

Inside

Smithsonian Research

3

SPITZER TELESCOPE

6

ARTIFICIAL PARTS

8

ISLAND
HUMMINGBIRDS

10

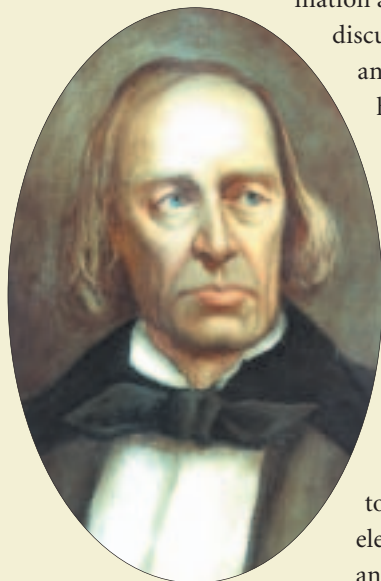
ARTISTS ON
VACATION



Smithsonian
Institution

SCIENCE, HISTORY AND THE ARTS
NUMBER 4 • SPRING 2004

Scientific identity. What's in a face? Plenty, claimed George Sarton, a founder of the history of science as an academic discipline. A great portrait, he said, can contain information about a person that "even the longest descriptions and discussions would fail to evoke." American businessman



**Scientific instrument inventor
Joseph Saxton (1779-1873)**

and book collector Bern Dibner took Sarton's words to heart in the 1940s when he began buying woodcuts, oil paintings, photographs, lithographs, engravings, mezzotints and caricatures of many of the pioneers—both contemporary and historic—of science and technology. Dibner intended the portraits to serve as a research complement to the great library of scientific books he was assembling. When his remarkable library came to the Smithsonian in 1974, many portraits came with it. Now, Smithsonian Institution Libraries has put these images online in "Scientific Identity: Portraits From the Dibner Library of the History of Science and Technology." This new Web site is an electronic who's who of some of the greatest names—and faces—in aeronautics, botany, chemistry, electricity, geology, mathematics, medicine, philosophy, physics, technology and zoology.

—www.sil.si.edu/digitalcollections/hst/scientific-identity

Selling soap. Americans lather up with more than \$2 billion worth of personal soaps and bath-care items each year. Our obsession with keeping clean and fragrant didn't bubble up overnight. With an ever-changing array of products and advertising, soap manufacturers have been coaxing people to wash up for more than a century. The "Ivory Soap Project," a Web site produced by the Archives Center of the Smithsonian's National Museum of American History, documents some 1,600



Detail from a 1963 Ivory Soap advertisement, "Cheek-to-cheek softness."

advertisements for Ivory Soap, one of the nation's longest-lived, branded consumer products. Complementing the Ivory materials, which date back to 1838, are examples of advertising cards, soap wrappers, pamphlets and similar ephemera produced for other soap brands and products. This colorful collection offers an excellent look at marketing strategies and techniques used by the makers of America's consumer goods. It also offers a look back at ideas of gender, cleanliness and beauty shared by Americans at large.

—www.americanhistory.si.edu/archives/Ivory/index.asp

Correction. Two actors depicted in a 1942 mural by John Decker on Page 6 of the Winter issue of Inside Smithsonian Research were identified incorrectly. Charles Boyer is pictured fourth from the left in the mural. Roland Young is at the far right.

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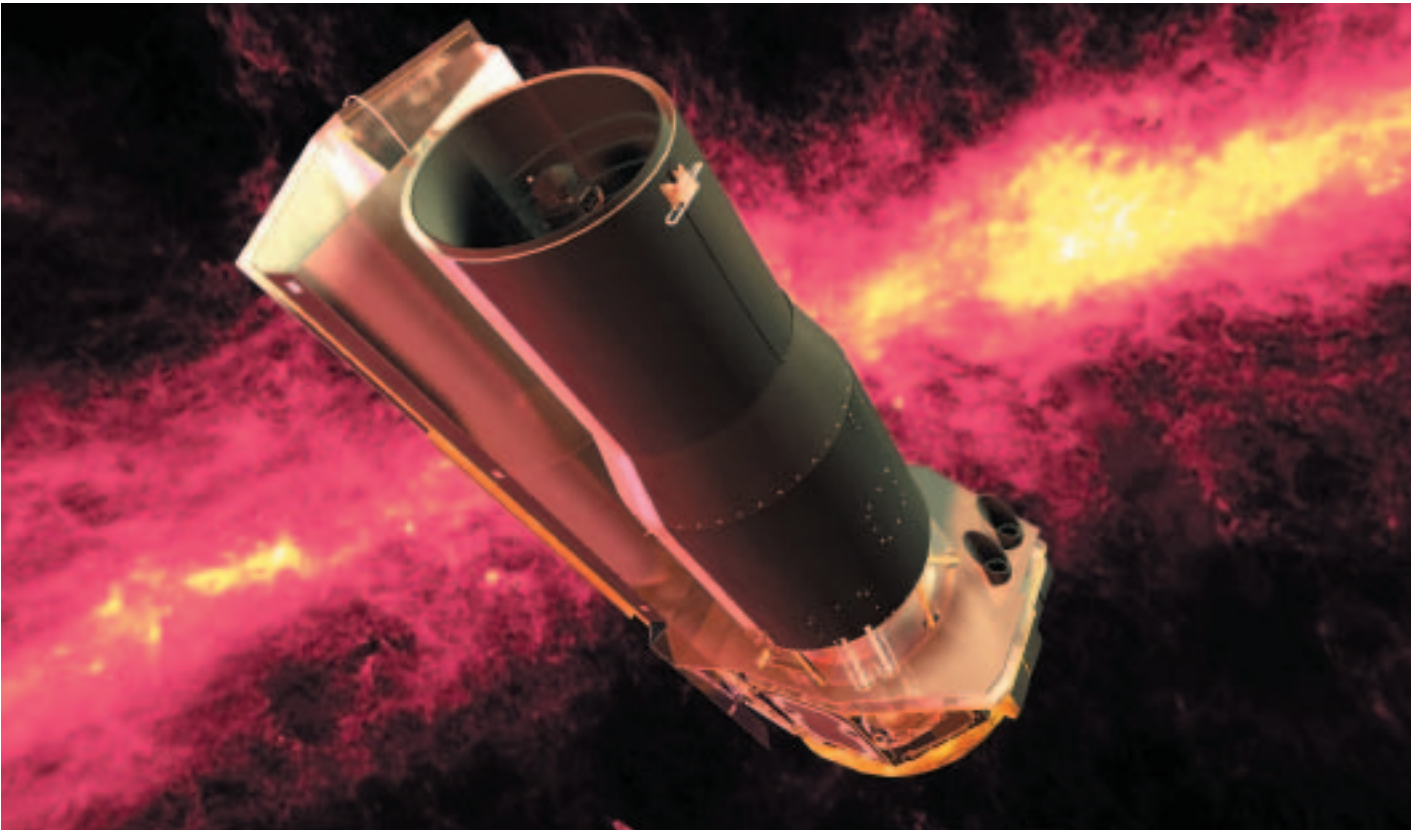
On the cover: In 2003, Marlon Shirley set a new men's amputee world record of 10.97 seconds in the 100-meter dash at the Utah Summer Games. Shirley is shown here wearing the "cheetah" leg, a prosthetic device created by inventor Van Phillips, who recently spoke at the symposium "Artificial Parts: Reinventing the Human Body," sponsored by the Smithsonian's Lemelson Center for the Study of Invention and Innovation. See story, Page 6. (Image courtesy of Scott Sabolich Prosthetics & Research)



Smithsonian
Institution

Spitzer Space Telescope lifts the dusty veils of space to reveal previously unseen wonders

By Christine Pulliam
Smithsonian Astrophysical Observatory



Since last fall, a torrent of remarkable space photographs has flooded into the Smithsonian Astrophysical Observatory in Cambridge, Mass.

One image showed glowing red and orange streaks of gas and dust forming a shape that reminded some of a “flaming ghost.” Another revealed yellow-green blobs shooting out from a star in opposite directions like water from a fire hose. A third featured a grand spiral galaxy, its arms studded with clumps of young stars sparkling like fireflies.

“We just let out a big scream when we first saw [them], because the images were

quite spectacular!” says Giovanni Fazio, a senior physicist at the observatory.

These amazing images were among the first to come from the National Aeronautics and Space Administration’s Spitzer Space Telescope, a new orbiting observatory named in honor of Lyman Spitzer, the scientist who first proposed putting telescopes into space.

Launched in August 2003, the Spitzer Space Telescope is the last of NASA’s Great Observatories, a series of missions that included the Chandra X-ray Observatory and the Hubble Space Telescope. Spitzer carries three instruments, one of which is an infrared array camera developed at

SAO and built at NASA’s Goddard Space Flight Center. Astrophysicists are now eagerly poring over the new views of the universe these instruments are providing.

Lifting dusty veils

Spitzer sees the universe in a different light. Its cousin, NASA’s Hubble Space Telescope, collects visible light in the rain-

(continued)

Above: This illustration shows the Spitzer Space Telescope orbiting in space against a backdrop of the infrared Milky Way. (Image courtesy of NASA/JPL-Caltech)

bow spectrum from red to violet. Hubble also senses ultraviolet light, just beyond the violet end of the spectrum.

Spitzer gathers invisible infrared light, or light just beyond the red end of the spectrum. This light is then translated into visible colors to produce dazzling astronomical images.

Infrared light offers unique benefits to astronomers. Many regions of space are filled with tiny dust particles that block visible light, hiding stars and rendering whole sections of the sky as black as coal. Infrared light penetrates these dusty realms to reveal what lies hidden inside or beyond, opening the door onto previously unseen wonders.

Stellar nurseries

Some of Spitzer's best images and most important scientific data are being collected from stellar nurseries, where young stars and planetary systems are being born. Stars form inside cocoons of gas and dust, hidden from view to optical telescopes. Spitzer's infrared "eyes" penetrate these obscuring veils, often revealing the unexpected.

"When you look at the optical images, there's nothing there, but all of a sudden, we looked in the infrared and saw these beautiful images," Fazio says. "We didn't expect to see anything like that."

Among the surprises was a rosebud-shaped gaseous nebula in the constellation Cepheus that proved to be the home of more than 100 young stars. Curtains of hot dust glowed pink in the false colors of Spitzer, resembling flower petals, and jets of gas from new stars formed a green stem.

Messier 81

Astronomers are also training Spitzer's instruments out beyond our own Milky Way to other galaxies. One target was the spiral galaxy known as Messier 81, a near-twin to our own Milky Way galaxy. One of the first galaxies photographed by Spitzer, Messier 81 lies 12 million light-years from Earth. Yet even at this distance, Spitzer provides astonishing detail.

In visible light, Messier 81 is an unremarkable disk of stars woven with winding lanes of dark dust that hide many details. Spitzer images clearly separate the stars from the dust, allowing astronomers to study the galaxy's anatomy in detail.

"We can dissect a galaxy into its component parts, just like a kid in biology lab dissects a frog," Fazio says. "This is something we have never been able to do before, and it will change the way we classify galaxies."

For astronomers, every galaxy is an opportunity to learn something new about

Bottom left: Spidery filaments and newborn stars in the Tarantula Nebula are shown in this Spitzer Space Telescope image. At the heart of the nebula is a compact cluster of massive, young stars. Spitzer peers through the dust of the Tarantula Nebula to reveal previously hidden star formation sites. (Image courtesy of NASA/JPL-Caltech)

Opposite top: The spiral arms of the nearby galaxy Messier 81, dominated by infrared emissions from dust heated by star formation activity, are highlighted in this Spitzer Space Telescope image. Found in the northern constellation Ursa Major, this galaxy is easily visible through binoculars or a small telescope. (Image courtesy of NASA/JPL-Caltech)

Opposite bottom: Giovanni Fazio (Photo by Ruth Bazinet)

the history of the cosmos. Each contains billions of stars, along with vast clouds of gas and dust spanning trillions of miles.

High resolution

None of these amazing results would be possible without the cutting-edge technology encapsulated in Spitzer, combined with its lofty vantage point in outer space.

Spitzer's infrared array camera, or IRAC, was developed by an SAO team led by Fazio and Project Manager Richard Taylor. IRAC's high resolution has yielded many spectacular images, despite its relatively small size. Each of IRAC's four arrays contains about 65,000 picture elements, or pixels, laid out in a 256-by-256-pixel grid.

"When I began my career as an infrared astronomer, our detectors had only one pixel," Fazio says. "You had to scan that pixel across the sky to gradually collect data. Now, an observation that would have taken days can be completed in only minutes by IRAC."

"An array of 65,000 pixels doesn't sound like much compared to millions of pixels, like the five megapixel digital cameras





that most people are familiar with,” Taylor adds. “But then household digital cameras can’t see 10 billion-year-old infrared light.”

Because the Earth’s atmosphere filters out most of the incoming rays of infrared light, launching Spitzer into space has given it an incredible advantage. Moreover, ground-based telescopes emit their own infrared radiation, which can obscure infrared signals from outer space.

“Observing in the infrared from the Earth’s surface is like trying to see stars in broad daylight. They’re simply invisible,” Fazio says. “To get away from that bright background, we have to go into space.”

Spitzer carries a large thermos of liquid helium that cools its instruments to minus 457 degrees Fahrenheit, or only 2 degrees above absolute zero. The frigid temperature increases its sensitivity to faint infrared light. Spitzer’s lifetime will depend on how long its helium lasts, but is expected to be at least five years.

Time machine

The flood of data from the Spitzer Space Telescope, which is operated by NASA’s Jet Propulsion Laboratory at the California Institute of Technology, has only begun. Its next five years may well revolutionize our understanding of the universe.



For example, Spitzer’s keen vision extends outward to the very edge of space. Due to the expansion of the universe, visible light from distant galaxies is stretched as space itself expands, causing it to shift into the infrared part of the spectrum. Spitzer will capture this once-visible light from galaxies billions of light-years away, showing the galaxies not as they are today but as they appeared billions of years ago. This means Spitzer is a virtual time machine, transporting us into the past to observe the early universe.

By studying the vivid images of stellar birthplaces captured by Spitzer, astronomers will also get a much better understanding of how stars in general, including those like our sun, form and evolve. Their ultimate goal is to learn just how common is the existence of stars with planets—especially planets that may support life. One day, work like this may answer the question: Are we alone in the universe? ❖

Invention, technology give amputees some remarkable new solutions

By Michael Lipske
Special to Inside Smithsonian Research

After sprinting up one side and down the other of Carmichael Auditorium in the Smithsonian's National Museum of American History, inventor Van Phillips bounded up the stage steps and returned to the lectern. "That was fun," he said, barely winded, as the audience applauded. "Thanks for letting me show off."

Phillips' dash through the aisles during the recent symposium "Artificial Parts: Reinventing the Human Body" was a demonstration of one of his inventions, a carbon-fiber prosthetic lower limb for athletically inclined amputees like himself.

Called the C-Sprint and inspired by the curved hind leg of the cheetah, the leg is used today by star Paralympic athletes around the world. Elegant and energy-efficient, the device is just one example of the remarkable leaps now being made in prosthetics technology.

The Smithsonian's Lemelson Center for the Study of Invention and Innovation at the National Museum of American History invited Phillips to Washington, D.C., in an effort to spark interest among museum visitors about the possibilities of invention. Prosthetics, the intersection of technology and the human body, is an excellent subject on which to focus, says Katherine Ott, historian in the museum's Division of Science, Medicine and Society.

"Over time, the design problems of prosthetics remain remarkably similar. It is the solutions that change"—solutions as different as an old-fashioned peg-leg and Phillips' C-Sprint.



Above: Katherine Ott holds a prosthetic leg decorated with a National Association for Stock Car Auto Racing logo. The leg is one of many items in the prosthetics collection of the Smithsonian's National Museum of American History. (Photo by Harold Dorwin)

Right: Inventor Van Phillips runs along a beach in California wearing his invention, the C-Sprint, one of which was recently added to the collections of the National Museum of American History. (Photo by Giovanna Nigro-Chacon)

Phillips was 21 when he lost his lower left leg in a water-skiing accident and was deeply frustrated by the prosthetics available to him in the 1970s. These included a latex-and-rubber foot that made him feel like he was wearing a ski boot. “They’re putting a man on the moon,” he recalls thinking. “I’m not accepting this foot.”

Switching his college studies to prosthetics, he went on to create not only the C-Sprint but also the Flex-Foot, another invention that allows amputees to run and jump. Recently, Phillips’ C-Sprint was added to the collections of the National Museum of American History, along with drawings, sketches, prototypes and other items which document the progress of his invention. Ott, who is responsible for chronicling the history of prosthetics by acquiring objects for the museum, is now working to collect a Flex-Foot modified with ice-gripping cleats worn by a mountain climber scaling a Himalayan peak.

Co-author of the book *Artificial Parts, Practical Lives*, Ott first became interested in prosthetics, and subsequently Phillips, through her exposure to the museum’s remarkable collection of prosthetic objects. Easily the largest collection of its kind in the United States, it includes such devices as a cable-operated arm constructed by a Massachusetts Institute of Technology engineer for his own use, a modern AbioCor artificial heart, and a prosthetic leg created by a Civil War veteran who started a company that manufactured and sold artificial limbs to other veterans.

In a museum storeroom near her office, Ott pulls out an array of artificial body parts, including boxes of latex noses and ears, a silicone breast implant and a zip-on latex hand. Fifty glass eyes, manufactured in 19th-century Germany, peer out from a shallow wooden case. Some of these prosthetics, like a metal hand that grips, are meant to help their wearers accomplish specific tasks. Others are intended only to look natural and deflect unwanted stares.

“Limbs that look like the real thing have the advantage of being less noticeable in

public,” Ott says. “Designs like Phillips’ C-Sprint that move beyond actual physical form and re-create bodily function in creative ways are more efficient, more durable and less fatiguing to the wearer.”

Prosthetics and how they have improved over time “speak to our assumptions about health, about how we fix bodies,” and about the very idea of what it means to be ill or injured and how that idea changes over the course of history, Ott explains.

Ralph Urgolites, director of the Orthotics and Prosthetics Lab at Walter Reed Army Medical Center in Washington, D.C., was a second speaker at the Smithsonian symposium. He demonstrated the Utah Arm. This high-tech limb offers its wearers the possibility of simultaneous control of elbow, hand and wrist.

The Walter Reed Center, which treats soldiers wounded on the battlefields of Iraq and Afghanistan, also can outfit amputees with a C-Leg (not to be confused with Phillips’ C-Sprint). The C-Leg contains a microprocessor knee and a force-sensing rod between knee and foot that evaluates feedback data—at a rate of 50 times per second—to determine proper leg motion and gives its wearer a nearly natural gait, Urgolites explained at the symposium.

Nearby in the museum, a new exhibit created by Ott and Lemelson Center Historian Maggie Dennis, “Inventing Ourselves,” asks visitors an intriguing question: Is there anything about humans that technology can’t mimic, replace or alter?

For those who witnessed Phillips sprinting around the auditorium, the answer is obvious. ❖

“They’re putting a man on the moon,” Van Phillips recalls thinking. “I’m not accepting this foot.”



Feeding preferences drive body differences in male and female hummingbirds

With its massive bulk of muscle, fat and flesh, the adult male elephant seal often weighs three times more than an adult female. Among humans, men, on average, are taller than women. In spiders, however, females are larger.

Scientists have long recognized morphological differences, particularly in size, between the sexes of a single species. But just what drives these differences—known as sexual dimorphism—has long been open to speculation.

Now, studies of the tiny purple-throated carib hummingbird on the Caribbean island of St. Lucia and its co-evolutionary relationship with the giant *Heliconia* plants from whose flowers it feeds is lending evidence to theories that sexual dimorphism is driven by ecological forces.

Conducted by John Kress, a botanist at the Smithsonian's National Museum of Natural History, and Ethan Temeles, a biologist in the Biology Department at Amherst College in Massachusetts, the new study indicates that the different bill shapes and lengths and different body sizes of the male and female carib hummingbird are shaped by the two *Heliconia* species upon which they feed.

Ecological niche

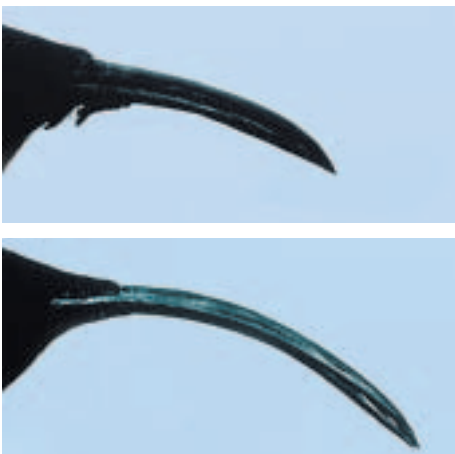
In the 1830s, Charles Darwin observed how the bills of different finch species in the Galapagos had adapted to take advantage of various ecological niches. A finch that fed on seeds, for example, had a thick, stout bill for breaking them. Finches that lived on insects had a thinner, pointed bill for poking holes in the ground and in wood. Darwin proposed

that, if feeding ecology had given rise to differences in the shapes of bills from species to species, it may do the same for the sexes of a given species.

In the late 1990s, Temeles decided to put Darwin's theory to the test. He chose to focus on the purple-throated carib hummingbird because the male and female are easily distinguished by the length and shape of their bills.

"Bills of the female carib hummingbird are 30 percent longer than the male's and curve downward at a 30-degree angle. Male bills curve at only 15 degrees. Yet the bodies of males are 25 percent larger than those of females," Temeles says.

Because these birds feed almost exclusively on the sugary nectar of *Heliconia*, Temeles asked Kress, an expert on these plants, to collaborate on the study. *Heliconia*, a genus of tropical plants related to



Top left and top center: The bill of the male purple-throated carib and the *H. caribaea* flower preferred by males. **Bottom left and bottom center:** The bill of the female purple-throated carib and the *H. bihai* flower preferred by females. **At right:** Bracts and flowers of *H. bihai*, from Dominica island. (Photos courtesy of Ethan Temeles and John Kress)



As a little hermit hummingbird hovers, it inserts its bill into a *Heliconia* flower to sip nectar. *Heliconia* pollen dusts the bird's head. (Photo by Phil Savoie)

the gingers and bananas, have huge leaves (they grow as long as 12 feet) and colorful smaller leaves, called bracts, that resemble lobster claws and contain the flowers.

Feeding preferences

After four years of observation and taking notes on St. Lucia and a second island, Dominica, the scientists determined that male carib hummingbirds feed upon the flowers of (and vigorously defend) the *Heliconia* species *H. caribaea*, which has relatively straight, short red flowers that closely match the male's bill shape.

Females sip nectar from a different species—*H. bihai*. This plant has longer, more curved green flowers corresponding to the female bill. The purple-throated carib is the sole pollinator of both plants.

The scientists discovered that the two *Heliconia* species secrete different nectar amounts. The larger male hummingbird's preference, *H. caribaea*, produces more nectar than the female hummingbird's preference, *H. bihai*.

Based on their observations, both scientists determined that near-exclusive feeding on two *Heliconia* species with different flower shapes and nectar amounts caused the differences in body size and bill morphology between the male and female purple-throated carib. "The role of feeding ecology in the evolution of sexual differences may be more common than previously thought," they wrote last year in their study, which was published in *Science* magazine.

Co-evolution

But this was only half of what they learned. Just as the two *Heliconia* species were influencing the carib's morphology, the hummingbirds were equally responsible for the morphological differences between the *Heliconia* species.

"We call this co-evolution," Kress says of the relationship between *Heliconia* and the carib hummingbird. "Each seems to drive the evolution of differences in the other."

By studying the flower-bird relationship at a number of locations on St. Lucia and Dominica, the scientists discovered variations in this bird-plant relationship.

For example, on some parts of St. Lucia, the male hummingbird's preferred flower was scarce or absent. At these sites, a red male-friendly morph of *H. bihai* evolved, with shorter, straighter flowers that suit the male's bill.

On the island of Dominica, where the female hummingbird's preferred flower is scarce, two *H. caribaea* varieties were found: a yellow variety with short, straight flowers visited by male hummingbirds and a red morph with long, curved flowers favored by female hummingbirds. Clearly, the purple-throated carib's feeding ecology appears responsible for the existence of these *Heliconia* morphs.

This study is an important step in understanding what drives sexual dimorphism, Kress and Temeles say. "It is one of the most unambiguous examples to date of how feeding ecology can generate sexual dimorphism." ❖

—Michael Lipske and John Barrat

Tagging along with artists on vacation with letters, drawings and snapshots

By Barbara Wells

Special to Inside Smithsonian Research

We may be familiar with artists at work, but how much do we know about artists at play? Jackson Pollock tanning on the beach? Franz Kline playing bocce? Winslow Homer fishing with his brother—in a suit?

In July, an exhibit scheduled for the New York City gallery of the Smithsonian's Archives of American Art will usher in the vacation season with a sampling of letters, postcards, photographs, sketches and works by artists on holiday. "Wish You Were Here: Artists on Vacation" offers

a lighthearted glimpse at this little-known side of a few of America's best-known visual artists.

Busman's holiday

"Many artists view vacations as a time to get out of the city, to recharge in a new environment with sympathetic souls," explains Liza Kirwin, curator of manuscripts for the Archives of American Art.

Getting away, however, does not mean leaving the canvas or sketchbook behind. Artists are always on the job, Kirwin points out, and vacations are habitually regarded as an opportunity to paint, draw and study.

Artist John Sloan (1871-1951), who painted and taught in New York City, summured at an artists' colony in Gloucester, Mass. He later vacationed in Santa Fe, N.M., where he set up a studio. In the exhibit, a letter from Sloan in Santa Fe to his friend Walter Pach includes an illustrated scene from his vacation. It depicts Sloan, smoking a pipe and painting at the easel, being interrupted by a rustic local who pops by to ask, "You want me pose?" Sloan's letter was found among the papers of Pach (1883-1980)—a painter, author, critic and art dealer—at the Archives.

Highly descriptive

A drawing like Sloan's always adds a special dimension to a letter, Kirwin says, evoking images that not only record a scene but also show an artist's distinctive style. "There's a quality to the 'wish you were here' letters of artists on vacation



A 1942 letter, by wildlife artist Paul Bransom to Helen Ireland Hays, included this illustration showing Bransom daydreaming in his studio about an upcoming vacation. It is among the Archives of American Art's Helen Ireland Hays papers.

that makes them highly descriptive,” Kirwin says. “They are filled with vivid impressions.”

The Archives of American Art is rich with letters and images that capture and preserve the thoughts of America’s artists. Its collection contains some 15 million items that include letters, diaries, sketchbooks, photographs, business records, journals and other artists’ documents from Colonial times to the present.

For “Wish You Were Here,” Kirwin and Technician Joan Lord scoured the Archives’ collection database and solicited recommendations from Archives staff, seeking unusual items that contain personal insights. They then winnowed their findings down to 60 items for the exhibit, plus numerous postcards.

Cultural exposure

One of the highlights of the exhibit is a sketchbook of African American painter Palmer Hayden (1890-1973) filled with watercolors of Parisian sailboats. It illustrates, Kirwin says, how a trip can expose an artist to cultures that impart a fresh perspective and strongly influence a person’s work.

Born in Virginia in 1890, Hayden’s studies abroad in the 1920s provided a social freedom he had never experienced at home. He liked it enough to stay and work in Paris for five more years.

An amusing item in the exhibit is a 1942 letter by wildlife illustrator Paul Bransom (1885-1979) to friends “Kickapoo and Jimmy.” At the time, he was in New York “engrossed with illustrations for a most engaging story of the rare sea-otter.”

Bransom’s letter closes with a cartoon of himself daydreaming. At his back, a smoke-filled city sky looms over gray buildings. In a cartoon bubble emanating from his head, a much anticipated vacation reunion plays out: Beneath fluffy clouds and a dock on a lake, Bransom waves to his friends on the shore. All three perform high-kicks like giddy Rockettes above the caption, “It won’t be long now.”



Winslow Homer, right, takes a break from painting to catch some fish with his brother, Charles. This image is in the Archives of American Art’s Winslow Homer papers.



This snapshot of Jackson Pollock and Lee Krasner was taken in 1950 by an unidentified photographer. It is in the Archives’ Jackson Pollock papers.

Snapshots

Among the photos in this vacation scrapbook is a candid 1950 black-and-white of Jackson Pollock (1912-1956) and his wife, Lee Krasner, at the beach. Seated in the sand with his shirt and shoes off, Pollock, dubbed by some the “shock trooper of modern painting,” seems subdued, a little sad and lost deep in thought. Krasner, with an elfinlike expression, peeks in from the edge of the photo.

Another photo, taken in Maine in 1880, shows painter Winslow Homer (1836-1910) and his brother Charles Savage Homer Jr. returning from fishing near Winslow Homer’s studio home, Prout’s Neck. The brothers have walked up together from the beach, each holding the handle of a fly rod on which flounder hang from a stringer between them. The painter appears quite dapper in dark suit, white shirt and bow tie.

“Wish You Were Here: Artists on Vacation” opens July 22 at the Archives of American Art’s New York City Regional Center at 1285 Avenue of the Americas. ❖

Atrium architect. British architect Norman Foster of Foster and Partners in London has been selected to design the courtyard enclosure for the Patent Office Building in Washington, D.C., home to the Smithsonian's National Portrait Gallery and the Smithsonian American Art Museum. The construction of a glass enclosure over the landmark Greek revival building's 28,000-square-foot courtyard will provide a year-round gathering place that will be a central focus of the museums. The new atrium space, the signature element of the renovation, will be one of the largest event spaces in Washington, D.C.

Zoo accreditation. The Smithsonian's National Zoological Park was granted full five-year accreditation from the American Zoo and Aquarium Association in early March. The accreditation means the National Zoo has met or exceeded American Zoo and Aquarium Association standards, which include all aspects of operations, management and animal care. The accreditation is valid through September 2008.

West Nile virus. Researchers from the Avian Ecology Lab of the Smithsonian Environmental Research Center, who are tracking the spread of West Nile virus across the Americas, recently visited the U.S. Naval Base in Guantanamo Bay,

Above: Migratory birds, such as this Adelaide's Warbler, are being tested for West Nile virus.



This glass enclosure designed by Norman Foster will span the courtyard of the Smithsonian's Patent Office Building in Washington, D.C.

Cuba, to take blood samples from birds there. Samples of blood from 650 resident and migratory birds, captured briefly then released unharmed, were sent to the New York Department of Health for testing.

Hancock donation. Jazz keyboardist Herby Hancock donated to the Smithsonian's National Museum of American History in March the Fairlight CMI Series II keyboard he used to compose some of his best-known hits. "Hancock's instruments not only represent the career of one of our country's most prominent musical figures, they also help us better understand the story of electric and electronic musical instruments," says John Hasse, curator of musical instruments. Hancock also donated two synthesizers and a headphone microphone to the museum.

Princess moth. Vichai Malikul, a scientific illustrator at the Smithsonian's National Museum of Natural History, presented a watercolor illustration of a new moth species, *Sirindhorn thailandensis*, to its namesake, Her Royal Highness the Crown Princess of Thailand Maha Chakri Sirindhornan. Discovered in 1980 in Chiang Mai province in northwestern Thailand, this small, brownish-gray moth was recently described and named by entomologist David Adamski. It was named for her royal highness in recognition of the support she has given to science education and research in Thailand.

Vichai Malikul and his illustration of the princess moth (Photo by John Barrat)



Smithsonian scientists discover new butterfly species trapped in 20 million-year-old amber

Though extinct for millions of years, the recent discovery of a tiny metalmark butterfly, *Voltinia dramba*, by Smithsonian scientists, is causing entomologists to reconsider just when butterflies first appeared on Earth.

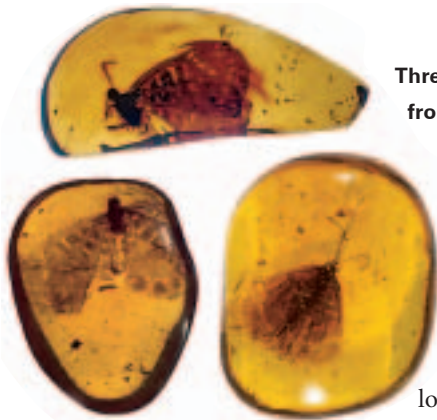
Some 15 million to 25 million years ago, *V. dramba* fluttered through the forests of what is now the Dominican Republic, laying eggs on epiphytes, small plants that grow on tree trunks. A few of the insects landed on gooey tree resin, became entombed and were then preserved for millions of years as the resin hardened to amber.

After meticulously examining five female amber-trapped specimens under a microscope, butterfly experts Jason Hall, Robert Robbins and Donald Harvey of the Smithsonian's National Museum of Natural History officially named *V. dramba* in March in a paper in the Proceedings

of the Royal Society of England.

"*V. dramba* is the first butterfly to be described from amber," Robbins points out. "The exquisite preservation of wings, head and legs, on which scales and hairs can be seen, makes this the best-preserved fossil butterfly yet discovered."

Discovery of this tiny butterfly has revived debate among scientists over butterfly ecology and origins. For example, scientists theorize that the five female *V. dramba* captured in amber were in the process of laying their eggs on epiphytes. Living butterflies of the genus *Voltinia* are known to do this today. If true, it would mean that this genus has not changed its host-plant ecology for at least 15 million



Three amber specimens from which *V. dramba* was identified (Chip Clark photo)

to 25 million years. Evolutionarily speaking, this represents an incredibly long run of a specific ecological behavior.

In addition, the location of *V. dramba* in Hispaniola, and the recent discovery of its living sister species in northwestern Mexico, suggest that butterflies were widespread on Earth and had diversified by 40 million to 50 million years ago. This possibility lends weight to the theory that butterflies originated earlier than has been recognized, perhaps during the age of the dinosaurs more than 60 million years ago. —John Barrat

Pet dogs and cats imperil wild carnivores in Amazon basin

As settlers push deeper into the remote regions of the Amazon basin, wild carnivores in these areas—bush dogs, jaguars, pumas and ocelots—face a significant risk of contracting disease from domestic dogs and cats, says a new study in the journal *Animal Conservation*. Sharon Deem, veterinarian at the Smithsonian's National Zoological Park and previously with the Wildlife Conservation Society, is a principal author of the article.

Researchers found antibodies of nine pathogens—including canine distemper—in blood drawn from 40 domestic dogs and 14 domestic cats living in remote villages near Bolivia's Madidi National Park. Both dogs and cats roam freely in these villages, and dogs regularly accompany hunters into the forest.



A puma at the National Zoological Park (Photo by Jessie Cohen)

The presence of antibodies indicates a high probability that domestic dogs and cats are exposing wild carnivores to these diseases. A wild carnivore can contract disease by direct contact with an infected domestic animal, or its urine or feces.

More than 90 percent of domestic dogs tested near Madidi National Park showed

antibodies for canine distemper virus and canine parvovirus. Canine distemper has been implicated in epidemics among carnivores in other regions of the world.

Each domestic cat tested by Deem and her colleagues showed antibodies to feline panleukopaemia and all but one to feline calicivirus. Both of these pathogens are known to cause disease in wild cats.

According to Deem, widespread vaccination of free-ranging domestic animals living near protected areas, creating a "buffer zone" between wildlife and unvaccinated domestic animals, appears to have met with some success in other parts of the world. Such an approach to controlling disease transmission from domestic to wild carnivores may be implemented in Bolivia.

—Susan Lumpkin

Nashville's Lower Broad: The Street That Music Made, photo-

tographs by Bill Rouda, foreword by Lucinda Williams (Smithsonian Books, 2004, \$29.95). This book is a gritty, honest photographic portrayal of Nashville's Lower Broadway, the street that is a legendary wellspring of country music.



Meet Mindy: A Native Girl From the Southwest, by Susan Secakuku (National Museum of the American Indian, 2004, \$15.95). A book for children introducing them to Mindy Secakuku, a present-day Hopi girl living in Arizona. To order this book, write to Beyond Words Publishing Inc., 20827 N.W. Cornell Rd., Suite 500, Hillsboro, Ore. 97142-9808

War Games: Inside the World of 20th Century War Reenactors, by



Jenny Thompson (Smithsonian Books, 2004, \$27.50). An insider's study of the strange and often shocking world of America's 20th-century war reenactors.

Washington on Foot, edited by John J. Protopappas and Alvin R. McNeal (Smithsonian Books, 2004, \$14.95). Twenty-three walking tours of Washington, D.C., neighborhoods, complete with maps and architectural illustrations.

Scotland's Empire and the Shaping of the Americas, 1600-1815, by T.M. Devine (Smithsonian Books, 2004, 32.50).

An epic account of the influential role the Scots played in settling the English colonies of the Americas.

Official Guide to the Smithsonian National Museum of Natural History (Smithsonian Books, 2004, \$14.95). This colorfully illustrated book is an indispensable companion to the world's most-visited natural history museum.

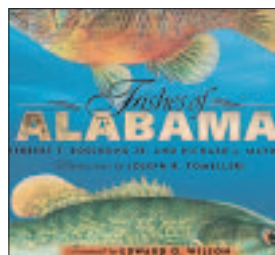
The Published Writings of Wilbur and Orville Wright, edited by Peter

Jakab and Rick Young (Smithsonian Books, 2004, \$32.50). This book offers a rare glimpse into the Wright brothers' genius, replete with human weakness, failure and majestic triumphs.



Satisfaction Guaranteed: The Making of the American Mass Market, by Susan Strasser (Smithsonian Books, 2004, \$17.95). A sweeping history of America's consumer society, obsession with shopping and devotion to brands.

Fishes of Alabama, by Herbert T. Boschung Jr. and Richard L. Mayden (Smithsonian Books, 2004, \$55). A superbly illustrated, user-friendly reference guide to the astounding diversity of fish species found in the state of Alabama.



Sarge: The Life and Times of Sargent Shriver, by Scott Stossel (Smithsonian Books, 2004, \$32.50). An illuminating biography of the man who founded the Peace Corps, launched the War on Poverty, created Head Start and Legal Services for the Poor, started the Special Olympics and served as ambassador to France.



Classic Maritime Music From Smithsonian Folkways Recordings (Smithsonian Folkways Recordings, \$12 CD). More than just sea chanteys, this CD features ocean songs sung by Pete Seeger, Leadbelly, Dave Von Ronk, Paul Clayton and others.

Eddie Pennington Walks the Strings and Even Sings (Smithsonian Folkways Recordings, \$12 CD). Irrepressible humor and picking from a disciple of the Kentucky guitar picking known as "Travis-style."



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No Greater Sacrifice, No Greater Love: A Son's Journey to Normandy

By Walter Ford Carter, with Terry Golway
(Smithsonian Books, 2004, \$24.96)

Each morning as he shaves around the shrapnel scars on his chin, Billy Melander of Tonawanda, N.Y., is reminded of the surgeon who treated his wounds some 50 years ago on a World War II battlefield.

Melander was one of the last soldiers tended to by Capt. Elmer Norval Carter, an Army medic on the front lines in war-ravaged France. Before the war, Carter lived in Huntington, W.Va., with his wife and two young sons.

Eleven days after landing in Normandy on D-Day, he left the cover of a hedgerow to help a wounded soldier and was killed by a German sniper.

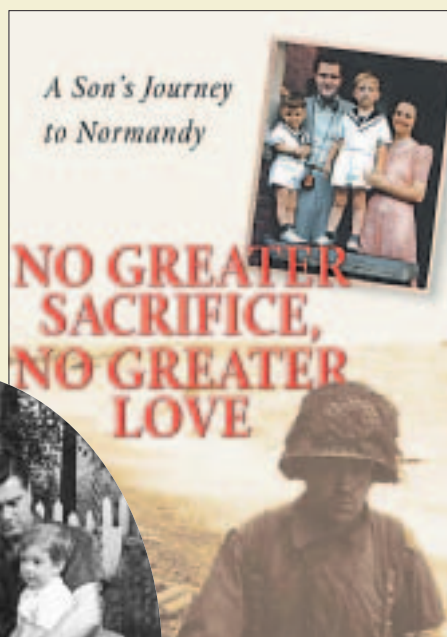
No Greater Sacrifice, No Greater Love is the touching story of Elmer Norval Carter's life, written by his son Walter Ford Carter nearly 60 years after his father's death. Walter Carter retraces Norval's Army service, examines the social and psychological fabric of World War II America, and discovers a man he knew only "as a smiling face behind glass" from a photo on his mother's bedroom bureau.



Left: Norval and Emma Carter and their young family in September 1940

Emma Ferne Carter, Walter's mother, never spoke of her late husband to her two sons. But after she died in 1995, Walter Carter stumbled upon a packet of his parents' letters and his father's wartime diary in the attic of Emma Carter's home. They changed his life.

Together with details on the minutia of training and battle, Capt. Carter's letters weave an original tale.



"I am left with a legacy of words," Carter writes of his parents' letters. "The words of two people who were very much in love, who spent childhood days together...who drove off in a car one day to get married, who expected to spend their lives together and who gave life to me.... The war changed everything—everything, that is, except their love."

In June 1944, before Elmer Norval Carter was killed in France near St. Lô, his writ-

ings to "Fernie" showed how serious the formerly light-hearted country doctor had become. Massive numbers of troops were gathering and training where he was stationed in England in preparation for D-Day.

"I...saw that some members of Congress were against the War Department's demand for such a large Army," he wrote to Fernie. "Those men should be enlightened or shot. We shall need a much larger force than we have now. We are up against some tough armies.... People in the states better wake up & get to work."

Feeling ineffective in his role as chief of psychiatry in an Army hospital in England, Carter volunteered to serve on the front lines with the 115th Regiment of the Army's 29th Infantry Division.

Throughout *No Greater Sacrifice, No Greater Love*, the author addresses the painful questions: Why did his father volunteer "for service, even though he was exempt from the draft? Even though he had two small sons and a young wife? How could he have placed himself in danger when he had so much to live for?"

Walter Carter's exhaustive search includes interviews with his father's friends and soldiers who knew him, as well as a trip to the battlefields of World War II. One man he located was Frank Wawrynovic of Clearfield, Pa. Wawrynovic was the wounded soldier who called out for help to Capt. Carter the moment before Carter was shot.

Walter Carter and Wawrynovic returned to the spot in France where Capt. Carter died. One is the survivor who feels forever indebted to that fallen hero. The other is the orphaned son, moved to pay his respects to the father he finally knows.

—Daniel Friend

Louis XV soup tureen serves as inspiration, and medium, for a modern artist

At first glance, the flamboyant pink tureen appears to have come directly from the table of King Louis XV of France. Its elegant, Rococo-style ornamentation and rose color mark it as distinctively 18th-century royal French porcelain. Yet the alluring female adorning the tureen and its accompanying tray would surely have caused the king to spill his soup.

The face in the cartouche is that of Cindy Sherman, a contemporary artist and photographer, not Louis XV's well-known mistress, Madame de Pompadour née Poisson (1721-1764). Photographed in a wig, white makeup, jewels and even prosthetic breasts, Sherman's portrait "spoofs the commodification of women as objects of male fascination and desire," explains Gail Davidson, curator and head of the Drawings, Prints and Graphic Design Department at the Smithsonian's Cooper-Hewitt, National Design Museum.

"By masquerading as Madame de Pompadour, the ultimate consumer and patron of the most elegant and exorbitant ceramic wares by the Sèvres Royal Porcelain Manufactory, Sherman is critiquing women as consumers and supporters of elitist fashion," Davidson says.



"Covered Tureen With Tray: Madame de Pompadour née Poisson (1721-1764)," by Cindy Sherman, was created in 1990.

Sherman is probably best-known for her *Untitled Film Stills*, a series of black-and-white self-portraits in which the photographer assumes the persona of actresses in B movies.

Excluding the portrait and other painted decorative details, the tureen was fabricated from a 1756 mold commissioned by Madame de Pompadour herself, Davidson says. Made in 1990 by the New York firm Artes Magnus, the tureen was produced in a limited edition of 100—25 each in four colors, rose, apple green, yellow and blue—by the La Manufacture Ancienne in Limoges, France. Sherman's image was transferred onto the tureen through a complex process requiring up to 16 photo-silk-screens.

The tureen, acquired by the Cooper-Hewitt Museum last year, "is an excellent example from an artist working today who uses Rococo objects as inspiration," Davidson explains.

—Lindsey Morton

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