive changes. If I can show—

Mr. YATES. That lizard came from that age, didn't it? [Laughter.]

Mr. TALBOT. It was there.

This is an awkward one, because we're looking down on a map of the earth, the North Pole. The North Pole is about here, and the U.S. is here. I put in Chicago and—[Laughter.]

Mr. YATES. That's understandable. [Laughter.]

Mr. TALBOT. And also it's very close to where Mr. Regula comes from. But you can see that in fact this is really a tropical system, or just subtropical that time. And alligators were right in the Canadian Arctic. The whole of this period was extremely warm. This has occurred not once, but is a common occurrence.

This one is a little awkward, but if you just stay with the red and just follow the red line, you can see what happens. Here we have had climatic change. And instead of making even changes in what was a forest system, you get sudden steps, as though thresholds are reached, and then suddenly there are changes. And where we reach here, about 300 years before the present, there is a massive drop.

Why I bring this to your attention is that Dr. Wing tells me, and I believe him and his colleagues, that by looking back in the past, we can get a very clear idea of what climate change does. And sometimes it's CO<sub>2</sub> warming affecting the different ecosystems, the ecological systems on Earth. And although we have one of the models on the Cray computers, using the best computers we can devise, they are not as accurate as the knowledge we derive from actually looking back in time. So what Dr. Wing and his colleagues are doing is giving us an idea of what might happen in the future, and at the moment, it is the best idea we have.

#### EXTINCTION OF DINOSAURS

Mr. YATES. Can Dr. Wing and his colleagues tell us what happened to the dinosaurs, why they came to a sudden end?

Dr. WING. Which story do you want? [Laughter.]

Mr. YATES. Which do you accept?

Dr. WING. I think actually the dinosaurs are what we are now beginning to think of as a unique case where an asteroid impact is probably involved in the extinction. But it's much more common to see extinctions——

Mr. YATES. You mean for the whole world?

Dr. WING. Yes, certainly for North America. That's very well documented now. The site of the impact is probably close to North America. They were in the wrong place at the wrong time. [Laughter.]

But it's much more common for extinctions——

Mr. YATES. Could that happen now?

Dr. WING. That could happen now, but the chance of it happening any time soon is very small.

Mr. YATES. Why did it happen then, and you say the chances are very small now?

Dr. WING. Well, events like that happen extremely infrequently, maybe once every 20 or 30 million years, or maybe not even that often. So the chance of it happening over any given period of time is very small. But it's much more common to see extinctions related to climate change in the past, and that's what we're trying to study. How warming a climate or cooling a climate can affect the Earth's biota. And we are able to do that, to study events that have already happened.

In some ways I think we're further ahead than trying to monitor events that are occurring right now. By studying the present, we are only finding things out as they are happening that may be too late to do anything about it by the time we see the changes that are occurring. If we can use history then maybe we can learn something from it.

Mr. YATES. Well, perhaps we can. We are faced with that right now.

Dr. WING. Yes.

Mr. YATES. What's your guess? What ought we be doing, really?

Dr. WING. I think the lesson that comes most clearly is that effects on biological systems, when they occur, are very rapid, and as Dr. Talbot was pointing out, you can pass a threshold almost without knowing it. It's almost like pushing against a desk on a floor. If you push hard on a desk and it doesn't move, if you continue pushing you may eventually overcome the floor wax or whatever is holding it to the floor, and suddenly the desk slides across the room. That seems to be how biological systems respond to climate change. And so our guess from the past is that that's the kind of effect we'll see. And it's a fairly sobering lesson.

Mr. YATES. It is sobering. I take it we ought to worry about the environment more than we are worrying about it.

Dr. WING. I think that's true.

Mr. YATES. Well, thank you for a very interesting presentation.

#### NATURAL HISTORY FOSSIL SPECIMEN

Where did you find the rock? Who found the rock?

Mr. WING. This rock was actually purchased.

Mr. YATES. Somebody must have found it.

Mr. WING. It was found in Central Wyoming in some ancient lake beds there, and cut out with a saw and then split open. I have actually found many fossils like this, but they don't happen to be this pretty or this easy to carry.

Mr. YATES. Is there a value you place on that? How much did you pay for it?

Mr. WING. Actually it was purchased before I came to the museum, so I don't know how much it cost. Things like this go for thousands of dollars now, but this has been in the collection for quite a while.

Mr. TALBOT. Mr. Chairman, driving in Wyoming a short while ago, Dr. Wing looked at the landscape and with that paleontologist's eye thought there was something unusual, and found a whole petrified meadow. About 100 people worked there this last summer. What happened was a volcano erupted and put fine dust on a meadow about 1773 million years before the present. Then it rained and solidified and finally came under pressure and became rock. And that's probably the best example of any petrified meadow we have had. It totally changes our view of that time.

Mr. YATES. Is this in Wyoming again?

Mr. TALBOT. Yes. That was Scott's own finding last year.

Mr. YATES. Thank you very much. Very interesting.

Mr. TALBOT. I just brought you this, Mr. Chairman, to indicate that the material that we have, old ones or ones recently found, is a huge resource and we are just way behind where we should be with information technology. It really is one of the big problems that not only we but the other museums are facing to computerize and use this massive data base as a really proactive research tool.

#### ATMOSPHERIC STUDIES AT SMITHSONIAN

Mr. YATES. Are you doing atmospheric studies? Is anybody in Smithsonian doing it?

Mr. TALBOT. What we're doing is going back in time and trying to find CO<sup>2</sup> differences. And we can do that with isotopes. But we're not looking at the current atmosphere. Others are doing that.

Mr. YATES. Who in the Smithsonian is doing it?

Mr. TALBOT. I think Mr. Shapiro is.

Mr. YATES. Are you looking at the atmosphere?

Mr. SHAPIRO. We do a lot of atmospheric research.

Mr. YATES. Well, you do that, yes, but you don't look at the condition of the atmosphere, though, do you, Dr. Shapiro?

Mr. SHAPIRO. Oh, yes.

Mr. YATES. Do you see what changes are happening?

Mr. SHAPIRO. We have some unique capabilities with instruments we have developed primarily to look at outer space, that can be used to look for trace components of the atmosphere. In particular, for example, the bromine, which has a devastating effect on the ozone layer. And we have the best instrument in the world for measuring the bromine in the stratosphere. We are talking about measuring with uncertainties down to several parts per trillion. You might say that's so small as to be irrelevant. But in fact it is very relevant and is very important.



Mr. YATES. Why is that so relevant if it's in such small quantities?

Mr. SHAPIRO. Because the multiplying effect of destroying the ozone is felt even at those levels, felt very strongly.

Mr. YATES. You mean it's liable to make a hole in the ozone?

Mr. SHAPIRO. Yes. It is very effective in destroying ozone. And it has a very important effect on what we do on the Earth. For example, bromine comes to the stratosphere from several sources, natural sources, from the ocean and also from man made sources in fumigants that are based on methyl bromide. And that's a billion dollar or so a year industry. And if it can be shown that much of the bromine at a significant level comes from methyl bromide that's used as a fumigant and fertilizer then that could have a major effect.

Mr. YATES. Who is trying to show that?

Mr. SHAPIRO. We are at the moment the ones with the best instrument to make the measurements.

Mr. YATES. Is that the same instrument?

Mr. SHAPIRO. Yes, and we also are heavily involved in modeling the atmosphere; the chemical reactions are very complicated, and we have probably the best person in the world working on that to understand just exactly how these effects work.

#### SMITHSONIAN ASTROPHYSICAL OBSERVATORY'S COMPUTER NEEDS

Mr. YATES. And is this person using the computer that you recently purchased?

Mr. SHAPIRO. The computer this person is now using is somewhat obsolete.

Mr. YATES. You mean you need more computers?

Mr. SHAPIRO. Yes, I'm sorry to say.

Mr. YATES. Is that in your budget?

Mr. SHAPIRO. Well, no.

Mr. YATES. Why is it not? If this is so important, why is that not in your budget?

Mr. SHAPIRO. That's a good question, but our budget is reduced to the point where we have essentially no money left for computers.

Mr. YATES. How can you carry on your research?

Mr. SHAPIRO. Well—

Mr. YATES. It's a good question?

Mr. SHAPIRO. Right. We do the best we can.

Mr. YATES. Well, how much money do you need for your new computers?

Mr. SHAPIRO. Well, that's—

Mr. YATES. That's a good question, too?

Mr. SHAPIRO. That's a difficult question to answer precisely. I like to answer things precisely. However, the problem is that the computer industry is developing so rapidly and capabilities are changing so rapidly and costs are changing so rapidly—

Mr. YATES. As a stockholder in IBM, I'm learning that. [Laughter.]

Mr. SHAPIRO. It's very difficult to give a precise estimate.

Mr. YATES. Well, what do I do here, sitting on the Committee, who is impressed with your story about this research upon which

the fate of our world may depend sometime in the not too distant future? Does somebody else have a computer and are they doing the research on bromine that you say you're doing so that they can carry on because they have the computer?

Mr. SHAPIRO. As I say, we try to be as efficient in how we operate as possible. And there are national super computer centers.

Mr. YATES. But this is a priority, is it not? Why shouldn't this be something on your list of priorities for this Smithsonian?

Mr. ADAMS. I think I heard him say that his computers were obsolescent.

Mr. YATES. He said obsolete.

Mr. ADAMS. I think he would agree that obsolescence—

Mr. SHAPIRO. I would say obsolescence is a fair term.

Mr. ADAMS. So obviously there are matters of judgment here as to whether the research stops utterly because of the present computers or whether it goes forward with some difficulty. Much of what we do goes forward with some difficulty.

Mr. SHAPIRO. That's a fair statement.

Mr. ADAMS. I might say that as a part of the restructuring that we anticipate here, we have set up a pool for the cost of research equipment. No allocations have been made from that pool.

#### FAR INFRARED FOURIER SPECTROMETER

Mr. YATES. I meant to ask Dr. Shapiro, what does your instrument look like? Is this kind of like a dental instrument?

Mr. SHAPIRO. No, it's a far infrared Fourier Spectrometer. It looks at characteristics—well, how shall I put it? Molecules and atoms undergo transitions and give off radiation of characteristic frequencies. And the frequencies that we are sensitive to with this instrument are in the far infrared. The sensitivity we have to bromine in particular is far greater than any other instrument that has yet been developed worldwide.

#### BROMINE IN THE ATMOSPHERE

Mr. YATES. How do you go about finding out whether those companies that are manufacturing the bromine, that it is actually going into the air?

Mr. SHAPIRO. It's a complicated problem from several points of view. There are a number of contributors to the bromine that goes into the atmosphere. And it's not easy to decide which one is contributing more. It's also not easy to figure out exactly what damage has been done. Because the chemistry is very complicated.

But the best models we have at the moment indicate that bromine is extremely dangerous to the ozone. And what we're trying to do is measure the level of bromine and how it varies with time to see how dangerous it is. Then it's another problem to find out which is the more important source of bromine, the natural source or the agricultural use, the source of the agricultural use.

Mr. YATES. What is bromine used for in agriculture?

Mr. SHAPIRO. As I said, it's used both—in the form of methyl bromide it's used—

Mr. YATES. As a fertilizer?

Mr. SHAPIRO [continuing]. As a fumigant to kill unwanted bugs and stuff like that. It's a multi-billion dollar a year industry. It's not a trivial usage.

Mr. YATES. I would guess that was true.

Mr. SHAPIRO. In fact, this was brought to our attention by the Department of Agriculture.

Mr. YATES. They're trying to learn about it?

Mr. SHAPIRO. They had heard about our instrument and wanted to know more about what we could find out, because they are so heavily dependent on that.

Mr. YATES. Can you find out?

Mr. SHAPIRO. We can. There is no question that we will be able to make the measurements that will tell us the level of bromine in the stratosphere. What is less clear is whether we will be able to reliably say how much of that is natural and how much of that comes from the agricultural use.

Mr. YATES. I see. Well, of course, those who are making it will say it comes from the ocean, won't they?

Mr. SHAPIRO. There are other experts who are looking at this part of the problem. We are not ourselves trying to determine how much comes from the ocean.

Mr. YATES. Who are the other experts?

Mr. SHAPIRO. Oceanographers.

Mr. YATES. Oh. You mean Woods Hole?

Mr. SHAPIRO. Partly. Marine geochemists.

Mr. YATES. Well, is this something you should pursue?

Mr. SHAPIRO. We are pursuing it.

Mr. YATES. I know you are. But apparently you're kind of crippled.

Mr. SHAPIRO. Crippled is probably too strong a word. Hindered, but not crippled.

Dr. Rubinoff wants to add something.

#### FOREST RESEARCH

Mr. RUBINOFF. If I could direct your attention to one of the photographs, we are doing research on the space between the tropical biosphere and the geosphere.

Mr. YATES. I looked at a few of these.

Mr. RUBINOFF. You had a question about the atmosphere. [Laughter.]

Mr. YATES. I must say that Dr. Shapiro's testimony has kind of alarmed me, even at the age of 83.

Mr. RUBINOFF. What we have in our photograph is a picture of a construction crane, which we are using to get access to the surface of the forest, the canopy of the forest. And that's where the interaction is occurring, the photosynthesis and the production of carbon dioxide and oxygen from the forest. These measurements are being taken for the first time in the canopy, and they are contributing to the models that we are able to make about the global change.

In other studies, we are changing the CO<sup>2</sup> concentration of plants in the tropics to see how they are going to respond to what we perceive will be changes in the future. Not all species of trees and

plants will accommodate these changes equally. Some will grow faster, some will probably become extinct.

Mr. YATES. You're not studying the bromines.

Mr. RUBINOFF. No, we're not.

Mr. YATES. Well, how—thank you.

Mr. RUBINOFF. If we relate back to what Dr. Talbot said, we are doing studies—

Mr. YATES. You mean that Ronald Reagan may be right, that trees may pollute? [Laughter.]

Mr. RUBINOFF. It depends on how you look at it. [Laughter.]

Mr. YATES. But you're looking at it, that's why I asked you the question.

Mr. RUBINOFF. I would use a different term. [Laughter.]

One of those other photographs—

Mr. YATES. What's the answer to my question?

Mr. RUBINOFF. That trees contribute.

Mr. YATES. Do they?

Mr. RUBINOFF. Yes.

Mr. YATES. Which trees?

Mr. RUBINOFF. All trees contribute to the atmosphere in different ways.

Mr. YATES. Does the logging industry know that? [Laughter.]

Mr. RUBINOFF. I think they're trying to deny that.

I have one more study showing global change in the short term. That's a section of a coral that's been cut through and then x-rayed, the little squiggles on the left there. If you look at that growth rate, you can measure those bands from the x-ray as though they were similar to tree rings. We show there's a 100 year chronology, the last 100 years in that coral head shows that growth rate has gone down twice, once when the canal was constructed, this is taken from an area near the Panama Canal, and again in more recent years during the construction nearby of a refinery and a cement factory. So what we see is human effects on the growth of corals.

Moreover, although it doesn't show in that particular photograph, other studies indicate that in the Caribbean we are experiencing a 20 percent loss in coral cover in the last few years. There are several reasons that may be occurring. We don't have the data on which to separate them. We have a slight warming in the Caribbean throughout these periods. We have a loss through an epidemic of one of the major species of sea urchin that eats algae. The algae compete for space with the corals. And it may be that the algae are now in too great amounts for the corals to compete with.

And then it may be human factors as well, runoff from land where agricultural development has replaced the original forest. So deforestation on the land may be affecting coral growth in the ocean.

We are not able to separate the relative impact of these different causes or potential causes. But it's a real problem, and one that's not widely recognized.

Mr. YATES. Do I have to worry about your research?

Mr. RUBINOFF. I hope so, sir.

Mr. YATES. I'm kind of speechless at the moment, because I'm not sure I can ask the proper question. Do you require computers or instrumentation or research funds or what?

SMITHSONIAN'S RESTRUCTURING PLAN

Mr. RUBINOFF. We do. We require research funds, and we are looking to this new fund that's being created in the Institution's reorganization as a source of new instruments.

Mr. YATES. Is this going to be pooled for all the research groups?

Mr. RUBINOFF. That's my understanding.

Mr. YATES. Well, when I look at your letter of February 4th, the reorganization letter, attachment one under scientific equipment, nothing is being asked for 1993. Oh, it's being reprogrammed in 1993. But you're taking some money from the Smithsonian Astrophysical Observatory. What does that do to the bromine research?

Mr. ADAMS. In order to have a pool to reprogram, you take it from various places across the Institution.

Mr. YATES. In other words, what you're saying is we need money in order to have a pool of money.

Mr. ADAMS. We're making the pool available from the institution itself. And then these are funds upon which the various bureaus can draw on their comparative need, on the strength of their programs. This is the program from which it's quite likely that Irwin Shapiro will be drawing.

Mr. YATES. How much money are you taking from all of the activities in order to make up this pool? Fourteen million dollars?

What happens to your activities? Are these activities from which these funds are drawn activities that are not needed?

Mr. ADAMS. As the Under Secretary explained earlier, there were obviously judgments that were made in which the entire management of the Institution was involved as to the comparative priorities. It is on that basis that funds were pulled back from various programs. These are not funds that the central administration of the Institution is going to sit on. These are funds which are then available for reprogramming for the purposes that are specified.

Mr. YATES. Let's take a look. It's kind of like the President's speech last night. [Laughter.]

Mr. Talbot would give up \$1,675,000. And you in turn will receive \$1,175,000. So all you will lose will be a half million dollars.

Mr. TALBOT. That's correct.

Mr. YATES. Then the question occurs to me, what are you losing when you lose half a million dollars?

Mr. TALBOT. That half a million is primarily from mandated increases. So we would have lost that anyway. We have become reasonably even and slightly positive out of the reprogramming.

Mr. YATES. Well, you are not terribly hurt.

Mr. TALBOT. I think we're hurt in all sorts of ways, particularly with exhibits, where we really do need to function much more effectively. But in this particular process, we have in fact not been hurt badly.

Mr. YATES. Let me ask Dr. Shapiro. How much did you give up?

Mr. SHAPIRO. I gave up \$135,000.

Mr. YATES. And how badly are you hurt? Computers cost more than \$135,000?

Mr. SHAPIRO. Some do, yes. Some don't.

Mr. YATES. What did you lose by that?

Mr. SHAPIRO. We're going to have to cut staff to make up for that difference.

Mr. YATES. One man for \$135,000.

Mr. SHAPIRO. It's more like a person and a half, which makes it a little complicated. But there are other complications.

Mr. YATES. Well, what does that loss of that staff mean? Are you losing a janitor type, are you losing a scientific type?

Mr. SHAPIRO. We're trying to make it as painless as possible. But there are complications with the Federal system that I am just beginning to come to grips with. [Laughter.]

Mr. YATES. It was better when the Smithsonian was a private institution, as the judge indicated it once was. Right, judge? [Laughter.]

Mr. SHAPIRO. Let me say I'm getting a new education in the Federal personnel system.

Mr. YATES. Well, I'm going to have to—I have a meeting of the Subcommittee Chairmen to discuss the new budget in half an hour. So we're going to have to come back. I'm going to have to defer the pleasures of listening to the museum directors until a later time, and the other members of your staff, because of the fact that we're going to meet on the President's request for a supplemental. And I don't know whether you have any material on the supplemental or not.

At any rate, you wanted to tell me something.

Mr. ADAMS. I really wanted to complete the line of discussion that brought Frank Talbot to the table in the first place. He made passing reference as he was leaving the table to the problems that they are having with exhibitions. And that is a much more serious problem than in the cases that were rather positively reported on that you heard earlier.

Seventy percent of the permanent exhibitions are more than 25 years old. There are real questions about their adequacy in terms of public education and the proper representation and cultural diversity in the case of the anthropology exhibits. That's a pocket of real problems with regard to exhibitions that I really want to call to your attention before we pass by the Natural History Museum altogether.

Mr. YATES. Why don't I release everybody from having to come back, and just ask the out of towners—do any of the out of towners have to catch planes? Okay, if you don't have to catch a plane, can we have the out of towners come back at 2:00 and take their testimony so they won't have to come back in the future? Will that be satisfactory?

Okay, at 2:00 o'clock, then. We will adjourn now until 2:00 o'clock. I think the meeting of the Subcommittee Chairmen will be through by then.

Okay, thank you very much.

## NATIONAL MUSEUM OF NATURAL HISTORY EXHIBITS

Mr. Talbot, you might come sit down and make your point.

Mr. TALBOT. One issue that really is worrying us very much is what we'll do about our exhibits. We know that at the rate we're going, we are just not keeping up. We've been raising money outside, and we've done that with some success. We have over, I guess, the next seven years, the four we have now and three more, we have pledged or given about \$12 million, just over \$12 million, and we consider that successful, but I think we can still do better. But what seems to be needed and what Mr. Sullivan, who's our Associate Director of Public Programs, indicates is really some kind of renewal program for those exhibits that is much bigger than that, and we just are not coping.

Mr. YATES. How much money's involved?

Mr. TALBOT. He thinks about \$100 million, but the way we would put it—

Mr. YATES. I just got indigestion. [Laughter.]

Mr. TALBOT. The way we would, I think, approach it is we feel we should raise a good deal, and we're trying to do that, but we need somewhere in the region of about \$5 million a year over the long term really.

Mr. YATES. You mean 20 years?

Mr. TALBOT. Well, I would think we could raise the remainder and try and do it much faster than that. We're trying shortcuts, we're trying new methods, and we're trying small upgradings. We're doing everything we can, but we're not being fair, I think, to the American public right now. We really try and get youngsters who come turned on to science by our exhibits and get some understanding of changes on the earth and in the past and potentially in the future and the richness and beauty of nature. We think this is important to do as a social issue, and we're not able to do that. So I'd like you to be aware of that.

Mr. YATES. Forewarned is forearmed. [Laughter.]

Thank you very much.

Mr. TALBOT. Thank you very much.

## TRANSITION OF PANAMA CANAL ZONE

Mr. YATES. All right. Who has to fly back?

Dr. Rubinoff? How are your relations with the Panamanians, Dr. Rubinoff?

Mr. RUBINOFF. They're excellent, sir.

Mr. YATES. Are they?

Mr. RUBINOFF. Yes.

Mr. YATES. Should one become disturbed when you say that?

Mr. RUBINOFF. No, we have a democratic government now.

Mr. YATES. Have you really?

Mr. RUBINOFF. Yes.

Mr. YATES. I didn't know you had any government. [Laughter.]

Tell us about what your needs are.

Mr. RUBINOFF. Well, would you like to hear more about the transition as we reach the year 2000 and the treaty ends? I have been invited to prepare draft legislation for the Panamanian Legislative Assembly which will cover the needs that we have beyond 2000. At

this moment, the Panamanian Legislature Assembly is in an extraordinary session to try to create legislation which would allow title to be given to those organizations that have developed real estate holdings within the former Canal area. STRI's needs will either be taken care of in that legislation or in special legislation that will be passed in the future.

Mr. YATES. Will they be charging a rental charge?

Mr. RUBINOFF. It's not clear. I don't think so. I suspect that they will continue to make the lands available that we've been using under new longer-term leases, and we will receive title to any improvements that we've made. So if we at some point decide that certain facilities are surplus to the needs of the Smithsonian, I believe we would be able to sell them at that point.

#### FLOATING LABORATORY

Mr. YATES. Do you have in your consideration the possibility of a floating laboratory, a ship?

Mr. RUBINOFF. Yes, sir. That has been under some lengthy study. We have a design. We're ready to go on that package. It will require permission to reprogram some funds already appropriated for two marine facilities on the Atlantic side.

In one case, we no longer wish to build the planned facility because of an oil spill that occurred some years ago and made the natural area, which we were going to use that laboratory to study, less interesting. In the other case, we find that the contracts that we can acquire from the Indian nation that controls the area are only for five-year periods, and I don't think that's sufficient guarantee to invest a million-dollar laboratory, or nearly a million, as we were planning. So we will be coming forward shortly with a letter requesting permission to reprogram funds to build the floating laboratory.

Mr. YATES. How much money will be involved in that?

Mr. COATES. Reprogramming funds will be \$1.3 million.

Mr. YATES. Reprogramming funds. What's the total cost of your yacht?

Mr. COATES. About \$3 million.

Mr. RUBINOFF. About \$3 million.

Mr. YATES. Why do you need the extra money?

Mr. RUBINOFF. Between the time that we started this process—the real fundamental error initially was to call around to several oceanographic institutions in the country about four years ago and ask them what a vessel of approximately this size would cost. As it turns out, there was very little experience in the nation for building intermediate-size vessels. It's 100 feet long. You may recall the model that was brought in here some years ago. It was a low estimate.

By the time the actual study was done and the design was completed, I think that the marine architect is now high in the estimate that he gave. In order for us to go out on the street and find out what the shipyards will really charge, we have to have the estimated cost in hand.



## EFFECT OF PLANT RESPIRATION ON THE ATMOSPHERE

Mr. YATES. Now, you were looking at the—is the word “pollution” proper to say?

Mr. RUBINOFF. We were studying an oil spill, if that’s what you’re—

Mr. YATES. No, no. Describe whatever’s happening from the tops of the trees. Is that pollution?

Mr. RUBINOFF. It’s the respiration of the plants that we’re looking at and how they contribute to the atmosphere. I wouldn’t call it pollution.

Mr. YATES. Well, do they have a degrading effect?

Mr. RUBINOFF. I think the equilibrium that we enjoy in this planet is a function of their activities, and what we’re trying to understand is how that’s changing in response to what we call greenhouse effects and man-caused pollution in the atmosphere. I don’t think it’s safe for us to assume that the processes within plants are not responding to the changes that we’re putting into the atmosphere.

Mr. YATES. I had the impression from your earlier testimony that the respiration of the plants was degrading to the atmosphere. Is that a wrong conclusion?

Mr. RUBINOFF. That’s a wrong conclusion.

Mr. YATES. Wrong conclusion. Then Ronald Reagan was not right.

Mr. RUBINOFF. Not about that.

Mr. YATES. Was he right about anything? [Laughter.]

Mr. RUBINOFF. No comment.

Mr. YATES. All right. Now, as a result of having your new yacht, are you going to study the effects of bromine from the ocean?

Mr. RUBINOFF. It would be possible to do so, but we have no immediate plans for that.

Mr. YATES. Now, will that be a disappointment to Dr. Shapiro? [Laughter.]

Mr. RUBINOFF. I somehow think he’ll bear up. [Laughter.]

Mr. YATES. If it’s as alarming as I thought he said it was, should you not study that instead of what you’re doing?

Mr. RUBINOFF. Well, when we get the vessel, we’ll have to take a look at how much we know about those processes at that time. It’s going to take at least a year to build once we solicit bids and select a shipyard.

Mr. YATES. Will you be instrumenting your yacht with instruments of the type that Dr. Shapiro is using?

Mr. RUBINOFF. It’s conceivable. We’re certainly designing this vessel to take on instrumentation that may yet be designed.

Mr. YATES. How expensive is something like that?

How expensive is that, Doctor?

Mr. SHAPIRO. Our instrument is about \$500,000.

Mr. YATES. That’s expensive.

Mr. SHAPIRO. Well, it’s a very complicated instrument.

Mr. RUBINOFF. Maybe he’ll lend it to us. [Laughter.]

Mr. YATES. Can you carry it?

Mr. SHAPIRO. It wouldn’t do you any good on the ground.

Mr. YATES. He’s on a yacht. [Laughter.]

At any rate, what other needs do you have?

Mr. RUBINOFF. I think that's it. We've covered it. I think we're moving along toward the 21st century in getting our marine research program advanced.

Mr. YATES. Is your research very important?

Mr. RUBINOFF. I think so. Indeed. We are the only institution that the United States has that has any kind of custodianship over mainland tropical forests, and I think that's a very important responsibility that we have.

#### SMITHSONIAN TROPICAL RESEARCH

Mr. YATES. What about the degradation of the Keys and the reefs?

Mr. RUBINOFF. That's a serious problem as well, but there are other—

Mr. YATES. Are there other agencies that are studying that?

Mr. RUBINOFF. There are some.

Mr. YATES. Should you be doing this research if the Forest Service is doing it?

Mr. RUBINOFF. The Forest Service has heretofore been restricting most of their research into—

Mr. YATES. I'm talking about tropical.

Mr. RUBINOFF. No, they've been doing relatively little. They now have a new mandate which allows them to do more research abroad in other countries, but the focus of their attention has been on Puerto Rico until now, and that's an oceanic island, and these islands don't have the kind of diversity of forests that we experience on the mainlands.

We have a research network—one of these maps that I brought shows the network of studies that we're setting up around the world. Many of them are already in place such as the very intensive 50 hectare forest dynamics studies, all of which are using the same methodology. This is being fostered with a grant from the MacArthur Foundation, and as you see, we have sites in Asia and in Barro Colorado Island and in Panama.

Mr. YATES. How big a grant do you have?

Mr. RUBINOFF. It's \$1.1 million.

Mr. YATES. Did you say \$1.1 million?

Mr. RUBINOFF. Yes.

Mr. YATES. Is that adequate?

Mr. RUBINOFF. No.

Mr. YATES. How much do you need?

Mr. RUBINOFF. Well, we have a proposal that we're about to send to the Global Environmental Facility of the World Bank that's about \$10 million to promote this program.

Mr. YATES. I think they probably have more money than we have, don't they?

Mr. RUBINOFF. Well, the United States gives them a lot.

Mr. YATES. All right. Anything else you want to tell us?

Mr. RUBINOFF. I think that's it. Thank you.

## SMITHSONIAN AND FOREST SERVICE COOPERATIVE STUDIES

Mr. ADAMS. Mr. Chairman, since the matter has arisen of the overlap or the potential overlap between our activities and those of the Forest Service, it might be well if you would call on Dr. Hoffmann to say a little about that, because we've done some exploration of that question.

Mr. YATES. All right.

Dr. Hoffmann, tell us about your exploration.

Mr. HOFFMANN. Thank you, Mr. Chairman.

The exploration has been done here in Washington rather than in Panama. What the Secretary was referring to was the fact that over the past several years, we have been working closely with a number of agencies, both through the Committee on Earth and Environmental Sciences, which is an interagency group that we sit with as an observer, but more specifically with the Forest Service. We have now met with them to discuss the possibilities of cooperation in international forestry studies.

This has been a very useful meeting. At the first session of the group, we agreed to begin exploring possible areas of joint research, such as forest canopy studies, tropical ecosystems dynamics, and the like. We have already scheduled a second meeting in mid-March to continue these discussions.

## TAXOL FROM PACIFIC YEW TREES

Mr. YATES. May I ask you a question about what concerns us and what the Forest Service is doing, and that is the use of drugs from trees. We, of course, have funded their developing of Taxol from the Pacific yews, and an offshoot of that, of course, was considered: the bark. They were looking at the needles on the yews. Do you do any of that, you, the Smithsonian?

Mr. HOFFMANN. We, the Smithsonian, are not directly involved in that. However, I would point out that—

Mr. YATES. Well, why would you not be? Why is your research less than that of the Forest Service? I would have thought the Smithsonian, with its great vision and its great people, would be working for mankind in this respect.

Mr. HOFFMANN. We are, but because historically our great strengths are in the areas of systematic and evolutionary biology, ecology, ecosystem studies, things of this sort, basic scientific research, our focus has been on understanding the relationships of organisms throughout the world and the distribution of those organisms.

Mr. YATES. You mean like bacteria to human beings?

Mr. HOFFMANN. Well, let's talk specifically about yew trees. The drug Taxol was first identified in the Pacific yew, which is a tree growing in the old-growth forests of the Northwest. There are about 20 to 25 other species of yew trees growing around the world, mostly in the Northern Hemisphere. Once Taxol was identified as a substance of interest, systematic biologists, including people at the Smithsonian, were able to direct pharmaceutical researchers to other places and other yew trees, and it is my understanding that some of those other species are much better sources of Taxol potentially than is the Pacific yew.

Mr. YATES. From where does your understanding come?

Mr. HOFFMANN. That comes from several articles I read more than six months ago, and if you ask me the names of them, I'm afraid I can't tell you.

Mr. YATES. When you say "pharmaceutical researchers," are you referring to private pharmaceutical researchers?

Mr. HOFFMANN. They're both private and public people in NIH.

Mr. YATES. At NIH?

Mr. HOFFMANN. Yes.

Mr. YATES. Do you know the results of their research?

Mr. HOFFMANN. As I say, this is based on an article I read some time ago, but the results of the preliminary screening were that in certain other species of yews, the needles were much richer in the basic substance than were the needles of the Pacific yew.

Mr. YATES. Now, who discovered that?

Mr. HOFFMANN. I can't tell you who that was.

Mr. YATES. You can't take credit for it?

Mr. HOFFMANN. No.

Mr. ADAMS. I think we could volunteer to find the article.

Mr. HOFFMANN. I'll see what we can do.

Mr. YATES. I would like to know that, because we've been pressing the Forest Service for this. We've been telling them to plant more Pacific yew trees so that you have a source available, and then they came in and said that they were looking also with private companies at the possibility of the needles. The Smithsonian is not engaged in anything like that?

#### RESEARCH IN BIOLOGICALLY ACTIVE COMPOUNDS

Mr. HOFFMANN. No. The closest we come are some projects that we're discussing with the Fogarty International Center of NIH that would involve pairing our biosystemists with ethnobotanists and pharmaceutical researchers and economists to prospect for organisms that might be useful sources of drugs in several localities. Sri Lanka is one possibility, the Cameroons is another. These are tropical forest ecosystems. But these are still being negotiated.

Mr. YATES. Is this being done in Panama, too?

Dr. Rubinoff, in addition to researching the respiration of the trees, do you ever research the trees themselves to see what their possible medicinal values are?

Mr. RUBINOFF. We don't, but as you know, the facility that we operate is open to researchers from all over the world, and we have a number of people from universities in North America—one from Utah that I can think of right off—who are using the research sites in Panama that we administer to do these kinds of studies that you're mentioning, looking for effects—

Mr. YATES. Who does that?

Mr. RUBINOFF. Biologists from universities in North America, who are not employees of the Smithsonian.

Mr. YATES. Which ones?

Mr. RUBINOFF. I can provide the names.

Mr. YATES. Please provide that for the record.

[The information follows:]

## SCIENTISTS AT STRI DOING RESEARCH RELATED TO MEDICINAL PRODUCTS OF PLANTS

Name	Affiliation	Description of research
Abelson, Adam.....	Vassar College .....	Use of medicinal plants by Guaymi Indians.
Brown, Nicholas.....	Cornell University.....	Medicinal products from Quassia.
Correa, Mireya.....	STRI staff/University of Panama .....	Screening and analyzing different plants for medicinal activities.
Gilbert, Gregory.....	STRI 3-year Postdoctoral Fellow .....	Antibiotic resins in forest trees.
Gomez, Nelida.....	STRI staff doing Ph.D. at the University of Heidelberg.	Screening plants in the morning glory family for anti-herbivore chemicals.
Smith, Neil.....	STRI staff.....	Looking at application of insect antifeedants for human diseases.
Sojarto, Doel.....	University of Illinois.....	Abundance and distribution of plants with known medicinal activities in Malaysia, Indonesia, and Panama.

Mr. RUBINOFF. One is Professor Coley from the University of Utah, and there are two or three others who have been exploring this possibility.

One of the advantages of looking for the biologically active compounds in trees and working in a place that's stable and has long-term protection, is that some of these compounds are only produced when the plant is under attack from insects. So if you go through sampling only one time, and if the tree isn't under attack at that particular time, you may miss a very important compound. So you need to have an area where you can examine the whole tree, perhaps reaching its crown with the crane we mentioned earlier. You also need to look at the plant through time. So that's one of the reasons that some biologists are beginning to turn to us to use our collaborating sites around the world.

Mr. YATES. Can that be happening to trees on the continent here? I wonder, because we hear so much testimony about the infections that trees are subject to and we've got to cut them down. Is anybody doing research on—that's the first I've ever heard of the assault of insects creating this kind of countermeasure.

Mr. RUBINOFF. It produces countermeasures on the part of the plant, indeed. It's certainly the same process—

Mr. YATES. We have the Forest Service coming in, and I'll ask them about that. They'd be doing it. You wouldn't be doing it.

Mr. RUBINOFF. Lots of universities in North America might be doing that as well.

Mr. YATES. But the Smithsonian is not.

Mr. RUBINOFF. I'd have to ask my colleagues who administer—

Mr. YATES. Who would you like to ask? Mr. Freudenheim?  
[Laughter.]

Mr. RUBINOFF. Dave Correll.

Mr. CORRELL. The Environmental Research Center is not looking at the pharmaceuticals that way. We are doing some of the other aspects you're talking about.

Mr. YATES. Wouldn't it be nice if you were?

Dr. Talbot?

Mr. TALBOT. We've had one contract with a firm just doing collecting for them in the Philippines and working with them and providing materials. We don't do the work ourselves.

Mr. YATES. What do you mean by "providing materials"?

Mr. TALBOT. We collect marine algae and bring them back, and then they test them.

Mr. HOFFMANN. The Smithsonian also provides identification of species for the National Cancer Institute, and this is of critical importance, because if you have identified a compound from some organism and it shows a significant anti-cancer activity, for example, you must know what it came from in order to be able to go out and find more. So this is a very important function that we provide in concert with other agencies.

I'd like to make a general statement concerning the way in which I think the Smithsonian should be functioning here, and that is, we should be doing those things that we can do best and doing them in a coordinated fashion rather than trying ourselves to develop a real capability, say, in pharmaceutical chemistry. It's something we've never done. It's a very expensive thing to do.

Our efforts, our resources are best expended in functioning in a collaborative and complementary fashion, and this is exactly what the Committee on Earth and Environmental Sciences and the U.S. Global Change Committee see for us. They are very emphatic that the kinds of things we do are not being done by other government agencies, and it is very important for this scientific research, therefore, to be supported by the Smithsonian.

Mr. YATES. Okay. I'll get over my disappointment. [Laughter.]

Thank you very much.

Who else is from out of town?

Dr. Shapiro, you're from out of town. Tell us what your needs are, other than your computers. [Laughter.]

#### INSTRUMENTATION AT SMITHSONIAN ASTROPHYSICAL OBSERVATORY

Mr. SHAPIRO. First, I'd like to put a postscript on what I said this morning. Apparently you asked me what the instrument looks like, and I answered the question what does the instrument look at, and I apologize for that. The instrument looks like a telescope, and it's about 5 feet long and about 18 inches wide and about 18 inches high.

Mr. YATES. With a face on it showing results?

Mr. SHAPIRO. Well, it's a very complicated instrument, and I don't think it's appropriate for me to try and describe all its details here, but it uses a principle of interference of light waves such that it can get very high resolution on the radiation that comes from these particular molecules.

Mr. YATES. Okay. You get certain information as a result of the use of that instrument. Is that the end of the research?

Mr. SHAPIRO. Oh, no, no. That's just one part.

Mr. YATES. I was going to say—

Mr. SHAPIRO. That's just one part.

Mr. YATES. I'm trying to make your case for your computers. Do you then have to extrapolate them?

Mr. SHAPIRO. No, the data that this instrument gathers is—the gathering is controlled by a computer, and the analysis is done by a computer, and as we make improvements, the requirements for the computer increase, and that's where we get into the need for continual upgrading of computers.

Mr. YATES. So what you're saying is if the Committee buys you your new computers, they're going to be obsolescent in a relatively short time because of the advance of research?

Mr. SHAPIRO. Right. It's, roughly speaking, about three years before computers get at least obsolescent, and by five they're really obsolete. [Laughter.]

Mr. YATES. Let me ask the next question. Do you have access to more advanced computers than those which you have so that you can take the next step in this research?

Mr. SHAPIRO. To a certain extent. As I mentioned earlier, we have access to the National Supercomputer Centers, but the difficulty there at the present is the rate at which you can supply information to that computer and the rate at which you can get it back. Now, over the next decade, there may be really large improvements in the amount of information that can flow back and forth when fiber optics connect all of these machines, but at the moment it has limited utility because of that difficulty in getting information to and from the Supercomputer Centers.

Mr. YATES. We are really in the world of tomorrow, aren't we? If there is a world of tomorrow. [Laughter.]

Which really all depends on what happens with the bromine, doesn't it?

Mr. SHAPIRO. Well, that's one aspect. [Laughter.]

I would, if I could, like to say something about our projects for the world of tomorrow, our major scientific instrumentation projects, which are the backbone of what we're building for keeping the Smithsonian Astrophysical Observatory in the forefront of research. Here I've brought this picture of the largest single casting of glass ever made in the United States: 20 feet across.

Mr. YATES. That's for your telescope?

Mr. SHAPIRO. Right. To give you a sense of scale, it would fill up about half of this room, this one piece of glass. And if all goes well, it will be the largest piece of glass ever polished in the world.

Mr. YATES. Who polishes it for you?

Mr. SHAPIRO. This will be polished, starting in a few months, at the University of Arizona's Mirror Laboratory.

Mr. YATES. How do you transfer it?

Mr. SHAPIRO. Oh, it's there already.

Mr. YATES. Oh, it's there. They made it?

Mr. SHAPIRO. It was cast there.

Mr. YATES. I see. And they'll polish it there, too.

Mr. SHAPIRO. Right. I mean, we're helping, but basically the development was the University of Arizona's, not ours. It's a collaborative project.

Mr. YATES. Where will it go?

Mr. SHAPIRO. This will go on Mt. Hopkins, which is 40 miles south of Tucson, Arizona.

Mr. YATES. Will this be a mirror?

Mr. SHAPIRO. This is a mirror. It will be a telescope when we get everything finished, and it will be a really marvelous telescope in several respects. The major advance it will have is it will be able to look at a lot of the sky at once. Now, this wasn't important in the old days, but now when we have fiber optics, we can actually analyze the light from up to 300 objects simultaneously. So it makes

the telescope—this telescope, when it's finished, will be in effect 300 times as efficient as what we already have.

Mr. YATES. Oh, my.

Mr. SHAPIRO. So it's an enormous advance that allows us to address questions that were simply unaddressable.

Mr. YATES. I remember Dr. Challinor coming in with his multiple mirror.

Mr. SHAPIRO. Right.

Mr. YATES. But that's now—

Mr. SHAPIRO. The multiple-mirror telescope—

Mr. YATES. Is now obsolete.

Mr. SHAPIRO. Well, no, I wouldn't call it obsolete.

Mr. YATES. Obsolescent. [Laughter.]

Mr. SHAPIRO. It has a very limited field of view. It can only see roughly  $\frac{1}{4000}$ th of the amount of sky that this one will be able to see at one time, but it wasn't important when it was built, because fiber optics hadn't been invented yet. So this new telescope is going to take advantage of this modern technology.

If you will, we're the technology arm of the Smithsonian. We're pushing technology in a number of fronts, in telescopes and instruments, a variety of sorts. And our submillimeter—

Mr. YATES. How much does your piece of glass cost?

Mr. SHAPIRO. Beg your pardon?

Mr. YATES. How much does your piece of glass cost?

Mr. SHAPIRO. Well, we bought it in chunks roughly this size—6 inches on a side—but if you put all the chunks together and the refractories that fill up the spaces, it was \$1 million.

Mr. YATES. That's not a lot.

Mr. SHAPIRO. To some people that's a lot of money.

Mr. YATES. I was just going to say, I'm used to the Smithsonian coming in for hundreds of millions of dollars.

Mr. SHAPIRO. Well, we're not at that stage, but we try to make as good use as we can. I might say this is the first time a big advance in the size of a piece of glass cast was done successfully the first time. If it had cracked, that would have been \$1 million down the drain.

Mr. YATES. Isn't that what happened to one of the satellite mirrors?

Mr. SHAPIRO. Well, no. If you're thinking of the Hubble space telescope, it has a little spherical aberration. Just a polishing error.

Mr. YATES. Does that spoil everything?

Mr. SHAPIRO. Well, it doesn't spoil everything. It just makes it a little, if you will, nearsighted. [Laughter.]

Mr. YATES. How much will your total telescope cost?

Mr. SHAPIRO. The total telescope will cost, and it is another thing where I can't give you a precise answer, but of the order of \$20 million, half being paid for by the University of Arizona and half by the Smithsonian.

Mr. YATES. Good deal.

Mr. SHAPIRO. Well, we think it's a very efficient way, because we're making as much use as possible of the structure of the multiple-mirror telescope.

Mr. YATES. Now, is this the site where you're having trouble with the Endangered Species Act?



Mr. SHAPIRO. No, no, no. That's 150 kilometers away, and we're not involved in that controversy anymore. [Laughter.]

Mr. YATES. All right. What else can you tell me about your activities?

RESEARCH AT THE SMITHSONIAN ASTROPHYSICAL OBSERVATORY

Mr. SHAPIRO. Well, I thought I'd tell you some of the things that we've done that have been, I think, newsworthy. One thing we discovered is we detected the highest-energy radiation from outer space ever detected. If you look at ordinary light, each little particle of light has a certain amount of energy. The light we detected from a galaxy separate from our own has almost 1,000 billion times as much energy as ordinary light that you see with your eye. This is a mindboggling discovery.

The question is, how did nature manage to produce such high-energy light particles? We don't know yet. What applications will it have perhaps down on Earth when we figure it out? We don't know. I suspect no applications over the next 10, probably even 20 years. But when you're talking on a scale of 30 to 50 years or more, it might revolutionize things on Earth. It might. I won't say it will.

Mr. YATES. You don't know how to capture it, either, do you?

Mr. SHAPIRO. No. We don't know how nature does it. We may or may not ever understand, and given our understanding, we may or may not ever be able to reproduce it on the earth. But we're dealing with absolutely incredible sources of energy that nature manages to produce.

Mr. YATES. How far out in space is that?

Mr. SHAPIRO. This galaxy, I've forgotten exactly how far, but it's of the order of 40 million lightyears away. That means the light that we're looking at was emitted 40 million years ago, when you were a young man. [Laughter.]

Mr. YATES. Sometimes I feel like that. [Laughter.]

Well, are you adequately funded?

Mr. SHAPIRO. Well, if our major scientific instrumentation—

Mr. YATES. Incidentally, will it take 40 million years for you to get up there?

Mr. SHAPIRO. If we were to travel there, it would take us longer. I'm not about to embark on the trip.

Mr. YATES. No, of course not. I wondered in terms of capturing that light, that you'll have to capture that light. How much time do you have to go to—well, you don't know the answer to that yet.

Mr. SHAPIRO. No. The light comes to us from the objects.

Mr. YATES. So in effect it is captured, then.

Mr. SHAPIRO. We capture it, yes, but only a small part of it, obviously. But the question is, what is going on in the object—

Mr. YATES. How do you know it took 40 million years for it to come here?

Mr. SHAPIRO. Well, estimating distances in astronomy is actually a very difficult problem indeed, and at the Astrophysical Observatory, just by coincidence, you might say, we've made a real breakthrough in being able to determine accurate distances to galaxies this past year using a technique developed at the Observatory called very long baseline interferometry. This would take us far

afield if I were to give you this lecture now, but suffice it to say we've really made a big advance in being able to determine distances within the universe. That was one of our other accomplishments this year.

In addition, closer to home—and this is tentative and preliminary, and my colleague would probably shoot me if he knew I was talking about it, but I'll talk about it anyway—it looks like we have really good evidence for detecting the first extrasolar planet of the size of Jupiter, a Jupiter-size planet, around another star. Now, this is not yet confirmed, and the data are not quite as good as we would like before making a claim, but it looks like we may have another first there, too.

Mr. YATES. Does space travel have anything to do with your research?

Mr. SHAPIRO. Space travel?

Mr. YATES. Yes.

Mr. SHAPIRO. You mean within the solar system?

Mr. YATES. We're sending satellites up.

Mr. SHAPIRO. Right.

Mr. YATES. We're talking about a space station. If you get a space station, will that help you go further out into—

Mr. SHAPIRO. The space station, I can fairly say, is irrelevant to our research.

Mr. YATES. Is it?

Mr. SHAPIRO. Yes. I think that's a fair statement.

Mr. YATES. What's it relevant to?

Mr. SHAPIRO. I'd rather not get into that. I have rather strong feelings about it.

Mr. YATES. You could use that money for something else, couldn't you?

Mr. SHAPIRO. Well, if I were given that much money, I think I could find something better to do with it. But it's a complicated story involving all sorts of aspects, none of which are scientific. [Laughter.]

Mr. YATES. You know, I sit here and listen to these wonders that are being performed by the Smithsonian, and I wonder and I wonder, and it occurs to me, how many of my colleagues in the Congress know what you're doing? I don't think many do.

Mr. SHAPIRO. I suspect that's true.

Mr. YATES. And I am at fault, it suddenly occurs to me, in not having all this made a part of the record, listening to all those. But that would take days and weeks, wouldn't it, just listening to what you fellows are doing with funding going to the Smithsonian, apart from the funds that go to constructing the sheds and fixing the glass roofs and things of that sort? I'm impressed by this, and I'm impressed by Dr. Rubinoff, and I never got past seeing the exhibits at the museum, really, which are beautiful. That's unfortunate.

Mr. SHAPIRO. Let me say one more thing.

Mr. YATES. Let me just ask the next question.

Mr. SHAPIRO. Sure.

## SCOPE OF RESEARCH AT THE SMITHSONIAN

Mr. YATES. Do you anywhere, other than—I don't think it's in the "Treasures of the Smithsonian". Do you anywhere tell what you're doing scientifically?

Mr. ADAMS. Well, there are a number of brochures, Mr. Chairman, that very briefly and in a popular way outline the sphere of activity.

Mr. YATES. How much would it cost for you to create an encyclopedia showing what you're doing? First of all, does something like that make sense?

Mr. ADAMS. Well, an encyclopedia implies that we are sort of universal in what we do, and we're not. We have a lot of activity where we do spectacular work and where we're very important in the scope of all that's done, and certainly astrophysics is one of those fields, and tropical biology and evolutionary biology are another two. But there's a lot that we don't cover.

Mr. YATES. I know. But how many more do you cover, though? Those are just two of how many activities?

Mr. ADAMS. Well, we miss a lot. We're not comparable to a university with some aspirations to universality in coverage.

Mr. YATES. This is true, but what I'm trying to find out is how much you do. I know that what you do is not universal. I know about Dr. Shapiro and his astrophysics, I know about Dr. Rubinoff and what he's doing. I don't know what you're doing down in Florida to a great extent, for example. You must have laboratories or expeditions going out a lot of places. They come back and report. Who reads your reports, other than Dr. Hoffmann?

Mr. ADAMS. Well, the great thrust of research in the life sciences has been laboratory experiments, and we do some laboratory work, but we're much more likely to be field biologists rather than laboratory biologists.

## BOOK ON RESEARCH AT THE SMITHSONIAN

Mr. YATES. Well, that's fine, but what field biology do you do? Where is it written? Where could I read something about that? When I say I read it, I want my colleagues to be able to read it, too, so they know the goodies before they get up on the floor and demand that your funds be cut.

Mr. HOFFMANN. We perceived this need several years ago and began on a book project. It will be a book for lay audiences——

Mr. YATES. Like "Treasures of the Smithsonian"?

Mr. HOFFMANN. Something like that, but it's called "A World of Discovery," and it emphasizes all of the research activities throughout the whole range of the Smithsonian, from astrophysics through American art.

Mr. YATES. And Zen Buddhism. [Laughter.]

Mr. HOFFMANN. This book——

Madeleine, when do you think it will be done?

Ms. JACOBS. It will be ready for our May Regents' meeting. It's 128 pages.

Mr. YATES. That's all?

Ms. JACOBS. Well, it either had to be 128 or 1,280. I mean, it's hard to put the Smithsonian into a short publication, so this was

kind of a short look at the Smithsonian behind the scenes, all its research.

Mr. ADAMS. We'll be sure that you get copies.

Mr. YATES. I would like it very much.

#### SCIENCE TEACHING THROUGH ITS ASTRONOMICAL ROOTS

Mr. SHAPIRO. While I've emphasized so far the increase of knowledge aspect of the Smithsonian that we champion, we have not neglected the diffusion, and I thought I'd let you know that our Project STAR, Science Teaching through its Astronomical Roots, concluded and had its full textbook, teacher's guide, and everything published and is now available and being used in a number of schools and hopefully more throughout the country. How successful it will be in really teaching students better than conventional methods remains to be seen, but it certainly is a radical departure from the usual methods of teaching science to pre-college students.

Mr. YATES. It sounds wonderful, Dr. Shapiro, to an uneducated layman. There are people like you who are going out there, and the Smithsonian. That's why I asked you, are you short of funds?

Mr. SHAPIRO. Well, you know, like everybody else, we can always make good use of more funds.

Mr. YATES. I'd hate to ask Dr. Adams that question, because I'm sure he'll come back with lots of money.

Won't you? You're short of funds, aren't you? That's why you're putting the collection boxes around.

But, you know, when you look at the Federal budget that you've had, it's grown. Really grown. Which reminds us of the statement by Thomas Jefferson, I think it was, who said that one should not expect that a grown man would wear the coat he wore when he was a boy. [Laughter.]

Mr. SHAPIRO. In summary, it's fair to say that if the major scientific instrumentation account, which is funding our major new projects, is continued, and if we were to get modest amounts for computers, we'd be in good shape.

Mr. YATES. All right. Thanks, Dr. Shapiro.

#### SMITHSONIAN RELATIONSHIPS WITH ACADEMIC INSTITUTIONS

Mr. ADAMS. I think it might be worth noting that one of the reasons that the SAO is as successful as it is because it's done in partnership with Harvard University. The notion of having a public/private corporation in that form, which has been so effective, is really worth doing.

Mr. YATES. Now, is your association with Harvard the only one of its kind, or do you have that kind of association, say, with others than Harvard? For instance, what about the University of Chicago?

Mr. ADAMS. We have nothing comparable with the University of Chicago. There's a small parallel case involving Princeton, with whom we're involved in this Kenya wildlife ranch, but I think there are a number of more modest, really quite modest undertakings that have some of the same—

Ms. PILGRIM. We have a relationship with the Parsons School. We have a master's program.

Mr. ADAMS. I might mention also the National Science Resources Center, which we jointly sponsor with the National Academy of Sciences.

Mr. YATES. How much do connections like that or relationships like that cost? For instance, your association with Harvard.

Mr. ADAMS. Well, Harvard is putting money into that for their share. It isn't that we're hiring—

Mr. YATES. Now, who pays for Dr. Shapiro? Harvard or you?

Mr. ADAMS. I don't remember what the—

Mr. SHAPIRO. I can answer that. [Laughter.]

It is a true statement that 55 percent of my salary is paid by Harvard and 45 percent by the Smithsonian, and I think it's also fair to say that 90 percent of my time is put in on Smithsonian business and 10 percent of my time on Harvard business. [Laughter.]

The latter is an approximation. The former is a fact.

Mr. YATES. Okay.

Mr. SHAPIRO. But I would like to add that I think the association with Harvard has been extremely good for the Smithsonian, because we are able to recruit and retain very high-caliber scientists because we are in the university environment. They have the option to have students and so forth. It is, I think, critical to the success of—

Mr. YATES. That raises the next question that we have. Why shouldn't the Smithsonian do more of that?

Mr. ADAMS. I think it probably should, Mr. Chairman. We've been discussing with the Regents the possibility of establishing a high-level commission that would look at the future of the Smithsonian comparable to the one I mentioned while you were out of the room and Mr. Skaggs was chairing. It was done 50 years or so ago. But it seems to me one of the questions that a broad commission might indeed examine is whether there aren't so many opportunities through forms of collaboration like this that we need to explore them more systematically.

Mr. YATES. Do you need legislation for that?

Mr. ADAMS. No, I don't think so. We would do this with private funds. I'm not saying that we couldn't—

Mr. YATES. How was it done 50 years ago?

Mr. ADAMS. It was done just by action of the Board of Regents.

Mr. YATES. You mean the Board of Regents appointed or approved the commission?

Mr. ADAMS. Approved the commission. I'm not saying I had any objection to that, but since it would really be spelling out options and opportunities for the Regents to consider, it isn't really a public body—

Mr. YATES. It isn't only for the Regents to consider, because the bulk of your appropriations comes from the Federal Government.

Mr. ADAMS. Well, I'm not saying that it couldn't come up for—

Mr. YATES. It is something for the Regents to consider, of course, but I think it's something for the Federal Government to do, too, and I think it would work well, because your scale of your appropriations is really—the curve is going up, and I think that it's something the Congress would like to know as to where you're

going. As a matter of fact, as I indicated before, I think it would be well for the Congress to know more about what you're doing.

Mr. ADAMS. Well, Mr. Yates, the discussion with Mr. Skaggs while you were out of the room dealt at length with the question of long-term possibilities in the field of dispersion, not simply dispersing facilities or any other forms of dispersion. That clearly would be a very important item on the agenda of such a commission, too, and it's a subject which is very much of concern to the Congress.

Mr. YATES. I agree with that, and this relationship with Harvard is one form of dispersion, really, and I think a very good one. I was thinking the Harvard of the West is Stanford University. Perhaps it ought to be done. Certainly the University of Chicago, as you and I both know, has wonderful physicists, for example, nuclear and chemical, and other scientists.

SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER

Well, who else is from out of town? Or is there one more scientist? Mr. Correll from the Environmental Research Center on the Chesapeake Bay. Okay.

What are you doing, Mr. Correll? Are you in outer space, too? Is that part of your environment or only in Dr. Shapiro's?

Mr. CORRELL. We do atmospheric research, but not astronomy research. We are primarily concerned with—

Mr. YATES. He doesn't do all astronomy. Is the ozone considered astronomy or not?

Mr. CORRELL. Well, we overlap in the sense that they look down from satellites and so forth, and we look up from the ground. [Laughter.]

But we both study the effects of changes in ozone and causal mechanisms. So in that sense, we overlap.

Mr. YATES. "Confrontation with DeGuiche in Cyrano." Do you remember that?

Mr. CORRELL. No.

Mr. YATES. Well, take a look at it. [Laughter.]

No. The DeGuiche asks Cyrano whether he has read "Don Quixote," and he said yes, he had, and he said, "Do you remember, then, tumbling into the mud and looking up to the stars?" [Laughter.]

Mr. CORRELL. It's similar. That's a good analogy.

Mr. YATES. I'm sorry to interrupt you.

Mr. CORRELL. I was noting this morning when Irwin was talking about his wonderful new machine to measure the broadening of the stratosphere, we're also looking at the effects of atmospheric changes on what we're really concerned about, which is ultraviolet light penetration through the atmosphere to the earth, only we're looking at it from the earth looking up and actually measuring the ultraviolet light that reaches the earth and how that changes and some of the atmospheric factors that control that.

Mr. YATES. What's your relationship to his bromine? Because obviously it's from the earth, because it's going into the earth in the form of fertilizer.

## OZONE DEPLETION IN THE STRATOSPHERE

Mr. CORRELL. We have, at this point, not looked at sources of bromine moving to the atmosphere, but we do look at a lot of other species that are involved in ozone chemistry, their rates of release and their source areas. Such as, for instance, nitrous oxide, which is laughing gas, but it is also a chemical that destroys ozone in the stratosphere, and it's increasing. We have projects where we're using modern technology to measure source areas——

Mr. YATES. Is this the coolant in refrigerators?

Mr. CORRELL. No, this is material that's produced in microbial reactions in soil, such as in rice paddies or in farm fields where nitrogen fertilizer is sometimes converted to this gas, and once this gas reaches the stratosphere, it destroys ozone. It's another kind of chemistry involved in the ozone dynamics.

Mr. YATES. How does it escape?

Mr. CORRELL. Well, it's a light gas that is evolved by the bacteria in the soil, and it just diffuses up into the atmosphere and then gets carried by atmospheric circulation into the stratosphere. It's natural, and it's always been there, but the concentrations are increasing now due to man's activities in various parts of the world, and we're doing research on that to look at the mechanisms involved and the factors that might be changed to decrease the rate at which we're releasing it.

But we're also looking at effects of the actual changes in the ozone and other atmospheric factors on ultraviolet light penetration to the earth. We have the most extensive records in the world on ultraviolet radiation reaching the earth and how it changes over time. Right now we're cooperating with the Department of Agriculture, for instance, to provide instrumentation for a network of stations in the United States to measure ultraviolet radiation as one of the agencies that are funded under the Global Change Program to carry out that mission.

Mr. YATES. Why the Department of Agriculture?

Mr. CORRELL. They were chosen as the principal or lead agency by the Global Change Committee to carry out the U.S. Federal program and do the radiation monitoring, and also effects research in plants.

Mr. YATES. This is Dr. Shapiro's bromine again, isn't it?

Mr. CORRELL. Well, it's involved in the same sense that chlorine, for instance, the chemistry is really similar.

Mr. YATES. Yes, and a lot of other compounds.

Mr. CORRELL. There are a number of ways in which you can affect the ozone, primarily by destroying——

Mr. YATES. Well, do you find in your research the ozone's being affected?

Mr. CORRELL. We find that at least in most places, a more important factor in the short term has been aerosols are being created in the atmosphere that are attenuating ultraviolet penetration, and fortunately for us that means that we don't get as much ultraviolet radiation as we would otherwise. So in some periods over the last 15 years, we've actually had a decrease in ultraviolet radiation reaching the earth, despite the fact that the ozone layer is being threatened.

Mr. YATES. I have a feeling, from what I've read, that it's more than a threat. Don't you have holes in the ozone presumably down in Antarctica?

Mr. CORRELL. There's a hole in the Antarctic, a seasonal hole that's produced, which has been around for as long as people have measured it, since the 1950s at least, and it may be getting larger.

Mr. YATES. Do we know yet whether that's man-made?

Mr. CORRELL. Well, we know that some of the things that man has done have affected the size of the hole and the duration of the hole, and as Irwin says, bromine may be one of those factors that acts as a catalyst for destroying ozone. But the ozone over this part of the world hasn't changed much in recent years, so it's—

Mr. YATES. Does that mean we don't have to worry about it?

Mr. CORRELL. No, I didn't mean to say that. I think the most frightening thing about the whole business is that many of the things we're doing have a duration of centuries, so that even if we were to stop any of our activities that are affecting the atmospheric chemistry right away, the impact of what's already up there might show up 100 years from now or continue to be acting 100 years from now.

Mr. YATES. Is any of your research concerned with the effect of nuclear explosions on the atmosphere? For example, would you have looked at what happened as a result of the Chernobyl disaster and its effect on the atmosphere?

Mr. CORRELL. None of our research is directly related to that. If it had an effect on some of the things we're measuring, we would see it, but it doesn't have, for instance, any measurable effect that we know about on ultraviolet light penetration.

#### GREENHOUSE GASES IN THE ATMOSPHERE

We're looking at other things to do with the atmosphere and man's interactions, and one of them Dr. Rubinoff mentioned this morning about the effects of increasing CO<sub>2</sub>, carbon dioxide, and just to give you an idea of how complicated that is, it isn't necessarily true that the world will warm up and get drier because of increasing CO<sub>2</sub>. We're doing research on the direct effects of increasing carbon dioxide on plant communities, and we've been doing that in cooperation with the Department of Energy. They're running part of it.

The effects are fairly striking in the sense that the plants use less water, and they give off less water to the atmosphere, and water is the biggest greenhouse gas of all, and it's the most important greenhouse gas in the atmosphere. So if plants give off less water to the atmosphere, that may be more important in terms of climate than the effects of increasing CO<sub>2</sub>. So we may in fact have, in some senses, a wetter and cooler climate in the future as the CO<sub>2</sub> increases.

It's a very uncertain kind of business where I don't think anybody can certainly predict the future from what we know today. So what we're trying to do is better understand the mechanisms and what is really involved so that we'll be better able to say what's going on and predict the effects of man's activities in the future. I don't think we can do that very well today.



Mr. YATES. Okay. Are you short of funds?

Mr. CORRELL. Oh, yes, sir, we are.

Mr. YATES. Are you?

Mr. CORRELL. We're, to a considerable degree, funded by grants and contracts that support specific projects, but we have to contribute funds from the Smithsonian, from Congress, and from our trust funds to support those activities, and we are critically short of funding to carry those out. About a third of our budget is research grants and contracts, but the necessary component for that is the contribution from the Smithsonian.

Mr. YATES. And Dr. Adams doesn't want to make one to you?

Mr. CORRELL. Well, I didn't say that. We are feeling the pinch everybody else is in the institution now with the budget problems, and we've had a reduction in our budget.

#### FACILITIES AT THE SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER

Mr. YATES. What's the condition of your physical properties?

Mr. CORRELL. Our facilities, buildings?

Mr. YATES. Yes.

Mr. CORRELL. We have been in a growth phase for a number of years of adding staff, and we're adding to our facilities, and we're also renovating some of the older ones. We started off with some old barns from a farm that we renovated. With FY 1993 funding we're right now in the process of adding to the existing laboratory and renovating the Old Dominion Wing which was formerly a cow barn. I think most of the buildings we have are pretty functional, but we're very crowded, and we're renting some facilities to supplement our physical plant.

#### COOPER-HEWITT MUSEUM

Mr. YATES. Thank you. Any other scientists, or is that the whole field of scientists?

Ms. Pilgrim? Now we get to aesthetics. [Laughter.]

Ms. PILGRIM. And more.

Mr. YATES. Science, too?

Ms. PILGRIM. Well, actually, Cooper-Hewitt, the National Museum of Design, is a fitting topic for the end of this hearing in the sense that design really bridges the gap between science, technology, art, and history. Everything that we utilize goes through a design process, and one of the exciting things that's been happening in this past year for Cooper-Hewitt the National Museum of Design, is that we have rewritten our mission. In the information that I have left at your—

Mr. YATES. I have the kit, yes.

Ms. PILGRIM. Right. In there is our new mission statement, and in effect, just to sort of sum it up, because the mission statement could be rewritten 20 million times and a lot of different ways, but it is to really try to get across to everyone that design impacts on our lives every second of every day, and we don't even think about it. I mean, from the chair that you're sitting on to the table we're talking around—

Mr. YATES. Well, we could have a better design for the chair. [Laughter.]

Ms. PILGRIM. I wouldn't mind that for my own chair, too. And I could tell you a few problems about your so-called handicapped bathroom.

Mr. YATES. Our what?

Ms. PILGRIM. Your so-called handicapped bathroom here in the Rayburn Building.

Mr. YATES. Oh, okay. Well, make a date with the superintendent.

Ms. PILGRIM. Okay. But that's a huge problem.

Mr. YATES. Okay.

Ms. PILGRIM. In this mission statement and in looking at our strategies and thinking about the future, we realize that there are two things we need to do. Now, you seemed, last week when I ran into you, rather shocked that our collections are as large as they are.

Mr. YATES. No. If I gave you that impression, I'm sorry. I knew that you have a very good museum and that you had more of certain collections than any other institution in the country. I think it was drawings of one of the artists perhaps—

Ms. PILGRIM. Well, before the National Museum of the American Indian, we were in essence the largest "art" museum within the Smithsonian in the fact that we have about a quarter of a million objects, and I feel a strong commitment, obviously, to those objects, particularly since when the museum was founded in 1897 as part of the Cooper Union, the whole idea was to use those objects for the students, for designers, for the public, for inspiration for better design. So we have a commitment to show those collections, but show them in such a way that people will walk away with a new understanding.

The other commitment we realized that we had was to do shows about socially relevant issues and to take objects of everyday life that we can all afford, no matter what religion, class, race, et cetera, we are—we all have access to things like maps, and the whole idea in effect of this map show which is on right now—I don't know if you've had an opportunity to see it. Probably not. I am hoping that it will come to Washington to the International Gallery if we can raise the money for it in November of this year. But the idea is—

Mr. YATES. What is the International Gallery?

Ms. PILGRIM. In the Ripley Center.

Mr. YATES. Oh. I thought it was a private gallery.

Ms. PILGRIM. No, no, no. Here at the Smithsonian. From my point of view, it would be a very fitting way to have us have our first sort of exhibition space—

Mr. YATES. What's involved in that exhibition? How much money?

Ms. PILGRIM. About \$300,000 to bring it here. But part of that is because of the fact that we would have to furnish the money for the guards, lights, et cetera. There is no budget for the International Gallery. So in fact, the irony is that it's going to be more expensive to show it here in Washington than it was in New York.

But, to me, this show is very important, because we want to make people aware of something that they actually think they know everything about. Most people think of maps as statements of fact, but they're not. They're just as prejudiced as any history book,

depending on who originally asked for it to be published. And not that there's anything wrong with that, but we want people to understand that if they know that, then they can make better use of maps.

We want people to walk out being better consumers of whatever object it is so that they can feel more empowered to do something about it. Because if you really think about it, when we design anything, and I mean as big as a regional planning right down to a can opener, we're essentially designing things for a very limited audience, people who are between 16 and 55, they're a certain height, they're a certain weight, they're righthanded, they have no eye problems, ear problems, back problems, arthritis, and God forbid, they don't have children, because the world is not really, in a way, designed—I mean, to me, I find it an amazing irony that we are the ones who created this built environment, and yet we haven't necessarily created it for our own needs. So in fact, we should be doing a far better job of looking at the widest possible audience for whatever it is we're designing and trying to make it work for those people's needs.

Mr. YATES. I take it from your statement about the International Gallery that you don't have all the money that you need?

Ms. PILGRIM. No. We're looking for—American Express was kind enough to underwrite the show in New York, and we are working on them to hopefully fund it here, but I don't know that yet. I'm hoping, because I think it would be an excellent opportunity for Cooper-Hewitt to make it's first sort of introduction to the Washington area. I mean, I think it's a perfect topic for the National Museum of Design.

#### RESEARCH AT THE COOPER-HEWITT MUSEUM

One of the other things that we're doing in regard to this exhibition, and we're making it part of our policy in the scheme of all the work we did on the mission and the strategies, is to really study what it is people are learning when they go to exhibitions. Museums have not done too much research. It's only been in the last five years or so that we've begun to do research on what people get out of what we do, and we would really like to know what people get so if it's not working, we can fix it and make it better for the next time, or continue doing the things that in fact are working. And we're very grateful for Zahava Doering working very closely with us. We've been doing surveys, and in your packet is a statement of overall facts that we have discovered about people's reactions to the exhibition.

The other thing I've included for you is, we did have comment books, like a lot of museums are doing, at the end of the exhibition, and you have to put this into some sort of context, because there's both negative and positive, but to me, you see that means people are really going through the show very carefully and they're reading labels to come and write long diatribes about what they feel about the show. That means we're doing something right. We're getting people to think. It's not our idea to tell people what to think. It's just to get them to think and hopefully feel more empowered when they actually leave. So that's been very exciting.

## EDUCATIONAL OUTREACH AT THE COOPER-HEWITT MUSEUM

We're doing some very innovative work, I think, in the area of education, and I want to thank you and your Committee for making this possible. There's a separate pamphlet there on a program which is called "City of Neighborhoods: Bridge Between School and Community," and it's essentially to work with teachers in New York City and architects and community resources, and we've done three of these courses. They last for three weekends, they're in a different community in New York, and the idea is to show the teachers the resources they have right there, right where their own schools are.

We all know, tragically by the dismissal of Chancellor Fernandez, how difficult it is to do something with the school system in New York, so we don't want to complicate the teachers' lives. What we're trying to do is to help them integrate visual literacy, design, architecture into their already existing curriculum, and so far the response to this program has been phenomenal, and it never could have gotten off the ground without your help. So I thank you very much for that.

## FUNDING FOR THE COOPER-HEWITT MUSEUM

As you know, the most serious problem we've had for our 25 years within the Smithsonian is the fact that it was always thought that we weren't supposed to cost the Smithsonian any money—

Mr. YATES. It says so in the record.

Ms. PILGRIM. No, you proved that it didn't. [Laughter.]

Mr. YATES. It says so in the record. Originally, when they were thinking of buying it, and this is Dr. Ripley speaking, a long time ago—

Ms. PILGRIM. I know, but you finally did—

Mr. YATES. I surrendered. [Laughter.]

Ms. PILGRIM. And you also finally, at my very first hearing, got out all the legislation and at the end of it looked at me and said, "Okay, now that you know there is no legal impediment to Cooper-Hewitt receiving Federal funding, what is it that you want?" And what I want is financial parity with the other institutions within the Smithsonian.

Mr. YATES. You want to go to the Department of Agriculture. [Laughter.]

Ms. PILGRIM. I'll go anywhere. Design crosses all fields.

## CONSTRUCTION AT THE COOPER-HEWITT MUSEUM

Mr. YATES. Okay. How's your new building?

Ms. PILGRIM. Well, there is no new building. We are about to embark on a project which has turned into a larger project than originally—

Mr. YATES. Isn't the building next to yours called the Fox Building?

Ms. PILGRIM. Correct. Our facility includes a mansion, the Miller House, the Fox House, a terrace, and a garden. We had numerous small projects going on. One project was to just internally join the Miller and Fox Houses together so that they would be more useful

spaces, but we also had an accessibility program going on, because those of you who have been there know how inaccessible the place is. There were boiler problems, roof—you know, all these buildings were built about 1900.

I have to say a great thanks to the Office of Design and Construction at the Smithsonian. I asked if all these could be put under the same contract of James Stewart Polshek, who is the architect for joining the Miller and Fox Houses, and I challenged him to figure out a way to get everyone in the front door of the mansion, and I challenged him to integrate all of our facilities, and he has come up with, I think, a program that the Smithsonian can use as a model on how to deal with landmark buildings and make them accessible for everyone without taking away from the architectural integrity of those buildings. So I am extremely thrilled and pleased with this project.

There is one minor hitch to it, as there always is, and that is that ODC, in preparing the budget, somehow no one put any money for moving the staff and the collections which are in the Miller House off site so that we can begin the construction. So right now we are having a dilemma, and that is one request which is in the budget for 1994. It is not the request that we submitted to the Smithsonian, I'll have to add, and at the moment, even if we get the request which has now been submitted, we would have to close our second floor. As you know, we only have 10,000 square feet of gallery space, and that would only leave us with 5,000, and our whole sort of very ambitious program would sort of somewhat go out the window for three years. So that's slightly disturbing, to say the least.

#### FUNDING FOR THE COOPER-HEWITT MUSEUM

We're still in the position where we have to raise 50 percent of our budget every year, so we have been charging admission, of course, from the beginning.

Mr. YATES. Fifty percent?

Ms. PILGRIM. Yes. We essentially get \$1 million from the Federal Government, we get about \$1 million from trust funds of the Smithsonian, and we raise over \$2 million ourselves. We support 12 positions ourselves.

Mr. YATES. How much do you take in from the admission fees?

Ms. PILGRIM. It's minimal. We charge \$3. Not suggested. We bring in about \$160,000. We do have our own membership, and we do have our own shop.

Mr. YATES. Any protest about the admission fee?

Ms. PILGRIM. No, because in New York we're actually a very cheap deal. I mean, it's so standard there. We're also closed one day a week.

Mr. YATES. Which day?

Ms. PILGRIM. Monday. We are open on Tuesday evenings from 5:00 to 9:00 for free.

Mr. YATES. How many people do you get a year?

Ms. PILGRIM. It ranges. Our average is about 130,000 people annually. A year ago we did a very sort of daring and bold thing, which was to devote the entire museum to our collections, because,

to my distress, I discovered that people didn't seem to really understand that we had these collections and how extensive and how incredible they are. So for a year and a half we had the same show, albeit we've had to change it, because you can't keep paper and textiles up for that long. And even though we were incredibly fortunate in getting press on each one of those changes, there's no question the admission level went down. We pretty much train people, particularly in New York City, to only come to our institutions when we have different shows.

So last year we barely made it—we didn't even quite make it to 100,000. This year will be much better, because the map show, we've gotten fantastic publicity, and we've been having very good crowds. So I'm very pleased about that.

Mr. YATES. Good.

Ms. PILGRIM. So, I mean, for us there's still this issue of the fact that we have to raise—we spend so much time, because we have no programmatic monies from the Smithsonian, other than the monies that you have allocated in the last couple of years for education.

Mr. YATES. Thank you very much.

Ms. PILGRIM. Thank you.

#### CLOSING REMARKS

Mr. YATES. Does that take care of everything? I think so. All right. We will let you know when we would like to have you back, and that would be after we hear from OMB and have a chance to take a look at all this. Thank you very much.

## ADDITIONAL COMMITTEE QUESTIONS

## Reprogramming/Restructuring

Question 1: The Smithsonian on February 4 submitted a proposed restructuring/reprogramming for the Smithsonian. This is the first step in a restructuring and downsizing effort which is expected to take place over several years, and in 1993 involves a targeted reduction of \$14 million, or approximately 5 percent to the 1993 appropriation. About one-third of that amount (\$5.8 million) would be redistributed for shortfalls in mandated costs, and the remainder would be reallocated to support the priorities of the Institution.

What are the shortfalls in mandated costs that you are facing? Provide details for the record.

Answer: The shortfalls in mandated costs result from three reductions included in the FY 1993 appropriation, which totaled \$5.814 million. The Smithsonian's appropriation allowed additional funding for only half of the FY 1993 costs required for the January 1993 legislated pay raise and the senior executive gradeless pay system, directing the Smithsonian to absorb the balance. In addition, Section 324 of the FY 1993 Interior Appropriations Act mandated a reduction of 0.85 percent to almost all programs funded in the Interior Act, including the Smithsonian. The proposed reprogramming includes the redistribution of the second half of the funding for the January 1993 legislated pay raise (\$2.88 million) and the senior executive gradeless pay system (\$400,000), and funding to offset the effects of the 0.85 percent reduction (\$2.534 million) on the base funding in individual budget line-items.

Question 2: What process was used to determine which line items would receive additional funds as part of this reallocation process?

Answer: The Smithsonian developed a process that provided analysis and feedback from management at different levels of the Institution to support the restructuring process. At the beginning of this process, the Secretary established the framework for discussions by affirming the following six core priorities of the Institution: 1) the care and conservation of Smithsonian collections and facilities; 2) the retention of a vibrant, broadly appealing exhibition program (relying more heavily on the Institution's own collections); 3) the maintenance of momentum in major research programs where the Institution has a strong tradition and comparative advantage, with particular emphasis on fellowships, internships, and minority access; 4) the meeting of mandated responsibilities, including but not limited to those related to environmental management, safety, and access for people with disabilities; 5) the provision of an adequate administrative and service base to plan for and handle a transition to downsized programs and operations, without sacrificing present standards; and 6) the retaining of recognizable salience, to the fullest extent that these other priorities permit, for key

outreach programs to educate, widen, and diversify Smithsonian audiences, and for those contributions to an understanding of global change that lie most directly within the Smithsonian's area of expertise and responsibility.

In addition, the following principles were established as the bases for decisions to reduce or leave static the funding levels for individual bureaus and offices: 1) inherent validity of programs as contributors to the Smithsonian's reputation for scholarly excellence and high standards of performance of public service; 2) strategic importance of programs to the future of the Institution, including central services widely required by Smithsonian bureaus and offices; 3) comparative historical growth in Federal appropriations among the bureaus and offices; 4) financial and operating flexibilities suggested by scope and variety of efforts; 5) access to and availability of multiple sources of alternative funds; 6) evidence and indications of cost-conscious operations; 7) unalterable commitments that control spending plans; 8) ratio between personnel costs and funds available for other objects of expense; 9) prospective organizational changes, reductions or placements; 10) potential for streamlining operations; and 11) efficiencies through cost-reimbursement procedures.

During the summer and fall of 1992, the Under Secretary met with each of the assistant secretaries, and bureau and office directors, and began to focus the discussions on permanent downsizing and restructuring to attain an equilibrium through substitution rather than growth. Building upon the first phase of a reorganization plan which the Institution had implemented earlier in 1992, the Institution developed an approach to restructuring as an extension of the reorganization effort. The goal of this approach was financial equilibrium through a closer match between resource utilization and institutional priorities.

In addition, a full-scale discussion on all Smithsonian programs was undertaken during which input was sought from affected parties throughout the Institution. Programs were reviewed with respect to centrality to the Institution's mission, quality and effectiveness, cost effectiveness, and optimum funding requirements. The Under Secretary led frank discussions on programs that might be targeted for elimination, reduction, merging, sustaining, or strengthening. Each bureau and office was asked to consider the impact of a 10 percent reduction, or a 10 percent increase, and to comment freely on other areas in the Institution that might be targets for reduction or strengthening. Two full drafts of a proposed restructuring plan were circulated to all bureau and office heads for comments. Following consultation with the Assistant Secretaries and the approval of the Secretary, a third draft was circulated to bureaus and offices with a request to provide a plan for operating under restructuring. Adjustments following that iteration completed the Plan as submitted in the reprogramming request.

Question 3: As part of this proposal, two programs are proposed to be eliminated: The American Studies program, and the Man and the Biosphere program. How many agreements are there with cooperating universities under the American Studies program, which you intend to maintain?



Answer: We have on-going cooperative agreements with George Washington University and the University of Maryland. Rather than being eliminated, it is most likely that this program will be merged into the National Museum for American History and possibly reconsidered after that move.

Question 4: What are the costs involved, and how will they be covered?

Answer: In addition to its Federal base, in FY 1992 the American Studies Program incurred Trust fund expenses of approximately \$20,000. If the agreements are continued, the Institution will absorb the Federal costs within the Arts and Humanities area of the Institution. The Trust support from external sources would most likely continue.

Question 5: For the MAB program, when will you decide which existing bureau into which to incorporate this program?

Answer: The decision will be made by the end of March 1993.

Question 6: What are the sources and amounts of grant funds that are expected to continue for this program?

Answer: We will be seeking funds almost exclusively for the biological diversity research component of the program. We expect to obtain an estimated amount of about \$100,000 to \$200,000 per year. We will seek support from private and governmental organizations such as UNESCO, US-Conservation Organizations, US AID, and Japanese corporations.

Question 7: For these and other proposed reductions, how many positions will be affected? Will a RIF be necessary? If so, provide details of your plans for the record.

Answer: A total of 26 positions were identified in the reduction process from an Institution-wide perspective. Bureaus that are reallocating funds from within their bases may choose to reduce positions to attain their target reductions as well. We cannot proceed with position reductions until we are certain that the reprogramming request will be approved, and thus cannot be specific at this time as to which positions will be reduced. However, every effort is being made to avoid RIFs, and to the extent possible, the reductions will be made by attrition.

Question 8: A part of this initial phase of the restructuring is the establishment of a chargeback system for the Office of Plant Services. Which functions will be included in this chargeback system?

Answer: The only function affected by the chargeback system will be program/exhibit support which is currently provided by the Office of Plant Services (OPlantS). Under the new chargeback system, Smithsonian bureaus and offices will be required to reimburse OPlantS for the cost of regular labor hours, overtime hours and material costs used on any exhibit project work or in support of minor reconfiguration of program space. Currently only material and overtime costs are reimbursed.

Question 9: How was the amount of \$1.1 million to establish this system determined?

Answer: This amount is based upon amounts currently being expended by OPlantS for labor costs in support of exhibits/program work, with a reduction applied to reflect limited resources and the expectation that cost savings can be achieved through chargebacks. (See question 11).

Question 10: When will you complete the analysis of usage which will be used to determine the allocation of these funds to the offices involved?

Answer: The analysis of usage which will be used to determine the allocation of these funds to the offices involved has been completed by OPlantS. This analysis includes the average of the actual number of program/exhibit hours expended by OPlantS for each bureau for fiscal years 1990-1992. From this information, the average number of hours used by each bureau and office was converted to a percentage of the total hours. The \$1.1 million will be distributed based upon this three year average usage percentage.

Question 11: What exactly are the services or functions that will be paid for by these offices from the reprogrammed funds?

Answer: The reprogrammed funds which are presently budgeted in OPlantS to cover these labor costs will instead be used by bureaus and offices to pay OPlantS for the cost of regular labor hours expended on program/exhibit project support requested by them. It is believed that this arrangement will result in better planning and defining of required work by bureaus and offices that use OPlantS services. Through better planning and up-front definition, and greater awareness of the costs of constructing exhibits and making in-house program space modifications, it is believed that major cost savings will be obtained.

Question 12: As part of this process, two separate funds will be established to support upgrade and replacement of small scientific and research equipment (\$1.186 million), and to support information resources development, with emphasis on collections management needs (\$1.15 million). How were these amounts determined?

Answer: Early in the process it became clear that there was a pressing institutional need for upgrading research equipment and providing more support for information resources and collections management. A target of approximately \$1.0 million to \$1.3 million for each fund was established as attainable in the reduction process without hardship to other parts of the institution. The final size of the funds was reached after adjustments were made to other areas. It is the intention, however, to increase the size of both of these funds to provide ongoing support that will not erode over time. Like the R&R account for facilities, these funds will serve to renew infrastructure for research and information needs.

Question 13: Describe the process that will be used for distributing these funds. Who will have the overall responsibility for these funds?

Answer: The process for distribution will be somewhat different for each of the funds. Funds for research equipment will be distributed according to a plan to be completed by late March. The bureaus, working from their detailed base equipment inventories that identify each item according to type, age, and useful life, will develop a priority list of priced items to replace; upgrade; or in the case of new technologies, to acquire for the first time. A justification of the need for each item will be included as well. The Assistant Secretary for Science, with the assistance of an advisory group of bureau representatives, will establish criteria and priorities for allocating the funds.

The information resources fund will be used to address systems requirements and technology applications with a particular focus on collections management systems. Bureaus will develop proposals to address their hardware, software, and systems support needs for their collections. The proposals will be reviewed by a steering group, chaired by the Under Secretary, that will develop priorities and selection criteria for evaluating the proposals.

Question 14: Will the bureaus be able to continue to use other funds available to them for these types of costs, or will Institution-wide funds be the only source for such purchases?

Answer: The bureaus will be able to continue to use other funds available to them for these types of costs, although most bureaus presently have little or no capacity in their annual operating budgets to make the level of investments that are required to upgrade scientific equipment and to undertake major information systems development or enhancements.

Question 15: If the bureaus are retaining their own base funds for these purposes, particularly in the area of collections management, how will the allocation of these funds be determined in relation to these base funds?

Answer: Availability of any funds from bureau sources will be a factor in determining how these funds will be distributed. Throughout the reduction and reallocation process of the past few months, management has gained a clearer understanding of bureau needs and the extent to which resources available to each bureau provide a degree of flexibility. Strong consideration will be given to those bureaus with little or no flexibility.

Question 16: How exactly will the information resources funds be used?

Answer: In a needs assessment underway, bureaus have identified their information needs as (1) off the shelf software; (2) limited enhancements to software; (3) upgraded hardware; and (4) enhanced connectivity and integration between separate platforms and systems.

Question 17: In the proposed reallocation, \$600,000 will be taken from the Museum Support Center. Why are you choosing to delay the acquisition of equipment for the MSC? Which equipment is involved?

Answer: We chose to delay the acquisition of MSC storage equipment because the Institution determined that other needs should take precedence over purchase of this storage equipment at the present time. The result will be a delay in acquiring some of the storage cabinets in Pods 2 and 4 and in initiating the acquisition of the remainder of the shelving system in Pod 3 for storage of specimens stored in alcohol. The procurement of the remainder of the Pod 3 system, estimated at approximately \$9.0 million, can be postponed for a short time, but it will soon become critical because it is the only Pod designed to meet the fire safety standards for storage of alcohol.

Question 18: Why do you believe this delay will have no impact on the current pace of work?

Answer: This delay will not impact the Initial Move to the MSC. Although the Congress has been very generous with the Institution by increasing funding for the Move in recent years, it has not been able to provide sufficient funding to enable us to fill the Initial Move Storage Equipment already installed at MSC as quickly as we desire. The delay in acquisition of storage equipment in FY 1993 will not slow down the pace of the Move.

Question 19: Significant reductions are included for several of the larger museums, including the Natural History (\$1,675,000), American History (\$1,800,000), Air and Space (\$1,100,000), and the Museum of the American Indian (\$1,000,000), although the first three also have partially offsetting increases (\$1,175,000, \$600,000 and \$900,000

respectively). How have the specific reductions included in these amounts been determined?

Answer: Due to shortages of funds for exhibits and research and collections needs, the Natural History Museum must redirect internal resources to address its most urgent priorities, notably, the Africa Hall (see Question 21) and the Collection and Research Information System. The Museum was directed by the Secretary to reduce its expenditures by \$1,675,000. Of this amount, \$1,175,000 will be redirected internally. We hope to achieve the total targeted amount through voluntary retirements and have given ourselves six months to try to accomplish this goal. Failing this, we will be forced to reduce our staff by about 30 positions (5 percent of the workforce ceiling in addition to the 10 percent the Museum already is down). The specific positions to be eliminated have yet to be identified. In order to minimize the impact of the downsizing, we have instituted a much tightened hiring freeze and have begun to redeploy some existing staff to high priority vacant positions. As part of this redeployment, we are restructuring the plant conservation program in the Department of Botany (see Question 20).

At the National Museum of American History, the senior managers of the Museum have first identified three "non-core" programs/activities whose elimination do not significantly affect the central mission of the Museum. This will result in savings of \$375,000. In order to meet the remaining reductions, the Museum has asked all but a few of its departments and support offices to develop a plan for downsizing, and to suggest efficiencies that could be effected through an overall Museum reorganization. These plans are still in discussion and will be finalized in March, 1993. It may take one or two years to implement the entire plan. In the meantime, reduction targets will be met through attrition and cuts to other objects.

To determine how to absorb the cut, the National Air and Space Museum examined its internal priorities and also looked for vacant positions that could be eliminated and projects that could be deferred.

Details of the National Museum of the American Indian reductions are provided in the responses to Questions 27 and 28.

Question 20: For Natural History, describe the Plant Conservation Unit, which is being eliminated. What are the costs and number of positions involved?

Answer: The Plant Conservation Unit is a program within the Department of Botany. Staff in this unit compiled the original list of candidate plant species for protection under the Endangered Species Act. Since then, the Unit has continued to compile basic information about threatened and endangered plant species in North America and to serve as a center for disseminating this information to individuals and organizations throughout the world. During the past several years, the staff has turned to compiling comparable information on threatened and endangered plants in Latin America. The Unit also has compiled publications of medicinal plants for several

underdeveloped countries, and it prepares and distributes the monthly Biological Conservation Newsletter.

The Unit consists of three federal positions and one trust-funded position that has been supported by grants from various federal agencies and non-government organizations (NGOs), including the International Union for the Conservation of Nature (IUCN).

Federal Salaries (3 FTEs):	GS-12/6	\$52,294
	GS-11/4	39,828
	GS-9/6	<u>36,484</u>
	Total	\$128,606

All Other	\$ 1,700
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The Unit has outlived its purpose and usefulness in its present form. With the exception of the Latin American work, the work of the Unit has now been largely superseded by the conservation efforts of the Department of the Interior and various NGOs. On completion, new Latin American compilation will provide a critical starting point for Latin American conservation efforts, just as the original species compilation provided for North America. The time has come to disband the Unit and restructure the work to continue the vital Latin American effort until that compilation is published, but discontinue the other activities of the Unit. One of the three federal employees (GS-11/4, \$39,828) and the grant-supported Ecuadoran national will continue to work on the Latin American listing for about another year. The other two federal employees (GS-12/6, \$52,294 and GS-9/6, \$36,484 = \$88,778) will be reassigned to higher priority tasks in the Museum; thus their salaries will be saved by not having to fill other vacancies.

Question 21: How much of the increase will be used for renovation of the Africa Hall? What is the total expected cost of this renovation?

Answer: The Museum will use \$600,000 a year for two years, for a total of \$1,200,000, to upgrade the Africa Hall. The total expected cost of the upgrading is \$1,200,000.

Question 22: In the case of American History, what is involved in the three programs that will be eliminated (Office of the Senior Historian, Office of Academic Programs, and Office of Technology and Culture magazine)?

Answer: While the Office of the Senior Historian conducts research into important issues connected with the history of American Science policy, its elimination will have the least impact on the Museum because of its limited connection to collections and exhibition programs. The remaining two offices provide a liaison with the scholarly

community on research in the field and produce two important journals, The American Quarterly and Technology and Culture. Both of these journals will undoubtedly rotate to other venues if the Museum withdraws its support. Losing these two offices could diminish the Museum's presence and activities in the research community, and lower our leadership profile. However, other members of our staff who are active in these fields of research will continue their less direct liaison with these journals and those communities.

Question 23: What are the educational and outreach activities that will be increased with the \$900,000 increase that will be retained by American History?

Answer: The Museum has targeted three areas for improvement: the weekend docent program, the demonstration program, and school programs. More than 100 docents in NMAH serve the public on weekends, when visitorship is heaviest. A full-time manager is needed to run this program. Second, research has shown that visitors get the most from their experience when hands-on activities allow them to "learn by doing." Hands-on programs use volunteers to move throughout the exhibitions and interpret themes through dialogue, object handling, and demonstration of historic machines. Hands-on demonstrations in NMAH now reach only 2 percent of the Museum's visitors. NMAH wants to raise that figure to 33 percent by increasing the number of demonstrations. Lastly, NMAH seeks to create a museum-school program that brings teachers in from around the country for tours and workshops that will help them interpret NMAH exhibits to their students. Through teacher and student workshops, the Museum will supply unique educational materials and methods not otherwise available to schools.

Question 24: Why are these activities a higher priority than exhibit installation, which will be affected by the reductions?

Answer: The education programs of the Museum have been underfunded for many years, and do not approach the level of support needed for a National Museum. By contrast, the exhibits reinstallation program has received more support, particularly through the outside fund raising efforts of the Museum. Education and outreach are traditionally harder to fund through non-Federal sources than exhibit reinstallation. Thus, the education funding situation is more dire at present. Education also becomes a higher priority as the National and Institutional priorities shift in that direction.

The exhibit reinstallation program can sustain some reductions by relying more on outside funding, and by seeking to contract out more work. Also, now that the building restoration and renovation work on the exhibit floors has been completed, the remaining exhibition work can be slowed.

Question 25: For Air and Space, what areas will be affected by delaying filling the 9 vacant positions?

Answer: The areas that are affected include the Planetarium for production of new planetarium shows. The Aeronautics Department will forfeit positions for military aviation and business history; the Department of Space History has reassigned the manned spaceflight collection to other curators, who already have large collections to care for; and the Garber Facility will spread out the work of the Facility Manager to other staff members, providing less service to all bureaus located at the Silver Hill location. In Collections Maintenance the Museum Technician vacancy means a delay in the reorganization of storage space at Garber and Dulles which results in less efficient use of this space. The Laboratory for Astrophysics will not add a technician to its staff. (This position would have offered a career path to a Smithsonian employee currently in a low-paying dead end position). The Exhibits Department will not fill two vacancies, a typesetter and graphics specialist, forcing the Museum to contract out for these services, increasing the production costs of exhibitions.

Question 26: What are the specific plans for using the additional \$600,000 provided for Air and Space?

Answer: Air and Space will fill several much needed positions in the Collections Management area. They include a loan coordinator, archives technician, museum technician in the restoration shop, and a maintenance mechanic for the Garber Facility. Other vacancies in NASM that will also be filled are a Museum Specialist for avionics serving both the Aeronautics and Space History collections, a program coordinator in the office of Cooperative Programs which provides hundreds of public and staff programs annually, three custodial workers, a custodial leader and a laborer for the Building Management Division; and an Administrative Technician for personnel and financial transactions.

Question 27: What 4 positions will be affected by the reduction to the American Indian Museum, and how much is involved?

Answer: The positions affected by the reduction are as follows:

Curriculum Developer	\$48,000
Assistant Outreach Coordinator	\$48,000
Exhibits Specialist	\$30,000
Curator	\$52,000
Total	<u>\$178,000</u>

Question 28: What is the impact of the balance of the reductions, against publications, exhibit development, contracts and general operations? Are delays in planning and proceeding with the museum the reason for these reductions?



Answer: The balance of the reduction will be taken as follows:

Publications	\$100,000
Exhibitions (Custom House)	\$450,000
Exhibitions (Off-Site)	\$100,000
Exhibitions (Future Development)	\$ 20,000
Contracts	\$100,000
General Operations	\$ 52,000
Total	<u>\$822,000</u>

These reductions are the result of the restructuring process and the determination that it will not hinder opening of the museum on schedule.

Question 29: The proposal includes a reduction \$1,716,000 for Administration. The Smithsonian has been asking for additional positions for accounting and finance in recent years; why are you know cutting 4 positions and \$200,000? What impact will this have?

Answer: With the advent of the implementation of the new automated Smithsonian Financial System (SFS), we expect reduced needs for current levels of accounting and finance personnel. Productivity gains achieved through automation and the System's ability to more accurately and timely produce accounting data and reports will translate into personnel and dollar savings. This reduction will not impact the ability of these operations to successfully complete their missions.

Question 30: What is the impact of the reduction of 5 positions and \$200,000 in printing and photographic services?

Answer: The impact will be a reduction in the availability of duplicating and photographic services provided to the Institution. We estimate that reductions would occur in the photographic support at NMNH (1 position), NMAH (1 position), and STRI (1 position). In addition, there would be a reduction of 2 positions in the Duplicating Branch, which serves Institution-wide duplicating and printing needs.

Question 31: Explain the reduction of 4 positions and \$900,000 to information resources management.

Answer: The Office of Information Resource Management (OIRM) will abolish positions that are currently vacant, eliminate certain contractor support, and discontinue certain kinds of technical staff support and other project funding for IRM endeavors initiated by Smithsonian organizations. Remaining staff are being reassigned during an

interim transition period from collections information, management information and research development programs to support the highest priority IRM projects scheduled for near term completion. The redirection of these human resources supplants plans for new staff and contractors. These near term priorities include the implementation of the Smithsonian Institution Research Information System (SIRIS), technical support for mainframe operations to the Smithsonian Financial System (SFS) and conversion of Honeywell applications to the new IBM mainframe.

The study of IRM that is part of the Phase II restructuring will result in:

- more clearly defined IRM needs across the Institution;
- an IRM vision for the future;
- an integrated set of policies, architectures, strategies, and projects to meet needs and achieve the vision;
- clearer, more appropriate definitions of IRM roles and responsibilities for the central OIRM versus bureau-based IRM staff, based upon present and future technology as well as considerations of efficiency and effectiveness; and
- priorities for the allocation and re-allocation of IRM resources.

Thus, this study will potentially restructure and realign both central and bureau-based IRM functions and staff further, in order to address in a more efficient and effective manner the Institution's other IRM needs that have been temporarily placed in abeyance. In the future, bureau-based IRM projects will no longer be funded by OIRM but from the planned new information systems/collections management fund. This fund will be overseen by an executive IRM steering group representing various functional areas and chaired by the Under Secretary.

Question 32: The proposal includes a list of numerous additional studies to be conducted prior to making further recommendations.

What is the reason for undertaking the comprehensive assessment of the National Zoo program?

Answer: The Under Secretary of the Smithsonian has asked that several studies, including the comprehensive assessment of the National Zoological Park (NZN), be undertaken in order to inform and guide decisions for additional phases of realignments. The study of the NZN will focus on the centrality of programs and activities now conducted at Front Royal, as well as financial and management policies and procedures at the Rock Creek and Front Royal sites. In addition, the relationship between the NZN police and the Office of Protection Services will be examined.

Question 33: What are the specific questions about Front Royal to be included in this assessment?

Answer: At present a review committee is being formed. Specific questions/issues have not been fully framed. However, the following issues are being put forward to serve as a template to begin discussions:

1. Value of ex-situ versus in-situ conservation.
2. Economics of conservation (both ex-situ and in-situ).
3. Conservation plan for Conservation Research Center.
4. Use of current and proposed facilities.
5. Deployment of personnel.
6. Overview of activities world-wide in ex-situ conservation and what the major trends are in other zoos.
7. Reintroduction strategies--time frames and expectations.
8. What should be the role of Front Royal in ex-situ conservation and its coordinating role throughout the Zoo?
9. What is the relationships between the activities of the Conservation Research Center at Front Royal and the activities of the NZP at Rock Creek?
10. What is the advantage of international wildlife management training at CRC compared to training in other institutions?
11. How does CRC fit into the larger efforts in biodiversity/global change within the Smithsonian? What modifications, if any, should be made?
12. Future role of CRC vis-a-vis Rock Creek.
13. If we need to scale back, where are the logical places to do so?

Question 34: There is also a study of the Office of Folklife and the Folklife Festival. What is the basis for this study?

Answer: In the course of the restructuring discussions, several proposals were made. One suggested that the pressure to continually raise external funds for the festival could be alleviated by holding the festival in alternate years. Another suggested that federalizing some of the trust funded staff was appropriate and justified. Folklife staff themselves suggested the need for a risk fund procedure necessitated by the uncertain

cash flow resulting from festival funds received through state contracts. The study will examine these proposals in light of the mission and operations of this program to see if they can enhance its efficiency and success.

### African-American Programming

Question 35: In 1993, a small increase was agreed to for the Office of the Assistant Secretary for Museums for African-American programming. How are these funds being used?

Answer: The current activities of the National African American Museum Project are Collections Identification, Public Education, Program Planning and Services to the Field.

Collections Identification - To date more than 500 collections with 20,000 objects have been identified. Many of the collections that are at risk have been acquired by elderly people whose stories are as important as their artifacts. While the staff cannot collect without congressional authorization, they have begun to do oral histories.

Public Education - Staff members have delivered papers at conferences throughout the country. They have also talked to community groups at libraries, schools and other public facilities. They have just begun to co-sponsor programs at the Smithsonian.

Program Planning - More than a dozen small task forces have met to design the museum's program based on its identified areas of scholarship and Smithsonian practices. A program will be published in the late Spring.

Services to the Field - The project continues to be seen as a resource center in matters relating to African American culture and history with the staff providing requested information and making appropriate referrals. To date the project has received more than 400 queries concerning collections, museum career opportunities, African American museums, scholarship and research, and graduate and under-graduate programs. A quarterly newsletter is being developed that will help the project disseminate this information.

Question 36: What is the next step in this process?

Answer: The next steps for the project are passage of the legislation, selection of a museum director, confirmation of a board of directors, facilities planning, training of museum professionals and an increase in Educational Programming.

The four collecting areas of the proposed museum are art history, history, images of Blacks in the media, and the history of Blacks in the performing arts. The later two areas of research and scholarship can be pursued and programmed prior to the opening of the museum. Accordingly, scholars will be hired in those areas. The project will continue to co-sponsor educational programs with other cultural institutions and community groups. After authorization is received, the museum will actively begin to acquire collections that are at risk.

Question 37: What is the status of authorizing legislation for the African-American museum, and when do you expect a final version of it?

Answer: In the 102nd Congress, Congressman Lewis introduced authorizing legislation (H.R. 1246) and Senator Simon introduced the Senate companion (S. 523). The Senate version passed in late 1992, however; H.R. 1246 was not acted upon by the House. On February 4, 1993, Mr. Lewis and Mr. Simon introduced legislation in the House and Senate (H.R. 877 and S. 277), respectively, calling for the establishment of an African American Museum in the 103rd Congress. According to all indicators, prospects for passage of both bills are excellent. In the House, the bill was jointly referred to the House Administration Subcommittee on Libraries and Memorials and the House Public Works Subcommittee on Buildings and Grounds. A hearing and markup on the Lewis bill was on March 17, 1993. The Public Buildings subcommittee will hold hearings on March 25, 1993. The Smithsonian Institution anticipates legislative passage by late spring of this year.

#### National Zoo

Question 38: The National Zoo recently opened its Amazonia exhibit, which has proven to be a very popular exhibit. What is the visitation to date for the exhibit?

Answer: Over 100,000 visitors have seen Amazonia since its opening on 18 November 1992. Concession sales in December and January were at record levels, suggesting that Amazonia has significantly increased Winter attendance at the Zoo.

Question 39: What additional costs remain to complete the exhibit, and when do you expect to request these funds?

Answer: The Amazonia Habitat is finished with the exception of some minor interior repairs and alterations (\$10,000) and exterior landscaping (\$75,000). The Amazonia Gallery building is finished, and the interior living and interpretive exhibits are fully funded. We do not anticipate additional requests for construction funding for Amazonia.

Question 40: Have you discovered additional costs related to operation of the exhibit? If so, how much is involved, and how will these costs be met?

Answer: Yes. The management of tropical plants has required more effort than anticipated; and the Zoo is currently trying to fund, from its FY 1993 S&E budget, a program of plant pest control (\$15,000). There are more visitors than anticipated and they are staying for an unusually long time (30 to 60 minutes). This is producing an unanticipated demand for interpretive guides, exhibit maintenance, and security. If the Institution determines that an increase in staffing at the Zoo is needed it will examine other Smithsonian activities/programs for possible reprogramming.

Question 41: How will the proposed reduction \$400,000 in the reprogramming affect the Zoo in general, and this new exhibit in particular?

Answer: Since the date to begin implementation of the proposed reduction is not established, the actual dollars that can be saved from many of the planned Zoo actions cannot be predicted. The reduction of \$400,000, coupled with the effects of base erosion stemming from staff promotions, mandated pay increases, and inflation, and the inability of NZP to obtain the necessary positions and dollars to hire staff to support and operate the existing and planned exhibits, require that the NZP to take some or all of the actions listed below.

- (1) Eight to ten keeper and exhibit support staff positions will remain unfilled.
- (2) Staff promotions and awards will be frozen.
- (3) Temporary summer hires of Zoo police will be frozen.
- (4) Some of the exhibits may be closed and the animals involved may be surplus.

The Amazonia exhibit consists of two parts, the Habitat and the Gallery. The Habitat recently opened is the first exhibit to be housed in the new building devoted to the Amazon exhibit. This exhibit occupies about half of the space available in the building; and the remaining space will be devoted to the Amazonia Gallery. The complexity of the Habitat has resulted in the immediate need for two extra staff. Unless we can provide these, we will have to close the exhibit for one to two days a week. The effect of the proposed reductions and the staff shortages mentioned above are as follows:

- (1) Defer work on the major living exhibits for the Amazonia Gallery for at least one year.
- (2) Defer planning for interactive interpretive exhibits.

## National Museum of the American Indian

Question 42: In 1993, the request for the National Museum of the American Indian was \$15.6 million, an increase \$5.2 million. The final amount agreed to was \$12.2 million, with the restructured amount being \$11.4 million. What delays are you encountering in planning and programming for the new museum?

Answer: Although there were, as to be expected, some minor delays in the earliest stages of the planning and programming process for the three museum facilities, we are currently on schedule. At this stage, we have every expectation that we will continue to maintain the schedule as adopted earlier for the Suitland and Mall facility. We are very encouraged by the cooperative efforts which have enabled NMAI to aggressively pursue the schedule for the new museum. For instance, the architect for the Mall project has been selected recently. Consultations with Native Americans have been incorporated into all stages of the development and are proceeding in a timely fashion. A wide range of concerns including Native American cultural needs and state of the art-technology have been incorporated into each stage of these plans.

With the continued support from Congress for the necessary appropriation levels, these two interdependent facilities will remain on schedule. The interdependency of these two facilities, the Mall and Suitland, is based on the essential role of the Suitland facility as a programmatic and physical staging and production area for all Mall exhibitions and related programming. Thus, the sequence of their development is essential to the overall program efforts of NMAI. Also, substantial change in the present plans would complicate the timely raising of private sector funds for the Mall facility. The Customs House Facility is moving along on schedule and will open to the public in the fall of 1994.

Question 43: What is the status of fundraising for the museum on the mall? Are you ahead or behind on goals to date?

Answer: As of February 25, 1993, \$7,660,537 has been raised from all sources and for all purposes by the NMAI National Campaign. Included in this amount is \$5,461,845 restricted to the Mall Museum construction fund.

The NMAI's authorizing legislation requires that one-third of the cost of construction of the Museum's Mall facility be provided from non-Federal sources. A timetable for construction of this facility was developed and has been shared previously with the Subcommittee. That timetable requires that the one-third non-Federal portion be in hand no later than September 30, 1996. The NMAI National Campaign is predicated on that timetable and deadline. The success of the Campaign, to date, is reflective of and dependent on the "sense of urgency" that the timetable and deadline create.

The NMAI National Campaign is on schedule with regard to meeting this legislated requirement. The Institution is proceeding with plans for the Mall Museum with the expectation that the appropriated two-thirds portion of the construction cost will be available on October 1, 1996.

Question 44: Do you anticipate being able to meet the fundraising requirement for the museum?

Answer: The Institution expects to meet the legislated non-Federal funding requirement (\$35.3 million) toward the construction cost of the NMAI facility on the National Mall.

Inherent in meeting this goal will be the need to maintain the momentum and the sense of urgency which result from the current timetable and deadline for raising these funds. We believe that the donors to the Campaign, including more than 63,000 members, are responding positively to our appeals for three general reasons: (1) they concur with the Congress that there should be a national museum of Native American history and culture; (2) they support the Congressional decision that this museum should be a public-private partnership; and (3) they anticipate that the two-thirds Federal funds portion of the construction cost will be provided to complement their own philanthropy. Meeting the fund-raising requirement for the Museum will ultimately depend on the Institution's ability to continue to assure donors that all three of these reasons are valid.

Question 45: How many positions are currently authorized for all of the museum's facilities? How many of those positions are filled? Provide a list of unfilled vacancies by location, and plans for filling those positions.

Answer: The NMAI continues to make great strides in hiring a number of individuals with wide-ranging fields of expertise to enable use to meet our goals for the provision of museum facilities addressing the history and culture of the native peoples of this hemisphere. In the past fiscal year we have successfully recruited for employees for our Washington, D.C. and New York City facilities. We are currently working on the completion of actions which will result in the entry on duty of 42 employees in both locations.

Congress has approved 154 full time positions for the National Museum of the American Indian through fiscal year 1993. The actual strength figures is 123 since 8 positions were transferred to other Smithsonian activities as shadow positions, 6 Library positions authorized in FY 1990 cannot be filled, 14 positions are currently assigned to the National Campaign Office, and 3 positions are to be eliminated as a result of the Institution's FY 1993 Restructuring Plan. We currently have 94 Federal positions filled; 13 of these positions are filled on a temporary basis using lapse money. Following is a list of the remaining 42 vacancies, designated by program, position, location and plans for recruitment.



VACANT SLOTS AS OF 2/25/93  
(Defined by Program)

VACANCY	LOCATION	PLANS	Page 1
<b>I. FACILITIES PLANNING AND DEVELOPMENT</b>			
Assistant Facilities Planner GS 11	DC	To be filled immediately	
<b>II. PUBLIC PROGRAMS AND COMMUNITY SERVICES</b>			
Outreach Coordinator GM 13/14	DC	To be filled immediately	
Editor GS 12	DC	To be filled immediately	
Training Coordinator GS 12	DC	To be filled immediately	
Secretary GS 7	DC	To be filled immediately	
Film/Video Technician (50%) GS 5	NY	To be filled FY94	
Deputy Assistant Director for Cultural Resources GM 14/15	NY	To be filled immediately	
Assistant Film/Video Coordinator (50%) GS 11	NY	To be filled 4th Quarter FY93	
Special Assistant GS 6/7	NY	To be filled immediately	
Publication Program Assistant GS 6/7	DC	To be filled immediately	
Coordinator of Media Technology GS 12	DC	To be filled FY94	
Secretary GS 7	NY	To be filled FY94	

VACANCY	LOCATION	PLANS	Page 2
<b>III. EXHIBITIONS</b>			
Exhibits Specialist GS 9	DC	To be filled immediately	
Exhibits Specialist GS 7	DC	To be filled 4th Quarter FY93	
Film/Video Technician (50%) GS 5	NY	To be filled FY94	
Audio/Visual Technician GS 8	NY	To be filled FY94	
Assistant Film/Video Coordinator (50%) GS 11	NY	To be filled 4th Quarter FY93	
Project Manager GS 12	DC	To be filled immediately	
Exhibits Designer GS 12	DC	To be filled immediately	
<b>IV. COLLECTIONS/CURATORIAL</b>			
Assistant Director of Cultural Resources GM 15	NY	To be filled immediately	
Secretary GS 6	DC/NY	To be filled 4th Quarter FY93	
Conservation Technician GS 5/7	NY	To be filled immediately	
Move Coordinator GS 11	NY	To be filled immediately	
Collections Manager GS 12	NY	To be filled immediately	
Archivist GS 11	NY	To be filled immediately	

VACANCY	LOCATION	PLANS	Page 3
Collections Technician GS 5	NY	To be filled immediately	
Senior Curator GS 15	NY	To be filled 4th Quarter FY93	
Curator GS 12	NY	To be filled 4th Quarter FY93	
Research Assistant GS 9	NY	To be filled immediately	
Research Assistant GS 9	NY	To be filled 4th Quarter FY93	
Public Affairs Assistant GS 9	NY	To be filled immediately	
<b>REPATRIATION</b>			
Repatriation Program Manager GS 13	NY	To be filled immediately	
Photographer GS 9	NY	To be filled 4th Quarter FY93	
Conservator GS 11	NY	To be filled 4th Quarter FY93	
Conservation Technician GS 9	NY	To be filled 4th Quarter FY93	
Research Assistant GS 9	NY	To be filled 4th Quarter FY93	
Repatriation Technician GS 7	NY	To be filled 4th Quarter FY93	
Clerk GS 7	NY	To be filled 4th Quarter FY93	

VACANCY	LOCATION	PLANS	Page 4
<b>V. FINANCE AND ADMINISTRATION</b>			
Technology Coordinator GM 13/14	DC	To be filled immediately	
Receptionist (GGHC) GS 4	NY	To be filled 4th Quarter FY93	
Motor Vehicle Operator WG 3	NY	To be filled immediately	
Laborer WG 2	NY	To be filled immediately	
Secretary GS 7	DC	To be filled 4th Qtr FY 93	
Museum Registration Specialist GS 11	NY	To be filled FY 94	

## Other Facilities Needs

Question 46: The Smithsonian has been discussing the need for additional storage at the Suitland site for some time. At the recent Regents' meeting, the Board approved the first phase of a storage and research facility, of 400,000 sq. ft., to serve 7 bureaus: American History, Anacostia, American Art, Portrait Gallery, African Art, Hirshhorn, and Sackler. Authorization for planning and design, in the amount of \$5 million, will be sought for 1994 and 1995.

Since the Quadrangle construction was fairly recent, and the Freer reconstruction and connection to the Sackler is just being completed, why are additional storage and research areas being identified so soon for the Sackler and African Art?

Answer: The recent renovation of the Freer Gallery of Art, which will be completed in time to open to the public on May 9th of this year, did not affect the need for storage space for the Arthur M. Sackler Gallery at the Suitland site. Because of the caveats in Mr. Freer's will, Freer objects may not be housed outside of the Freer Gallery nor may objects of other collections be housed inside the Gallery. This prohibition applies to the Sackler collection, as well.

In the ten years since the Arthur M. Sackler Gallery was founded, the collection has almost doubled. We actively seek gifts and anticipate that the requested 30,000 sq. ft. of space in the Suitland facility will be desperately needed by the year 2010 to house the expanded collection. The majority of the requested space would be used for permanent collection storage. Another use of the space in Suitland would be for crate storage. Having a place to store our own crates, as well as those used for loan exhibitions, will save a considerable amount of money. Rather than destroy and rebuild crates, they can be saved and reused. There would also be an area for a small conservation lab and a staging, or work, area.

As for the National Museum of African Art, access to the proposed Suitland facility is very important to the National Museum of African Art for purposes of cost savings, collection development and management.

Cost Savings

When the Quadrangle facility was constructed, it was not possible, due to space limitations, to provide storage areas for exhibition furniture -- cases and plexiglas vitrines. In today's economy, those items represent a major investment of labor and dollars and have a great impact on the overall cost of exhibition construction. Depending on whether a case/vitrine is built in the Museum or by a contractor, the average cost of labor and materials for a case/vitrine (measuring 52" x 24" x 24") may range from \$1,200 to \$2,000. Museums generally, and particularly small-medium size museums like the National Museum of African Art, now store and recycle exhibition furniture at a considerable cost savings. Since there is not any space available in the

Quadrangle, NMAfA presently stores exhibition furniture for reuse in leased space and at the Smithsonian facility located at 1111 North Capitol Street. Clearly, access to storage at the Suitland site would be beneficial for NMAfA.

#### Collection Development and Management

These efforts necessitate careful analysis to determine the storage disposition of large-scale works of art which may not be exhibited or studied with great frequency. Removal of such objects to an off-site facility frees space in the Museum for works of art that are exhibited and studied with greater frequency and assures that the finite amount of storage in the Museum can service the needs of the institution in future decades.

In addition, the proposed Suitland space meets two other NMAfA program requirements:

- The study of textiles in the collection requires a research area that can accommodate large tables and appropriate equipment for technical examination and study. Even now, NMAfA cannot accommodate such study with the on-site space available. NMAfA would move its textile collections (now occupying approximately 1,173 sq. ft.) to Suitland to be in proximity to the storage/study resource that is proposed for Suitland.
- It is also envisioned that a portion of NMAfA's space allocated at Suitland would be dedicated to conservation needs that could operate in concert with the sophisticated equipment and techniques available at the Conservation Analytical Laboratory which are impossible and inefficient to duplicate here in the Museum.

Question 47: What is the status of your plans for the old General Post Office Building, which was to provide additional storage and related space for American Art and the Portrait Gallery?

Answer: While the Institution has done some preliminary planning, the project is currently on hold pending a review of our construction priorities in light of current fiscal constraints.

Question 48: What is the status of the Master Plan for the Anacostia Museum? Do you now intend to stay in the current location indefinitely?

Answer: The completion of the master plan for the Anacostia Museum will be considered in the context of available resources. The Institution will be looking at all possible alternatives to meet the needs of the community and to allow for growth in the

programming at the Museum. For the moment, plans are for the Museum to stay at its current location.

Question 49: Since funds are so limited, which of the current authorizations and appropriations for new facilities being sought from the Congress represent your highest priority at this time: the American Indian Museum (already authorized); Air and Space extension; African/American Museum; or the Suitland Collections Storage Building?

Answer: Answering this question is most difficult. Each of the four has a high priority for the Institution for very valid yet different reasons. The Air and Space extension is a priority because of our grave concern about the deteriorating condition of irreplaceable historical artifacts. The African American Museum is a priority because the time has long since come to provide an opportunity to tell the story of the African American experience to the nation. The Suitland Collections Center is a priority because it is essential for the appropriate care of the National Collections.

The American Indian Museum represents a commitment on the part of the Federal government to Native Americans that cannot be abrogated. This project, of the four, is the farthest along. The campaign to raise one third of the construction cost of the mall museum is increasingly active. The design firm for the Mall museum has been selected and the design of the Cultural Resources Center is underway. The Custom House is being renovated. Programming has begun. It is critical that we continue the momentum and complete this project. For this reason, difficult as it may be to make the choice, and not withstanding our other serious and pressing needs, completion of the American Indian Museum is the Institution's highest priority.

With regard to the proposed facilities, the Suitland Collections Center is very close to our first priority. This Center is a priority because the National Collections suffer daily degradation from the effects of storage in crowded, poorly controlled environments, including facilities which are substandard and deteriorating rapidly. The proposed Suitland Collections Center will rescue the national patrimony from these conditions and will greatly facilitate the preservation and many uses of these national treasures through safer access.

#### National Biodiversity Center

Question 50: The Bush Administration had requested relevant Federal agencies to work with the Smithsonian in a planning process leading to a National Biodiversity Center, to be chaired by the Smithsonian. The planning function would be staffed by the National Museum of Natural History.

What is the current status of this effort?

Answer: The Bush Executive Order was not signed, but is viewed positively and being studied by the new administration. At the moment, there is no date set for issuance of an Executive Order.

Question 51: What resources, if any, are being used for planning for such a Center?

Answer: Since the process has not been started, no resources are being used. When and if it does happen, the effort will be based at the National Museum of Natural History; and it will require modest resources--the precise amount is hard to estimate at this point. The National Museum of Natural History has already begun the type of research activities that would be expected of a National Biodiversity Center.

Question 52: What is envisioned as the role for such a Center?

Answer: The initial purpose of a National Biodiversity Center would be to link existing data bases on biological diversity in federal, state, and private organizations (such as the Nature Conservancy).



## ADDITIONAL QUESTIONS SUBMITTED BY REPRESENTATIVE REGULA

## Product Development and Licensing

Question 53: Last year we discussed at some length the Smithsonian's having entered into a three year contract with American Pacific to market reproductions of American quilts made in China. After some discussion with you Mr. Secretary both during the hearings and afterwards I think its is fair to say that the Smithsonian regrets its decision to enter into this contract although as I understand it the contract is still in effect. Is that accurate?

Answer: It is fair to say that the Smithsonian regrets its decision to enter into this contract. Although the goal of sharing our quilting patrimony more broadly with the American public is consistent with Smithsonian purposes and has been applauded by some, the Smithsonian failed to adequately consider issues of foreign production, reaction from the quilting community, opposition to licensing iconographic products generally, etc. We have subsequently strived to accommodate the concerns of the quilting community and to mitigate the negative impact upon them. Although the contract with American Pacific is still in effect, we have suspended release of further patterns. As of March 20, 1993, representatives of the quilting community, American Pacific and the Smithsonian Institution have reached an agreement that resolves the issue. The press release announcing this agreement follows.

March 22, 1993

Media only: Linda St. Thomas (202) 357-2627  
 Madeleine Jacobs (202) 357-2627

**SMITHSONIAN INSTITUTION AND THE AMERICAN QUILT DEFENSE FUND  
 SIGN AGREEMENT**

The Smithsonian Institution and the American Quilt Defense Fund, an association based in Knoxville, Tenn., have agreed to undertake significant steps that foster the study of American quilts and the quilting tradition.

The AQDF was formed in late 1992 in response to the quilting community's concerns about the sale of reproduction Smithsonian quilts made outside the United States. The five founding members of the group are active in the quilting community and represent major quilting organizations including the National Quilting Association Inc., the American Quilt Study Group and the American Quilters' Society.

Under the terms of a March 20 memorandum of understanding, AQDF will work with other quilting organizations to establish a quilt legacy program to identify unique historic quilts that may be of interest to Smithsonian curators and to generate funding for the Smithsonian's quilt programs, including exhibitions, conservation and education.

The Smithsonian's product licensing division will authorize up to four quilt designs for production in the United States through the institution's licensee, American Pacific Enterprises Inc., and production of a maximum of three quilts to be made outside the United States, also through its licensee.

In 1991, the Smithsonian entered into a three-year contract with American Pacific to produce and market quilts based on historic quilt designs in the collections of the Smithsonian's National Museum of American History. To produce the volume of quilts needed for retail and catalog sales in the United States, American Pacific contracted with factories in China to handstitch the quilts. To date, more than 23,000 Smithsonian imported quilts have been sold by American Pacific. Revenues that come to the Smithsonian are used in part to support the Textile Division of the Museum of American History where the quilts are conserved and stored.

SI-118-93

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Office of Public Affairs, Smithsonian Institution, Washington, D.C. 20560 (202) 357-2627

Many quilters found the Chinese-reproduced quilts to be inappropriate and protested the Smithsonian's licensing agreement to the institution and to Congress. The American Quilt Defense Fund was formed to bridge the gulf between the quilters and the Smithsonian and to discuss how the problem might be resolved.

As a result of these discussions, the Smithsonian agreed that it had not properly considered the view of the American quilting community regarding the institution's imported-quilt licensing agreement. Many individuals in the quilting community also came to recognize the importance of supporting the Smithsonian in order to meet their expectations concerning quilt-related programs, according to AQDF member Linda Claussen of Knoxville.

"I think something positive has come of this controversy," says Merikay Waldvogel, a board member of the American Quilt Study Group and author of several books on quilting including *Softcovers for Hard Times: Quiltmaking and the Great Depression*. "After a year passed, we decided it was time to move this issue to a higher level and with this agreement we think that the Smithsonian can regain the goodwill of many in the quilting community."

Smithsonian Secretary Robert McC. Adams also expressed pleasure with the agreement. "We are delighted to reach this understanding, which benefits both the Smithsonian and the concerned quilters," he said. "We believe this agreement will continue to allow us to highlight the unique role of quilting in our American heritage."

"American Pacific is thoroughly excited about working with the American quilting community and the Smithsonian to develop American-made quilts for our customers," Steven J. Block, executive vice president of American Pacific, says. "From the beginning of our history in the quilt business, we have relied on American quilters to develop some of our most successful quilt designs and, until just recently, our ties to the American quilting community had been pretty good. We hope that the American quilt project contemplated by the AQDF agreement will serve to mend some of the hard feelings."

According to the agreement between the Smithsonian and the American Quilt Defense Fund:

- ♦ The Smithsonian and the AQDF will establish a quilt advisory panel of five representatives from the U.S. quilting community. The panel will review and make recommendations regarding the appropriateness of both domestic and foreign quilt reproductions under the institution's current licensing agreement with American Pacific (which continues until September 1994).

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- ♦ The Smithsonian's National Museum of American History, which houses the quilt collection, will work toward the presentation of a major quilt exhibition in 1997.
- ♦ The Museum of American History will explore the feasibility of constructing a large quilt exhibit case so that quilts can be displayed on a rotating basis.
- ♦ The museum will organize seminars on the quilt and textile collections for historians, scholars and other interested individuals when funds are available.
- ♦ Both the Smithsonian and the AQDF will work to foster the serious study of quilts by making the quilts accessible to historians and other scholars and by publicizing the results of their research.

The production of a U.S.-made quilt has already begun. American Pacific has made arrangements with a quilting cooperative in West Virginia to produce one of the Smithsonian quilt designs—the Harvest Sun Quilt, made in the late 1800s by a Kentucky woman. It will be available this fall to consumers exclusively through the Lands' End “Coming Home” catalog.

The members of the AQDF are Linda Claussen, member of a number of quilting organizations and past president of the Smokey Mountain Quilters; Rebecca H. Harriss, a board member of the National Quilting Association and a quilt appraiser; Eva Earle Kent, a consumer advocate and member of the National Quilting Association and the American Quilt Study Group; Barbara Jean Lester, member of several quilting organizations and a judge for quilting competitions; and Merikay Waldvogel, historian, author and board member of the study group.

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Comments from quilters

"I think the Smithsonian has done a remarkable job...taking this very negative situation and working it around to be of some benefit to quilters...that's the way things ought to be worked out. Include my name among those who support this memo of understanding."

Jean Ray Laury, quilt designer  
19425 Tollhouse Road  
Clovis, Calif. 93611  
(209) 297-0228

"I want to commend the Smithsonian for working to arrive at a satisfactory resolution to the great quilt controversy. I am particularly pleased that the Smithsonian plans to foster serious study of the quilts in its collection...I am certain that the exhibits and publications resulting from in-depth research would be welcomed and supported by a wide spectrum of the public, both inside and outside the academy."

Virginia Gunn, Associate Professor  
School of Home Economics and Family Ecology  
The University of Akron  
Akron, Ohio  
(216) 972-7721

"Congratulations to the AQDF for getting the Smithsonian to put in writing some of its assurances and commitments to quilters. This agreement is an important step toward the quilting community and the Smithsonian working together for their mutual benefit...AQDF's idea for establishing a quilt advisory panel to work with the Smithsonian is excellent."

Bonnie Leman, Editor in Chief  
Quilters Newsletter  
Wheatridge, Colo.  
(303) 420-4272

"I look forward to seeing the Smithsonian as a museum where people participate...where people with special knowledge and interests have the opportunity to contribute to the life of special collections such as the quilts."

Carter Houck, Contributing Editor  
Lady's Circle Patchwork Quilts  
Box 66  
Elka Park, N.Y. 12427  
(518) 589-6329

"The National Quilting Association Inc. is happy to hear about the Smithsonian and the AQDF agreement...It is certainly a step in the right direction toward resolving the controversy, which has incensed American quilters for over a year now. We look forward to the implementation of the points outlined in the memorandum and an improved relationship between American quilters and the Smithsonian.

"On behalf of all the members of the National Quilting Association, I take this opportunity to thank the members of the AQDF for their diligent and untiring efforts in pursuit of an end to this controversy."

Marie Salazar  
Chairman of the Quilt Heritage Committee  
National Quilting Association Inc.  
Union, Ky.  
(606) 384-1412

Question 54: As I understand it the Smithsonian has taken a number of steps to mitigate the situation, although a number of issues remain to be resolved. Is it true that you have decided to terminate the contract upon its expiration in 1994?

Answer: When the term of the current agreement expires in 1994, the contract is terminated. This means that no new patterns could be produced, although inventory from the original agreement could still be sold. The Smithsonian has no intention to extend the current agreement. (See question number 53.)

Question 55: At one point you had temporarily suspended release of further patterns. Was a fifth pattern released to American Pacific for domestic production in West Virginia and the sale and distribution through Lands End? What pattern was it and could you comment on how that arrangement is working and what is the price of those quilts versus the Chinese manufactured product?

Answer: A fifth pattern was released to American Pacific and a West Virginia coop is currently producing approximately 50 quilts. The quilts will be sold and distributed by Lands End. They will be sold for approximately \$800 (queen size) as compared to \$200-\$400 for the Chinese produced quilts (twin through king size). The pattern released is for the Harvest Sun quilt made by Fannie Gatewood Grimes of Keysburg, Kentucky in the third quarter of the 19th century. Since the quilts are not yet produced, it is too early to comment on how the arrangements for this quilt are working. However it is worth noting that we have been unable to identify any quilting group that could produce quilts in significant numbers to be of commercial interest to American Pacific and major retailers.

Question 56: Have any more patterns been released and if so where are these quilts being produced?

Answer: No other patterns have been released beyond these five.

Question 57: You had also agreed in a letter to me last year to exercise more careful control over third party advertising to ensure that the country of origin is clearly identified, the quilts are referred to as "copies" and not "reproductions", and that handwork is clearly distinguished from machine work. Since that time I have continued to have complaints about the issue of labeling and advertising. Could you elaborate on specifically what has been done to address these concerns and do you feel this problem is under control?

Answer: Initially labels on the quilts identified that they were "Made in China". Because of concerns that labels could be removed, we required American Pacific to begin to embroider "Made in China" directly on the quilts. Next we contacted American Pacific to express our concern over third party advertising and informed them that we

intended to fully enforce the requirement of Smithsonian approval. We also provided them with guidelines as to what should be included and what may not be included and American Pacific sent them to all companies ordering quilts. We plan to take the further step of preparing an updated guide that we will distribute directly to all quilt vendors. We also plan to institute a system that will identify any vendor who has not submitted copy for approval in order to be more proactive and less reactive in this area. These steps will assure adequate control over advertising if any new patterns are released.

The principal reason for the continuation of complaints has been timing. In many instances the production of advertising and catalogs was already in process as we were implementing new controls. The other aspect of this situation is the relatively long shelf life of the advertising, particularly that in catalogs. The issue should resolve itself with time.

Question 58: For example last August someone sent me a booklet and certificate of registration that is evidently included with each quilt. The wording would seem once again to put the strong stamp of the Smithsonian on these quilts. Use of words such as heirloom quality, exacting detail and high quality of standards would seem inappropriate given the quality of the quilts I viewed. Have any changes been made in this booklet and is a certificate of registration still accompanying each of these quilts?

Answer: The provenance information, currently in a booklet included with the quilts, will be reissued shortly. It will be edited to assure the appropriateness of the language used. There will be no certificate of registration included with the new provenance information.

Question 59: You also agreed to work with the quilting community to identify groups to create marketable Smithsonian copies domestically and indicated you were considering an annual quilt event at the Smithsonian. Have you made any further plans for such a quilt event and have you developed other relationships besides the West Virginia one with domestic manufacturers?

Answer: The Smithsonian is considering a major quilt exhibition in 1997. This is the normal lead time required to address exhibit research, planning and funding. We would hope to enter into a partnership with the quilting community to raise funds for this effort. Recent discussions with various elements of the quilting community have dealt with this possibility. Another possibility being looked at is the feasibility of a mobile exhibit case that would allow for a small quilt exhibit to be up the majority of the time. Other possibilities are also being considered.

No further relationships have been developed with other domestic manufacturers. The Smithsonian has been unable to identify any domestic manufacturer capable of supplying quilts in a quantity significant enough to interest American Pacific and



retailers. However, the Institution has worked out an approach to the current contract that would be acceptable to all parties. This compromise will include production of additional American produced quilts.

In discussions with the quilting community the Smithsonian has identified other ways that it can be supportive of American quilting interests. One recent success was the signing of a licensing agreement with Spartex, a South Carolina based firm, to produce quilt kits made in America. The Smithsonian continues to pursue other possibilities.

Question 60: How much money has the contract with American Pacific Enterprises returned to the Smithsonian and how much more do you project through the remainder of the contract?

Answer: From January 1992 through January 1993 approximately 22,500 quilts have been sold. Smithsonian royalties have been \$181,000 through December 31, 1992. The Institution estimates that total royalties on the first four quilts will be \$400,000. Royalties on the fifth, American produced, quilt will not be significant. It is difficult to estimate additional royalties since there has been no final decision on how the Smithsonian will proceed with the contract with American Pacific. If the final seven quilts called for in the contract were produced in China, the Smithsonian would expect royalties similar to those on the first four quilts or approximately \$800,000.

Question 61: As far as the contract for the release of the fifth pattern for domestic manufacture, are the financial arrangements with respect to the Smithsonian's share the same and if so do you have any figures on how these sales are going?

Answer: The fifth quilt is being produced under the terms of our agreement with American Pacific with no change in any terms of that agreement including the royalty provisions. Production of these quilts is not yet complete and they have not yet been offered for sale.

Question 62: What quality controls do you have over the Chinese quilts? Could you tighten the quality specifications of these imported quilts such as increasing the stitches per inch, increasing resistance to fading and bleeding, etc.?

Answer: Per the terms of the agreement American Pacific provided both interim and final sample quilts which were approved by the Smithsonian as to the quality of the product. The Smithsonian has no evidence that the quilts produced fail to meet the standards of the approved samples. The contract does not include any specifications such as stitches per inch or resistance to fading. Changes in the quality of the product could only be accomplished through a negotiated change to the contract.

Product quality and price interact to determine the value of the product to the consumer. At certain levels of quality the cost of the product and ultimately its price might have to rise to a point where it no longer matches the intended market. Price is often a concern for the Smithsonian. Since product sales are part of its outreach and educational efforts, a lower price often means making the product available to a broader audience. Balancing quality and cost/price to meet the needs of the licensee, the retailer, the Smithsonian, the consumer, the curator/museum whose collection the product is based on and any special interest groups is often difficult.

Question 63: What are the outlets now available for the public to purchase quilts reproduced from Smithsonian designs?

Answer: American Pacific has a large number of outlets that include mail order companies, department stores and specialty stores. Mail order companies include The Linen Source, Tapestry, Horchow, Chambers, Spiegel, Anticipations, Garnet Hill, Domestications, Sturbridge Yankee Workshop, Nieman Marcus, etc. Department and specialty stores include May Company, Hecht Company, Dillards, Macy's, Bullock's, Filene's, Woodward and Lothrop, Kaufman's, Elder-Beerman, Younkers, The Broadway, Linens and Things, Lee Jay Bed & Bath.

### Research

Question 64: Last year your budget included \$60 million for research. Could you comment on how you coordinate your research with other federal agencies. For example I understand you are doing work on coral reefs and volcanoes which the US Geological Survey is also doing. How does your work differ and how does it compliment what the Survey, for example, is doing?

Answer: Much of the Institution's scientific research, especially that dealing with global environmental change in the broadest sense, is formally coordinated with all other Federal agencies through the FCCSET (Federal Coordinating Council for Science, Engineering, and Technology) committees. We participate in the CEES (Committee on Earth and Environmental Science) which oversees and coordinates the U.S. Global Change Research Program. In addition, scientists in our individual research programs work closely with scientists and program managers from all relevant Federal agencies in their particular fields to ensure the most efficient allocation of scientific resources. For example, our scientists work with appropriate bureaus of the Departments of Agriculture, Interior, Defense, Commerce, and HHS, as well as NASA, EPA and many others.

In the particular case of our relationship with the U.S. Geological Survey, the Smithsonian's work on coral reefs is primarily biological and ecological, and focuses on modern, living reef systems and those of the recent past. The USGS primarily studies fossil reefs as part of the geologic record, and as important reservoirs for oil and gas. In

volcanology, the Smithsonian concentrates on quantifying, understanding, and interpreting the historic record of volcanism with the goal of estimating the impact of volcanic activity through time on the evolution of the earth's environments and atmosphere. We also study the fundamental nature of volcanic processes as reflected in the vast collections of volcanic rocks and minerals which we maintain. The USGS programs in volcanology are focused primarily on volcanic hazards.

Question 65: Please highlight some of the more significant research results of the Smithsonian Institution for the past year. Where has the Smithsonian Institution made important advances?

Answer: Highlights of research results, broken down by science units, follow:

#### NATIONAL MUSEUM OF NATURAL HISTORY:

##### **Department of Anthropology**

In 1990, the Smithsonian Institution Press published cultural anthropologist William H. Crocker's landmark book on the Canela people of Brazil. Crocker first went to live with and study the Canela in 1957, and his book is the culmination of 33 years of fieldwork and careful scholarship, illustrating the kind of long-term research and publication on complex subjects that is possible at the Smithsonian and few other institutions.

Creativity of Power; Cosmology and Action in African Societies (Smithsonian Institution Press, 1989), edited by cultural anthropologist and Africanist Ivan Karp, was selected as one of the year's top academic books by Choice, the journal of the American Library Association. This work led to his selection as the first director (1991-92) of the Institute of Advanced Studies in the African Humanities at Northwestern University. Two other books edited by Dr. Karp (Smithsonian Institution Press), Exhibiting Cultures: The Poetics and Politics of Museum Displays (1991) and Museums and Communities: Debating Public Culture (1992), which resulted from two conferences that he organized, are academic best sellers that are influencing significantly the way museums and the arts and academic communities are now approaching communication and exhibition of cultural differences.

Physical anthropologist Donald Ortner has made substantial progress in the past few years in the identification and diagnosis of disease in human archeological remains. He co-edited a book on human paleopathology published in 1991. More recently, he and collaborator Noreen Tuross of the Conservation Analytical Laboratory, using biochemical methods to characterize disease in archaeological human remains, have identified segments of DNA associated with the genetic response to disease and have also recovered from the ancient remains immunoglobulins with antibodies. Such

evidence may soon make it possible to reconstruct the disease history of many human groups who lived in the past.

Recent research by archaeobiologist Bruce D. Smith, in a series of revolutionary studies, has shown that the eastern United States can be added to the list of ancient centers of plant domestication and agricultural origins. Applying new technology to archaeological materials, Smith discovered two additional local plants that were domesticated by the Native Americans of the eastern United States. Overturning prevalent opinion, he established that indigenous farming economies based on local plants developed about 4,000 years ago, long before the introduction of any crops from Mexico or other centers. Field research by Smith and colleagues also recently discovered a wild gourd growing deep in the Ozarks that almost certainly is the ancestor of many of today's squashes. In FY-92 the NMNH received Federal funding to establish a formal Archaeobiology Program under his leadership.

The research by physical anthropologist Douglas Ubelaker on human remains recovered archaeologically from Ecuador and other areas has revealed for the first time the biological aspects of long-term temporal change in human populations. In Ecuador, samples from a single geographic area span the entire cultural evolution from hunting and gathering bands 8000 years ago through the development of agriculture and the growth of pre-Columbian cities to the historic period. His research in Ecuador and throughout the Americas has documented the condition of the population prior to 1492 (diseases, life expectancy, population numbers, etc.) and assessed the impact of contact with the Old World. In part through this research, Dr. Ubelaker has become an expert in forensic anthropology and has consulted with law-enforcement agencies throughout the country and provided reports in over 400 cases during his career. He has developed new computer techniques to recreate the appearance of a person from the skull as an aid in identification. His research also has produced new techniques to distinguish animals from humans in fragmentary remains, to estimate age at death more accurately from microscopic analysis of bone fragments, to identify individuals from comparison of x-rays and dental materials, and many other aspects of forensic anthropology.

Archaeologist Gus Van Beek has completed 12 years of excavation at Tell Jemmeh, a major archeological site in southwestern Israel, covering 1500 years of settlement during which Canaanites, Philistines, Assyrian, Persians, and Ptolemaic Egyptians flourished in turn. The site has provided several "firsts" in Near Eastern archaeology: the first centralized grain storage center, not unlike the modern cooperative grain centers of the American midwest; the most technologically advanced mud-brick barrel vaulting known from antiquity; and a highly sophisticated ceramic kiln built by the Philistines in the 12th century B.C., that has no parallel until the 12th century A.D. in China.

Zooarchaeologist Melinda Zeder, whose primary research focus for 20 years has been human/animal interaction from the eolithic period through the development of city/states in the Middle East, published the book Feeding Cities in 1992, based on her archaeological research and field experience.

In 1988, the NMNH established with specially appropriated funds the Arctic Studies Center under arctic anthropologist William Fitzhugh, and in 1992 he initiated the Center's newsletter. He organized and produced the books for two large and enormously successful cultural exhibitions that have traveled to major cities across the continent: Inua: Spirit World of the Bering Sea Eskimo, and Crossroads of Continents, which is still traveling. The latter show, about the cultures of both the American and Siberian sides of the Bering Straits, is unique as the first jointly researched and curated Soviet-North American exhibition. The pioneering archaeological studies of Fitzhugh's team on the 16th century voyages to the Canadian Arctic of Englishman Martin Frobisher are now in press to be published as a book.

The research program of paleoanthropologist Richard (Rick) Potts and collaborators at early human sites in Kenya is the first systematic effort to trace and evaluate human ecological settings and responses over the long course of ancestry to the present. In the summer of 1992, he found the first fossil skeletal evidence (a million-year-old molar tooth) of hominids at Olorgesailie in Kenya since excavations were initiated at this site by the Leakeys 50 years ago. As a result of his pioneering work, Dr. Potts has been approached by Chinese officials to lead renewed excavations at the famed Peking Man cave, the most important source of early human prehistoric material in Asia.

The NMNH's American Indian Program was started in 1988 with appropriated funds by cultural anthropologist JoAllyn Archambault (Sioux). This program has brought a steady stream of Native Americans to the Museum for research and training. Her own research has revealed new understandings of the dynamic capacity for cultural exchange and innovation in contemporary Indian society and so far has yielded field data on 40 sundances at 10 different locations over the last 5 years.

In 1990, cultural anthropologist Paul M. Taylor published a book (Smithsonian Institution Press) on the folk biology of the Tobelo People of the large island of Halmahera west of New Guinea, which presents the most comprehensive survey ever undertaken for any human culture of the folk classification of plants and animals. He brought to light many unknown species and recorded detailed tribal knowledge about medicine and other practical uses of little-known rain forest plants and animals. In 1991, he organized the first major exhibition of art works from Indonesia's outer islands, which has travelled to major cities in the United States and Europe, and published (with L.V. Argon) a lavishly illustrated accompanying book.

The NMNH established its first historical archaeology program with the hiring of anthropologist Theresa Singleton, whose studies of the plantation archaeology of African Americans are pacesetter. She has initiated a well-received newsletter on African American archaeology, another first, and its distribution has grown rapidly.

## Department of Botany

In 1992, the Smithsonian, in collaboration with the World Wildlife Fund and the University of Guyana, opened the newly constructed "Center for the Study of Biological Diversity" on the campus of the University in Georgetown, Guyana. Realized largely because of the work of Victoria (Vicki) Funk, the center will provide vital new facilities for the continuing work of the Museum's Biological Diversity of the Guianas Program, directed by Dr. Funk, in this rich tropical region.

Marine algal specialists Mark and Diane Littler have proposed and tested the leading new theory of coral reef development (Relative Dominance Model), which is of great value to managers of coastal ecosystems. This model predicts that coral-dominated systems will shift to algal systems with changes in the level of nutrients and abundance of herbivorous fishes, both of which are highly sensitive to pollution and overfishing.

With Museum marine botanist James Norris, the Littlers have published the first field guide to the marine plants of the Caribbean, illustrated with striking underwater color photographs. It opens up the use of algae as a tool not only for researchers but also a broad range of resource managers and users.

Marine algal expert Maria Faust has established a new program and national collection for the study of benthic dinoflagellates, microscopic unicellular plants that are the most important component of the marine food web. She has made significant contributions to our understanding of fish-borne dinoflagellates that cause disease in humans and to our knowledge of shellfish poisons related to the causes of "red tides."

A strong collaborative program in botany between the Museum and Philippine scientific institutions has been established by marine botanist Ernani Menez. He (with Dr. Rafael Guerra, Executive Director, Philippine Council for Aquatic and Marine Research and Development) organized and raised the major funding for the "Second US-Philippines Phycology Symposium and Workshop," held in the Philippines in 1992.

Tropical botanist John Kress has recently published a beautifully illustrated book (Smithsonian Institution Press) on the heliconias, or false birds-of-paradise. These ecologically important plants in the tropical rain forests are also important in the horticultural trade. His book sets a new standard in presenting technical scientific data in a readable, popular format.

Grass specialist Paul M. Peterson has organized and initiated a new collaborative project with several other major institutions to produce a modern treatise of the grasses of the New World, which will be the first of its kind. The grasses constitute the most important plant family in the world because they supply the world's major food crops--barley, corn, rice, rye, sugar cane, and wheat.

The number of international collaborative studies of floras by the Museum's botanists is at an all-time high, with joint projects on the flora under way in China, the

Philippines, Taiwan, Mesoamerica, Peru, Ecuador, the Guianas, Venezuela, Dominica, India, East Africa, Indonesia and Southeast Asia, and Mexico, as well as North America.

The Museum's Plant Conservation Unit, directed by Jane Villa-Lobos, has developed and maintained the Latin American Threatened Plants Database and the Consortium on Plant Resources of the Americas, which will lead to knowledge of unexploited plants for agriculture and medicine.

Pacific botanist Warren L. Wagner is the principal author of the recently published two-volume Manual of the Flowering Plants of Hawaii, the first since 1888. This award-winning book represents a significant step toward a modern evaluation of the Hawaiian flora and is a new benchmark for scientific research, conservation, and economic development.

### Department of Entomology

Under the leadership of Chairman Ronald J. McGinley, the Department of Entomology developed a quick and effective profiling system for evaluating curation levels of collections. The system has now been adopted by major museums throughout the United States and Canada and has become a "standard," for example, in proposals submitted for collections improvement to the National Science Foundation.

Dr. McGinley also initiated the International Collections Newsletter (ICN) about entomology collections, which he edits and the Department distributes. The newsletter serves to coordinate projects, communicate ideas, and solicit the cooperation and support for collection-related activities.

The Department, especially Dr. McGinley, has been strongly instrumental in developing the Entomology Collections Network (ECN). ECN was founded in 1989 in response to growing needs for coordination and cooperation among entomological collections. This organization has successfully improved avenues of communication and has developed standards for automated data processing.

The A.N.T.S.E. (A Network Tracking System for Entomology) program was initiated by their department to address the basic problem of accessibility of specimens (millions!) to worldwide researchers, especially those engaged in studies of tropical biodiversity. The system now uses collections management staff to sort large samples of insects, mostly preserved in alcohol, to similar kinds. The sorted samples are then forwarded to collaborating researchers who select, prepare, and identify the material. The system is tracked and coordinated on a computerized database.

Dr. Pedro Duret (Argentina), a leading specialist of South American mosquitoes, recently made his private collection available to the Smithsonian Institution. The collection was purchased and is now being incorporated by Research Associates from the Walter Reed Biosystematics Unit into our main collection. The collection is an

invaluable resource for study of mosquito vectors of numerous debilitating and frequently fatal diseases such as malaria, dengue, and various encephalitis.

Catalogs of species are invaluable tools for the scientific community. The Department of Entomology continues to be the leading producer of these, frequently in cooperation with other agencies and individuals. Two significant recent ones are the catalog of Heteroptera (true bugs) by Richard Froeschner (SI) and Thomas Henry (USDA) and the computerized database for the Hymenoptera (bees, ants, and wasps) by Karl V. Krombein and David R. Smith (USDA).

Scientists in the Department have played a major role in demonstrating the vast diversity of arthropods, especially insects and spiders, in the tropical rain forests, particularly in the canopy. Beetle expert Terry Erwin has pioneered in the study of the canopy insect fauna, both in technique and theory, and, as a consequence, he has revolutionized thinking about the number of species on Earth, showing that it may be many orders of magnitude higher than previously thought--perhaps 30-50 million. His publications on techniques for biodiversity research and on estimating species have had a seminal influence on the whole field of biodiversity. Spider specialist Jonathan Coddington has developed and published an innovative new protocol for estimating the number of spider species in an area.

The Department, along with the Systematic Entomology Laboratory (USDA) and the University of Maryland, has established the Maryland Center for Systematic Entomology (MCSE). Through this program, numerous students have received Master's or Ph.D degrees, and currently there are eight students in the program.

Vichai Malikul meticulously prepared 541 watercolor paintings for 47 plates in A Field Guide to Eastern Butterflies (1992, Peterson Field Guide series), written by Paul A. Opler. Mr. Malikul's paintings have been highly praised, and the book is expected to become a new classic.

#### **Department of Invertebrate Zoology**

Introduced aquatic animals pose a major problem in the large estuarine system of the San Francisco Bay and the Sacramento San Joaquin delta. Thanks to the leadership of crustacean specialists Thomas Bowman, Frank Ferrari, and Chad Walter, working with the California Department of Fish and Game, the species introduced to this system have now been identified, making it possible to undertake control measures.

Marine ecologist Klaus Ruetzler, director of the Caribbean Coral Reef Ecosystem (CCRE) Program, edited two books on sponge biology and morphology, the results of the largest international conference on sponges. Sponges have become critical in studies on paleoecology, coral reef, wetland ecology, global warming, aquatic pollution, and drugs from the sea.



This year marks the 30th anniversary of NMNH's field station at Carrie Bow Cay, Belize, the major field site for the CCRE Program. A total of 350 scientific publications, including four books and two doctoral dissertations, have come from the research at this station. This research has provided valuable information on the functioning of coral reefs, seagrass beds, and mangroves, which in turn are economically important for fisheries, land protection, and recreation.

Marine biologist Clyde Roper's papers on the identification of western North Atlantic and eastern central Pacific squids have become vitally important reference tools for commercial fisheries, fisheries biologists, the National Marine Fisheries Service, and the Food and Agriculture Organization of the United Nations.

Crustacean specialist Raymond Manning in his research on commercially important deep-sea crabs has discovered 18 new species to add to the two species previously known. This is vital new information on deep-sea crab distribution. Manning's studies of mantis shrimps has led to the discovery of color vision in one group, which has implications for the study of underwater vision in other animal groups.

Benthic crustacean expert Rafael Lemaitre has discovered a species of ghost shrimp that causes damage to the commercial culture of marine shrimps used for human consumption throughout the world.

Nematodes are the most abundant organisms in the marine environment (100,000-30,000,000 individuals per square meter of mud or sand) and therefore, are of enormous ecological importance. Duane Hope has just completed an annotated checklist of these worms for the east coast of the United States.

Illegally imported, CITES-protected corals confiscated by the U.S. Fish and Wildlife Service can now be identified quickly with the reference collection of Indo-Pacific corals established by Stephen Cairns.

Meredith Jones (now retired) has pioneered in the study of deep-sea rift worms (Vestimentifera) and discovered striking details of their unique symbiosis with chemosynthetic bacteria, forms of life independent of the process of photosynthesis. These deep-sea life forms constitute one of the most exciting discoveries of modern biology.

Robert Hershler's findings on spring snails in the southwestern United States have produced critical new understanding of the history, economic importance, and fragility of freshwater springs, seeps, and streams in this water-starved region.

Robert Higgins has opened up a whole new world of biodiversity with his studies of marine meiofauna (tiny animals that live between sand grains). His new book has become a standard reference. He also has produced a video film on meiofauna that is used by many colleges and universities as a teaching tool in marine ecology and biology classes.

Crustacean specialist and Department chairman Brian Kensley and illustrator Marilyn Schotte published an illustrated handbook on the marine isopods of the Caribbean, Gulf of Mexico, Bahamas, and Bermuda, for use by college students, ecologists, and fish biologists. The isopods are small but extremely abundant crustaceans that are an important link in the food chain of the sea.

#### Department of Mineral Sciences

Studies by meteorite expert Roy S. Clarke, Jr. of the corrosion of metal in meteorites recovered from Antarctica has led to new ideas concerning the initial stages of corrosion of iron alloys, information that may well prove to be applicable to our decaying steel infrastructure.

The experimental findings of volcanologist Richard S. Fiske (with collaborator) have revolutionized thinking about how particles from volcanic eruptions sort out in submarine environments. His continuing collaborative research with U.S. Geological Survey scientists on the island of Hawaii have demonstrated that the largest landslide on Earth, about three miles thick over an area more than 10 times the size of the District of Columbia, has moved more than 30 meters in just the last 500 years. This extremely rapid displacement is splitting the active volcano Kilauea apart, which could slide into the sea at any time, and sudden failure of the landslide would cause a monstrous tidal wave and catastrophic destruction to the Hawaiian Islands. He recently produced a spectacular video and a traveling exhibition on volcanoes, and both have proved to be very popular.

Geochemist Eugene Jarosewich has completed the analysis of approximately 350 meteorites from the Museum's collections for major and trace elements. These analyses represent the most comprehensive chemical data available for classifying meteorites found in Antarctica and comparing them to those found elsewhere.

His characterizations of approximately 50 minerals for their chemical composition, homogeneity, and stability in the electron beam as reference minerals for electron microprobe and SEM measurements have established these samples as "Smithsonian reference minerals." They have been requested by approximately 500 researchers from throughout the world and are a critical foundation for most mineral and material research.

Explosive volcanic eruptions threaten lives and property and can modify the global climate system toward cooler temperatures. Explosivity is directly related to the abundance of volatile constituents, primarily water, in the magma prior to eruption. Volcanologist James F. Luhr, through a series of innovative experiments, has pioneered a model for accurately estimating the content of natural magmas. The goal is to provide more realistic estimates of volcanic hazards and climatic perturbations caused by explosive eruptions.

Geochemist Glenn J. MacPherson and colleagues, using a new technique of measuring the products of long-extinct isotopes, have shown that the planets may have formed several million years after the dust from which they accreted was itself formed. This timescale is significantly longer than generally believed possible on astronomical grounds, and their result is a significant step forward in understanding how our (and possibly other) solar system(s) formed.

The violent explosive activity of Arenal Volcano, Costa Rica, recently and over the past 3,700 years, provides valuable information on precursors of volcanic explosions, precursors that may provide early warning. Geologist William G. Melson and coworkers have established a privately funded observatory near the active crater where the eruptive activity is monitored. Volcanologists are trained, and recording and warning equipment are developed.

Geologist Jeffrey E. Post and colleagues have developed specialized techniques for studying fine-grained minerals, such as clays, silica phases, and manganese and iron oxides that are common constituents of soils and sediments. Recently, in Science magazine, they reported the widespread occurrence of a new silica phase similar to quartz, which, though largely unrecognized previously, turns out to be one of the most common minerals in the Earth's crust. Already these results have had important implications for reconstructing past geological events.

The field and laboratory studies by geologist Sorena Sorensen and colleagues of the complex chemical processes that occur in subduction zones where two of the Earth's plates meet have demonstrated that many elements formerly thought to be immobile are actually transported by fluids for long distances and that relatively minor minerals can exert important controls on the compositions of these fluids.

Meteorites are "the poor man's space probe," containing clues to the birth and early history of our solar system. The Museum is deeply involved in the Antarctic Meteorite Program and has achieved in recent years a premier meteorite collection for scientists to study.

### **Department of Paleobiology**

Paleobotanist William DiMichele's Studies of Late Paleozoic (310 million years ago) plant communities have shown that vegetation is buffered against climate change until a threshold number of extinctions occurs, then the entire system collapses. There is no reason to assume that similar conditions do not apply today.

The pacesetter research of Douglas Erwin has shown the greatest extinction of marine organisms occurred at the end of the Paleozoic (230 million years ago) with more than 95 percent of the organisms becoming extinct. Recent theories suggest that the extinction was caused by a runaway greenhouse effect.

Dr. Conrad Labandeira became the first insect paleobiologist to be hired by the Museum. His research has helped to push back the age of the earliest insects to about 360 million years ago, when they were reasonably well developed.

Oceanographer Daniel Stanley's coring studies of the Nile delta, the breadbasket of Egypt, have shown that this critical area is undergoing long-term sinking. A natural sinking of the delta and a rising sea level formerly were offset by sediments brought to the coast by the Nile; this balance has been interrupted by the Aswan Dam, trapping sediment in Lake Nasser. Without new sediment, the coastline may move 20 miles inland by the year 2100.

Anna K. Behrensmeyer, organizer and director of the Museum's Evolution of Terrestrial Ecosystems Program, headed a team of editors including three other Museum scientists (William A. DiMichele, Scott L. Wing, and Richard B. Potts), who have just published the pioneer book Terrestrial Ecosystems Through Time (1992), which surveys 400 million years of life on land. It presents new approaches to paleoecological research that will illuminate how periods of major and minor environmental change affect communities of land organisms. Their program is establishing a whole new field in paleobiology, and their book provides the first "ground truth" for testing models of organic response to environmental change in land ecosystems through geologic time.

Brian T. Huber's detailed studies of foraminifera in the Antarctic area document global changes in ocean climate patterns around this southernmost continent and show the early onset of global cooling and initiation of glaciation. He also documents change from a salinity driven circulation pattern to a thermally driven pattern.

Geologist Kenneth Towe, of the National Museum of Natural History's Department of Paleobiology, has revolutionized our understanding of the evolution of the Earth's atmosphere and of oxygen-breathing life. In an article published in the prestigious journal Nature, Dr. Towe calculates that the world-wide use of oxygen respiration by early life forms began at least a billion years earlier than scientists previously believed. The atmosphere during this early time, 3.8 to 2.5 billion years ago, contained dramatically higher amounts of oxygen than formerly thought possible. Towe's work contributes important insights to understanding the atmosphere and its relationship through time to the living world; insights which may be critical to interpreting global environmental change. His findings represent a major change in the thinking about the chemistry of the early atmosphere.

Geologist Richard Benson, of the National Museum of Natural History's Department of Paleobiology, has made extremely important progress in understanding the fundamental basis of global climate change through detailed studies of the geologic record of such changes in the recent past. He has demonstrated how isolation of the Mediterranean by geologic processes profoundly altered the global climate patterns, contributing eventually to ice-age conditions. This work, now being correlated with Milankovich cycles, will strongly constrain global climate models now being developed by international scientific teams studying global change.

This year paleobotanist Scott Wing led a major, multidisciplinary investigation of a 70-million-year-old plant deposit in Wyoming. It is a unique deposit, with the fossil plants preserved in growing position under a volcanic ash--a sort of Late Cretaceous Pompeii. Paleobotanists, fossil soil experts, and sedimentologists from NMNH were joined in the field by scientists from Yale and the University of Michigan and a group of college students from around the country to conduct a two-month excavation of this deposit. In spite of the great diversity of flowering plants (about 90 species), most of the species were small herbs and had little influence on the vegetation. The results of this study will rewrite our ideas about the importance of flowering plants in Late Cretaceous vegetation.

#### Department of Vertebrate Zoology

Marine mammal specialist Dr. James Mead sounded the alarm and played a central role in the quest for answers when dolphins started dying along the Atlantic seaboard several years ago. The investigations on stranded cetaceans carried on in his Marine Mammal Program have garnered a wealth of life-history information recently on whales and dolphins. In 1988, Dr. Mead and collaborators discovered a new species of whale along the coast of Peru, the first discovery of an unknown cetacean since 1958. Such an extraordinary discovery illustrates how little we know of the diversity of the ocean.

With zoologists and conservationists raising the alarm that so many amphibian populations are in decline, Ronald Heyer's Frogs of Boraceia answers the need for an in-depth analysis of a frog fauna. The publication, an accumulation of 30 years of data, covers the entire Atlantic coastal forest of Brazil, the most endangered rain forest in South America. Findings in the study site indicate that extinctions of populations have occurred as a result of unusual cold periods.

With every known population of sea turtles on the decline it is important for conservationists to know the age at which turtles reach sexual maturity. No one knew it took 20 years for Loggerheads to reproduce until the publication of George Zug's manual, Age Determination in Turtles. Researchers of turtle biology now have a more complete picture of the life history of sea turtles and an excellent tool for determining age by means of skeletochronology. Zug's study is essential for people working in the management and conservation of sea turtles by providing baseline data.

Clarification of the diversity and distribution of the freshwater fishes of South America is essential to understanding the historical biogeography of the Amazon. Our knowledge of organisms making up this tropical ecosystem is grievously inadequate but now has been enlarged by a major series of monographs and papers on two large families of freshwater fishes of South America. These studies, by ichthyologists Richard Vari and Stanley Weitzman, document the diversity of fishes and the decline of freshwater streams of coastal regions. A recent publication by Dr. Weitzman on the

conservation problems of the fishes of the Atlantic Forest of Brazil has had great influence on the people concerned with conservation in Brazil.

The basis for assessing biological diversity is an inventory of what species exist and where. Fish expert Victor Springer has published a major work on Indo-Pacific blennies, with special reference to evolution and distribution of species tied to past tectonic events. Research on sea-level changes influenced by glaciation demonstrates extinction in some areas not due to man but to natural phenomena.

Sharks have captured the imagination of the public and generated thousands of inquiries regarding their biology and behavior. Four years in preparation, Sharks in Question, (Smithsonian Institution Press) by Victor Springer and Joy Gold, is an informative and educational book that provides the answers, and it is proving to be a best seller.

Mammalogist Charles O. Handley's recent 250-page status report on the "Threatened and Endangered Mammals of Virginia" (In Terwilleger, K., coordinator of Virginia's Endangered Species) is a major work updating Handley's earlier book length reports (1946 and 1981).

Discovery by bird paleontologists Storrs Olson and Helen James of 32 new species of extinct birds from the Hawaiian Islands documents a very recent, human-caused extinction event of major proportions. Co-authored monographs present a new vista of the past life of Hawaii and understanding of human interaction with the environment. These studies indicate why certain species are now extinct and provide a basis for current management and conservation decisions in Hawaii.

The ten-year Barro Colorado Island (Panama) Project led by Charles Handley has provided the basis for numerous investigations. A major publication by Handley, Don Wilson, and Alfred Gardner on the natural history of the common fruit bat, (Artibeus jamaicensis) on Barro Colorado Island, is a comprehensive study of one of the most abundant bats on BCI. It provides an in-depth look at one of the tropics' key animals and rare insight to terrestrial tropical field studies.

The biological diversity of the rodents increases every time mammalogist Michael Carleton undertakes a new study. His most recent work in Madagascar on endemic rodents has revealed at least 50 percent more species than previously known to exist there. His discoveries are providing baseline data in cataloging the fauna of habitats never before adequately studied.

#### Laboratory of Molecular Systematics (LMS)

Under the LMS Director Michael J. Braun, the renovation of the space assigned to the LMS at the Museum Support Center was completed in 1992, resulting in a thoroughly modern laboratory complex for molecular studies.

David Swofford, an internationally acclaimed expert on phylogenetic analysis--the use of evolutionary trees phylogenies to draw inferences about the nature and direction of evolution--was hired in 1991. He is also a specialist in the computer analysis of molecular data and has written one of the most widely used phylogenetic programs.

A recent paper published by L. Vigilant and associates at Penn State University claimed that DNA sequence data from humans and chimpanzees supported an African origin for human mitochondria. Reanalyses of their data by Dr. Swofford demonstrated that this conclusion was not justified; other evolutionary trees fitting the data as well as their trees support a non-African origin. A new procedure, implemented in the PAUP program (developed by Swofford), was used to identify these trees.

Dr. Braun obtained DNA sequences from the mitochondrial cytochrome B gene from a museum specimen of the presumed extinct "Tasmanian wolf" and compared them to homologous sequences from representatives of the modern Australian marsupials. Phylogenetic analysis of the sequences supported the hypotheses that the Tasmanian wolf represents an ancient Australian marsupial lineage. This project illustrates the vast potential for genetic research on rare and unique material held in NMNH collections.

Molecular botanist Elizabeth A. Zimmer sequenced and analyzed segments of the ribosomal genes to determine specific relationships among several seed plant lineages. The origin of the seed plants and the monocotyledonous plants is a special focus of a Mellon Foundation grant to Dr. Zimmer and Michael Donoghue (University of Arizona and Harvard University).

Methods in Enzymology, Vol. 221, Molecular Evolution: Producing the Biochemical Data has been developed by Dr. Zimmer as senior editor in conjunction with R.L. Cann (University of Hawaii), and T.J. White (Hoffman and LaRoche). This volume includes over 45 original papers, including four written or co-authored by eight researchers from LMS.

## NATIONAL ZOOLOGICAL PARK:

### **Husbandry**

NZP scientists have made crucial scientific discoveries that have enabled a number of exotic animals to survive and reproduce in captivity. We discovered that golden lion tamarins, a highly endangered South American monkey, will reproduce only when kept in monogamous family groups. We found that fathers and older siblings must remain with the family to carry newborn infants and to offer them their first solid food. We found that these monkeys must be fed animal protein in addition to fruit. We diagnosed and developed treatment for a number of life-threatening parasites and diseases. We have discovered that they are highly susceptible to a hepatitis virus; and with the help of an NIH grant, we are currently investigating treatment strategies that may be applicable to humans.

Another example of husbandry research involves gorillas. NZP scientists were able to document that gorillas raised by humans in nurseries were socially and sexually deficient. In many cases, this incompetence was irreversible, meaning that the animal could never contribute to the breeding population. Females were more severely affected than males. These findings echoed earlier discoveries with monkeys, but their documentation in a great ape made their generalization to human developmental disorders more valid. Further, such research with great apes never could have been accomplished experimentally in laboratories because the apes would not have been available in sufficient numbers, and because ethical considerations preclude intentional social deprivation of large numbers of infant apes. A retrospective search of zoo records covering 150 gorillas in many zoos, with opportunistic cases of hand-rearing, allowed NZP scientists to document this effect.

### Genetics

Even when animals survive and reproduce, there is a risk of loss of genetic vitality. Captive animal populations, and insularized wild populations, often have too few breeding individuals to maintain genetic variability. This can lead to inbreeding. NZP scientists documented that the survival of infants born to closely related parents (siblings, half-sibs, first cousins) were far less likely to survive the first 30 days of life than infants born to more distantly related parents. The effect was consistent over a broad range of mammal species. NZP scientists later participated on a team that documented a tremendous loss of genetic diversity in wild cheetahs, and were able further to document a consequent increased susceptibility to communicable disease and loss of semen quality. As a result of this work, avoidance of inbreeding and maintenance of genetic variability has become the primary goal of most captive breeding and wildlife management programs.

### Reproductive physiology

The National Zoo's reproductive physiologists have developed a "Mobile Laboratory Research Team" that travels throughout the world helping to solve reproduction problems in endangered species. The team has worked with zoo animals in more than 40 institutions in North America and Europe. The team also has collected new research data in field studies of truly wild animal populations living in Africa, Asia, Australia and Indonesia. Among the rare species helped are the cheetah, lion, snow leopard, tiger, elephant, giraffe and koala. This mobile team concept is important because many zoos and wildlife programs do not have research programs or the expertise of Smithsonian scientists. The program provides a service to many organizations while providing Smithsonian scientists with unique access to a wide array of very rare species.

The National Zoo's reproductive physiologists produced the first ever tiger cub by *in vitro* (test tube) fertilization (IVF). Eggs collected from a Bengal tiger female were fertilized in a Petri dish with sperm collected from a Bengal tiger male. The resulting



embryos were transferred to a Siberian tiger that became pregnant and delivered 3 normal young. This is important because it demonstrates how "assisted reproduction" can be used to overcome fertility problems in an endangered species. Particularly unique is that the researchers were able to adapt a technique originally developed by humans (IVF) to help a rare species, thus demonstrating how human biomedical science can benefit conservation. The National Zoo has produced living offspring in rare species using a new artificial insemination (AI) technique. Many wildlife species are sexually incompatible. Also many zoo animals are bred on the basis of genetics (to maintain healthy populations), so it often is necessary to move animals long distances to find an appropriate mate. To overcome these problems, AI has been developed using a "laparoscope," a type of telescope that can be inserted into the abdomen permitting sperm to be placed in the uterus. Living young have been produced in the black-footed ferret, tiger, cheetah, leopard cat, clouded leopard, puma and Eld's deer using this approach. Recently, scientists also have produced 2 kittens from the endangered leopard cat using sperm frozen, stored at  $-196^{\circ}\text{C}$  and then thawed and artificially inseminated. This work is demonstrating how artificial breeding procedures, originally developed in humans and livestock, can be used to help conserve rare species.

Many species of cats, like the cheetah and puma, produce many structurally-abnormal sperm in their semen, as does the human male. For this reason, reproductive physiologists are studying the function of abnormal sperm in cats in hope of finding the cause and the significance of these same type of abnormal cells in humans. This work is considered so important that it has been funded by grant monies from the National Institutes of Health.

#### Endocrine research

The National Zoo developed an Endocrine Research Laboratory (ERL), a state-of-the-art laboratory that allows measuring hormones from any endangered species. Hormones are essential to successful reproduction, and hormone patterns indicate an animal's ability to reproduce, become pregnant and deliver young. Blood samples usually are needed to measure hormones, but collecting frequent blood samples from wildlife species is impossible. National Zoo scientists have developed "non-invasive" techniques that allow hormones to be measured in animal excretions (urine and feces), so that animals do not have to be handled to be studied. This has allowed new data to be collected on rare species like the giant panda, Eld's deer, maned wolf and elephant. Some of the new technology, like that being used to measure stress hormones, will have similar applications to humans.

#### Pathology

Specific examples include tracking down the cause of a lethal hepatitis in marmosets and tamarins that occurred as epizootics in a dozen North American zoos during the past two decades. These outbreaks were responsible for a significant number

of deaths in the endangered golden lion tamarin. An extensive surveillance program was set up to monitor new episodes and in so doing, the specific virus was identified and found to be harbored and transmitted by mice "silently" infected with the causative agent. Elucidating this viral disease led to control measures so programs, such as the reintroduction of lion tamarins to their native habitats in Brazil, are no longer threatened by this dread disease.

Another example are the long-term research efforts carried out by the NZP's pathologists with tuberculosis in avian species. The disease is insidious and once entrenched is responsible for significant losses and has stymied conservation programs for both captive and wild endangered avian species. Using technology similar to that for controlling tuberculous diseases in AIDS patients, we are developing diagnostic and preventative methods to remove this variable which currently threatens the Micronesian kingfisher, the Guam rail, the American whooping crane and others.

### Molecular genetics

In NZP's new Molecular Genetics Laboratory, we have started growing DNA, the genetic building blocks, from extinct or long-dead animals. We are now looking at the evolutionary relationships between living endangered Hawaiian birds and many extinct native Hawaiian species; for an extinct Hawaiian goose, the ancient DNA came from subfossil bone. We are also growing DNA from tiny pieces of hair removed from museum specimens of lion tamarins; we are comparing the change in genetic composition of 200 year old animals with presently existing live animals.

### Social evolution

NZP scientists discovered that there are some generalizations about how animals communicate with sounds, regardless of whether the species is a songbird or a giant panda. Angry animals growl and submissive ones have high-pitched whines. This relationship between structure and motivation allows us to predict behavior in animals, and provides some understanding of how primitive human speech might have evolved. Our greater understanding of animal "talk" has resulted in many examples of animal "deception."

NZP scientists have studied one population of polygynous toque macaque monkeys in Sri Lanka for over 20 years and monogamous golden lion tamarins in Brazil for 9 years; in that time we have made significant discoveries concerning how monkey groups are organized and the effects of kinship, environment, and social behavior on individual survival. We also understand better how social groups develop through fission and fusion of pre-existing groups.

### **Milk and growth**

NZP scientists have made some remarkable discoveries concerning the relationship between a species ecological adaptations and how mothers of different species rear their young, the composition of their milk and the timing of weaning. Black bears can rear young while hibernating by producing tiny infants and feeding them small amounts of high fat milk. The female avoids dehydration by "recycling" cubs feces and urine. As an adaptation to breeding on pack ice, hood seals wean their young (who have doubled their birth weight) in 4 days and produce the richest milk of any mammal yet studied. The endangered Hawaiian monk seal and other seal species often foster young, but without apparent detriment to survival.

### **Conservation**

NZP scientists have developed internationally accepted criteria for Reintroduction Programs involving captive-bred species, and using the golden lion tamarin of Brazil, have demonstrated how an integrated conservation program can be organized, using captive and wild animals, zoos and reserves, community education and public affairs, habitat protection and rehabilitation, and scientific research. The Golden Lion Tamarin Conservation Program is THE model reintroduction program.

### **Animal health**

Veterinarians in the Department of Animal Health are very active in both clinical and reproductive physiology research programs. Studies of the epidemiology, diagnosis, treatment, and prevention of disease problems arising in captive and free-ranging wildlife are continually occurring in the department. Several important studies involving the pharmacokinetics of antibiotics in avian and reptilian species have made it possible to accurately dose many avian and reptilian species with antibiotics in a clinical setting. New and improved methods of tranquilization and anesthesia of exotic animal species are continually being investigated.

### **Migratory bird research**

The Migratory Bird Center developed the neophobia threshold hypothesis, that holds that variation in the response to new things is a major force in resource use by migratory birds and most other vertebrates. This research has its analog in current research on the importance of novelty response in the formation of human personality. Other research involving one of the only long-term studies of the demography and social behavior of a tropical forest bird was completed, demonstrating that birds defend multi-specific territories that are passed on from pair to pair without change. These populations are socially regulated at a level below what is determined by food supply.

### CONSERVATION ANALYTICAL LABORATORY:

CAL has developed the first successful computer model of polymeric structures such as paintings, photographs and other cultural objects. The model provides us with the ability to predict the structural effects of changes in environmental conditions such as temperature and relative humidity, and to assess the response to shock and vibrations such as encountered during transportation. The model also may have use in evaluating certain potential effects of conservation treatments of objects before actually treating them. This technology is a leading candidate for transfer to non-museum, industrial applications.

In collaboration with the National Gallery of Art, the Canadian Conservation Institute, and the Tate Gallery, CAL completed a research project on the effects of the transit environment on paintings and methodologies to minimize these effects. The results of this research were presented at an international conference organized for that purpose in London, and published in the two special volumes produced at the same occasion. The work establishes packing and shipping methods which safeguard the physical integrity of paintings during transport. CAL, the National Gallery, and the Canadian Conservation Institute also collaborate on a series of workshops, organized throughout the USA and Canada, where the results of this work are disseminated to museum staff and shipping professionals. The private shipping and packing industry has been very interested in and supportive of this program.

In CAL's photographic materials science research program, the computer modelling technology referred to above has been introduced to address the questions relating to the effects of storage at low temperature. The first results have already been quite dramatic in that the commonly recommended practice of lowering the relative humidity as well as the temperature must be questioned. This program appears to have applications outside the museum field: we are negotiating with private industry on the possibility to apply this research to preserving radiographic image collections of electric power stations.

A main focus of CAL's program on modern polymeric materials was the preservation of elastomers, such as in the NASM collection of space suits. This work has already contributed significantly to our understanding of the processes which play a role in the long term behavior of these materials. For example, it was found that the crystallization mechanisms, which result in stiffness and brittleness of the material, are different for non oxidized and oxidized elastomers, with the process being irreversible for the latter. Hence, the present practice of storage at low temperature, which promotes crystallization, must be seriously questioned. It also appears that storage in a nitrogen atmosphere is beneficial in inhibiting oxidation. These findings will have relevance for the long term preservation of elastomeric materials in museum collections beyond spacesuits.

Research on the aging of cellulosic materials has shown that the environmental conditions play a critical role on the chemical mechanisms involved in the accelerated

aging of these materials. Thus, for example, an accelerated aging test on paper, conducted under a given set of temperature and relative humidity conditions, cannot be compared to an aging experiment conducted under different conditions. This is of critical importance in the field of preservation of archival and library collections, as accelerated aging is the only practical way of evaluating preservation and conservation methodology, and it clearly points at the need for establishment of standardized aging protocols.

Research on the effects of cleaning solvents, used for removal of deteriorated varnish from paintings, on the underlying paint layers is producing major advances of our understanding of these effects for the traditionally used solvent systems. Results obtained from investigations on the recently introduced resin soap systems indicate the potential for far more dangerous and damaging effects than generally anticipated, and will most likely result in a re-evaluation of their use.

In CAL's research program on biogeochemistry, techniques have been developed for the extraction of protein from ancient bone and shell. Thus, indigenous protein was recovered from a 350 million year old fossil shell of *Lingula*, although it had commonly been assumed that biomolecules would not survive diagenetic processes in the fossil record beyond about 100,000 years. As these techniques can be used to extract DNA from historic and fossil bone/shell, they can be of major importance in the studies of genetic and evolutionary relationships. The recovery of immunoglobulins has resulted in the identification of diseases in historic populations. For example, a positive identification of exposure to treponemal disease was made in the extract from bone of a Woodlands Native American, radiocarbon dated to about 800 AD. The research in this program also has provided important information relating to the preservation and conservation of natural science collections, and especially the biochemical information contained therein.

CAL researchers have developed a new conservation treatment to safely clean art and archival paper collections. Non-aqueous light bleaching uses ethanol and light exposure to bleach (clean) water sensitive materials such as manuscripts and documents found in archival collections. This treatment can improve the legibility and handling properties of materials which otherwise would be inaccessible because of extreme brittleness and illegibility. The same program also produced guidelines to the safest way to flatten, with a minimal change to scale, architectural drawings on tracing paper, which make up a large portion of the Smithsonian's archival collections and are often important elements of collections elsewhere. This research can lead to safer, less expensive and more efficient treatment and care of archival collections.

Analyses of slags, surface residues and earthenware refractories excavated at the site of Goltepe in southeastern Turkey, provide evidence of tin metal processing in the mid-third millennium BC. As the traditional assumptions have been that there was no source of tin in Turkey and that this metal, used to alloy copper into bronze to forge tools and weapons at the onset of the bronze age, was imported from Afghanistan, these findings are resulting in a major reevaluation of the archaeology of this important period.

The research program on applications of analytical and technical studies in the archeology of the American Southwest also executed a unique Native American Educational outreach program, in which research findings from a study of Hopi ceramics, produced between 1300-1600 AD, were communicated back to the Hopi community. Specific activities included a one-semester course taught at the Hopi Junior/Senior High School involving the integration of history, art and science. Following this course, the students spent a one month residence at CAL where they carried out components of the scientific research on objects from their cultural heritage. The acclaimed Hopi video producer Victor Maysayesva made a interpretive-documentary video of the whole project. This project has received wide acclaim in the Hopi community.

During the period 1987-92, CAL organized 61 advanced conservation courses for practicing conservators and other museum professionals. During the same period CAL provided educational experiences to 77 interns at various levels of expertise and experience.

In 1987, CAL started the new Furniture Conservation Training Program (FCTP). In the years since, this innovative program has graduated its first class of 6 conservators, with the second class expected to graduate in 1993, and a third class just started this year. The need for this program is best illustrated by the fact that all our graduates, and even students in the program, have found immediate employment in the profession.

#### SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER:

##### **Ultraviolet Solar Radiation on Earth**

Responding to concerns that the ozone layer is threatened, SERC has for 17 years continuously monitored ultraviolet-B solar radiation at the earth's surface with precision spectral radiometers. Data have been gathered from a number of sites. For the Washington, D.C. region, significant changes have been found with a peak in total radiation in 1983. Edited data have been archived as computer files and made available to a wide variety of users. For example, the National Institute of Standards and Testing has used these data to evaluate ultraviolet exposures in its materials testing program.

##### **Acid Deposition**

SERC has continuously monitored acid rain for 18 years at its Rhode River research site near Annapolis, MD. Results show that wet deposition is a significant source of nitrogen to the Chesapeake Bay system, that the acid deposition is dissolving aluminum from clay minerals in the soils with toxic effects on fish larvae in freshwater streams, and that essential mineral nutrients such as calcium and potassium are being displaced from forests with the potential for long-term forest impacts. Basic research on dry deposition is evaluating its relative importance to this region. This is the longest and most complete acid deposition record in the mid-Atlantic region.

### **Direct Effects of Elevated Carbon Dioxide Concentrations on Plant Communities**

For five years, SERC has experimentally increased CO<sub>2</sub> in chambers on a tidal marsh to simulate concentrations expected in a few decades. Dramatic increases have been measured on tidal marsh plant community productivity, storage of organic matter below ground, and respiration, while transpiration of water vapor was greatly reduced. The plants have not adapted to the altered atmosphere in five years of continuous exposure. These results are extremely significant to the global change program. If these results are general for other plant communities, as the CO<sub>2</sub> increases the plants will take more of it up and store it, buffering the expected rate of increase. Also, less of the rain that falls will be transpired by the plants, leaving more for other uses.

### **Riparian Forest Buffer Effects**

Deciduous hardwood forest along streams on the coastal plain part of the watershed of Chesapeake Bay were shown to intercept most of the eroded soil and nutrients in agricultural runoff before it reached the stream channels. Over 80 percent of the nitrate in shallow ground water was removed even in the winter, buffering the impacts of agricultural runoff. These results have led to national programs within the US Forest Service and US EPA to improve the management of riparian forests. These forests can be managed for timber production while still serving as efficient environmental buffers.

### **Chesapeake Bay Nonpoint Sources of Nutrients and Sediments**

A regional watershed research project on the Chesapeake Bay has examined the relative importance of landuse, geology, and variations in weather for discharges of nutrients and sediments. Data on water, nutrient and sediment discharges from 150 carefully selected subwatersheds in the Coastal Plain, Piedmont, and Appalachians in four states are being compared with data on their topography, landuse composition and distribution, and weather data. Data are entered in a Geographic Information System and used for developing and calibrating large scale models of watershed dynamics. The results will be extremely useful to land management groups for improving their understanding of nonpoint sources and their controls in the region.

### **Forest Fragmentation Effects of Woodland Bird Populations**

Regional studies of the effects of forest fragmentation within the Coastal Plain part of the Chesapeake Bay watershed on breeding success of neotropical woodland birds have shown that the regional long-term decline in the populations of these species are partially due to forest fragmentation. Follow up research in the Yucatan Peninsula of Mexico, where the birds winter, have also documented adverse effects of forest habitat fragmentation in Mexico.

## Sunlight Penetration as a Limiting Factor in Chesapeake Bay Productivity

Chesapeake Bay is very turbid as a result of suspended eroded soil particles and high phytoplankton populations. These particulates absorb and scatter sunlight, limiting its penetration and therefore the photosynthesis of plant populations. SERC scientists have measured the penetration and scattering of various wavelengths of sunlight under a wide variety of conditions. At the same times, they characterized the phytoplankton populations and productivity and measured many related parameters of water quality. A predictive mathematical model was derived and calibrated so that common, easily measured water quality parameters could be used to accurately predict phytoplankton productivity.

## Biological Population Trends

SERC ecologists have established many long-term population records for plants and animals in various terrestrial and estuarine habitats characteristic of the Chesapeake Bay region. Changes in these populations can then be related to variations in weather and to various possible causal mechanisms. Examples of possible environmental forcing functions monitored by SERC are acid rain, alterations in ultraviolet radiation, land use changes, and introductions of exotic biota.

## SMITHSONIAN ASTROPHYSICAL OBSERVATORY:

### Stratospheric Change

SAO has an instrument--an infrared spectrometer originally developed for astrophysics--that is providing critically needed measurements of some atmospheric constituents. The constituents play important roles in controlling the ozone balance in the upper atmosphere. For example, this spectrometer can make uniquely accurate measurements of the stratospheric abundances of the products resulting from the breakdown of the compound methyl bromide. Methyl bromide is vital for agriculture, particularly for fumigating agricultural products shipped from one country to another. Depending on the amount of bromine from this substance that reaches the stratosphere, it could greatly enhance the destruction of ozone. Even at concentrations as low as 20 parts per trillion, the effect would likely be significant. Measurements from this instrument, with relatively small improvements, when combined with laboratory measurements and theoretical models, would allow SAO scientists to determine if the agricultural uses of methyl bromide will have to be sharply curtailed in the near future -- an action with potential consequences in the billions of dollars, according to information provided by the U. S. Department of Agriculture, which is acutely interested in this problem.



## Climate Change

Observations by SAO astronomers of cyclic brightening on a star in the Constellation Cetus show long-term variations in magnetic activity analogous to the 22-year periodic changes in the magnetic field of the Sun. These measurements represent the first direct evidence for such a cycle on a star other than the Sun. When these results are combined with those from SAO studies being made of other similar stars, scientists should have a far better understanding of the Sun's enigmatic cyclical behavior which may well play an important role in long-term climate variations on Earth.

## Extraterrestrial "Threats"

The successful imaging of the asteroid Gaspra by the National Aeronautics and Space Administration's (NASA) Galileo spacecraft was due in large measure to precise positional information provided by SAO scientists from observations at its Oak Ridge Observatory in Massachusetts. High-resolution photos from that encounter show a 12-mile-long, potato-shaped, heavily cratered, rocky body scored by long, deep grooves probably caused by successive collisions with other bodies in space. Understanding the orbits of asteroids and their nature are the first steps in developing effective countermeasures to these potential threats.

Radar images of a small, Earth-approaching asteroid obtained by SAO scientists and their colleagues look like the result of a collision of two separate objects, each about one-half-mile in diameter. The images, the first to show such a "dumbbell" shape were obtained with the 1000-foot-diameter radar telescope in Arecibo, Puerto Rico, when this asteroid passed with 4 million miles of Earth. Asteroids which approach this close to earth pose the greatest threat of collision.

## Science Education

Project STAR: The Universe in Your Hands, the first high school text to make use of astronomy as a vehicle for teaching basic principles of science and mathematics was released by Kendall/Hunt Publishing Company. The text incorporates the efforts of SAO scientists to make science and mathematics accessible to all students. Based on a series of innovative activities, the book represents a progressive departure from previous approaches.

## Rewriting Precollege and College Texts

SAO scientists discovered that the large-scale structure of the universe is dominated by giant "bubbles." Rather than being scattered through space, galaxies form the relatively thin walls of these bubbles. How this structure arose remains a subject of hot debate in the scientific community. Whatever the mechanism of evolution, this

fundamental characteristic of the structure of the universe will be incorporated in all future textbook descriptions of the universe as a basic part of human knowledge, such as the existence on Earth of continents and oceans.

Precise measurement at SAO of the temperature and density of gas in a distant cluster of galaxies has provided a way to determine directly the expansion rate of the universe--or Hubble Constant--and produced a result suggesting the universe is closer to 20 billion than to 10 billion years old. The answer to this fundamental question about the age of the universe is another fundamental building block of human knowledge that will be part of the general education of citizens in our technological world.

SAO scientists obtained the first convincing evidence for a planet circling a star other than our own Sun, by using a painstaking technique designed to detect minute variations in a star's motion caused by the gravitational attraction of a companion body. The planet is most likely some 10 to 20 times more massive than Jupiter. Since the planet's distance from its star is about the same as that of Mercury from the Sun, it would have oven-like temperatures and, thus, not be a suitable habitat for life. Demonstrating the existence of other solar systems is an important step in answering a most basic human question: are we alone?

### Technological Innovations

A 6.5-meter-diameter mirror blank intended to replace the six separate mirrors of the Multiple Mirror Telescope was successfully cast by SAO's partner in this project, the University of Arizona. The mirror is the largest single glass blank ever cast in the United States. The mirror was cast using a new technique and will be polished using an innovative "active stressed lap." The innovations developed to fabricate this mirror represent a major extension of U. S. optical technological capability.

In a landmark exchange of East-West timekeeping technology, Soviet-built atomic hydrogen maser clocks were brought to SAO in Cambridge and found to be comparable in stability with similar devices built at SAO. These SAO devices, equal to the best in the world, are being used for applications in space tracking and global navigation.

SAO conceived and developed the idea of using long tethers in space. SI has the patent on this concept which NASA attempted to test on a shuttle flight in August 1992. Tethered satellites may have many important applications in power generation in space, in communications, and in other areas such as investigation of the Earth's upper atmosphere that cannot be carried out in any other way.

### Future Energy Sources

Many astrophysical objects spew out highly energetic particles and radiation that involve conditions we cannot now replicate on the Earth. Understanding the

mechanisms that generate gamma rays and x-rays in such objects may provide understanding vital for the development on Earth of energy sources in the 21st century.

The first ground-based detection of gamma radiation at the trillion electron volt (TeV) level ever seen from a source beyond our galaxy was made by the SAO-led Whipple Observatory Gamma Ray Collaboration through observing a distant galaxy. The origin of these extraordinarily powerful rays is still a mystery; scientists speculate that they originate near a massive black hole.

An SAO scientist, with colleagues elsewhere, found convincing evidence that a star in the Southern Hemisphere may be a black hole. This black hole, however, would be far less massive than the one responsible for the TeV gamma rays described above. It is important to understand the range of sizes of black holes, since "local" black holes which might serve as future energy sources, would be of much smaller size than any identified to date.

The National Aeronautics and Space Administration (NASA) selected SAO to plan, develop, and operate the international science center that will receive, analyze, and archive data from the Advanced X-Ray Astrophysics Facility (AXAF), now scheduled for launch in 1998. AXAF will be the premier instrument for exploring the high-energy processes present in the universe.

#### **SMITHSONIAN TROPICAL RESEARCH INSTITUTE:**

##### **The Ecological Structure of Tropical Environments**

Through long-term monitoring of fluctuations in abundance of tropical insects and in periodicity of flowering and fruiting of tropical plants, STRI provides major scientific evidence to dispel the belief that tropical environments were stable and constant in their ecological balance. This is fundamental to all applied studies in the tropics.

##### **Center for Tropical Forest Science**

STRI has created the first long-term system for measuring the rate at which tropical forest trees grow and die by monitoring, with 5 year censuses, every tree greater than 1 cm in diameter in a world-wide network of 50 hectare plots. More than 1 million trees, among more than 1000 species, are providing unique and fundamental data on which trees and their products are most suitable for sustained production and extraction in tropical plantations and at what rate production can be maintained without destroying the system.

### **Metabolism of Plants Under Conditions Predicted in Global Change Models**

Plants possessing a special water-conserving mode of carbon dioxide uptake for photosynthesis (crassulacean acid metabolism), are able to occupy relatively dry and exposed epiphytic habitats in rainforest canopies. These plants serve as model systems to understand the nature of plant changes in conditions associated with predicted global climatic change, such as increasing temperatures and declining rainfall. Certain leaf pigments protect rainforest gap and canopy plants from the damaging effects of light radiation stress (ultraviolet and visible). The role of these and other adaptive mechanisms are evaluated under conditions that simulate possible future increases of atmospheric concentrations of carbon dioxide.

### **Genetics, Population Structure, and the Metabolism of Indigenous Peoples**

Recent developments in molecular genetic techniques are revealing the evolutionary history of our species. One of the most exciting arenas of human population study is the New World, which represents the most recent human colonization of a previously uninhabited continental landmass. The Americas are particularly interesting because of the impressive cultural and linguistic diversity of its indigenous people, and the wealth of prehistoric sites. We are now understanding how human populations change over time, including patterns in such health problems as obesity, epilepsy, and gall bladder disease, that have reached epidemic proportions among some indigenous groups in the Americas.

### **The Biology and Effects of Colonization of Africanized ("killer") Bees in the American Tropics**

Since their release in Southern Brazil in 1956, descendants of African bees have spread steadily across South America passing northward through Panama in 1982 and recently crossing the Rio Grande into the Continental U.S. Studies show that this bee has interbred little, if at all, with European varieties during its rapid range expansion, retaining all its characteristics of aggressive foraging, colony defense and nomadism. Throughout most of Latin America, the comparatively docile European honey bee, which survived tropical conditions poorly, has been replaced by the African bee. Evidence also indicates that native pollinating bee species are being outcompeted by this species in natural forest communities. However, numbers of colonies also are beginning to decline in these areas as predators learn to take advantage of the newcomer. Humans also are learning to adapt to the nature of this bee and the honey industry is beginning to rebound. In 1981, specific appropriation was made by Congress for STRI to examine this ecological invasion.

### **The Use of a Tower Crane to Study the Tropical Forest Canopy**

The biological activity and biodiversity of tropical forests are concentrated in the uppermost foliage of the canopy. Interactions between the upper canopy and the atmosphere play a crucial role in processes of global climatic change. However, until very recently, scientists have lacked a safe, rapid and non-destructive method for carrying out research in this zone. STRI has pioneered the use of standard technology from the construction industry - construction tower cranes - to overcome this limitation. We are now carrying out many studies of the exchange of energy, carbon dioxide and water vapor within the upper canopy and between the canopy and the atmosphere, as well as studies of canopy biodiversity and productivity. This facility is also providing training in tropical forest processes for a large number of Latin American and North American scientists and students. Funds for this project are being provided by the governments of Finland, Germany and Norway, through the Clearing House of the United Nations Environmental Program.

### **Patterns and Extent of Human Deforestation Before Columbus**

The history of deforestation in the New World tropics has relevance to a number of important issues in tropical anthropology and biology. Phytolith analysis is providing detailed information on the prehistoric human/forest association, including the earliest occupation of tropical forest and the emergence of slash and burn agriculture. Contrary to conventional wisdom, the humid, lowland tropical forest was occupied and modified by small groups of hunters and gatherers at least 11,000 years ago. These small scale patterns of tropical forest management evolved over time into agricultural systems that were responsible for the removal of large expanses of primary forest prior to AD/500. After a 7,000 year history of maize and manioc agriculture, which produced deforestation equal to that of today, much of the extant forest appears to be a rebound in the last 500 years, due to the dramatic demise of Indian populations in the face of European colonization.

### **The Ecological Effects of a Major Oil Spill in Tropical Marine Coastal Waters**

Major oil spills are dramatic reminders of the environmental destruction of pollution. Tropical oil spills may be particularly devastating because the shore line literally is alive, in the form of coral reefs, seagrass beds, and mangroves. However, little is known about the fate and effects of tropical oil spills, and how much time tropical coastal habitats require to recover from widespread damage or death of any kind. Findings from Panama show that shore-line and underwater die offs of tropical marine organisms, including corals and mangrove trees, can be severe and widespread. For coral reef and mangrove habitats, recovery times are probably very long, on the order of a few decades for the 60 hectares of mangroves that were killed, and even longer for reef-building corals. After the initial deposition of oil in mangrove areas, death of the plant causes further collapse and erosion of the shore with subsequent new releases of

oil which in turn kills more plants resulting in a cycle of continuing pollution and further ecological damage. Part of the success of documenting effects of this 60,000 - 100,000 barrel spill stemmed from the baseline biological and environmental data of the long-term Smithsonian Environmental Sciences Program at the site, and a survey of coral reefs of the region that had been conducted the year before the spill. The results of the study underscore the need to prevent oil from polluting tropical coastal waters, where ecological "scars" may require many decades to heal.

#### **Marine Pollution in the Bay of Panama: Effects on Commercial and Sport Fishing**

The Bay of Panama supports economically important commercial and sport fisheries. The causes of variation in the abundance of harvested species and, hence, fluctuations in this sector of Panama's economy are not well known. In 1985, STRI and the Marine Sciences Department of the University of Panama, initiated the Marine Environmental Assessment Study (MAREAS) to document seasonal and long-term changes in the community of marine algae that forms the base of the food chain in the Bay of Panama. The MAREAS has found that the Bay is highly seasonal. During the dry season (January - April), cool, nutrient-rich waters rise to the surface, stimulate up to ten-fold increases in the populations of resident algae, and concomitant increases in the abundance of fishes. During the rest of the year, productivity of the Bay and the fishery declines. Inter-annual variation in this seasonal cycle appears to be related to variation in regional weather patterns and the depth of the cool water layer at the beginning of the dry season. Through long-term monitoring, the results of the MAREAS will help fisheries managers better predict stock fluctuations and plan investments.

#### **Tracking Growth Rings in Corals Document the History of Deforestation on Land and the Heavy Metal in their Skeletons Signals Pollution from Anthropogenic Activity**

Massive coral skeletons have been demonstrated to provide a proxy record for various environmental or climatic variables such as sedimentation, temperature, pollution, and runoff. The amount of sediment trapped during growth of massive coral species was used to interpret the concentrations of sediment in the water column due to increasing top soil erosion from deforestation. Preliminary results indicate that concentration of some heavy metals (e.g. Al, Fe, and Mn) in coral skeletons can be considered good tracers for terrigenous material in coastal areas. A hundred year sedimentation chronology is being developed using such metals as indicators.

#### **How to Regrow Tropical Forests Using their Originally Native Trees and to Develop Sustainable Extraction of their Resources**

The Smithsonian Tropical Research Institute agroforestry program, centered at Las Pavas in the buffer zone of the Barro Colorado Nature Monument (BCNM), is developing labor intensive, low-cost technologies that restore the production potential to

degraded lands, and provides the slash-and-burn farmers, active in the forest frontier of the Panama Canal watershed, with alternative production technologies. Techniques include reforesting degraded lands with fast-growing leguminous species such as Acacia magnium that provide firewood and soft lumber, that with time will increase soil fertility and permit the growth of traditional food crops and native tree species. Suitable forage crops have been planted between rows of Acacia to feed Anglonubian goats kept permanently in rustic sheds with a thatched roof and elevated silt floor for sanitation and manure collection. The goats provide milk, cheese and meat. The raising of the green iguana, whose meat and eggs are a traditional protein source, has also been initiated. Small farmers have begun reforestation on their own initiative and, using goat manure, are raising crops successfully.

#### **Domestication of Iguanas and Pacas to Produce a Reliable Source of Protein from Desired Native Species**

Many people in the humid neotropics are chronically short of high quality dietary protein. Traditional game management techniques are inadequate, and the local populations probably could not supply significant quantities of protein anyway. Traditional domestic animals require grass or grain, which promote deforestation, yet they cannot be grown sustainably on lowland tropical soils. In an effort to provide an alternative, STRI scientists have been working on experimental domestication of two highly favored local game animals. By greatly reducing first year mortality of iguanas and then "ranching" them in the forest while they grow, and by behaviorally modifying pacas so that the normally solitary animals are easily managed in captive groups, the dual objectives of (a) providing alternate sources of protein, and (b) providing an incentive to preserve forest as a sustainable source of animal forage, can be realistically anticipated.

#### **Can Cattle and Wildlife Live Together? An Experiment at the Mpala Research Center, Kenya**

The processes of desertification, poaching and replacement of native wildlife by cattle are placing East African ecosystems, and economies, in jeopardy. Moreover, the shift in vegetation from savanna woodland to open grassland and bare soil are contributing to deterioration of the global climate. However, at present we lack the basic knowledge of these savanna ecosystems to provide plans for their management and conservation. The Mpala Research Center has been established to provide this basic knowledge, to transfer the knowledge to land managers, and to train the next generation of East African land managers. The Center is a joint project of the Smithsonian Institution, Princeton University, the National Museums of Kenya, and the Kenya Wildlife Service. The land for the Center is being donated by its owner. Funds for construction and research are being raised from foundations and individual donors. Donations have been received from Citibank, Hilton Hotels, Hertz, the National Geographic Society, the James Smithson Society, and the Smithsonian Women's

Committee. Research on the interactions of native wildlife and cattle have just been initiated, and studies of desertification will begin in September.

### **Regional Loss of Coral Cover and Possible "Crash" of Coral Populations in Western Caribbean**

The Isthmus of Panama has risen and formed an ecological barrier over the last 6 million years, closing completely 3 million years ago. Dramatic extinction patterns in mollusks and corals have been discovered by the Panama Paleontology Project providing a history very different than previously thought.

Question 66: What progress is being made in quantifying and understanding global change?

Answer: Real progress is now being made at the Smithsonian in some of the areas of research most crucial to quantifying, understanding, and predicting global environmental change. These include the following:

- (a) Establishing baseline data for documenting and measuring change in biological diversity in sensitive ecosystems, and devising standard methods for quantifying biological diversity.
- (b) Establishing baseline data for estimating the quantitative effects of volcanism on the earth's atmosphere, land and oceans through time, and understanding how volcanic processes affect the atmosphere.
- (c) Understanding the dynamics of tropical and temperate forest ecosystems and how they may respond to environmental changes.
- (d) Quantifying plant-atmosphere gas interchange and understanding atmosphere-ecosystem interactions.
- (e) Quantifying and interpreting the process of desertification through time.
- (f) Understanding and predicting the responses of important groups of organisms to environmental stress.
- (g) Understanding the fundamental genetic effects of global change.
- (h) Establishing and carrying out long-term environmental and ecosystem monitoring for threatened marine and terrestrial ecosystems of great economic and human importance.



- (i) Understanding human ecological history, including the response of human societies to past and present environmental changes, and the history of human modifications of ecosystems.
- (j) Carrying out accurate measurements of atmospheric chemistry, including trace species, and developing predictive models for atmospheric behavior.
- (k) Quantifying and understanding the past behavior of ecosystems at critical times in the geologic record, emphasizing periods of climatic extremes and drastic environmental change, in order to validate hypotheses and models for future climate change and its effects on ecosystems.
- (l) Understanding the effects of past and present climate change and human interactions on sensitive coastal and estuarine environments.

In sum, we are making significant progress in establishing current and past baselines for determining change, in carrying out long-term monitoring to discover changes in the environment and ecosystems, in understanding the relevant fundamental processes, and in predicting the effects of environmental change on the earth's ecosystems and on human societies.

Question 67: Please characterize your research staff (i.e., numbers of individuals by scientific discipline and level of education) and their production of publications for the past year. What have been the trends in research staffing and research outputs?

Answer: The scientific research staff, their level of education, and their scientific discipline are listed in the attached publication, "Smithsonian Opportunities." This publication has been made available for the Committee files.

The production of publications for the past year and the trends in research staffing and outputs are listed by scientific bureau below:

#### CONSERVATION ANALYTICAL LABORATORY:

Journal articles: 28 published during the year, with another 12 in press or submitted at the end of the year.

Contributions of one or more chapters in books: 18 published, with 3 more in press.

Articles in refereed conference proceedings: 11 published, with another 10 in press or submitted.

Articles in Preprints (several refereed): 5 published.

Notes/reviews: 6 published, with 4 in press.

The trend in staffing over the last several years has been to bring in experts with specialties which can bring new aspects to the conservation and preservation field, where promising application potential is seen. Thus, specialists such as mechanical engineers, photographic materials scientists, biochemists, polymer chemists, etc., have been brought in to widen our perspective and create programs to address hitherto unrecognized or unanswered problems in the conservation and preservation of museum collections.

Traditionally, much of the information exchange in conservation takes place through conferences and symposia. The tendency over the last ten years has been to publish preprints rather than proceedings; lately there has been a tendency to have such preprints refereed. A notable exception to the trend is the Annual Meeting of the American Institute for Conservation (AIC), a major forum for conservation information exchange. After many years of preprints, AIC has changed to Abstracts and refereed proceedings, the latter in the form of a special issue of the "Journal of the American Institute for Conservation," a refereed publication. A rather new player in the field, the Materials Research Society, which now has held three biennial meetings on "Materials Issues in Art and Archaeology" has also published the contributions in refereed volumes of proceedings. Compared to a few years ago, there is more opportunity to publish in refereed publications outside the few professional journals. For CAL, the number of publications resulting annually from the work of staff and affiliated associates and collaborators has increased steadily as research became both nominally and in fact the main mission element. CAL has no reason to expect much staff expansion. In fact, CAL is about to go through a staff reduction, and the publication frequency of the present staff cannot increase much without sacrificing quality for quantity.

#### NATIONAL MUSEUM OF NATURAL HISTORY:

During the past year, Museum scientists, including Research Associates and Postdoctoral Fellows, published 10 books, 463 articles, and 24 reviews. Below are four of the most recent publications.

Terrestrial Ecosystems through Time, a recent publication of the Evolution of Terrestrial Ecosystems Program, presents an ambitious new approach to the history of life on land, from the earliest traces of terrestrial organisms over 400 million years ago to the beginning of human agriculture. A central theme is that understanding the patterns that occur in associations of fossil land plants and animals is essential to a broader understanding of global change.

Mammal Species of the World, produced by the National Museum of Natural History's Biodiversity Program, provides a fully updated taxonomic checklist of the 4,629 species of mammals currently recognized in the world. In the modern scientific arena where research in the biological sciences is attracting considerable attention in areas ranging from environmental and species conservation to genetic engineering, an

authoritative taxonomic and geographic checklist is an essential element in fostering accurate communication and is instrumental in focusing on research in those areas that appear the weakest.

A similar accomplishment was provided by the Biological Diversity of the Guianas Project, which published the first complete Checklist of the Plants of Guyana. This significant addition to the Flora of the Guianas is the initial major contribution from the newly established Center for the Study of Biodiversity, a joint venture with the University of Guyana, funded by a debt for nature swap.

The Biological Dynamics of Forest Fragments Project focuses on the changes that occur in the Amazonian rainforest ecosystem of Brazil as human development encroaches upon it. Researchers inventory the flora and fauna in a series of isolated forest reserves near Manaus and measure the physical changes in the understory microclimate and soil moisture. Biotic and physical changes are then related to the size of the forest reserve under study. Resulting analyses compare change, including the rate of loss of species, in different sized reserves, and will provide guidelines for the integration of conservation and economic development. A major summary of results from the past decade was published in Bioscience.

Scientists hired in recent years have tended to have broader interests and to engage in a greater range of research activities than was formerly the case. In particular, they have become less purely descriptive and more problem-oriented; more deeply involved with questions relevant to social, economic, and policy issues, as well as to fundamental understanding of natural processes and human behavior. In the biological sciences, much research effort is now focused on defining, measuring, and monitoring biological diversity, on understanding evolutionary processes, and on questions of broad ecological significance. The earth scientists are attacking major questions of past global climate change and its ecological significance, of planetary and solar system origins, and of the fundamental nature of earth processes and materials. Anthropologists are defining cultural diversity and change, and studying human response to past and present environmental pressures. New research programs are broadly interdisciplinary, and often involve collaboration between scientists from many Smithsonian Departments and many other scientific institutions in the U.S. and abroad.

Reflecting these trends, research output is increasingly interdisciplinary and relevant to a broader spectrum of users. A good example is the aforementioned book, Terrestrial Ecosystems Through Time, which includes geologists, paleontologists, and anthropologists. Staff productivity continues at a very high level, including many semi-technical, general and popular books and articles, as well as technical articles, monographs and books in peer-reviewed journals and series.

### GLOBAL CHANGE RESEARCH:

Throughout the century and a half of its existence, the Smithsonian Institution's scholars have focussed much of their attention on the causes, magnitudes and effects of changes in the Earth's environments. In recent years, our scientists have been particularly concerned with understanding and interpreting the nature of environmental change as it has impacted the Earth and its inhabitants in the past, and as it continues to affect us today. Recognizing the importance accorded by Smithsonian scientists to such studies, the Secretary several years ago made Global Change Research an "Area of Emphasis" for the Institution.

When the U.S. Global Change Research Program (USGCRP) was established to coordinate and focus government-funded research in this area, its stated goals were "to help establish the scientific understanding and the basis for national and international policymaking related to natural and human-induced changes in the global Earth system by (1) establishing an integrated, comprehensive, long-term program of documenting the Earth system on a global scale; (2) conducting a program of focussed studies to improve our understanding of the physical, geological, chemical, biological, and social processes that influence Earth system processes; and (3) developing integrated conceptual and predictive Earth system models." These goals closely reflect the priorities and work of Smithsonian scientists. Furthermore, the Smithsonian has unique capabilities for carrying out critical portions of the studies required to fulfill these goals. Therefore the CEES (Committee on Earth and Environmental Sciences) requested that the Institution become an active participant in the program. The impetus to do so came from our scientists themselves, and they, not the Smithsonian administration, are driving our participation in this endeavor. Thus, far from distorting our research priorities, the USGCRP under the FCCSET has strengthened the very efforts we hold most important.

What are the areas of Global Change research in which the Smithsonian can make the most significant contributions? **First** and foremost, we are looking at the effects of environmental change, both natural and human-induced, on critical ecosystems - particularly those which exert a major influence on the Earth's climate or are particularly threatened, such as tropical rainforests. **Second**, we are trying to understand major periods of global environmental change in the past, to provide a longer time baseline than our own brief era for evaluating the effects of such changes. **Third**, we are studying the processes which cause natural changes in climate and the environment - such processes as global volcanism, solar variability, atmospheric chemistry, and changes in oceanic circulation - so as to distinguish better between natural and human-induced environmental changes.

In studying these topics, the Smithsonian Institution can bring to bear on them unique capabilities and experience. Our studies of critically important terrestrial and marine ecosystems are based on fundamental understanding of the composition, behavior, and dynamics of these communities, and unequalled expertise in long-term monitoring - especially in the tropical systems which have been targeted by the scientific community as crucial to understanding Earth system behavior. To the task of unravelling

and interpreting past global change, we bring the experience and skill of teamwork by paleontologists, geologists, biologists and anthropologists working together, and the historical evidence locked in the treasure trove of our museum collections. To the understanding of fundamental Earth processes, we contribute an interdisciplinary approach which utilizes vast files of global data, and the insights accumulated by decades of experience in Earth system studies.

Finally, the Institution is extremely well-positioned to carry out studies of human interactions with the environment, from the emergence of humankind to the present day. Our combination of anthropological, biological and physical-science expertise is being focussed on efforts to understand, predict and mitigate the effects on human populations of global and regional environmental changes. In fact, the Smithsonian research focus, on effects of environmental changes on the Earth's ecosystems, will be of enormous benefit to policy makers and planners now and in the future.

#### SMITHSONIAN ASTROPHYSICAL OBSERVATORY:

The SAO research staff produced over 400 journal articles in FY92. The SAO research staff also provided over 1,000 reviews for proposals and journal articles in FY92.

The size of the SAO scientific staff has not changed significantly over the past decade, with the exception of the new personnel required for the development and, eventually, the operation of the pioneering submillimeter telescope array.

SAO has strong observational programs ranging across the electromagnetic spectrum. Researchers at the SAO have developed innovative facilities and instruments for use on the ground and in space and have pioneered redshift surveys and high resolution studies of astrophysical objects. Examples of the recent advances made as a result of these programs include: discovery that galaxies are not distributed randomly in space but are confined to the surfaces of large "bubbles;" discovery of the best candidates for black holes; discovery of the first non-solar planetary system; and a significant revision of the size of our own galaxy, the Milky Way. To continue this tradition, major new ground-based and space-based programs are being undertaken or planned. In addition, the SAO is actively involved in improving precollege science education and in providing public outreach programs.

#### NATIONAL ZOOLOGICAL PARK:

In the past year the staff published 1 book, 65 articles in refereed journals or edited volumes, and 17 reviews, notes, abstracts, and popular articles. Our students, fellows, and associates published an additional 24 refereed articles.

There are 28 federally-employed scientists at the National Zoological Park (including the Conservation and Research Center). Some are charged solely with conducting research, but most do research in concert with other administrative, curatorial, or educational responsibilities. Twenty-six of the 28 have Ph.D. or D.V.M. degrees. One is enrolled in a doctoral program and one has a terminal M.A. There are 16 with concentrations in behavior and ecology, 5 in the veterinary sciences or pathology, 2 nutritionists, 2 geneticists, 2 reproductive physiologists and 1 morphologist.

The most prominent trend is increased concentration on research that bears directly on understanding and conserving biodiversity. The latter includes applied research on assisted reproduction (artificial insemination, embryo transfer), assessment and control of genetic variation in captive and wild populations, diagnosis and treatment of disease in wild animal populations, computer modelling of ecosystem health, and reintroduction of endangered species to the wild. The most prominent trend is increased concentration on research that bears directly on understanding and conserving biodiversity. The latter includes applied research on assisted reproduction (artificial insemination, embryo transfer), assessment and control of genetic variation in captive and wild populations, diagnosis and treatment of disease in wild animal populations, computer modelling of ecosystem health, and reintroduction of endangered species to the wild.

#### SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER:

Books and Monographs: 4.

Journal Articles: 45.

Professional research staffing increased by an increment of one scientist in the past year, resulting in 9 percent growth. Publication productivity of the research staff during this interval increased by 19 percent over the previous year, and the Bureau's rate of publishing remained high at 4 technical publications per scientist per year. All SERC scientists were funded by a wide variety of competitive external and internal grants contributing about 30 percent of the Bureau's annual budget.

#### SMITHSONIAN TROPICAL RESEARCH INSTITUTE:

STRI publications result not only from the work of our permanent research staff, but also from the many researchers who utilize the STRI facilities for their research. These include pre and post doctorates and visiting researchers, combined under "others" in the table below. Since complete information on the publications for 1992 is not yet available, the table below reflects publications for 1991.

	<u>Staff</u>	<u>Others</u>	<u>Totals</u>
Books, monographs, & thesis	6	13	19
Journal articles & book chapters	82	105	187
Reviews, notes & abstracts	<u>16</u>	<u>10</u>	<u>26</u>
Totals	104	128	232

Recent trends in STRI research have clearly fallen into two domains: first, the maintenance of a series of diverse research programs carried out by individuals across a wide spectrum of tropical terrestrial and marine areas. These include strong emphasis on animal behavior, and plant and animal ecology and evolution. Secondly, STRI has focussed resources on four areas of programmatic research where a critical mass of world renowned scientists have made STRI leaders in the field. These are:

1. Tropical Paleoecology

Five STRI scientists have developed techniques to interpret the recent geological history of the tropics as a basis for understanding its present structure and dynamics. This research includes fundamental studies on the ecological effects of the rise and emergence of the Isthmus of Panama 3 million years ago; the effect of the Ice Age on tropical habitats over the last 20,000 years; and the modification to those habitats due to human cultures over the last 7-8,000 years.

2. Tropical Forest Science

By the use of carefully surveyed 50 hectare plots, detailed information is being produced for the first time on the birth, growth, and death rates of numerous species of tropical trees. Several plots have or are being established throughout the tropics, and will provide basic actuarial statistics and detailed maps on how tropical forests grow. This work has fundamental importance to both tropical ecology and to tropical forest management and represents the principal extension of STRI's research beyond the Isthmus of Panama.

3. Molecular Evolution

STRI has developed a state-of-the-art tropical molecular biology facility that is allowing systematic and evolutionary biologists to use protein electrophoresis and DNA technology to study a variety of biological problems. These tools solve problems in biogeography and biodiversity by providing new and more precise ways of identifying species and establishing their phylogenetic relations. The techniques are being applied to freshwater fishes and closely related species of marine animals on either side of the Isthmus, among others.

4. Tropical Plant Eco-physiology

Cutting-edge equipment and the use of construction tower-cranes to access the canopy is permitting STRI scientists to understand plant physiological reactions to a wide

range of light, moisture, temperature and soil conditions, including experimental manipulation of projected global change scenarios.

STRI scientists also have been extensively involved in a variety of applied projects, including agroforestry projects at Las Pavas, Panama; alternatives to the Panama Canal and their environmental impacts (called for by the Panama Canal Treaty); ecological relations of cattle and wildlife at Mpala, Kenya; and possible scenarios for sustainable development of the Panama Canal reverted lands after the year 2000.

### Restructuring

Question 68: Why did you choose to eliminate the American Studies Program and the Smithsonian Institution/Man in the Biosphere Program as they are presently constituted as part of phase 1 of the restructuring? What were your criteria?

Answer: The American Studies Program was identified because the Institution is looking for opportunities to eliminate or merge smaller offices into larger organizations. Our hope is to realize savings in the level of administrative support required for these operations.

The Man and the Biosphere Program will not be eliminated. Instead, the Program will be placed within a larger unit. The criteria used was based on the size of the office and the administrative efficiency of the operation. We feel that the program will be more efficiently administered in a larger unit, where the necessary administrative and management controls are already in place.

Question 69: What plans, if any, does the Smithsonian Institution have during restructuring to expand off the Mall?

Answer: The goal of the Institution's restructuring plan is to attain financial equilibrium through a closer match between resource utilization and institutional priorities. To date, these efforts have had not resulted in any programmatic decisions to expand off the Mall.

### Funds from the Public

Question 70: I understand the Smithsonian has recently installed donation boxes in the museums. What has been the response by the public to the donation boxes in Smithsonian Institution facilities?



Answer: The Smithsonian recently announced its intention to carry out a demonstration on whether the solicitation of voluntary donations in selected museums is beneficial to the Institution. The demonstration, which will run for a full year beginning in March 1993, involves many complex questions, of which concern for the public's response is paramount. The Smithsonian will keep the Subcommittee informed as results become available.

Question 71: Has the Smithsonian Institution recently studied the possibility and/or feasibility of collecting general entrance fees?

Answer: Yes. Under the auspices of the Board of Regents' ad hoc Committee on Museum Admissions, which began its work in May 1986, the Smithsonian studied the implications of charging for admission to its museums. The Committee first looked for legal restrictions which would prohibit admission charges at the Smithsonian and discovered that (1) relevant sections of U.S.C. Title 20 stipulate that the National Portrait Gallery, the Hirshhorn Museum and Sculpture Garden, and the National Museum of African Art must be operated as free public museums, and (2) by deeds of gifts both the Freer Gallery of Art and the Sackler Gallery should be maintained as free public museums. Because of these restrictions, the Regents' ad hoc Committee turned its attention to issues related to the solicitation of voluntary donations.

In a subsequent discussion, at the September 18, 1989, meeting of the Board of Regents (see Minutes, pp. 11-12), the Secretary said that several Members of Congress strongly recommended that the Smithsonian should consider admission fees for its visitors, as practiced at the National Parks and elsewhere. While the Secretary indicated that the staff was poised to experiment with the collection of voluntary donations in its museums, a strong sense emerged from the Regents that "neither the Congress nor the public would tolerate either the solicitation of contributions or the imposition of general admission fees, and the matter ought to be dropped."

The current effort to launch a demonstration on voluntary donations was prompted by the Regents' discussion on May 11, 1992 (see Minutes, pp. 52-53). In taking this step, the Regents were reminded of the concerns expressed in 1989, but they "felt that the present times are decidedly different from those when the issue was last discussed" and they urged the Secretary to bring a plan back to the Regents.

## ADDITIONAL QUESTIONS FROM REPRESENTATIVE MCDADE

Questions 72 and 73: Can you tell the Committee what the Smithsonian's 94 budget request to OMB was? Were there any new funding requests or major change in priorities from past years? Please detail?

Answer: Given the timing of the submission of the questions, the Smithsonian is not in a position to provide an answer. As the Subcommittee knows, the Institution is guided by Office of Management and Budget Circular A-11, Section 12.9 (a) which states that "the nature and amounts of the President's decisions (on budgetary matters) are confidential and will not be released until the budget is transmitted formally to Congress." Accordingly, the Smithsonian cannot provide information on its FY 1994 budget request at this time, but will provide this information to the Committee following the submission of the President's budget to Congress.

Question 74: Has the Smithsonian made progress in reducing the number of outstanding audits?

Answer: The Smithsonian Institution has made progress in reducing the number of outstanding audit recommendations by the Office of the Inspector General.

Of the 85 IG audit recommendations issued before January 1991, 22 remain open. These remaining audits mainly address: (1) revising collections management policies including those of the National Museum of Natural History (Anthropology, Paleobiology, and Invertebrate Zoology), the Office of Horticulture, and American History; and, (2) updating computer and accounting procedures.

While resource limitations, both staff and funding, are the reasons closure of these recommendations has been slow, staff have held discussions with the Office of the Inspector General and are working hard to close the recommendations as soon as possible.

Of the 64 IG audit recommendations issued from January 1991 to August 1992, 5 remain open. These include: (1) development of a pan-institutional marketing plan (awaiting appointment of a business manager); and, (2) recommendations pertaining to the Cooper-Hewitt Museum of Design with regard to establishing and implementing control systems and eliminating duplication of effort.

With regard to the Cooper-Hewitt, the museum's director is well aware of the problems, citing insufficient resources to hire additional administrative staff. Smithsonian management has agreed, even during this time of downsizing, to increase Cooper-Hewitt administrative staff. Cooper-Hewitt is in the process of advertising an administrative position. Additional training is also being provided Cooper-Hewitt staff by the Office of the Comptroller.

Since September 1992, 4 audits have been issued having to do with amending contracts to increase assurance of vendor compliance and continuing fine-tuning of accounting procedures. These are slated for completion in 1993.

At this date, the total of open audit recommendations is 31.

Question 75: Last year's Washington Post reported several serious assaults to both Smithsonian personnel and visitors to the museums. What steps has the Institution taken to improve security?

Answer: The three incidents referred to occurred between May 7, 1992 and June 10, 1992. Following the first, Protection Services senior staff met with officials of the U. S. Park Police to discuss strategies to handle this type of incident that had not surfaced prior to that time at the Smithsonian. We stepped up our recruiting and hiring efforts, bringing on additional security staff to fill existing vacancies. We also brought on additional temporary security aides to augment the regular security force during the summer months. In addition to the increased uniformed presence, we increased our plainclothes contingent and, working with the Park Police, increased training in spotting behaviors that indicate potential problems.

Question 76: How much was raised in FY 1992 in private funds (gifts/grants) for both unrestricted and restricted purposes?

Answer: The Smithsonian recorded restricted gift income of \$36,128,000 in FY 1992. This income came from gifts and grants from individuals, foundations and corporations. Amounts received were primarily to support operations. However, funds were also received for endowment and construction accounts. Adjusting for pledge activity, funds raised would include an additional \$5,989,000.

The Smithsonian recorded unrestricted income from gifts and grants of \$9,277,000 in FY 1992. These amounts also came primarily from individuals, foundations and corporations. This support was primarily used to support operations. However, some funds were deposited to construction and endowment accounts. Adjusting for pledge activity, funds raised would include an additional \$37,000.

The Smithsonian also receives grants and contracts from government agencies, principally federal agencies. In FY 1992, \$42,689,000 was received with the majority coming from NASA for projects at the Smithsonian Astrophysical Observatory. These funds are all restricted to particular projects.

Question 77: I understand the Smithsonian is considering new electronic information strategies to reach audiences outside Washington. Could you discuss these strategies with the Committee?

Answer: Access to the Smithsonian collections, research, and other information assets should be readily available to all people, not just those who can afford to visit the Smithsonian museums or who have direct access to Smithsonian researchers. For some years, the Smithsonian has created a series of television and radio programs to address these needs and is now exploring the possibility of transmitting Smithsonian programs and courses directly to the public nationwide, via satellite, cable TV and existing university networks, as well as videocassettes and various interactive formats. There are many additional electronic information technologies with the potential to disseminate the riches of the Smithsonian at affordable cost to every community, library, school, college and university in the United States. It is an effective way to yield greater dividends on the investment the nation has made in the Smithsonian over the last century and a half.

Some systems and products that could be further developed and coordinated under the new strategy are already underway. Among them:

**SIRIS:** The Smithsonian Institution Bibliographic Information System is being expanded and modernized into the Smithsonian Institution Research Information System (SIRIS). It will include information on books, periodicals, special collections, archival materials, and research databases. The Institution plans to make it available to users outside the Institution over the Internet network.

**Digital imagery:** The Smithsonian Office of Printing and Photographic Service has made pilot Smithsonian image databases available on commercial electronic networks. Use so far has been very high.

**Internet:** The Smithsonian officially became a member of the Internet in 1992. This worldwide network of information resources gives the Smithsonian researchers the ability to access collections of electronic information worldwide from their desks. Likewise, it can be used in the future to give outside users access to Smithsonian systems.

**Educational networks:** The Office of Elementary and Secondary Education resources has recently received Congressional funding to disseminate educational resources across information networks. The initial offerings will be made using American On-Line, a commercial information service that already offers many educational resources to teachers and students.

**Collections information systems:** Almost every Smithsonian museum is actively exploring ways of creating automated collections information systems that will meet the needs of both the Smithsonian Staff and users from outside the Institution. Several systems are now in operation, and more are in pilot development.

**Question 78:** The rapidly increasing white-tailed deer population at the Smithsonian Research Center has been a serious problem in recent years. What

methods of controlling the population have been considered? Is there a preferred option?

Answer: The Smithsonian Environmental Research Center (SERC) conducts long-term ecological research. Much of their research is focused on the Rhode River and its watershed, a representative subunit of the Chesapeake Bay system. To facilitate this research and protect its long-term nature, the Smithsonian owns or protects about 2,600 acres of undeveloped lands on the watershed.

In recent years the population of white tailed-deer on the property has been increasing rapidly. This year it was estimated to be about 600. In the last several years these deer have been causing serious damage to: a) natural habitats that are the subject of SERC long-term research, b) crops grown on fields owned by the Smithsonian and leased to private farmers, and c) crops on farms adjacent to Smithsonian holdings. Damage was so heavy in 1992 that all of the farmers have canceled their leases.

There are a number of possible methods of controlling the deer population. If controls are not implemented soon the deer will cause major long-term damage to forest communities, and increasing farm crop damage. Local land owners are already threatening to take legal and political action against the Smithsonian.

SERC staff have studied the population control options and have come to the following conclusion: fencing is the most cost-effective, feasible approach that would not raise major concerns of the public.

SERC is now planning to erect special deer fences around one rectangular block of land to test the practicality of this method. The land involved is about 80 acres, including some 45 acres of crop fields. The fences are of a special design developed at the Smithsonian National Zoological Park facility in Front Royal, VA.

Question 79: There has been discussion of late about linking together the existing patchwork of data bases on biological diversity. Currently the information lies both in the private section (Nature Conservancy), state organizations (Illinois Natural History Survey) and federal agencies like the U.S. Fish and Wildlife Service. What progress has been made or is planned to coordinate this function within the Smithsonian?

Answer: Smithsonian staff have participated in a number of discussion about linking together the existing patchwork of data bases on biological diversity. To date, no real progress has been made. The plan is to have this function as part of the proposed Center for Biological Diversity.

Question 80: The Board of Regents voted recently to establish a special vehicle for fund raising titled Smithsonian fund for the future. Could you discuss this in greater detail?

Answer: At its February 1, 1993, meeting, the Board of Regents voted to endorse a proposal from the Smithsonian National Board to establish the "Smithsonian Fund for the Future (SFF)." The SFF will provide donors with opportunities to make major restricted, quasi-restricted and unrestricted gifts to the Institution, with a strong emphasis to be placed on seeking and securing such gifts to the Institution's endowment.

It is the Regents' expectation that the SFF will strengthen the public-private partnership which is the cornerstone of the Institution. It is hoped that funding through the SFF will enhance and stabilize the Smithsonian's operating base which is provided through Federal appropriations.

## QUESTIONS SUBMITTED BY REPRESENTATIVE TORRES

## Hispanic Employment at the Smithsonian

Question 81: The question of the employment of Hispanics in senior professional and administrative positions has been raised in previous correspondence by members of the Appropriation Committee, mentioned prominently in Congressional Hearings and in meetings between Hispanic Members of Congress and the leadership of the Smithsonian Institution. In spite of this history, the representation of Hispanics on the Smithsonian staff is not adequate. Six percent of the civilian labor force is Hispanic; only 4.7 percent of the Smithsonian's work force is Hispanic, and that percentage drops to 2.5 percent if we do not include the staff at the Smithsonian Tropical Research Institute in Panama.

What is the actual number of Hispanics employed by the Smithsonian, on an institution by institution basis, and what are their GS ratings, job titles and length of employment?

Answer: As of September 19, 1992 there were 313 Hispanics employed in 43 different bureaus and offices throughout the Institution in professional, administrative, technical, clerical, wage board, and other positions.

Attached is a listing of those employees with the following information provided on each:

ORG CODE:	This code corresponds to SI's reporting units
ORG NAME:	Office or Bureau name
SERIES:	The Office of Personnel Management Job Series Number
TITLE:	The Job name
PAY PLAN:	To enable interpretation of grade
GRADE:	Grades 1-15 and SR to indicate ungraded senior employees
GENDER:	Male or Female
TENURE:	Years at the Smithsonian with uninterrupted service on either the Federal or Trust side. In some instances, this underestimates tenure. For example, if an employee worked on the Trust-side for 2 years and 10 years ago moved to a Federal position, his/her tenure would show as "10," not as "12."

The names are sorted in ORG CODE order and, within organizations, by ascending grades.

FOLLOWING ARE ORGANIZATIONAL NAMES WHICH ARE ABBREVIATED IN THE WORKFORCE PROFILE.

ABBREVIATIONS

OUS . . . . . OFFICE OF THE UNDER SECRETARY  
 NASM . . . . . NATIONAL AIR AND SPACE MUSEUM  
 AA&PG . . . . . AMERICAN ART AND PORTRAIT GALLERY  
 FGA . . . . . FREER GALLERY OF ART  
 NMAH . . . . . NATIONAL MUSEUM OF AMERICAN HISTORY  
 HMSG . . . . . HIRSHHORN MUSEUM & SCULPTURE GARDEN  
 NMAFA . . . . . NATIONAL MUSEUM OF AFRICAN ART  
 C/H . . . . . COOPER-HEWITT MUSEUM  
 OEC . . . . . OFFICE OF EXHIBITS CENTRAL  
 SITES . . . . . SI TRAVELING EXHIBITION SERVICE  
 OOP . . . . . OFFICE OF QUINCENTENARY PROGRAMS  
 NMAI . . . . . NATIONAL MUSEUM OF THE AMERICAN INDIAN  
 QUAD . . . . . QUADRANGLE BUILDING MANAGEMENT  
 OFP . . . . . OFFICE OF FOLKLIFE PROGRAMS  
 OESE . . . . . OFFICE OF ELEMENTARY AND SECONDARY EDUCATION  
 OASR . . . . . OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH  
 SERC . . . . . SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER  
 STRI . . . . . SMITHSONIAN TROPICAL RESEARCH INSTITUTE  
 NZP . . . . . NATIONAL ZOOLOGICAL PARK  
 NMNH . . . . . NATIONAL MUSEUM OF NATURAL HISTORY  
 SAO . . . . . SMITHSONIAN ASTROPHYSICAL OBSERVATORY  
 SIL . . . . . SMITHSONIAN INSTITUTION LIBRARIES  
 OEEMA . . . . . OFFICE OF EQUAL EMPLOYMENT AND MINORITY AFFAIRS  
 OPB . . . . . OFFICE OF PLANNING AND BUDGET  
 OIRM . . . . . OFFICE OF INFORMATION RESOURCE MANAGEMENT  
 OPLANTS . . . . . OFFICE OF PLANT SERVICES  
 OPS . . . . . OFFICE OF PROTECTION SERVICES  
 DDC . . . . . OFFICE OF DESIGN AND CONSTRUCTION  
 OHR . . . . . OFFICE OF HUMAN RESOURCES  
 OPPS . . . . . OFFICE OF PRINTING & PHOTOGRAPHIC SERVICES  
 OAFS . . . . . OFFICE OF ACCOUNTING & FINANCIAL SERVICES  
 OSP . . . . . OFFICE OF SPONSORED PROJECTS  
 MOD . . . . . MAIL ORDER DIVISION  
 MSC . . . . . MUSEUM SUPPORT CENTER  
 ASEA . . . . . ASSISTANT SECRETARY FOR EXTERNAL AFFAIRS  
 SNAP . . . . . SMITHSONIAN NATIONAL ASSOCIATES PROGRAM  
 RAP . . . . . RESIDENT ASSOCIATES PROGRAM  
 SMAG . . . . . SMITHSONIAN MAGAZINE  
 SIP . . . . . SMITHSONIAN INSTITUTION PRESS  
 VIARC . . . . . VISITOR INFORMATION & ASSOCIATES RECEPTION CENTER  
 OIR . . . . . OFFICE OF INTERNATIONAL RELATIONS  
 ODEV . . . . . OFFICE OF DEVELOPMENT



## HISPANIC WORKFORCE PROFILE AS OF SEPTEMBER 19, 1992

	ORG	ORG NAME	SERIES	TITLE	PAY PLAN	GRADE	GENDER	TENURE
1	203	OUS	1035	PUBLIC AFF SPECLST	IS	12	M	1
2	204	OUS	301	CONGRSNL LIASN SPECLST	GS	11	M	20
3	302	NASM	2854	ELCTRL EQUIP WRKR	WG	7	M	18
4	302	"	1015	MUSEUM CUR AERONAUTICS	GS	15	M	20
5	305	AA&PG	1410	LIBRN	GS	7	F	3
6	305	"	1010	EXH SPECLST GEN	GS	7	M	3
7	305	"	318	SECY TYPG	GS	9	F	1
8	306	FGA	303	INF & SALES CLK	IS	2	M	1
9	306	"	303	MAIL & SUPP CLK	IS	3	M	2
10	306	"	525	ACCTG TECHNCN TYPG	IS	6	F	1
11	306	"	1010	EXH SPECLST GEN	GS	9	M	0
12	307	NMAH	1016	MUSEUM AID	GS	4	M	3
13	307	"	1016	MUSEUM TECHNCN HSTRY	GS	5	F	2
14	307	"	318	SECY TYPG	IS	6	F	2
15	307	"	85	SUPVY SECUR GUARD	IS	7	M	0
16	307	"	1010	SUPVY EXH SPECLST GEN	GS	11	M	9
17	307	"	170	HISTRN	GS	11	M	2
18	307	"	1015	MUSEUM CUR	GS	11	F	1
19	308	HMSG	318	SECY TYPG	GS	6	F	0
20	308	"	303	ADMV TECHNCN TYPG	GS	6	F	0
21	308	"	1001	CONTEMPORARY ART SPEC	GG	11	F	3
22	309	NMAFA	1001	CONSERVATOR	GS	9	F	2
23	310	C/H	2091	SALES STORE CLK	IS	3	F	2
24	310	"	4749	MTNCE WRKR	WG	5	M	3
25	310	"	4749	MTNCE WRKR	WG	5	F	0
26	310	"	4749	MTNCE WRKR	WG	7	M	9
27	310	"	4605	WOOD CRAFTER	WG	10	M	3
28	310	"	1101	ASST. MUSEUM FACILITIES MANAGE	GS	11	M	0
29	315	DEC	1010	EXH SPECLST GEN	GS	11	M	3
30	320	SITES	1001	TRAVLNG EXHBTN SPECLST	GS	9	F	1
31	321	OQP	1001	QUINCENTENARY PROGRAM SPECIALI	GS	11	M	4
32	321	"	301	DIRECTOR, QUINCENTENARY PROGRA	IS	14	F	8
33	322	NMAI	3566	CUSTDL WRKR	WG	2	M	2
34	322	"	3502	LBRRER	WG	2	M	1
35	322	"	304	INF RECPTNST	GS	3	M	2
36	322	"	318	SECY TYPG	GS	5	F	2
37	322	"	318	SECY TYPG	GS	6	F	2
38	322	"	303	ADMV TECHNCN TYPG	GS	7	F	2
39	322	"	1035	PUBLIC AFF SPECLST	GS	9	F	2
40	322	"	301	STAFF ASST	GS	11	F	0
41	323	QUAD	322	CLK TYP	GS	4	F	5
42	403	OFF	303	OFF ASST TYPG	GS	5	F	2
43	403	"	101	FOLKLORE SPECLST	IS	12	F	4
44	406	DESE	1720	EDUC PROG SPECLST	IS	12	F	0
45	901	OASR	301	PROG COORD	IS	9	M	4
46	901	"	1001	RESEARCH PROGRAM SPECISLIST	GS	9	F	11
47	901	"	301	TRAINING PROGRAM COORDINATOR	GS	9	F	12
48	901	"	401	BIOLOGICAL PROGRAM DIRECTOR	IS	14	M	6
49	903	SERC	410	ZOOL	GS	12	M	3
50	905	STRI	190	SR RES ANTHRPLGST	SL	SR	F	19
51	905	"	302	MESSGR MOTOR VEHCL OPERTR	GS	2	M	1
52	905	"	3566	CUSTDL WRKR	WG	2	M	4
53	905	"	1812	GAME WARDEN	GS	2	M	1
54	905	"	1812	GAME WARDEN	GS	2	M	1
55	905	"	3502	LBRRER	WG	2	M	1
56	905	"	7408	FOOD SRVC WRKR	WG	2	M	1
57	905	"	7408	FOOD SRVC WRKR	WG	2	M	1
58	905	"	1812	GAME WARDEN	GS	2	M	1
59	905	"	3566	CUSTDL WRKR	WG	2	M	1
60	905	"	302	MESSGR MOTOR VEHCL OPERTR	GS	2	M	15
61	905	"	3566	CUSTDL WRKR	WG	2	M	4
62	905	"	382	TELEPH OPERTR	GS	2	F	1
63	905	"	7408	FOOD SRVC WRKR	WG	2	M	1
64	905	"	1812	GAME WARDEN GDE	GS	3	M	5
65	905	"	1106	PROCUR CLK	GS	3	M	3
66	905	"	303	PROCSNG CLK	GS	3	M	17

67	905	"	404	BIOLCL SCIENCE AID	IS	3	F	1
68	905	"	1812	GAME WARDEN GDE	GS	3	M	12
69	905	"	322	CLK TYP TYPG	IS	3	F	3
70	905	"	404	BIOLCL SCIENCE AID	GS	3	M	1
71	905	"	322	CLK TYP TYPG	IS	3	F	0
72	905	"	404	BIOLCL SCIENCE AID	IS	3	M	2
73	905	"	318	SECY TYPG	GS	3	F	1
74	905	"	404	BIOLCL SCIENCE AID	GS	3	M	13
75	905	"	303	PROCSNG CLK	GS	3	M	4
76	905	"	404	BIOLCL SCIENCE AID	GS	3	M	1
77	905	"	404	BIOLOGICAL SCIENCE TECHNICIAN	GS	4	M	0
78	905	"	4749	MTNCE WRKR	WG	4	M	3
79	905	"	404	BIOLCL SCIENCE AID	GS	4	M	25
80	905	"	1812	GAME WARDEN	GS	4	M	22
81	905	"	318	SECY TYPG	GS	4	F	4
82	905	"	1812	GAME WARDEN	GS	4	M	12
83	905	"	303	PROCSNG CLK	GS	4	M	21
84	905	"	1812	GAME WARDEN	GS	4	M	9
85	905	"	4749	MTNCE WRKR	WG	4	M	3
86	905	"	1060	PHOTOGR LAB	GS	4	M	14
87	905	"	503	FINANCIAL CLERK/CASHIER	GS	4	F	3
88	905	"	318	SECY TYPG	GS	4	F	4
89	905	"	2005	SUPP CLK	GS	4	M	4
90	905	"	318	SECY TYPG	GS	4	F	3
91	905	"	1812	GAME WARD (NAT)	GS	4	M	5
92	905	"	322	CLK TYP TYPG	IS	4	F	0
93	905	"	322	CLK TYP	GS	4	F	3
94	905	"	4749	MTNCE WRKR	WG	4	M	2
95	905	"	4749	MTNCE WRKR	WG	4	M	3
96	905	"	1812	LEAD GAME WARDEN	GS	4	M	9
97	905	"	1812	GAME WARD (NAT)	GS	4	M	7
98	905	"	404	BIOLCL SCIENCE AID	GS	4	M	5
99	905	"	344	MGMT ASST	GS	5	M	2
100	905	"	1812	LEAD GAME WARDEN	GS	5	M	17
101	905	"	525	ACCTG TECHNCN	GS	5	M	5
102	905	"	404	BIOLOGICAL SCIENCE TECH	GS	5	M	1
103	905	"	404	BIOLCL SCIENCE TECHNCN	GS	5	M	19
104	905	"	335	COMPR CLK	IS	5	M	4
105	905	"	525	ACCTG TECHNCN	GS	5	F	12
106	905	"	318	SECY TYPG	GS	5	F	3
107	905	"	203	PERS CLK	GS	5	F	3
108	905	"	7404	COOK	WG	5	M	3
109	905	"	404	BIOLCL SCIENCE TECHNCN	GS	5	M	7
110	905	"	404	BIOLOGICAL SCIENCE TECH	GS	5	M	1
111	905	"	525	ACCTG TECHNCN	GS	5	F	8
112	905	"	4749	MTNCE HLPR	WG	5	M	21
113	905	"	1106	PROCUR CLK	GS	5	F	12
114	905	"	318	SECY TYPG	GS	5	F	4
115	905	"	1060	PHOTOGR LAB	GS	5	M	12
116	905	"	7404	COOK	WG	5	M	3
117	905	"	1812	LEAD GAME WARDEN	GS	5	M	13
118	905	"	404	BIOLCL SCIENCE TECHNCN	IS	5	F	2
119	905	"	335	COMPR CLK	IS	5	F	2
120	905	"	404	BIOLCL SCIENCE TECHNCN	IS	6	F	1
121	905	"	525	ACCTG TECHNCN	GS	6	M	6
122	905	"	525	ACCTG TECHNCN	GS	6	F	9
123	905	"	318	SECY TYPG	GS	6	F	1
124	905	"	318	SECY TYPG	GS	6	F	8
125	905	"	303	RES ASST	GS	6	F	12
126	905	"	344	MGMT ASST	GS	7	F	3
127	905	"	525	ACCTG TECHNCN	GS	7	F	10
128	905	"	404	BIOLOGICAL SCIENCE TECHNICIAN	IS	7	M	0
129	905	"	404	BIOLCL SCIENCE TECH FISH	GS	7	M	25
130	905	"	4749	MTNCE WRKR	WG	7	M	13
131	905	"	301	ASSISTANT PROGRAM SPECIALIST	GS	7	F	4
132	905	"	7404	COOK	WG	7	M	12
133	905	"	303	ADNV TECHNCL ASST	GS	7	M	1
134	905	"	344	MGMT ASST	GS	7	M	0
135	905	"	303	ASST MGR VISITOR SERVICE OFF	GS	7	F	9
136	905	"	404	BIOLCL SCIENCE TECHNCN INVS	GS	7	M	17
137	905	"	1105	PURCHSG AGT	GS	7	M	8
138	905	"	303	ENVIRONMENTAL SPECIALIST	GS	7	M	12

139	905	"	303	MGMT SRVCS ASST	IS	7	F	15
140	905	"	1812	SUPERVISORY GAME WARDEN	GS	7	M	13
141	905	"	404	BIOLCL SCIENCE TECHNCN FISH	GS	7	M	15
142	905	"	404	BIOLCL SCIENCE TECHNCN	GS	7	F	2
143	905	"	303	MGMT SRVCS ASST	GS	7	F	4
144	905	"	4604	WOOD WRKR	WG	7	M	8
145	905	"	4749	MTNCE WRKR	WG	8	M	3
146	905	"	4749	MTNCE WRKR	WG	8	M	21
147	905	"	303	MGMT SRVCS ASST TYPG	GS	8	F	23
148	905	"	5786	SMALL CRAFT OPERTR	WG	8	M	18
149	905	"	5823	AUTMTV WRKR	WG	8	M	3
150	905	"	4206	PLMBNG WRKR	WG	8	M	5
151	905	"	4749	MTNCE WRKR	WG	8	M	4
152	905	"	344	MGMT ASST	GS	8	M	3
153	905	"	404	BIOLCL SCIENCE TECHNCN	GS	9	M	22
154	905	"	334	COMPR PROGMR ANAL	IS	9	F	0
155	905	"	4749	MTNCE MECH	WG	9	M	16
156	905	"	301	VISITOR SERVICES MANAGER	GS	9	F	21
157	905	"	404	BIOLCL SCI TECHNCN INS	GS	9	M	23
158	905	"	5823	AUTMTV WRKR	WG	9	M	3
159	905	"	4749	MTNCE MECH LEADR	WL	9	M	3
160	905	"	5306	AIR COND EQUIP MECH	WG	9	M	3
161	905	"	4749	MTNCE MECH	WG	9	M	15
162	905	"	5786	SM CRAFT OPERTR	WG	9	M	27
163	905	"	8610	SMALL ENG MECH	WG	9	M	3
164	905	"	4749	MAINTENANCE MECHANIC LEADER	WL	9	M	3
165	905	"	5786	SM CRAFT OPERTR	WG	9	M	13
166	905	"	5823	AUTMTV WRKR	WG	9	M	9
167	905	"	4749	LEAD MTNCE MECH	HL	9	M	0
168	905	"	2805	ELCTRL WRKR	WG	9	M	4
169	905	"	5786	SM CRAFT OPERTR	WG	9	M	5
170	905	"	5786	SM CRAFT OPERTR	WG	9	M	30
171	905	"	2805	ELTRCN	WG	10	M	5
172	905	"	5306	AIR COND EQUIP MECH	WG	10	M	4
173	905	"	4749	MTNCE MECH LEADR	WL	10	M	16
174	905	"	301	DIVING PROGRAM OFFICER (SCIENT	GS	11	M	0
175	905	"	560	BUDG ANAL	GS	11	M	3
176	905	"	1102	SUPVY CONTR SPECLST	GS	11	F	26
177	905	"	201	PERG MGMT SPECLST	GS	11	F	13
178	905	"	401	BIOLGST	GS	11	F	2
179	905	"	1701	EDUCATION INFO SPECIALIST	IS	12	F	15
180	905	"	401	BIOLGST	GS	12	F	4
181	905	"	510	ACCTG OFFCR	GS	12	M	5
182	905	"	334	COMPR SPECLST	GS	12	M	7
183	905	"	1640	FACIL MGR	GS	13	M	4
184	905	"	401	CONSV RESOURCE MGR	GM	13	M	12
185	905	"	301	PROG SPECLST	GS	14	F	23
186	905	"	301	PROG MGMT OFFCR	GM	15	F	7
187	906	NZP	5001	ANIMAL KEEPER	WG	5	M	0
188	906	"	5703	MOTOR VEHCL OPERTR	WG	6	M	18
189	906	"	2005	SUPP TECHNCN	GS	7	F	1
190	906	"	83	POLICE OFFCR	ZP	7	M	1
191	906	"	404	BIOLCL LAB TECHNCN	GS	9	F	1
192	906	"	410	ZOOL	GS	11	M	0
193	906	"	1001	DEVELOPMENT OFFICER	GS	12	M	0
194	907	NMNH	1016	MUSEUM AID	GS	2	M	1
195	907	"	3566	CUSTDL WRKR	WG	2	F	19
196	907	"	1016	MUSEUM TECHNCN ZOOL	GS	5	F	3
197	907	"	303	ADMV SUPRT ASST TYPG	IS	6	F	1
198	907	"	1016	MUSEUM TECHNCN ZOOL	GS	7	M	5
199	907	"	1016	MUSEUM TECHNCN NATRL SCI	IS	7	F	1
200	907	"	1016	MUSEUM SPECLST GEN	GS	7	F	1
201	907	"	318	SECY TYPG	GS	8	M	2
202	907	"	301	ADMV SPECLST	GS	9	F	23
203	907	"	1016	MUSEUM SPECLST NATRL SCI	GS	9	F	20
204	907	"	1016	MUSEUM SPECLST NATRL SCI	IS	9	F	7
205	907	"	1530	STATCHN	GS	12	M	0
206	907	"	401	MARINE BIOLGST	GS	12	M	3
207	907	"	1350	GEOG	GS	12	M	1
208	907	"	410	ZOOL	GS	12	M	2
209	907	"	430	BTNST	GS	12	M	3
210	907	"	193	ARCHEOLOGIST	GS	13	M	4

211	910	SAO	1105	PURCHSG AGT	GS	6	F	11
212	910	"	5823	AUTMTV WRKR	WG	7	M	1
213	910	"	1330	ASTRONOMER	IS	11	M	0
214	910	"	1330	ASTRONOMER	IS	11	F	0
215	910	"	1330	ASTRONOMER	IS	13	M	7
216	910	"	1330	ASTROPHYS CST	IS	13	M	5
217	925	SIL	1411	LIB AID TYPG	GS	3	F	1
218	925	"	4749	MTNCE WRKR	WG	4	M	4
219	925	"	1411	LIB TECHNCN TYPG	GS	5	F	1
220	925	"	318	SECY TYPG	GS	6	F	2
221	925	"	1411	LIB TECHNCN	GS	6	M	3
222	925	"	1411	LIB TECHNCN	GS	7	M	13
223	925	"	1410	LIBRN	IS	9	F	6
224	925	"	1410	LIBRN	GS	12	F	3
225	1004	OEEMA	260	EQ EEMPLMT MGR	GS	12	F	0
226	1005	OPB	560	BUDG ANAL	IS	9	F	2
227	1008	OIRM	334	COMPR SPECLST	GS	12	F	14
228	1008	"	334	COMPR PROGMR ANAL	IS	13	M	6
229	1010	OPLANTS	4742	UTIL SYS RPRER OPERTR	WG	10	M	3
230	1010	"	2608	ELECTRON DIG COMPR MECH	WG	11	M	5
231	1011	OPS	303	SECUR AID	GS	3	M	0
232	1011	"	85	GUARD	GS	5	M	0
233	1011	"	85	GUARD	GS	5	M	2
234	1011	"	85	GUARD	GS	5	M	1
235	1011	"	85	GUARD	GS	5	M	0
236	1011	"	85	GUARD	GS	5	M	0
237	1011	"	85	GUARD	GS	5	M	0
238	1011	"	85	GUARD	GS	5	M	0
239	1011	"	85	GUARD	GS	5	M	0
240	1011	"	85	GUARD	GS	5	M	16
241	1011	"	85	GUARD	GS	5	M	0
242	1011	"	85	GUARD	GS	5	M	11
243	1011	"	85	GUARD	GS	5	M	6
244	1011	"	85	GUARD	GS	5	M	2
245	1011	"	85	GUARD	GS	5	M	2
246	1011	"	85	GUARD	GS	5	F	2
247	1011	"	85	GUARD	GS	5	M	0
248	1011	"	85	GUARD	GS	5	M	1
249	1011	"	85	GUARD	GS	6	M	10
250	1011	"	85	GUARD SUPERVISOR	GS	7	M	3
251	1011	"	85	GUARD SUPERVISOR	GS	7	M	2
252	1011	"	85	GUARD SUPERVISOR	GS	7	M	4
253	1011	"	85	GUARD SUPERVISOR	GS	7	M	9
254	1011	"	85	GUARD SUPVR	GS	7	M	10
255	1011	"	85	GUARD SUPVR	GS	7	M	12
256	1011	"	392	COMMUN EQUIP OPERTR	GS	7	M	8
257	1011	"	85	GUARD SUPVR	GS	9	M	16
258	1011	OPS	85	GUARD SUPVR	GS	9	M	13
259	1011	"	80	SECUR SPECLST	GS	9	M	1
260	1011	"	610	OCCUPTL HLTH NURSE	GS	11	F	0
261	1011	"	80	PHYS SECUR SPECLST	GS	12	M	3
262	1011	"	80	SECUR OFFCR	GM	14	M	15
263	1012	ODC	318	SECY TYPG	GS	5	F	3
264	1012	"	809	CONST INSPR	GS	7	M	3
265	1012	"	809	CONST REPR	GS	11	M	3
266	1012	"	808	ARCH	GS	12	F	0
267	1012	"	850	ELCTRL ENGR	GS	13	M	3
268	1012	"	801	GEN ENGR	IS	14	M	7
269	1014	OHR	201	PERS MGMT SPECLST	GS	11	F	0
270	1018	OPPS	1060	PHOTOGR STILL	GS	11	M	7
271	1020	OAFS	525	ACCTG TECHNCN	IS	8	F	10
272	1020	"	510	ACCTNT	GS	9	M	1
273	1020	"	510	SUPVY SYS ACCTNT	GM	14	M	2
274	1022	OSP	303	OFF ASST TYPG	IS	5	F	1
275	1022	"	341	ADMV OFFCR TYPG	IS	9	F	5
276	1026	MOD	9999	WHSE CLK	IS	2	M	1
277	1026	"	1101	TELEMARKETING CLERK TYPG	IS	3	F	1
278	1026	"	9999	WAREHOUSE CLERK	IS	4	M	3
279	1026	"	1101	TELEMARKETING CLERK TYPG	IS	4	F	3
280	1027	MSC	2091	SALES STORE CLK	IS	2	F	2
281	1027	"	2091	SALES STORE CLK	IS	2	F	0
282	1027	"	2091	SALES STORE CLK	IS	2	F	3

283 1027	"	2091 SALES STORE CLK	IS	2	F	0
284 1027	"	2091 SALES STORE CLK	IS	3	F	3
285 1027	"	9999 DISTR CENTR CLK	IS	3	F	2
286 1027	"	9999 DISTR CENTR CLK	IS	3	F	3
287 1027	"	2091 SALES STORE CLK	IS	3	M	3
288 1027	"	2091 SALES STORE CLK	IS	3	F	3
289 1027	"	9999 DISTR CENTR CLK	IS	3	F	3
290 1027	"	2091 CATEGORY SALES ASSISTANT	IS	4	F	2
291 1027	"	503 ACCNTS PAYABLE TECH(T) TYPG	IS	4	F	3
292 1027	"	2091 CATEGORY SALES ASSISTANT	IS	4	F	2
293 1027	"	9999 MERCHANDISE STOCKING ASST	IS	5	M	3
294 1027	"	1101 ASST SHOP MGR	IS	7	F	8
295 1027	"	1101 SHOP MGR	IS	11	F	3
296 1027	"	1101 SR BUYER	IS	11	M	12
297 1101	ASEA	303 ADMINISTRATIVE TECHNICIAN TYPI	IS	7	F	5
298 1101	"	318 SECY TYPG	IS	10	F	5
299 1105	SNAP	303 TRAVEL PROG CLERK TYPG	IS	5	F	0
300 1105	"	301 PROG COORD	IS	9	F	4
301 1106	RAP	303 PROGRAM ASSISTANT TYPG	IS	6	F	2
302 1106	"	5703 MOTOR VEHCL OPERTR	HG	6	M	2
304 1108	SMAG	318 SECY TYPG	IS	5	F	4
305 1108	"	318 SECY TYPG	IS	6	F	1
306 1108	"	1101 MARKETING RESEARCH ASSISTANT	IS	8	F	0
307 1108	"	1101 ADVERTISING RESEARCH ANALYST	IS	9	F	0
308 1108	"	1101 RESEARCH MANAGER	IS	12	F	1
303 1108	"	1101 ADVERTISING DIRECTOR	SB	SR	M	11
309 1109	SIP	1084 VISUAL INFORMATION SPECIALIST	IS	7	F	3
310 1110	VIRAC	1087 EDITL ASST	IS	5	F	1
311 1110	"	1087 EDITL ASST	IS	6	F	2
312 1111	OIR	301 PROGRAM ASST	IS	7	F	1
313 1203	OEOVE	301 DEVELOPMENT OFFICER	IS	12	F	3

Question 82: What specific policies are in effect to increase Hispanic employment at senior professional and administrative levels?

Answer: It is the policy of the Smithsonian Institution to provide equal employment opportunity for all employees regardless of race, color, sex, religion, national origin, age, or disability, and to employ affirmative action measures where there is underrepresentation.

Managers and supervisors at all levels, Assistant Secretaries, Bureau and office Directors, are responsible for implementing this policy establishing goals, and formulating guidelines, practices and procedures to ensure the realization of goals. Accountability for achievement in this area is included in the performance plans of all managers and supervisors.

The Offices of Equal Employment and Minorities Affairs (OEEMA) and Human Resources (OHR) are the primary administrative offices which provide direction and assistance on recruiting, development and advancement of staff. In this regard, the Institution is engaged in a host of programs, activities and initiatives in attempts to increase the representation of Hispanics.

Specifically, we have developed an Equal Employment/ Cultural Diversity (EE/CD) Plan Initiative that requires each organizational unit with 25 employees or more to develop an EE/CD plan advising on strategies to promote cultural diversity in all aspects of the workforce.

Efforts targeted to increase the representation of Hispanics, other minorities and women at the senior, professional and administrative levels, include the Fair Search Recruitment initiative which involves an extended search recruiting process. During this process, Hispanic community leaders and organizations such as HACU, LULAC, IMAGE, LA RAZA and selected Hispanic media are contacted to make them aware of our recruitment objectives and to solicit their support in getting the word out to prospective applicants.

Additionally, the Institution is enhancing its minority database, which includes resources for contacting Hispanics who might be interested in SI employment, and is soliciting the advice and assistance of its Latino Working Committee to reach qualified Hispanics to employ.

The Secretary recently announced two initiatives designed to strengthen Hispanic employment and programs: a nationwide search for a program manager to oversee a study called the "Institute of the Americas." The purpose is to determine the nature of a permanent Hispanic presence within the Smithsonian. This effort will focus on issues of hemispheric concern in the arts, humanities and the sciences and is certain to bolster our efforts to employ more Hispanics at the senior levels.

The second initiative is the formation of a Task Force on Latino Issues headed by Raul Yzaguirre, president and Chief Executive Officer of the National Council of La Raza, the largest umbrella Hispanic organization in the United States. The Task Force, reporting directly to the Under Secretary, will work on employment issues and make recommendations for change within the Smithsonian.

Questions 83: It has been said that once hired, the Smithsonian has difficulty retaining the services of Hispanic professionals on its staff. Why?

Answer: We are unable to respond to this question at this time since we have not been able to assess the validity of the allegation. However, we intend to undertake a study into this matter and will address problems identified in the study.

Question 84: Are there any EEOC cases pending at the Smithsonian? If yes, what are the nature of the complaints filed? Do any of these Cases involve Hispanic employees?

Answer: Yes, there are 37 complaints pending, three of which involve Hispanic employees. The basis and issue are as follows:

BASIS

National Origin	7
Disabled	4
Race	16
Age	11
Religion	0
Sex	18
Sexual Harassment	4
Color	6

\* Note some complainants filed on more than one basis.

ISSUE

Termination	6
Performance Appraisal	1
Classification	1
Non-Selection	7
Job Assignment	4
Reprisal	7
Reprimand	2
Proposal to Remove	1
Work Schedule	1
Non-Promotion	7
Non-QSI	1
Work Environment	4
Permanent Appointment	1
Merit Increase	1
Sabbatical Leave	1
Suspension	2
Letter of Caution	1

\* Note some complainants filed on more than one issue.

Question 85: Given that the Smithsonian Institution has the National Museum of American History, what has kept this institution from developing integral programs which reflect Hispanic American history and art?

Answer: While the National Museum of American History hopes to do more, it has made progress in this area. The Museum's Department of Public Programs has produced a considerable number of programs addressing the contribution and culture of Hispanic Americans. A list of them is appended. The Museum also recently opened a new permanent exhibition entitled American Encounters, portraying the cultural interactions of American Indians, Hispanics, and Anglo-Americans in New Mexico over the last 500 years. A full schedule of seminars, performances and public programs has been developed to accompany this exhibit. In addition, in the last few years the Museum has hired a research curator and a museum technician in Hispanic American culture.

The Museum would like to supplement its current activities, and has drafted a plan for a broader initiative devoted to Hispanic American programming. Such an initiative would consist of four essential elements: 1) a strong curatorial program in Latino history that would provide a scholarly base for public programs; 2) a full-time public program director with an adequate staff and programming budget; 3) dissemination techniques that would make use of radio and television; and 4) a national group of scholars who can contribute to both curatorial and public programs. Such an initiative would require funding beyond what the Museum can reallocate through its downsizing plan.



February 25, 1993

HISPANIC AND RELATED PROGRAMMING  
FROM THE NATIONAL MUSEUM OF AMERICAN HISTORY

EXHIBITS

- Kiva, Cross, and Crown at Pecos Pueblo (opened April 1989)  
Exhibition on early encounters between Indians and Spanish, at Pecos Pueblo, New Mexico
- VSJ--Varrio San Jose: Scenes from an Urban Chicano Experience  
(opened April 1990)  
  
An exhibition of photographs by Miguel Gandert, Albuquerque, New Mexico. Lecture by the photographer.
- American Encounters (opened June 1992)  
Exhibit on how the American Indians, Hispanics have struggled, fought, compromised, and learned to coexist with one another and with Anglo-Americans in New Mexico for nearly five hundred years.

PROGRAMS1991January

- Music from the Missions  
Music of New Spain.
- Churches - Symbols of Communities  
Lecture - Sam Baca.

March

- Specializing in the Impossible: Women in Reform in America  
Two of the speakers were Hispanic women.

June

- American Sampler - Music and Dance of New Mexico  
performed by Los Folkloristas de Nuevo Mexico with guest artist Cleofes Ortiz

July

- Hispanic Music Festival  
Local and regional bands perform Hispanic music.  
In the Jacksonville Bandstand.

September

- American Sampler - Presents Roberto Mondragon and Consuela Luz  
(part of Hispanic Heritage Month)  
Performing traditional and contemporary songs from New Mexico.

October

- Symposium - "Good As Gold"  
Symposium on cultural exchange in the New World including Hispanic  
food traditions.

December

- Holiday Celebration - various Hispanic traditions  
Three craft demonstrations and nine musical groups.

1992January

- American Sampler - Music from New Spain  
Hesperus performs vocal and instrumental music from the Spanish  
colonial era; with Peter Becker, baritone.

February

- Jerry Gonzalez and the Fort Apache Band  
Afro-Cuban popular jazz
- Historical Perspectives on the African Diaspora  
Overview of Cultural Continuum of African, Spanish, and Indian  
contact.

June

- Music of New Mexico  
Music and performance program co-sponsored by Museum of American History and the Office of Folklife Programs for opening of "American Encounters" exhibition and the 1992 Festival of American Folklife (77 separate performances between 6/24/92 - 7/5/92, featuring various musicians and performers from New Mexico).

September

- Documentary - Jack Loeffler (part of National Hispanic Heritage Month)  
Depicting older Hispanic musicians playing music in their homes
- Music of New Mexico: Hispanic Traditions (part of National Hispanic Heritage Month)  
Traditional songs and dance tunes from New Mexico
- Concert by Hesperus (part of National Hispanic Heritage Month)  
Ensemble performs music from the Spanish Old and New Worlds.
- Sovereign to Sovereign  
Symposium on questions pertaining to the effects of European immigration on Native American cultures.
- Los Munequitos de Matanzas - Afro-Cuban Music and Dance Group  
Los Munequitos drum, dance and sing their way through "Patakin" (Stories of the Gods), revealing Afro-Cuban folklore, rituals and rhythms.

October

- American Sampler: Word of Mouth  
Quique Aviles, Salvadoran, was one of the storytellers.

December

- Holiday Celebration - various Hispanic traditions  
Five craft demonstrations and eight musical groups.  
Puerto Rican Holiday Traditions and Stories.

1993February

- American Sampler - Estevanico the Moor  
The life and adventures of Estevanico, his journeys through Florida and Texas with Spanish conquistador Cabeza de Vaca.

Tours of American Encounters

Tours of American Encounters (since June 1992, over 150 special tours have been given focusing on America's Spanish heritage).

## The Proposed Institute for the Americas

Question 86: In June 1985 Secretary Robert McCormick Adams was quoted in Science, that he was concerned about "the lack of any full recognition among Americans of Hemispheric partnership" and the multiethnic nature of the United States. On November 21, 1985, at the first meeting to begin planning for the Quincentenary, Dr. Adams said that "the impact of the Smithsonian Quincentenary will be felt in the academic community and among the popular audience, internationally and nationally, and will leave in place a permanent presence on the Mall focusing on the Americas". Since 1987, information about the proposed entity has been included in budget submissions to the Office of Management and Budget and to the Congress.

What is the status of the Institute for the Americas?

Answer: The Institute of the Americas Project is a commissioned study involving scholars from throughout the hemisphere who will be charged to: identify existing cultural and scientific resources; consider the Smithsonian's current activities; and identify scholarly issues that are being inadequately addressed. The committee's work should help the Smithsonian identify a cooperative role in the study of the hemisphere.

The project director will solicit the services of individuals to serve on the advisory board, provide them with research materials, organize their meetings, write a final report; and submit that report to the Smithsonian Board of Regents.

Question 87: Is the realization of an Institute for the Americas a policy commitment, or a study project, of the Smithsonian?

Answer: The Smithsonian Institution's policy is to fully diversify its staff and programs. The proposed Institute of the Americas may be one of many efforts in furtherance of this policy. As presently configured, the Institute of the America Project is a study project.

Question 88: What funds have been expended by the Smithsonian on the Institute for the Americas proposal?

Answer: The Institution is currently utilizing an Administrative Officer and a Program Assistant detailed from another office in the Smithsonian. We will reprogram funds in fiscal year 1993 to hire a temporary Project Director and Assistant Director.

Question 89: What steps have been taken by the Smithsonian to locate a manager to oversee the development of the Institute for the Americas?

Answer: An announcement for a temporary project director will be open from January through March. After the Smithsonian's Office of Human Resources screens the applications and produces the list of qualified candidates, a panel of five persons will review and rank them. Interviews will begin as soon as the office of the Assistant Secretary for Arts and Humanities receives the ranked list. We are hopeful that a project director will be in place by May.

Question 90: What happens to the development of the Institute for the Americas if Smithsonian appropriations are not increased?

Answer: Current funding for this project is for one year. The funds that we reprogrammed this year for the project will not be available to use in fiscal year 1994. The Institution will be required to reprogram additional fund in FY 1994 to continue the project. While the efforts of this project will focus specifically on the proposed Institute, the Under Secretary has convened a working group to explore the roles of Hispanics throughout the Institution. (See answer to question number 82.)

RONALD D. COLEMAN  
18TH DISTRICT, TEXAS

COMMITTEE ON APPROPRIATIONS  
MAJORITY WHIP AT LARGE  
CHAIRMAN, CONGRESSIONAL  
BORDER CAUCUS



Congress of the United States  
House of Representatives  
Washington, DC 20515  
November 10, 1992

440 CANNON HOUSE OFFICE BUILDING  
WASHINGTON, DC 20516-4216  
(202) 225-4821

DISTRICT OFFICE  
FEDERAL BUILDING, SUITE 722  
700 EAST SAN ANTONIO STREET  
EL PASO, TX 79901  
# 10 534-4200

SPECIAL PHONE FOR THE  
HEARING IMPAIRED  
TTY-202-225-1804  
VOICE-202-225-1900

Mr. Robert McCormick Adams  
Secretary  
Smithsonian Institution  
Smithsonian Institution Building  
1000 Jefferson Drive, S.W.  
Washington, D.C. 20560

Dear Mr. Adams:

I have noticed that the Smithsonian Institution has taken important steps in recognizing the unique cultures and art of several major ethnic groups, including museums dedicated to Native American Art and African American Art. I would like to commend you in your efforts to acknowledge the richness and diversity of American cultures.

I am writing to inquire as to the steps you have taken or are formulating to acknowledge the distinct cultural heritage of the American southwest and Mexican-Americans. The presence of Mexican-Americans in the southwest has allowed for the evolution of the unique art, literature and history of the region. It seems to me that not to have such a museum would demonstrate a failure to properly recognize an important part of the heritage of the American southwest.

I am very interested in seeing the establishment of such a museum to recognize the importance of Mexican-Americans in our cultural heritage. Moreover, the cultural and artistic contributions of Hispanics across the United States would be served by the establishment of a museum dedicated to the arts of Hispanic Americans. Please let me know if I may be of assistance to you in this endeavor.

I look forward to your early reply.

With kindest personal regards, I remain

Very truly yours,

Ronald D. Coleman



SMITHSONIAN INSTITUTION  
 Washington, D.C. 20560  
 U.S.A.

MAR 3 1993  
 40710

Honorable Ronald D. Coleman  
 U.S. House of Representatives  
 Washington, D.C. 20515

Dear Mr. Coleman:

I would like to take this opportunity to outline the Smithsonian Institution's many initiatives to acknowledge contributions of the Latino community, including Mexican-Americans, to our nation's culture. I share the concerns of your November, 1992 letter that it is of paramount importance that the Institution "properly recognize an important part of the heritage of the American southwest."

An Institution-wide review of programs and policies that involve Latino participation indicates that, while the Institution has, over the years, undertaken a number of exhibitions and programs that speak to the many facets of the Latino-American community, there has been no long-term plan nor integrated approach to address these contributions.

Fortunately, the commemoration of the Columbus Quincentenary provided a special opportunity to focus on contributions made by Latinos, including Mexican-Americans, throughout the development of our nation. Accordingly, we have begun to review both programmatic content and internal Institution policies to assess how they can further the knowledge and understanding of the Latino community among all citizens. Many areas of the Institution, including the Museums of Natural History, American History and American Art, developed and presented major exhibitions focusing on Latino-Americans in conjunction with the Quincentenary. The following four notable exhibitions highlighted these contributions and have provided the necessary framework for further Latino-oriented initiatives.

"Seeds of Change" at the National Museum of Natural History explores the meeting 500 years ago between the two distinct cultures of Europe and the Hemisphere of the Americas. This major exhibition touches on how the development of each hemisphere was drastically and permanently changed through the exchange with the other of material objects and cultural beliefs. From food crops to disease, from language to religion, the exhibition strives to show how this sharing of peoples affected life in both



hemispheres. It honestly portrays both the positive and negative outgrowths of this exchange of cultures and shows to many Americans, for the first time, the great contributions that the "New World" provided to the "Old" during this period of history.

"American Encounters," a significant exhibition in the National Museum of American History, examines how the Spanish, Mexican, Native American and Anglo cultures came together to co-exist in a most harmonious manner in New Mexico. The Latino performers from this program were recorded, and compact discs and audio tapes depicting their broad variety of music are available to the public.

"Chicano Art: Resistance and Affirmation (CARA)," presented works by outstanding Chicano artists over a twenty-year span that relates through their paintings, murals, posters, graphic arts, photography, sculpture, and videos a vivid picture of Latino-Americans of Mexican heritage. The CARA exhibition was on view for several months at the National Museum of American Art and continued on a tour throughout the United States.

The Smithsonian's Festival of American Folklife, an annual event on the National Mall, has featured not only the cultures of our nation, but also many cultures of the world. The Folklife Festival, in its twenty-six-year history, has presented a variety of participants from many Latino communities. The 1993 Festival will feature the Southwestern borderland states in a program that will explore the cultural heritage and creativity of Mexican-Americans whose historical experience has been shaped by the creation and maintenance of the Mexico-U.S. Border. Participants who will undoubtedly be of interest to you include citizens from South Texas, The Valley, and The Hill to El Paso.

Other programs featuring Latino-Americans include some of the presentations of the Smithsonian Institution Traveling Exhibitions Service (SITES). SITES has proven to be an effective and economical vehicle to bring significant exhibitions to areas of the country that normally do not see them. The SITES exhibition, "Two Eagles/Dos Aguilas, A Natural History of the Mexican-American Boundary," addresses the current and historical issues shaping the land and its people through stunning color photographs of this awe-inspiring area from the Gulf Coast to the Pacific Slope along the Rio Grande.

Very shortly, I will announce the establishment of a Latino Task Force which will study and identify issues of concern to the Latino community and then make recommendations to the Institution on how they may best be addressed. The Task Force will include members representing national Latino organizations and Smithsonian staff responsible for broader cultural inclusion in all aspects of the Institution. The Task Force will report

directly to the Under Secretary, Constance B. Newman, during its year-long mission, and a final report with recommendations will be presented to me for consideration in 1994. It may be that the genesis of a permanent Latino presence within the Institution will emerge from the Task Force's deliberations.

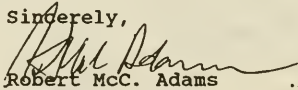
While the many programmatic initiatives of the Institution are important, they must be complemented by internal Smithsonian administrative policies which seek to make Latino-Americans a part of the Institution's fabric. These initiatives include recruitment, employment and promotion plans that proactively target and address the Latino community. We have recently taken a number of steps to do just this.

We have begun a cooperative relationship with the Hispanic Association of Colleges and Universities to create interest among Hispanic college graduates in considering careers at the Smithsonian. Additionally, we view this effort as beneficial to the Institution as it will provide a larger pool of qualified candidates for key positions within the Smithsonian.

Internally, the Office of Museum Programs is soliciting museum professionals in all specialties and disciplines to apply for grant awards which will bring participants to the Smithsonian in July, 1993, to participate in an overview course with an emphasis on museum management. Latino applicants are being targeted as their participation is critical to the expansion of new concepts affecting programming for Latinos, not only at the Smithsonian, but in museum networks throughout the country.

It is my hope that these several initiatives, both programmatic and administrative, will feed off one another and strengthen the entire Latino component of the Institution. I appreciate your interest and encouragement as we move ahead with full force at all levels of the Institution, and I look forward to working with you and your staff to accomplish this important initiative as soon as practicable.

Sincerely,

  
Robert McC. Adams ..  
Secretary

## ADDITIONAL COMMITTEE QUESTIONS

## Uncontrollable Increases

Question 1: The request for uncontrollable increases is \$6.3 million, compared to last year's request of \$18.6 million. Included is an increase of \$1.4 million for utilities, communications and postage. What caused the 1992 cost for electricity to increase over your estimate by \$1 million?

Answer: Our FY 1992 actual cost for electricity was \$1,062,000 higher than estimated in our FY 1993 budget request to Congress. This cost increase is directly attributed to an actual 2.3 million KWH increase in consumption over our estimate and an actual average rate that was \$.008 higher than our estimated average rate. The consumption increase was associated with bringing the Freer Gallery of Art back on line and the operations of the South Quadrangle, Museum Support Center, Cooper Hewitt and STRI buildings. The average rate increase was caused by an 3.4 percent rate increase which went into effect on October 29, 1991, and the fact that PEPCO is passing on to its customers the cost of a D.C. Gross Receipts Adjustment Tax.

Question 2: Under rents, why is the Trust portion of rent for L'Enfant Plaza decreasing in 1994?

Answer: The Trust portion of rent for L'Enfant Plaza reflects a decrease in 1994 due to a change in the cost per square foot charged to Trust auxiliary activities occupying space in the Smithsonian's mall facilities. The average cost per square foot of leased space at L'Enfant is used to allocate the Trust share of the rental costs.

Question 3: There is a request of \$365,000 for rent increases for the Astrophysical Observatory. How much will Trust pay for the additional space at 1815 Massachusetts Avenue?

Answer: The Trust contribution to the annual rent for the additional space at 1815 Massachusetts Avenue is approximately \$170,000.

Question 4: How did you compute the Federal share of the additional space for the AXAF Science Center? Since this is a NASA contract project, why aren't the costs covered under the contract?

Answer: To house the primarily NASA-funded AXAF Science Center, the Smithsonian must rent additional space in Cambridge. The corresponding need for an increase in the Smithsonian Federal contribution to the rental expenses stems from the

method by which rental costs are assigned to the Federal and to the Trust (contract and grant) portion of SAO's budget. Both internal and external auditors agree that SAO should distribute rental costs between Federal and Trust, dependent only on the fraction of the total square footage rented that is occupied by each. The new quarters that will house the AXAF Science Center must be rented commercially and are estimated to cost per square foot substantially more than the average rental now paid by SAO, thus driving up the cost of the Federal portion of the rent, independent of the (small) Federal component of the AXAF Science Center. The amount of this increase is estimated to be \$268,000 as described in the FY 1994 budget submitted to Congress. By far the larger fraction of this rental increase will be borne by the NASA contract.

Question 5: The summary table for Salaries and expenses shows a reduction of 81 FTE's as part of the government-wide FTE reduction. How will these reductions be taken?

Answer: Approximately half of the reductions required by the end of FY 1994 will have been taken as part of the restructuring process. It is anticipated that the remainder will be provided through retirements and other normal attrition.

Question 6: How are the funding decreases related to these reductions reflected in the budget?

Answer: The decreases taken through the restructuring process were identified in the reprogramming process. The Institution does not anticipate targeting areas for decrease in 1994; rather, management will evaluate positions that are or become vacant throughout the year, and reallocate the savings to highest priority areas.

Question 7: Was the Smithsonian also asked to share in the Administration's administrative cost reductions? If so, how were these reductions developed and applied, and how are they reflected in the request?

Answer: The Smithsonian Institution has been asked to share in the Administration's administrative cost reductions pursuant to Executive Order 12837. These reductions will be developed and implemented as part of the Institution's multi-year restructuring process that aims for financial equilibrium for both the Institution's Federal and nonappropriated budgets. The restructuring plan represents a thorough and comprehensive review of the Smithsonian's utilization of Federal and nonappropriated funds within the context of its priorities. One of these stated priorities is the provision of an adequate administrative and service base to plan for and handle a transition to downsized programs and operations, without sacrificing present standards.

Several of the principles established as the bases for decision making during the restructuring process will support the Institution's efforts to improve its administrative productivity. These principles include the evaluation of: (1) the strategic importance of programs to the future of the Institution, including central administrative and support services widely required by Smithsonian bureaus and offices; (2) financial and operating flexibilities suggested by scope and variety of efforts; (3) access to and availability of multiple sources of alternative funds; (4) evidence and indications of cost-conscious operations; (5) prospective organizational changes, reductions or placements; (6) potential for streamlining operations; and (7) efficiencies through cost-reimbursement procedures.

As part of the first phase of this restructuring plan, currently being implemented and reflected in the Institution's FY 1994 request, several major actions will promote greater administrative efficiencies, including: (1) the merger of the Smithsonian Institution Archives, the Office of the Registrar, and the Joseph Henry Papers Project into one combined office; (2) the elimination of separate administrative units for the American Studies Program and the Smithsonian Institution/Man and the Biosphere Program; (3) the reduction of funding provided to the offices of the Assistant Secretaries; (4) the elimination of support for several senior staff vacancies in Smithsonian bureaus and offices; and (5) the development of chargeback systems to distribute the costs of specific central support services to the bureaus and offices served. Other major actions to implement this administrative cost reduction throughout the Institution will be developed during the second half of FY 1993 for implementation in FY 1994.

The Institution notes for the record, however, that the methodology used by OMB for the Smithsonian reduction results in a significant reduction to Smithsonian program support, as well as a reduction in administrative costs. The "administrative expenses" baseline used by OMB in the calculation of this reduction for all agencies is inappropriate for the Smithsonian Institution. The baseline used was total funding for object class 20 (contractual services and supplies) for each appropriation account. For the Smithsonian this included the Salaries and Expenses, Repair and Restoration of Buildings, Construction, and Zoo Construction accounts.

Within the Salaries and Expenses account, however, much of the funding provided for object class 20 represents program costs of the Smithsonian's research, curatorial, education and public service programs. For instance, funding for travel costs include field research and curatorial travel to locate objects to be used in exhibitions or to be acquired for the collections. Funding for transportation of things includes the costs of transporting objects acquired for the collections, objects borrowed from other museums that are exhibited as part of Smithsonian exhibitions, and objects included in Smithsonian traveling exhibitions displayed in museums and other sites throughout the United States. Funding for contractual services includes contracts for conservation of the collections, research and research support services, curatorial support, and educational outreach. Funding for supplies and materials includes conservation and archival storage supplies, research laboratory supplies, and exhibition installation materials.

Moreover, utilities costs for almost all Federal agencies are included in space rental costs which they pay the General Services Administration. OMB specifically excluded these costs from the administrative expenses baseline. The Smithsonian, however, pays for all of its utilities costs directly and rents space in many facilities from commercial owners; OMB included both of these facilities charges in the Smithsonian baseline, and therefore, in the reduction.

Finally, the full funding provided for the three capital accounts (Repair and Restoration of Buildings, Construction, and Zoo Construction accounts) represent programmatic funding to plan, design, maintain and construct facilities for the Smithsonian. No administrative expenses are funded through these accounts; however, funding in these accounts constitutes 42 percent of the "administrative expenses" baseline used by OMB.

As a result of these factors, the "administrative expenses" baseline for the Smithsonian has been overstated, and accordingly, the proposed reduction required by the Executive Order is likewise overstated. The Smithsonian is currently working with OMB to resolve this issue.

Question 8: Overall, what will be the impacts of the requirement to absorb pay and other cost increases in 1994?

Answer: As currently planned in our FY 1994 request, there will be minimal impact from the requirement to absorb pay and other cost increases.

#### Sciences

Question 9: The request for major scientific instrumentation is \$7.3 million, a decrease of \$648,000. Under the submillimeter array project, what is involved in the \$1,000,000 included for the Mauna Kea buy-in?

Answer: All telescope installations invited to share the summit of Mauna Kea contribute to the costs of the general site facilities such as the roads and the communication network. The submillimeter array is classified as being in the second smallest of the four possible classes of instrument. As such, the submillimeter array will pay approximately a \$1,000,000 contribution, part of it directly, such as for the paving of a general-use road, and the rest indirectly by reimbursing the Mauna Kea development corporation. The details of the Smithsonian contribution are still under negotiation; one of the contributions will probably be the development of an archaeological preservation plan. Other installations contribute differently, in what has been a satisfactory sharing of development costs at this outstanding astronomical site.

Question 10: The request for the National Museum of Natural History is \$35.6 million, about the same as the 1993 level. Other than the reduction of 2 FTE's shown in the budget, what impact does this flat funding level have on the Museum?

Answer: The Museum had to reduce staff over the past several years to retain a reasonable level of non-salary support, due to across-the-board reductions, absorption of Necessary Pay costs, and general inflation. NMNH ended FY 1992 with 77 "unfilled" workyears, 12 percent below our FY 1993 authorized ceiling of 624. In order to implement the Institution's FY 1993 Reduction and Reallocation Plan, the Museum anticipates reducing staff by an additional 30 positions over the next year. The Museum has encouraged retirements (over 10 percent of the staff is eligible for voluntary retirement) to avoid or minimize a Reduction-in-Force.

The biggest impact of the staff losses is in the collection management area, as these positions have had the highest turnover. Several staff are being reassigned to the highest priority activities within their departments, such as support of the move to the Museum Support Center. Meanwhile, the collections continue to grow as new specimens are added, and the needs for sorting, cataloguing, storing, conserving, exchanging and lending them are growing steadily. Consequently, the Museum continues to fall behind in these basic functions.

Distinguished members of the Museum's scientific staff have been retiring at an increasing rate. Because the Museum is not able to replace them or hire scientists in important new areas, it is losing key research expertise and focus.

The Museum will, as part of the Institution's restructuring effort, redirect \$1.1 million to exhibits and high-priority science activities. Renovation of our 30-year old exhibits to bring them up-to-date, both in scientific accuracy and in application of modern exhibition techniques, has been a high priority for several years. Private support now matches and supplements existing federal base funds, providing approximately \$6 million annually for this purpose. However, with 170,000 square feet requiring total renovation at an average cost of \$500 per square foot, while maintenance of existing halls cost \$125 per square foot, the Museum has a long way to go to achieve a truly modern complex, accessible and intriguing, with adequate support services for the ever-increasing number and diversity of visitors.

The redirection to exhibits, however, comes at the expense of collection and research activities. The Museum cannot simply decide to no longer take care of certain collections. There are large areas of the collections on which the Museum does not conduct active research, some of which are studied by visitors, and some which have been placed in other research institutions where there is appropriate scientific expertise. However, there is a severe shortage of staff in key areas that will continue without new resources.

Some of the impact of flat funding from OMB includes the following:

- The new greenhouse at the Museum Support Center, required due to the East Court construction at the Natural History Building, becomes operational in 1995 and requires basic operating support, including 2 staff. The Mall site had been maintained on a part-time basis by staff in the Department of Botany. Reassignment of staff full-time to the new site will mean a further reduction in collection management staff at the Museum.
- Through reprogramming of existing positions, the Museum established two positions, a Safety Officer and a Hazardous Waste manager. Hazardous Waste disposal costs continue to rise, now \$40,000 per year. Response to safety issues and compliance with appropriate safety and accessibility laws all have associated costs. To date, these funds have added to the erosion of collection and research support.
- Implementation of the Museum's Collections and Research Information System (CRIS) has begun with a pilot project in the Department of Botany, chosen due to anticipated needs of the National Biological Survey. Additional funds are required to increase the speed at which the CRIS is brought on-line to meet escalating requests for information and items from the National Collections by scientific researchers, natural resource managers, U.S. and foreign government organizations, and the public.
- The Smithsonian is part of the U.S. Global Change initiative and has been participating in the Federal Coordinating Council on Science, Engineering and Technology cross-cut. Members of this committee see an important role for the Museum in documenting biodiversity, structure, growth and regeneration of ecosystems, and in analyzing geologic processes to develop predictive models of environmental changes and protect the diversity of the world's flora and fauna. While the Museum is developing strategic plans to more clearly focus efforts in these areas, it cannot adequately meet the charge in a downsizing environment.

Question 11: The budget notes that a study of the system architecture for the collection and research information system was completed in FY 1992. What is the next step in this process? What is underway in FY 1993?

Answer: The Museum is developing a pilot of a portion of the Collection and Research Information System (CRIS) in FY 1993. Pilot system testing will begin in the last quarter of this fiscal year. Deployment of the pilot in the system architecture chosen, and development of additional portions of CRIS, will require increased funding support.



Question 12: The request for the Museum Support Center is \$5.3 million, an increase of \$0.1 million over 1993. Explain for the record why the \$994,000 to repay the judgment fund is required to be repaid by the Smithsonian.

Answer: Under the terms of the Contract Disputes Act, the Smithsonian is required to reimburse the Judgment Fund, administered by the U.S. Department of the Treasury, in repayment for the settlement of the lawsuit related to the purchase of collections storage equipment for the Museum Support Center.

The judgment was the result of the lawsuit brought against the United States (the General Services Administration (GSA) and the Smithsonian) by the Davis Company in the U.S. Claims Court. The Davis Company sued the United States, alleging that the GSA had improperly terminated Davis for default of its contract to equip and install collections storage equipment at the Smithsonian's Museum Support Center. As a result of its investigation, the U.S. Department of Justice recommended to the GSA and the Institution that a settlement be negotiated. The GSA and the Institution agreed. A settlement was concluded among the parties. Thereupon, on June 19, 1990, the U.S. Claims Court rendered judgment in favor of the Davis Company pursuant to that settlement agreement.

Under the terms of the Contract Disputes Act, the full amount of the judgment awarded to a contractor must be paid by the Department of Justice from the Judgment Fund soon after the court renders judgment. The Treasury Department then requires reimbursement to the Fund from the Federal agency or entity that is responsible for the judgment.

The total award of the judgment against the Smithsonian was \$3,022,000. The repayment schedule was negotiated with the Treasury Department, which had agreed to accept payment in three annual installments of \$1,007,000 to be paid in FY 1992 through FY 1994. As part of the FY 1992 appropriation, funding of \$994,000 (reflecting the effects of the 1.26 percent across-the-board Interior reduction) was provided for this purpose. As a result, following the three payments of \$994,000 in FY 1992 - FY 1994, a fourth payment will be made in FY 1995 for the balance of the reimbursement (\$40,000).

Question 13: What will be the impact on the Natural History Museum's capital renewal project if the MOVE project proceeds at the pace reflected in the budget?

Answer: The capital renewal project would be delayed approximately 18 months if the MSC Move project proceeds only with the FY 1994 base of \$870,000 as reflected in the budget.

This projected schedule may be further delayed because of the necessity for funds in FY 1994 to decontaminate the asbestos-covered museum collection objects and other materials stored in Building 26 at the Garber Facility at Suitland. These items have always been on the Move schedule for decontamination, but not for several more years--

not until after the moves out of the Natural History Building attics and other locations were completed. However, in November, 1992, a tornado damaged Building 26. The asbestos insulation in the building was ripped off the walls and deposited very thickly on the collection objects. The building itself is structurally damaged and must be replaced in the near future to avoid additional damage to collections. The FY 1994 budget request includes funds for replacing the building, but does not include funds for decontaminating the objects. The estimated amount needed for cleaning the objects is \$700,000. Unless funding is identified from another source, the MSC Move may have to delay its work in getting collections out of the way of the Major Capital Renewal Project in the Natural History Building and instead complete the decontamination process and move the items out of Building 26. If no other funding source is available for this purpose, the Move budget for FY 1994 would have to be used, and the Major Capital Renewal Project would be delayed for another year, for a total delay of 30 months.

The longer the delay of the Natural History capital renewal project, the greater the potential that the collections, the public, and the staff will be without heating or air conditioning while interim repairs and/or replacements are made to a broken-down mechanical system. Such breakdowns, if they occur, will cause damage to the collections, loss of staff productivity and severe discomfort to the public visitors, and may require closing the building.

Question 14: What resources would be required in order to phase the MOVE with the renovation project?

Answer: To keep the renovation project on schedule, an increase of \$930,000 and 20 workyears would need to be added to the current base of \$870,000.

If FY 1994 MSC Move funds are used for Building 26 object decontamination, an additional increase of \$700,000 would be needed to prevent a 30 month delay.

#### Arts and Humanities

Question 15: The request for the National Museum of the American Indian is \$11.5 million, an increase of \$0.1 million over 1993. How long will the design phase of the Suitland research and storage facility take?

Answer: Design of the Suitland Cultural Resources Center is expected to take 23 months with completion currently scheduled for November 1994.

Question 16: If the two positions are added for design and construction management, how many architects and engineers will the Smithsonian have working on NMAI facilities?

Answer: Our Office of Design and Construction (ODC) is currently employing a team of professionals on the NMAI facilities program. Their collective efforts will reach six workyears in FY 1993. When the two additional positions are added, ODC will then have the required eight workyears necessary to manage the design and construction of the NMAI projects.

Question 17: The request for the Cooper-Hewitt Museum is \$2.3 million, an increase of about \$50,000. What is the current status of the renovation project?

Answer: The repair and restoration of the Cooper-Hewitt, including the necessary upgrades to meet accessibility requirements, is in design at the 40 percent stage. The Institution expects to complete design this fall.

Question 18: Has all necessary funding connected with this project been identified? If not, what are the deficiencies?

Answer: At this point in design, the Institution is relying on preliminary cost estimates but believes that all significant cost items have been identified.

#### National Museum of African Art

Question 19: What is the reason for the significant increases in restricted funds shown in 1993 and 1994?

Answer: The increases reflect anticipated gift and grant fund expenditures related to an exhibition project on the art and culture of the Islamic world.

#### Facilities Services

Question 20: The request for the Office of Design and Construction is \$3.5 million, a small increase over 1993. What is the status of the automated Smithsonian-wide facilities inventory?

Answer: The automated Smithsonian-wide facilities inventory is substantially complete. ODC has now selected a software system, entered a complete facilities inventory of existing space, and can generate reports. The next step will be to establish procedures for maintaining the data base, decentralizing this responsibility to the individual bureaus and offices, and developing a regular training program.

Question 21: The request for the Office of Plant Services is \$47.9 million, an increase of \$1.9 million over 1993. Has the analysis of the usage by bureaus and offices, for the chargeback system, been completed?

Answer: In preparation for the implementation of a chargeback system, an analysis of the total hours used by each bureau and office for program/exhibit type work for FY 1990, FY 1991, and FY 1992 was completed in February 1993.

Construction and Improvements,  
National Zoo

Question 22: The request for National Zoo construction is \$5.4 million, down from \$7.9 million in 1993. Are each of the exhibit clusters in the Aquatic Trail exhibit expected to cost about the same as the 1994 project?

Answer: Apart from the introductory exhibit "Living in Water," the Zoo anticipates that the exhibit clusters will cost approximately \$1,000,000 each. Because of downsizing and staff shortages, the Zoo is having to drastically rethink the exhibits aspect of its masterplan. New up-to-date exhibits could not be operated at the previously planned scale without extra staff-keepers, water quality engineers, and climate control personnel. The possibility of adding such staff through reorganization is minimal, hence a major rethinking of the complexity of these exhibits.

Question 23: In what way will the \$800,000 requested provide for a scaled down version of the exhibit?

Answer: The \$800,000 will modernize and upgrade the area, but will not provide for the major upgrade anticipated in the original request. The Zoo may have to phase this project over fiscal years 1995 and 1996 and eliminate one module. Until design and cost evaluation are completed, the effects of the reductions will not be completely predictable. As indicated in the response to question number 22, identifying resources for operating staff will be a major problem.

Question 24: Which two exhibit buildings will have their interiors renovated at the Rock Creek facility?

Answer: The Zoo will renovate the interiors of the Great Ape house and the Australian Pavilion.

Question 25: At Front Royal, is any winter shelter now provided for the ungulates?

Answer: Yes, winter shelters are provided for the ungulates in most of the pasture areas. However, additional shelters are needed as the ungulates are rotated in order to maintain the integrity of the pasture areas.

#### Repair and Restoration of Buildings

Question 26: The request for repair and restoration of buildings is \$24 million, an increase of \$0.4 million over 1992. When will work on the major projects at American History and Natural History, for which no additional funding requested, be completed?

Answer: The major work at the American History building has one remaining phase which will begin in FY 1995. The Institution will request \$5 million in the FY 1995 budget to fund this work which is expected to take two years to complete. The major capital renewal program at the Natural History Building is now underway. The ability to proceed in earnest with the program has been limited by the \$24 million funding level of our FY 1994 repair and restoration budget. Design is underway, and the Institution would be able to award the next phase of construction valued at \$7 million in FY 1994 if funding were made available. With an uncertain budget, it is difficult to predict when all of the work will be completed. With a funding commitment of \$10 million a year for NMNH alone, the Institution estimates that the work will take 10 to 12 years.

Question 27: Will the American History project need funds in 1994 to return collections and staff displaced during the project?

Answer: Because of an excellent bidding climate, the Institution was able to award the current construction contract at a cost below our estimate. This enabled us to reduce the funding request for relocation costs in FY 1994. The Institution believes sufficient funds are in hand to accommodate the return of collections and staff displaced during the project.

Question 28: Under the Air and Space project, what is the total estimated cost of the plan? How long will design of the plan take?

Answer: The Institution is in the process of developing a Master Implementation Plan for NASM and will complete its evaluation of all building systems this year. After the study is complete the Institution will develop a program to design and execute the replacement of interior building systems. Our preliminary cost estimate for the 1st phase of work at NASM is \$8 million, in current dollars. Design will be spread over several years.

## Construction

Question 29: The request for construction is \$10.4 million, a decrease of \$6.3 million from 1993. The request includes \$6.2 million for the NMAI Cultural Resources Center. With regard to the Mall museum facility, how much in non-appropriated funds do you plan to use for continuing design of this facility in 1994? Will you be able to complete the design with these funds?

Answer: The Institution plans to use only that portion of its non-appropriated funds necessary to keep the design of the Mall museum on schedule. The current plan identifies \$3.3 million of non-appropriated funds in FY 1994. Even with the use of the non-appropriated funds, an additional \$4 million will be required in the FY 1995 budget. The Institution estimates that the cost to prepare the plans and specifications will approach \$11.0 million. This estimate includes related planning and design of security, signage, and furniture systems, site investigation, preparation of the environmental assessment, and design support services during construction.

Question 30: What is the source of these funds?

Answer: The source of non-appropriated funds which will support the continuation of design of the NMAI Mall Museum in FY 1994 will be funds which have been raised from non-Federal sources and which are available in a Trust fund account restricted to the purpose of planning, design and construction of the NMAI Mall Museum.

Question 31: Since the proposed construction date has not changed since last year, why has the cost estimate increased from \$106 million to \$110 million?

Answer: The \$106 million was estimated in 1990 based on a year 2000 opening date. The construction date has now slipped almost one year because of delays in obtaining funding for the design budget. The Institution has now applied a one year cost escalation factor which raises the estimate to \$110 million.

Question 32: For the Cultural Resources Center, how much in total will design cost?

Answer: The estimated cost to prepare the plans and specifications for the Cultural Resources Center including the pre-design planning and programming, site investigation and building design, and the development of security, signage, and furniture requirements is \$6.5 million.

Question 33: What is the cost of the site preparation work? How was this amount determined?

Answer: The preliminary budget estimate for site development costs at Suitland is \$4 million. This is the estimate for the necessary utility feeds and connections, grading and paving, and landscaping based on the conceptual design and existing site conditions.

Question 34: What structures will have to be relocated or demolished?

Answer: Three existing structures are affected by this project. The horticultural services building will be demolished and replaced at another site at Suitland. Two former residential buildings currently used for administrative and training space by the security staff will be demolished but not replaced.

Question 35: The request for general construction planning is \$200,000, down from \$750,000 in 1993. What impact will this reduction have on your efforts?

Answer: There will be no immediate impact on Smithsonian efforts. Funding in FY 1993 will provide momentum for efforts that will continue in FY 1994. The funding requested in FY 1994 is adequate to temporarily sustain this momentum; higher levels will be required in future years.

Question 36: Several projects for which funding has been provided previously are not included. What is the current status of the East Court project at NMNH?

Answer: The East Court project passed the 35 percent design stage in April 1993. The project has been approved by the National Capitol Planning Commission and the Institution expects to have final design by the end of FY 1993 and advertise for construction in FY 1994.

Question 37: What are the remaining needs for this project, and when will they be required?

Answer: It is anticipated that the last increment of funding for the East Court project will be requested in the FY 1995 budget and will include \$3.7 million for construction and \$5 million for equipment. The Institution is currently seeking a technical adjustment to the authorizing legislation.

Question 38: What is the current status of authorization for the Suitland Collections Research Center?

Answer: It is anticipated that authorization legislation for the planning and design of the Suitland Collections Research Center will be introduced during the First Session of the 103rd Congress.





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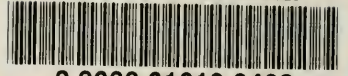
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