

Research Reports

MARINE BIOLOGY

New IMAX movie gives viewers an up-close look at Galapagos Islands

By Michael Lipske
Special to Research Reports

To this day, Carole Baldwin is grateful that, as she sank to the floor of the Pacific in a four-person submersible one morning last year, the pilot remembered to tell her about the alarming noises she would soon hear.

After all, who wants to wonder if the hull of your sub is splitting apart as it descends to 3,000 feet beneath the waves? "I was glad he warned me," says Baldwin, a marine biologist in the Division of Fishes at the National Museum of Natural History. "There are tremendous pressure changes and a lot of creaking and popping noises." And the drips falling on her head? Not leaking seawater, just condensation from the sub's cooling system.

Baldwin's scientific explorations, undersea and on land, are revealed in "Galapagos," the 3-D IMAX motion picture that premiered Oct. 27 at the museum's Johnson IMAX Theater. The 40-minute film follows the scientist on her first research trip to the Galapagos Islands, 600 miles west of South America, on the equator. The isolated, geologically young archipelago and its wildlife, studied by Charles Darwin in the 1830s, has long lured evolutionary biologists.

The ocean's treasures

Baldwin (who studies the evolution of ocean fishes) is the movie's human lead, but she shares the screen with a cast of blue-footed boobies, sea lions, moray eels, hammerhead sharks and other wild residents of this Ecuadorian national park.

As many Galapagos animals have little fear of humans, Baldwin frequently found herself inches away from creatures that live nowhere else on Earth, such as giant tortoises and marine iguanas, which Darwin called "imps of darkness."

Viewers of the film also get face-to-face with the wildlife, thanks to close-up cinematography and the hyper-realistic 3-D effect provided by the IMAX cameras used to make the movie. One "Galapagos"

review described the documentary as a "high-tech, virtual-reality hybrid of 'Wild Kingdom' and a Jacques Cousteau special."

When Baldwin scuba dives to net museum specimens in the movie, dizzying schools of

silvery pelagic jacks and a 30-foot column of swirling barracuda surround her. The cold ocean water that wells up around the tropical islands is rich in nutrients that support vast numbers of animals. "I have never seen greater numbers of fishes anywhere," Baldwin says.

"Galapagos" viewers, of course, stay warm and dry while tagging along on those dives. Many will be glad that the reality is only virtual when Baldwin finds herself stuck in the center of a large school of hammerhead sharks—"40 to 50 would be around us at one time," she says—or when slithering ranks of moray eels, seemingly curious, press close to study the marine biologist. "They tended to come right at my face," Baldwin says of the sharp-toothed, strong-jawed creatures. She remembers the experience as "fodder for nightmares."

The Johnson Sea-Link

The highlight of the expedition was deep-sea diving in the Johnson Sea-Link submersible. Rated to a depth of 3,000 feet, the undersea craft provides a panoramic view through its 5-inch-thick acrylic windshield. A mechanical arm on the sub manipulates three collection devices—a suction tube, a claw and a

scoop—used to snare small creatures. A separate, funnel-shaped device slurps up gelatinous organisms such as jellyfish.

"One of the interesting things about the submersible work we did was that we worked at a variety of different levels—between 400 and 3,000 feet," says Baldwin, who made about 20 three-hour dives in the Johnson Sea-Link. "I think, typically, when people have access to submersibles, they don't work in the shallower areas" that are still beyond the range of scuba divers. "They just go straight to deep bottom."

With the sub's pilot guiding the 14-ton craft along the islands' underwater volcanic walls, scientists on the expedition examined the little-explored realm between 400 and 1,000 feet. "Quite a few of the new species that we collected came from that deep reef area," Baldwin says.

Batfish that stride across the ocean bottom on leglike fins, viper fish equipped with formidably long fangs and other odd creatures were brought back from the deep to add to the Museum of Natural History's preserved fish collection.

New species

While "Galapagos" tours IMAX theaters around the world, the work of the expedition's scientists is far from done. Baldwin will be describing several of the new species collected on Johnson Sea-Link dives, including a new kind of cat shark and a new sea bass, as well as identifying the scores of larval fish that she brought back to Washington, D.C.

Almost every night during the expedition, she hurled a plankton net over the side of the research ship, Seward Johnson, which was the scientists' base, to collect the tiny, young fishes that are one of her special interests. Boxes filled with small bottles of these larvae now crowd the floor of her office, waiting for Baldwin to determine the species to which each fish belongs. The task is made more difficult by the fact that larval fish usually lack the color patterns and other features that help identify adults.

One reason for her interest in these specimens is that pelagic larvae, like the ones in the bottles, are the stages of marine fishes that colonize isolated islands like the Galapagos. Distance swimmers, such as tuna and sharks, easily cover vast stretches of ocean as adults, but most fish species



Carole Baldwin displays a new species of sea bass collected aboard the Seward Johnson in the Galapagos. A new IMAX film details her trip to the islands. (Photo by Kimberly Wright)

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Ancient Chinese musical instruments ■ The popular story of the Greek mathematician Archimedes running naked through the streets shouting “Eureka! I’ve found it!”—when he figured out (while taking a bath) how to calculate the proportion of gold and silver in King Hiero’s crown—is probably apocryphal. However, there is no question that both serendipity and the commonplace play a role in scientific discovery. This is especially true in the field of archaeology, in which something that changes our knowledge of the world can be unearthed by ordinary people just doing a day’s work.

Seldom, however, does such an accidental find reveal the mysteries of an ancient culture and inspire a new generation to carry it proudly into the future. That is what happened in September 1977, when members of the Chinese People’s Liberation Army, excavating a factory site in Hubei Province, stumbled upon the fifth century B.C. tomb of Marquis Yi of Zeng. Although only a minor official of a petty state during the Warring States period (481-221 B.C.), the marquis was laid to rest with goods befitting his social status in this life and to serve him in the next. Buried with him in the four-chambered tomb were percussion, string and wind instruments. The largest of the instruments was a three-tiered, L-shaped rack of wooden beams from which were suspended a set of 64 bronze bells in graduated sizes. Nearby lay a two-tiered bronze stand holding 32 chime stones; a large pole drum; two smaller drums; seven 25-string, zither-like instruments; four mouth organs; two panpipes; and two flutes.

These instruments constitute the oldest musical assemblages surviving from any culture, and they are the central focus of an exhibit titled “Music in the Age of Confucius,” opening April 30, 2000, at the Smithsonian’s Arthur M. Sackler Gallery. While the 64-bell set from Marquis Yi’s tomb cannot travel outside China, the exhibit will display—for the first time in the United States—the next-largest set of 36 bronze bells, taken from an adjacent tomb. Visitors will be able to hear their sounds on an audio guide. Performances of ancient and modern Chinese music, featuring bells, string instruments and stone chimes, will be offered twice daily.

Unlike the National Gallery of Art’s recent exhibition, “The Golden Age of Chinese Archaeology,” which gave a sweeping overview of 6,000 years in Chinese history, the Sackler show will treat the tomb of Marquis Yi as a time capsule that preserved a moment in Chinese history some 2,500 years ago. The exhibition is designed to show how a single archaeological find—unique to ancient Chinese culture—can open new vistas on the past, influence the present and shape the future. Discovery of the marquis’ burial immediately followed the end of the Cultural Revolution in 1976. Chinese scholars were allowed to return to work, and their publications once again appeared in the West. At the same time, the drive for economic development spurred the construction of roads, bridges and buildings. The digging uncovered a whole new Old World.

While it is unknown whether ancient Chinese music was ever written, we do know from the literature of the period that at least some of it was sung. The location of the percussion, wind and string instruments in the central chamber of the tomb provided the first concrete evidence that music figured prominently in courtly activities. Scenes painted on a lacquered wooden box from the tomb illustrate how the bells were played and the animated dancing that might have accompanied the playing of them.

Beyond the ramifications for scholarship, these instruments reveal the historical roots of Chinese music. They inspired a new generation of Asian and Asian American musicians to compose and perform contemporary music steeped in this millenniums-old Chinese tradition. Out of this accidental discovery, the distant past is shaping the present and the future and building a bridge that spans the boundaries of culture, politics and time. Eureka, indeed!

—Jenny So, Curator of Ancient Chinese Art, Freer/Sackler Galleries



Tom Garnett shows an illustration of sea shells from J.J. Spalowski’s 1801 *Prodromus*, a rare book on mollusks, and the illustration’s digital on-screen counterpart. (Photo by Jon Goell)

ELECTRONIC TECHNOLOGY

Digitizing Libraries’ rare books makes collections accessible to millions

By Brenda Kean Tabor
Special to Research Reports

Just a few months ago, an appointment was needed if one wanted to examine the illustrations in the Smithsonian’s 1796 copy of *Verzeichniss Meiner Insecten-Sammlung (List of My Insect Collection)*, by German engraver and entomologist Jakob Sturm.

Access to this rare book was by appointment only, between the hours of 8 a.m. and 5 p.m. The book is held by only six libraries in the United States.

Now, Sturm’s colorful insects have crawled out onto the Web and are visible 24 hours a day to millions of people worldwide, thanks to the work of the staff of Smithsonian Institution Libraries’ new Imaging Center.

The book’s appearance on the Internet heralds a great many rare things yet to come from SI Libraries. The Imaging Center was started to “make electronically available versions of selections from SI Libraries’ collections,” Tom Garnett, the Libraries’ assistant director for information systems, says.

Information about the text of *Verzeichniss Meiner Insecten-Sammlung* and about Sturm, written by SI Libraries Curator of Natural History Rare Books Leslie Overstreet, accompanies the digital edition. Custom-made navigational tools created by SI Libraries digital designer Martin Kalfatovic help users find their way around the site. “We are trying to create an on-screen navigation tool that preserves the way you work with traditional books,” Kalfatovic says.

Viewing books online

The SI Libraries Web site, located at www.sil.si.edu/DigitalCollections, is the result of several years of planning that began in 1994. As a pilot project, SI Libraries staff scanned the Sturm book on

borrowed equipment supplied by Carl Hansen of the Smithsonian’s Office of Imaging, Printing and Photographic Services.

Subsequent funding from the Atherton-Seidell Fund for the Dissemination of Previously Published Scientific Research, as well as other sources, enabled the Libraries to buy a “medium-format Hasselblad camera, a flatbed scanner, computers and soft-

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David Umansky, *Communications Director*
Kathryn Lindeman, *Associate Director*
Jo Ann Webb, *Editor*
Colleen Hershberger, *Production Assistant*

Telephone: (202) 357-2627
E-mail: researchreports@publicaffairs.si.edu
Internet: www.si.edu/researchreports

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Research focuses on George Catlin's documentation of Indian culture

By Brenda Kean Tabor
Special to Research Reports

In 1879, the Smithsonian became home to an extraordinarily rich collection of Native American paintings and artifacts that had been created and assembled by an early American visionary named George Catlin. Housed in the National Museum of American Art and the National Museum of Natural History, this collection of 445 paintings from his Indian Gallery, selected artifacts and a notebook are currently the subject of several extensive research projects that will result in a new Catlin exhibition at the National Museum of American Art's Renwick Gallery in 2001. A book and a Web site also are planned.

"There is no more important body of work in early American art than George Catlin's Indian Gallery," Elizabeth Broun, director of the Museum of American Art, says.

While the historic Patent Office Building, which houses the National Museum of American Art, is closed for renovation, this special exhibition will "continue to highlight the unique holdings of the museum in the Renwick Gallery building, which is almost contemporary with Catlin," Therese Heyman, guest curator, says. She is researching Catlin's connection to the Smithsonian's first Secretary, Joseph Henry, and working on the exhibition with museum Curator George Gurney.

A biographical sketch

Catlin was born in Wilkes-Barre, Pa., in 1796 and followed the path of many creative geniuses by first going to law school and then pursuing his true dream as an artist. Part serious scholar, part showman, Catlin, though self-taught, ranked with Charles Willson Peale and Thomas Sully as an academician of the Pennsylvania Academy of Fine

Arts. In demand for his miniatures and portraits, Catlin was hungering for more interesting subjects when, one day, he saw a group of American Indians in Philadelphia.

Later describing his obsessive lifetime devotion to documenting American Indians, Catlin wrote in *Letters and Notes on the Manners, Customs and Condition of the North American Indians*, one of two volumes he published on this group: "Man, in the simplicity and loftiness of his nature, unrestrained and unfettered by the disguises of art, is surely the most beautiful model for the painter, and the country from which he hails is unquestionably the best study or school of the arts in the world.... The history and customs of such a people, preserved by pictorial illustrations, are themes worthy of the lifetime of one man, and nothing short of the loss of

my life, shall prevent me from visiting their country and of becoming their historian."

Catlin's travels

In 1826 and subsequent years, Catlin painted Red Jacket, a Seneca, and other Native Americans in western New York.

In the spring of 1830, he began an extensive journey, traveling west of the Mississippi with William Clark, the former co-leader of the Lewis and Clark expedition. Clark was then superintendent of Indian affairs for the western tribes and was traveling to make treaties with the Iowa, Missouri, Sioux, Omaha, Sauk and Fox tribes.

In 1832, Catlin visited tribes of the upper Missouri as a guest of the American Fur Co. and started painting landscapes and scenes of villages and tribal life.

"His landscapes were some of the earliest depictions of that scenery," Gurney says. "The portraits have a directness that is very unusual."

Catlin also wrote extensive descriptions of the Indians he met on his trips.

Self-promoted exhibits

By 1833, Catlin had begun exhibiting his paintings in Pittsburgh, and later in Midwestern towns. He eventually took his paintings to New York; Washington, D.C.;



George Catlin devoted his life to painting images of American Indians, such as this one of Buffalo Bull's Back Fat, head chief, the Blood tribe, Blackfoot Nation. (Gift of Sarah Harrison)

Philadelphia; and Boston, where he piqued the curiosity of the public and met with enormous success.

Six years later, he sailed for Europe. While in London, he exhibited both paintings and artifacts he had collected, including costumes, weapons, musical instruments and a full-sized Crow Indian tepee. He sometimes employed live Indians to give demonstrations in an exhibition hall.

In 1841, Catlin published a popular lavishly illustrated two-volume book titled *Letters and Notes on the Manners, Customs and Condition of the North American Indians*. And in 1844, he published *Catlin's North American Indian Portfolio*, a collection of 25 lithographic reproductions of some of his most popular paintings.

Disappointments

In 1845, Catlin moved his show to Paris, only to return hastily to England in 1848 because of French uprisings. But the novelty of his exhibitions had worn off and that, together with poor financial management, led to his bankruptcy.

A prominent art collector and businessman named Joseph Harrison, who knew Catlin through other art dealings, paid off most of Catlin's debts and had his paintings and a large portion of his ethnographic collection shipped to Philadelphia, where they were stored in Harrison's boiler factory, Gurney explains.

Catlin continued to travel in South America and the U.S. Far West. He sometimes used a camera lucida technique to transfer images from the Indian Gallery onto canvasses, which he then painted, Heyman says. These new works, which he called his "Cartoon Collection," often tended to depict "combined portraits of Indians that he had painted earlier," Gurney says. Catlin spent the rest of his life trying to sell this Cartoon Collection to the American government.

However, despite the support of Smithsonian Secretary Joseph Henry, who arranged for Catlin to paint and exhibit his work in the Castle, Catlin was unsuccessful. He died in 1872 in New Jersey.

Catlin's works donated

In 1879, Thomas Donaldson, a lawyer who was interested in Indian affairs and who knew then-Secretary Spencer Baird, persuaded Harrison's widow to donate Catlin's collection to the Smithsonian. Although parts had been damaged by fire, water and pests, a large proportion was salvageable. The paintings have been most recently housed at the Museum of American Art, where they have been shown individually and in small groups from time to time. The artifacts that Catlin collected are in the National Museum of Natural History's Anthropology Department.

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This wooden cradle board, left, is among George Catlin's Indian artifacts that are housed in the National Museum of Natural History's Anthropology Department. (Gift of Sarah Harrison)



African sculptor's 'concrete vision' results in creation of outdoor screens

By Janice Kaplan
National Museum of African Art

In the winter of 1993, Sylvia Williams—then director of the National Museum of African Art who has since died—organized several trips to New York City to show the museum's chief conservator, Steve Mellor, and exhibition designer Alan Knezevich four works of art she was interested in acquiring for the museum.

Once they arrived on the upper east side, Williams, Mellor and Knezevich viewed what was—even by New York standards—an unusual sight. Near the corner of 91st Street and Madison Avenue, in the outer wall of a private garden behind a large apartment building, were

city art students, but townspeople who had never been exposed to formal art training," Roslyn Walker, director of the museum, says. "The most talented and creative individuals became professional artists and attained international reputations through exhibitions in Europe and America. Many, such as Jimo Buriamoah and Twins Seven-Seven, remain active participants in Nigeria's cultural life."

History of the screens

Concrete typically conjurs up images of sidewalks and roads, basements and construction sites. But Akanji's screens are about movement and light. "In some ways,



Pictured here is a concrete screen created by artist Adebisi Akanji for the private New York City garden of Waldemar Nielsen and his wife. (Photo by Steve Mellor)

four large openwork concrete screens depicting scenes of Africa.

"Here was the juxtaposition of this busy New York street and this quiet garden with these scenes of musicians and dancers and cars," Curator Bryna Freyer says. "Your first thought is that they seem so lighthearted and that they're made of concrete—something you think of being used for sidewalks or construction, but not a particularly lively medium."

This month, the screens—created by Nigerian artist Adebisi Akanji in 1966 and donated to the museum in 1994 by Waldemar A. Nielsen and his wife, who commissioned them—go on view at the National Museum of African Art as the centerpiece of the exhibition "A Concrete Vision: Oshogbo Art in the 1960s." The screens will be shown in a room next to works by 10 other artists from Oshogbo, Nigeria, who, also working in the 1960s, combined traditional forms with modern artistic influences and a willingness to experiment with new techniques and materials.

"The artists of the Oshogbo art movement in the early 1960s were not univer-

they remind me of stained glass windows," Freyer says. "They're like the framework for the windows, without the glass."

Akanji was born in the 1930s and began his career as a bricklayer—a job that taught him to build with fired mud brick, cement block and mud walls that are cement coated. His transition to creating works of art began with a sculpture contest for cement animals based on the heraldic animals found on the balustrades of Afro-Brazilian-style Yoruba houses in Nigeria. This led to commissions, including one from Nielsen, past president of the African American Institute in New York City.

While there are probably only a half-dozen Akanji screens outside Nigeria, many more exist in his native country. In addition to screens he created for other artists' houses and public buildings, Akanji was instrumental in helping to build Oshogbo's shrine to the goddess Oshun, as well as entrance gateways, wall reliefs and freestanding sculptures there.

As for the Nielsen screens, they measure 62 inches high, 40 inches wide and 2 inches deep. Their subject matter reflects contemporary life in the Yoruba town of

Oshogbo—a man pumping gas, motorists, a drummer and a dancer.

Conservation treatment

Every object that becomes part of the National Museum of African Art's permanent collection goes to the museum's conservation laboratory. The screens enjoyed an extended visit in the lab, where museum conservators spent nine months stabilizing the fragile sculptures, devising a treatment plan and preparing them for exhibition.

When the African Art Museum acquired the works in 1994, great care was taken by a team from the museum to remove the screens from their outdoor setting, pack them and ship them to Washington, D.C. Close examination in the conservation lab revealed the actual state of deterioration: shrinkage cracks, misaligned fragments from the original manufacture, extensive fracturing hidden by old restorations and completely shattered lower edges caused by the screens resting outdoors directly on the ground for more than 20 years.

"Concrete inherently has small cracks," Mellor says. "This is part of the natural curing process for concrete. But the harsh New York winter climate and the humidity accelerated that deterioration process."

When he created the screens, Akanji reinforced the concrete with iron rods. However, "outdoor exposure and imperfect construction caused the iron to corrode and the screens to crack and break," Mellor adds. During the months the conservators worked to mend the damaged screens, numerous clamps and cotton twill tape "tourniquets" were tied around the arms and legs of the concrete figures to hold together the fragile limbs—many with iron bars protruding like dislocated bones.

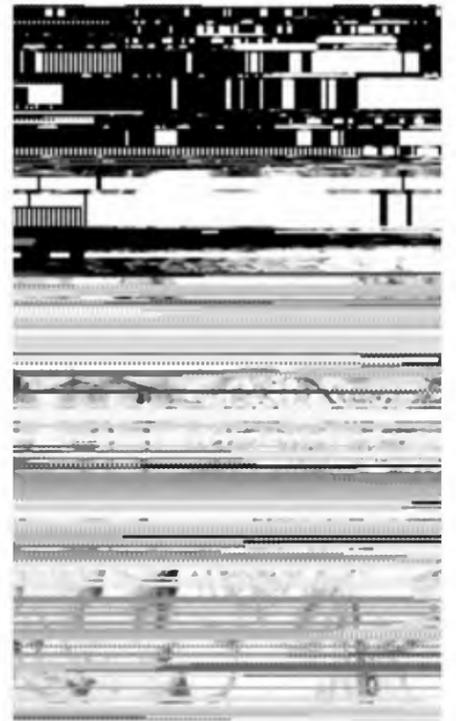
Earlier restorations

Conservation staff determined that, over the years, the screens were repaired five or six times using a variety of fill materials. These efforts proved to be unsightly, ineffective and difficult to reverse. Fills applied during earlier repairs were removed at the museum using solvents, scalpels and dental tools. The staff devoted dozens of hours to drilling out the hard-to-reach deposits.

Along the way, museum staff consulted with a variety of experts. Conservator Dana Moffett consulted with, among others, John Twilley, who helped repair the Los Angeles Watts Towers, perhaps this country's best known architectural work made of concrete.



Conservators at the National Museum of African Art spent months stabilizing the sculptures, devising a treatment plan and preparing them for exhibition. (Photo by Franko Khoury)



Artist Adebisi Akanji in Oshogbo, Nigeria, in 1999 (Photo by Roslyn Walker)

The staff also invited to the museum a structural engineer, who consults on highway construction for the Department of Transportation, to help assess condition and deterioration problems.

In fact, Moffett says, a different approach was necessary, since the fill materials had to be strong enough to hold the pieces together but flexible enough to accommodate the iron, which may continue to corrode and, therefore, expand in size. In the case of outdoor structures, the corroded iron and surrounding shattered concrete are sometimes removed altogether and replaced. It was determined that this approach would be too invasive for the screens; their inherent fragility would make removal of the iron rods too risky.

"The fact that we're approaching the screens as indoor concrete sculptures, as opposed to an outdoor architectural load-bearing structure, is what differentiates our treatment from that of the building industry," Stephanie Hornbeck, also a conservator, says.

In the months before the exhibition, the conservators focused their attention on reattaching the numerous loose pieces of concrete—some as large as 8 inches and some as small as a quarter-inch—that had broken off of the works. A final step was to repair the hundreds of gaps and weak

'Screens,' continued on Page 5



'Orphan' films in Smithsonian care get special attention with new initiative

By Brenda Kean Tabor
Special to Research Reports

Smithsonian film archivists Wendy Shay, Mark Taylor and Pam Wintle share an urgent problem. All three are custodians of what are known as "orphan" films, one-of-a-kind moving pictures that are not part of a large collection and which fall outside commercial film preservation programs.

For example, in the National Museum of American History's Archives Center, where Shay works, there is a home movie shot by musician Harry Carney while he was on tour with the Duke Ellington Band in the late 1930s and early 1940s. The National Air and Space Museum Archives, where Taylor works, contains rare 1936 home-movie footage taken aboard the ocean liner Queen Mary and inside the great Hindenburg airship. At the National Museum of Natural History's Human Studies Film Archives, Wintle is caretaker of many old films, including a 1934 film shot by anthropologist Melville J. Her-



Wendy Shay preserves rare films in the National Museum of American History's Archives Center. (Photo by Richard Strauss)

skovitz that documents Haitian culture during the last days of the U.S. Marine occupation of Haiti.

Restoring the films

Priceless as the dozens of orphan films in the Smithsonian's care are, many are in advanced stages of deterioration—an irreversible condition. The Human Studies

Film Archives' worst problem is with "our 35 mm nitrate holdings," Wintle explains, referring to the cellulose nitrate film that was commonly used through the early 1950s. As it ages, nitrate film becomes highly flammable at low temperatures.

Taylor and Shay's film problems involve 16 mm acetate films, which suffer from a form of decay known as "vinegar syndrome." As they age, these films shrink, become brittle and release a pungent vinegar smell.

"Some of our films are so badly shrunken that they can no longer be run on a projector," Taylor says. The only way to preserve the images on these reels of film is by copying them onto long-lasting archival quality film and onto video formats—a prohibitively expensive process.

Eliciting funds

Fortunately, Shay, Taylor and Wintle all belong to the Association of Moving Image Archivists, through which they learned in 1998 about a \$500,000 grant, offered through the National Film Preservation Foundation by the National Endowment for the Arts, for the preservation of orphan films.

Based in San Francisco, the National Film Preservation Foundation is an independent nonprofit organization created by an act of Congress in 1996 to "support film preservation activities nationwide that ensure the physical survival of film for future generations and improve access to film for study, education and exhibition."

Shay, Taylor and Wintle contacted Annette Melville, director of the foundation, to find out if their archives would be eligible for those NEA funds. They learned they were not eligible because the Smithsonian receives federal funds. The NEA money was earmarked for nonprofit, nonfederal archives only, like the George Eastman House, the Japanese American National Museum and the National Center for Jewish Film.

After talking with Shay, Taylor and Wintle, however, Melville recognized the need to preserve the unique footage held

in many federal public archives. "The National Film Preservation Foundation decided to try to reverse the process whereby public funds were supporting private collections and obtain some private money for federal archives," Taylor says. Melville approached some private foundations and successfully prepared an application that elicited a \$200,000 grant from the Pew Charitable Trusts.

This grant enabled several organizations with federal funding, including the

additional film he shot in West Africa also will be preserved through the new grant, as well as a 1930 film of a religious service by the Shouters of the Georgia coast.

After each film is preserved, "a 35 mm preservation copy will come back to us, which we will put into cold storage," Wintle says. "We also will get a projection print, a videotape copy and a duplicate negative of each film, so that if we ever need to make a new projection print, we can," Taylor adds.



Mark Taylor in the National Air and Space Museum's film archives (Photo by Eric Long)

Smithsonian, the Library of Congress and the National Archives, to join forces with other nonprofit and state archives in a preservation project known as the Treasures of American Film Archives Initiative.

The work has begun

As a result, the National Museum of American History Archives Center's Harry Carney film will be preserved, as will a Western Union film collection in the Archives Center's holdings of 16 mm early industrial films.

Both the Queen Mary and Hindenburg footage at the National Air and Space Museum will be preserved, as will a number of publicity films at the museum taken in 1927 by the Keystone Airplane Co. to promote its Patrician plane and Keystone Pirate bomber.

The Haitian footage by Herskovitz in the Human Studies Film Archives and

A 10-hour DVD (digital video device) disc set of the different films preserved under the Treasures of American Film Archives Initiative also will be produced by the National Film Preservation Foundation and given to each archives. In addition, "100 free copies of the disc will be distributed, one to each state library in the country and one to the largest public library in each state," Melville says. Copies also will be available for sale to the public.

After their recent success with the foundation, Shay, Taylor and Wintle plan to continue seeking other creative avenues of funding to preserve other orphan films in their collections. Many of these films are in heavy demand "by students, researchers, scholars, academics and filmmakers," Wintle says.

'Screens,' continued from Page 4

areas using a bulked adhesive that was injected or applied with a spatula.

Continuing research

Although the conservation staff have been successful in stabilizing the concrete works, knowing more about their original construction would help in their continuing treatment. Walker's meeting last August with Akanji provided an important link.

While in Nigeria to conduct a series of workshops, Walker made a special trip to the artist's hometown. She did not even know if he was still living. Inquiries inside the National Museum of Oshogbo led her to Akanji, an elderly man in sunglasses and an embroidered robe. She had not seen him since 1975, before she returned home after a three-year stay in Nigeria.

Mellor has been in touch with Akanji since that visit in hopes not only of verifying the museum's conclusions about how

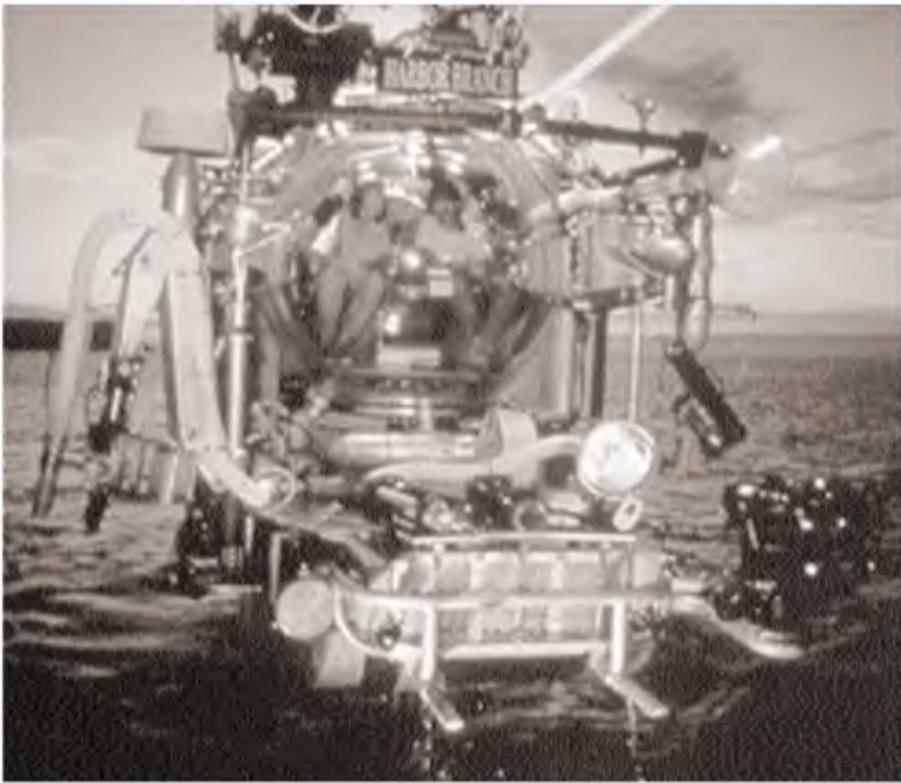
the screens were made but also of validating his understanding of the deterioration processes, which explain the present condition of the objects.

In the future, staff hope to learn more from the artist about the composition of the concrete mixture, how the screens were formed and how the iron supports were added. Museum officials also are trying to find out whether the figures on the screens were cast during the fabrication process or were carved when the concrete was par-

tially dry, and they wonder if details such as lips and eyes were modeled or poured.

In the coming months, National Museum of African Art staff will continue to monitor the condition of the screens and treat them as needed, especially as they learn new information.

"A Concrete Vision: Oshogbo Art in the 1960s" will be on view at the museum from Jan. 23 through Oct. 22.



The Johnson Sea-Link submersible hovers above the water before carrying Carole Baldwin and a colleague to an ocean depth of 3,000 feet. (Photo by Peter Coan)

'Galapagos,' continued from Page 1

only make journeys to new waters as plankton drifting at the surface of the sea.

An underwater light show

Baldwin's museum labor did not make it into "Galapagos." Nor did every experience during the expedition end up on film. Because the 240-pound IMAX camera's special underwater housing cannot be used at very deep depths, and because it would not fit inside the Johnson Sea-Link,

only the scientists witnessed the spectacular light show that accompanied the sub's descents and ascents through sunless depths.

"We would turn off all the lights inside and outside the sub," Baldwin remembers, "and as the sub either ascended or descended, it bumped into little gelatinous creatures that luminesce. Every now and then, the sub must have hit something big, because you would get this huge burst of light." It looked, says the scientist, "like it was raining a billion fireflies."

'Digitizing,' continued from Page 2

ware to equip the new center at 1111 North Capitol St.," says Susan Blaine, head of SI Libraries' Preservation Services Department. Blaine oversees the Imaging Center.

The imaging equipment

The camera, which is kept on a copy stand that can be mounted above the books, "has a digital scanning back that replaces film and is connected to a computer. It can be used to make a high-resolution image of a page without disbinding the book. It also allows the book to be well supported, while open for photographing," Blaine adds.

"The flatbed scanner looks like a photocopy machine and is used to scan flat pages," she says. It is hoped that the scanner will soon be used to capture the front and back covers of some 600 seed and nursery catalogs in SI Libraries' Horticulture Branch Library that were published between 1830 and 1930.

The selection process

While the choice of Sturm's book as the pilot for this project was largely serendipitous, it falls within one of the four primary categories of materials that SI Libraries plans to make available on its Web site. "These include rare texts, which, though they may be artifactually significant, are also of current research value; seminal works in the history of science; trade literature from the Smithsonian's vast holdings of catalogs of consumer and industrial goods; and other notable items from our collections," Garnett says. Significant items with a high visual content are more likely to be selected.

"Items that complement or enhance other sites and materials on the Web is another important criterion for selection,"

Garnett points out. "We see this as being very connected with other Smithsonian digitizing projects and expect to provide some of the bibliographic and textual background for other Smithsonian Web efforts."

Recommendations for selection come from the Libraries' Digital Library Committee, which is composed of people in the SI Libraries community, and also from a focus group of curators from the National Museum of Natural History.

"We will not select items that require a significant amount of conservation or treatment before digitization," Blaine says. "We prefer not to take the books apart, as bindings often contain historical information that is of artifactual value."

After items are chosen for digitization, "each will be carefully examined, page by page, and stabilized, if necessary, before scanning. After scanning, it will be returned to our shelves in protective enclosures," Blaine adds.

In coming months, users of the SI Libraries site can look forward to the appearance of a 1578 French work by Jacques Bresson on machines and mechanical engineering; astronomer Tycho Brahe's 1598 illustrated catalog of the astronomical instruments at his personal observatory; and Christiaan Huygens' 1659 book announcing his discovery of Saturn's rings.

Funding has recently been received from the SI Image Archive Fund, administered by the Smithsonian's Office of the Provost, to digitize portions of SI Libraries' collection of sewing machine trade literature.

Not only has the Imaging Center expanded access to the wealth of rare materials housed by SI Libraries, it also has enriched the experience of some Libraries staff, providing them an opportunity to "redefine their jobs and think about what they're doing in a new way," Garnett says.

'Catlin,' continued from Page 3

One of Catlin's unpublished sketchbooks, *Notes on Indians*, was purchased in 1971 by the University of Pennsylvania. Grant money has been used for the conservation of the book, which has been taken apart and digitized. The text has been magnified and clarified for transcription. "We now have enhanced and enlarged photographs of the pages," Gurney says.

The new information that is gained will be used, in conjunction with other texts, to look for examples of the systems that Catlin used to record details of color and to manufacture costumes and backgrounds for his Indian Gallery paintings. It also will be used as a resource for his later writings and illustrations.

Heyman, who was formerly senior curator at the Oakland Museum in California and is also the wife of retiring Smithsonian Secretary I. Michael Heyman, has spent the last two years analyzing the desk diaries of Joseph Henry in preparation for

the exhibition and the book that will accompany it. She also has researched the many letters between Henry and various Indian specialists, which can be found at the Joseph Henry Papers Project in the Smithsonian's Arts and Industries Building and at the Smithsonian's Archives of American Art, in order to analyze the relationship between Catlin and the Institution.

"A fascinating tale is laid out in these letters and documents, which says a lot about their relationship and about government patronage," Therese Heyman says, describing how, for a brief period toward the end of his life, Catlin painted in a makeshift studio in one of the Smithsonian Castle's towers.

"There are lots of discussions about the value of Catlin's work," she adds. "Henry was prescient and was interested in Catlin's work because of its scientific, rather than its artistic, value. Henry knew what he wanted for the Smithsonian."

A grant application is currently under review to conserve a number of Catlin's



George Catlin in Brussels, Belgium, in 1868, where he was living at the time

Indian artifacts, which are important for their rarity, as well as for their association with the artist, says Candace Greene, curator in the Museum of Natural History's Anthropology Department. These artifacts include a carved wooden cradle board, a shirt made of striped skunk skins and other clothing that is heavily beaded or embroidered with porcupine quills, a horned buffalo headdress, a model canoe and two types of lacrosse sticks.

"The cradle board may be the most demanding piece because the numerous tiny quills that cover the hide need to be checked and secured," Greene says. "The shirt, which was worn by a Mandan whom Catlin painted, was water damaged and has dried and hardened in a misshapened form. Work will be done to soften the materials and reshape them."

These artifacts, Greene adds, not only may be put on display in the exhibition but also may be photographed for inclusion in the book and digitized for inclusion on the exhibition's Web site.

Research Highlights

New museum director. Retired Marine Corps Gen. John R. Daily, associate deputy administrator of the National Aeronautics and Space Administration, has been named director of the National Air and Space Museum. He will begin work at the museum in January. Daily went to NASA in 1992, following retirement after 36 years of service in the U.S. Marine Corps. His most recent position there was assistant commandant. He succeeds Vice Adm. Donald Engen, who was killed in a glider accident last July. Engen had served as director of the museum for three years.

African Voices Hall. On Dec. 15, the National Museum of Natural History opened a new, permanent hall that focuses on Africa's diversity, dynamism, long history and global reach. The African Voices Hall presents the richness and diversity of cultures throughout the African continent, as well as traditions sustained and reinterpreted by the African diaspora in Asia, Europe and the Americas. The hall spans Africa's history—from early civilization along the Nile River through contemporary societies. Films, lectures and other public programs on African and African American cultures will be presented frequently at the museum in conjunction with African Voices.

Giant panda dies. The National Zoological Park's 28-year-old giant panda, Hsing-Hsing, died at the Panda House on Nov. 28. Veterinarians had treated Hsing-Hsing since May 15 for nonreversible kidney disease. As a result of this illness, he had been in declining health for several months. National Zoo veterinarians and the animal caretakers most familiar with the panda decided that humane euthanasia was best for the panda, who had become increasingly weak and inactive. Hsing-Hsing and his mate, Ling-Ling, who died of heart failure in 1992, came to the National Zoo from the Beijing Zoo in 1972. The pair of giant pandas was presented to the people of the United States as a gift of friendship following President Richard Nixon's visit to China. Since 1972, the National Zoo has been a leader in advancing the understanding and conservation of giant pandas. The best estimates are that only 1,000 giant pandas survive in China today, the only country where the animals are found in nature.

Alien species. Understanding invasion pathways, or transfer mechanisms, is the key to reducing the risk of future biological invasions. For the first time, experts from 15 nations, representing a wide variety of disciplines and professional affiliations, gathered at the Smithsonian Environmental Research Center in Edgewater, Md., in November to exchange information on species invasions across geographic regions, ecosystems and taxonomic groups. Invasion patterns, prevention and management of plants, invertebrates, vertebrates and pathogens were among the topics of discussion. The goal of the conference was to foster collaboration among the world's

leaders in the field of species invasion, toward the end of devising a practical, comprehensive and effective strategy to turn the tide against harmful invasive species worldwide. The Smithsonian Environmental Research Center is in its 35th year of studying the relationships between land and estuarine environments, the interactions of fresh and salt water, and the impact of human activity on coastal systems.

The start of planets. The popular image of nascent planetary systems as thin, spinning pancakes of cosmic dust and debris may be changed by a new theory developed by scientists and their colleagues at the Smithsonian Astrophysical Observatory in Cambridge, Mass. This theory shows how that disk of debris is transformed into a very distinct ring once Plutolike bodies start to form. By analyzing Hubble Space Telescope images of a suspected young planetary system around the star HR 4796A, Scott Kenyon and Kenny Wood, SAO astrophysicists, and Barbara Whitney and Michael Wolff of the Space Science Institute have produced a computer model that suggests the ring around that object probably is a common feature of all planetary systems. Indeed, the well-known Kuiper Belt of asteroids in our own solar system may be the residual remains of just such a ring.

Technology transfer. A three-member team from the Smithsonian and Johns Hopkins University has received a grant from the National Center for Preservation Technology and Training of the National Park Service to identify gilding techniques on ancient bronzes without taking samples from the works of art. Sampling is an accepted research practice but has the disadvantage of requiring that the scientist remove a tiny piece from a hidden part of the work of art. The goal of the yearlong project is to determine whether a test, commonly used in the automotive, aerospace and many other industries, also could be applied to the field of art conservation. If so, this technique would provide an important tool for research on ancient metalworking and the authentication of works of art. Gilding, the application of gold and gold alloys to the surface of base metals, is found on art from a wide range of time and place. The different techniques by which the gilded layers were applied help researchers identify where and when an object was made.

Space experiment. A space experiment with major contributions from the Smithsonian Astrophysical Observatory in Cambridge, Mass., has been selected for the National Aeronautics and Space Administration's Medium-Class Explorer, or MIDEX, Program and is now scheduled for launch in 2004. The FullSky Astrometric Mapping Explorer, known as FAME, is an Earth-orbiting optical telescope that will gather information on roughly 40 million stars in the Milky Way with unprecedented accuracy. For bright stars, positions will be determined to the equivalent of the width of a footprint on the moon as seen from Earth (50 millionths of a second of arc). This precision is central to the study

of key issues of scientific and general interest, including the existence of other "solar systems," the size and age of the universe and the nature of the mysterious "dark matter" in our portion of the galaxy.

Series Publications

The following publications on research in various fields were issued during the period Aug. 1 through Oct. 31, 1999, by Smithsonian Institution Press in the regular Smithsonian series. Diane Tyler is managing editor. Requests for series publications should be addressed to Smithsonian Institution Press, Series Division, 470



The trumeau statue of St. Peter on the west facade of Washington, D.C.'s National Cathedral was carved by Vincent Palumbo. (Photo by Brooks Photographers)

L'Enfant Plaza, Suite 7100, Washington, D.C. 20560-0950.

Smithsonian Contributions to Botany

- 89 *Generic and Subtribal Classification of American Vernoniaceae*, by Harold Robinson, 116 pages, 20 figures, 12 tables.
- 90 *Seed Micromorphology of Neotropical Begonias*, by A. de Lange and F. Bouman, 49 pages, 1 figure, 21 plates.

Smithsonian Contributions to Zoology

- 601 *Natural History of the Sea Fan Blenny, *Emblemariopsis pricei** (Teleostei: Chaenopsidae), in *the Western Caribbean*, by James C. Tyler and Diane M. Tyler, 24 pages, color frontispiece, 7 figures, 6 tables.
- 604 *Catalog of Type Specimens of Recent Fishes in the National Museum of Natural History, Smithsonian Institution, 9: Family Poeciliidae* (Teleostei: Cyprinodontiformes), by Lynne R. Parenti, Jeffrey M. Clayton and Jeffrey C. Howe, 22 pages.

Books & Recordings

Hotel People, by Thierry Bouët (Smithsonian Institution Press, 1999, \$24.95). In portraits of people at home in the everyday luxury of exclusive hotels, this photographer captures some of the world's "sedentary nomads," both famous and unknown.

Body Land, by Arno Rafael Minkinen (Smithsonian Institution Press, 1999, \$24.95). In his collection of self-portraits, the photographer incorporates his own nude body into a range of isolated settings, emphasizing its bond to the natural world.

Collecting Native America, 1870-1960, edited by Shepard Krech III and Barbara A. Hail (Smithsonian Institution Press, 1999, \$45). The book's contributors examine the motivations, intentions and actions of 11 collectors who devoted parts of their lives and fortunes to acquiring American Indian objects and founding museums.

The Stone Carvers: Master Craftsmen of Washington National Cathedral, by Marjorie Hunt (Smithsonian Institution Press, 1999, \$27.95). The author presents the lives and careers of two Italian American master stone carvers—Roger Morigi and Vincent Palumbo—who have spent years creating the sculptural works that adorn Washington, D.C.'s National Cathedral.

Music of Indonesia—Sulawesi: Festival, Funerals and Work, Vol. 18 (Smithsonian Folkways Recordings, 1999, \$14 CD). This compact disc features a variety of musical groups, recorded in three of the island's four provinces.

Music of Indonesia—Music of Maluku: Halmahera, Buru and Kei, Vol. 19 (Smithsonian Folkways Recordings, 1999, \$14 CD). Musically, the vast province of Maluku is one of the least known regions of Indonesia. On this compact disc, music from three islands—Halmahera, Buru and Kei Besar—is presented.

'Recordings,' continued on Page 8

Tupperware: The Promise of Plastic in 1950s America

By Alison J. Clarke (Published by Smithsonian Institution Press, 1999, \$24.95)

According to Alison J. Clarke, a Tupperware party takes place somewhere in the world every 2.5 seconds, and an estimated 90 percent of American homes own at least one piece of Tupperware. "Since the mid-1990s, around 85 percent of Tupperware sales have been generated outside the United States in countries as diverse as South Africa and Japan."

In *Tupperware: The Promise of Plastic in 1950s America*, Clarke, a tutor in design history and material culture at the Royal College of Art, London, and visiting professor of design history and theory at the University of Applied Arts, Vienna, Austria, presents a lucid and fascinating social history of these polyethylene containers for leftover foods. At the center of her story are two people—Earl Silas Tupper, who invented Tupperware, and Brownie Wise, a divorced, middle-aged housewife from Detroit, who began selling the plastic containers to pay for her son's medical bills.

"At first, I was interested in the relationship between technology and culture—why certain inventions become popular and others do not," says Clarke, who spent several years working on the book. "But after reading about Tupper's interesting life and self-determination, I decided that his biography was clearly relevant to the book."

"Tupper proved to be the quintessential amateur designer of the 1930s," she adds. "His belief in design as a means of transforming a society, along with his own self-belief, made for quite a fascinating story. After reading many of the rejection letters

he received for his failed designs, one wonders why on Earth he continued to go on and create Tupperware."

Wise also is a critical part of Tupper's empire. By going from door-to-door selling the plastic containers, she churned out record sales. In fact, her impressive sales nabbed her a key position in Tupper's Tupperware empire and resulted in her being the first woman ever to appear on the cover of *Business Week* magazine.

"Brownie Wise was quite a lady," Clarke says. "During a time when women were basically homemakers, I was surprised to learn that Tupper actually respected her selling power and sense of business. She was quite persuasive and genuinely astute as a businesswoman. And, yes, Tupper did eventually become threatened by her prima donna behavior."

When Tupper, an amateur inventor and designer, created Tupperware in 1942, he envisioned a total "Tupperization" of American home life. Women's lives, he believed, would be improved by his flexible, lightweight plastic containers.



This image, circa 1946, showing a young couple preparing to serve guests from Tupperware containers, is on the cover of a new Smithsonian Institution Press book.

By 1947, home magazines all over the country were hailing the Tupperware containers and praising their unique shapes and beautiful colors. Department stores and newspaper advertisements promoted Tupperware as the answer to the dreams of the modern homemaker. Tupperware changed the lives of millions of women who not only used these plastic containers but also found personal and economic freedom as Tupperware salespeople.

The Tupperware home parties, initiated by Wise, became the foundation of a multimillion-dollar business that proved as innovative as the containers themselves. Because of the overwhelming success of these parties, where women gathered in a hostess' home for lively product demonstrations and sales, Tupper pulled his entire product line from all department stores and retail outlets. In 1951, the Tupperware party became the company's exclusive form of distribution and sales. The rest is history.

Tracing the fortunes of Tupper's polyethylene containers from early design to global distribution, Clarke explains how Tupperware tapped into potent commercial and social forces, becoming a prevailing symbol of late 20th-century consumer culture.

Much of the initial research for the book, Clarke says, was based on the oral histories of women in the United States and Great Britain, who were involved with Tupperware as hostesses lending their homes for parties or as dealers seeking a full or supplementary income. The women, she adds, frequently spoke of their involvement with Tupperware not just as a means of circumventing the limitations of their domestic and economic situations but as a positive and self-determining experience.

"Tupper's inventions," she writes, "were not the results of formal drawing-board exercises executed in a professional industrial design office, but of observations and understandings of domestic rural life in New England."

—Jo Ann Webb

'Recordings,' continued from Page 7

Music of Indonesia—Indonesian Guitars, Vol. 20 (Smithsonian Folkways Recordings, 1999, \$14 CD). In this final album of the series, listeners can hear various samplings of Indonesian guitar music and natives' responses to it.

Bamboo on the Mountains: Kmhmu Highlanders From Southeast Asia and the United States (Smithsonian Folkways Recordings, 1999, \$14 CD). On this compact disc, which was recorded live in Laos, Thailand, Vietnam and California, listeners can hear the deep reservoir of musical traditions maintained today in Kmhmu communities.

Traditional Music of Peru 5: Celebrating Divinity in the High Andes (Smithsonian Folkways Recordings, 1999, \$14 CD). This compact disc features live recordings of religious songs from the famous mountain-climbing region of Ancash, Peru.

Books published by Smithsonian Institution Press can be ordered from P.O. Box 960, Herndon, Va. 20172-0960. To order by phone or for more information, call 1 (800) 782-4612. There is a \$3.50 postage and handling fee for the first book ordered and \$1 for each additional book.

Smithsonian Folkways Recordings can be ordered by writing to Smithsonian Folkways Mail Order, 955 L'Enfant Plaza, Suite 7300, Washington, D.C. 20560-0953. To order by phone or for more information, call (202) 287-7297 or 1 (800) 410-9815. There is a \$4 fee for shipping and handling of the first three recordings ordered; call for other shipping prices.

Our new look

Research Reports recently underwent a facelift, which we are implementing with this issue, Winter 2000. The updated design includes the addition of a color and more lively use of photographs. The editors welcome all comments. (See Page 2 for the various ways to contact us.)

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