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'Online Academy.' In Colonial times, as the white Jesuit inhabitants of Carrollton Manor in Adamstown, Md., were upstairs saying mass, their slaves were in the kitchen downstairs practicing the African religion of Hoodoo. This is one of the fascinating pieces of information available on the "Online Academy" Web site of the Smithsonian's Anacostia Community Museum. A large rock crystal found by archaeologists buried beneath the kitchen hearth at Carrollton Manor was placed there by the African cook "to control the comings and goings of the spirits in the spirit world up and down the flue and out the fireplace," explains University of Maryland anthropologist Mark Leone in an online video. "Online

Academy" features video interviews with scholars, collectors of African American material culture, conservators and others. For instance, Gladys-Marie Fry, one of the nation's leading authorities on African American textiles, talks about quilts made by male slaves; celebrated historian John Hope Franklin discusses the importance of preserving material culture; and Jerome Grey, a collector of African American objects, shares tips and experiences from his many years of collecting.—anacostia.si.edu

Dinosaurs. Since the early 1800s, nearly 1,000 dinosaur species have been discovered and named by scientists. Dinosaur fossils have been found on every continent, and experts estimate these prehistoric creatures ranged in weight from a few kilograms to tens



"Sisters II," a 1929 woodblock print by James L. Wells, is a featured artifact on the Anacostia Community Museum's "Online Academy."

of tons. It was 1859 when the Smithsonian received its first significant dinosaur fossils—those of a long-necked, plant-eating sauropod from Utah named *Dystrophaeus viaemalae*. Today, visitors logging onto the "Dinosaurs" Web site of the Smithsonian's National Museum of Natural History can access a wealth of information and learn about some of the 1,500 dinosaur specimens in the Smithsonian's collection. Also offered is an interactive tour of the office of a museum curator and facts about dinosaur anatomy, evolution, behavior and extinction. In addition, visitors can click

Smithsonian exhibition specialists reconstruct the skull of a triceratops.

through a guide to museums and places around the world where dinosaur fossils can be seen, a who's who of dinosaur researchers and an extensive list of Internet links to other dinosaur Web sites.—paleobiology.si.edu/dinosaurs/



Inside

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On the cover: This circa 1920 image of Times Square in New York City (detail) is one of many images collected in Times Square Spectacular: Lighting Up Broadway. This new book is a visual history of Times Square written by Darcy Tell, an editor at the Smithsonian's Archives of American Art. See story, Page 10. (Image courtesy of the Warsaw Collection of Business Americana, Archives Center, National Museum of American History, Kenneth E. Behring Center)



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In subzero Antarctica, Zoo scientists study the hardy metabolism of the Weddell seal

By Michael Lipske

Special to Inside Smithsonian Research

How does a roughly 150-pound human persuade a 1,200-pound seagoing mammal to lie still for a bit of bloodwork?

In the wild? In the case of a mother Weddell seal, the answer is simple, if inelegant. “You put a bag over her head,” says Olav Oftedal, a nutritionist at the Smithsonian’s National Zoological Park who recently returned from studying Weddell seals in Antarctica.

The Zoo’s head bags—custom-made of soft rubberized canvas—fit snugly over a mother seal’s shoulders and don’t press on her face. Thus bagged, Weddell seals submit relatively peacefully to scientific poking and prodding and even let themselves be hoisted up in a net for weighing. “If they were bears, we wouldn’t try this,” Oftedal notes.

All well and good. But what about when the wind barreling across the Antarctic ice drives the already staggeringly cold air temperature to minus 58 degrees Fahrenheit or below? Then, cooperative seal or not, taking a blood sample becomes impossible. “Blood freezes before it’s out of the animal” and the syringes won’t work, explains Regina Eisert, National Zoo physiologist and, like Oftedal, a veteran seal researcher.

Frozen blood, blinding wind-blown snow, treacherous cracks in the ice—these are a few of the difficulties field biologists face on the coldest, windiest continent.

Fast ice

Oftedal and Eisert, both on staff at the National Zoo’s Nutrition Laboratory, are



After gently taking blood, milk and other biological samples from a mother Weddell seal—shown here in the foreground being reunited with her pup—Olav Oftedal makes field notes on the animal. (Photo by Mike Lara)

principal investigators on a three-year project funded by the National Science Foundation to study Weddell seals at McMurdo Sound, an inlet of Antarctica’s Ross Sea located 800 miles from the South Pole. Their goal: learning what it takes for a mother seal to rear her pup in one of Earth’s most extreme environments—the fast ice, so called because this frozen seawater sheet is stuck fast to the shore.

The world’s southernmost species of mammal, the Weddell seal is one of the few creatures that thrives both on and under fast ice. Miles from the ice edge, where sea ice gives way to the open

ocean, the seals congregate on the ice surface near cracks that provide openings to the ocean below. Those ice openings allow access to the fish and other marine life on which Weddell seals prey.

Able to hold their breath for 90 minutes or longer and follow fish to depths of more than 1,000 feet, the seals are masters at navigating the dark, clear Antarctic water to find their way back to their breathing holes in the ice.

However, after their pups are born in October (the beginning of the Antarctic summer), mother Weddell seals feed little,

(continued)



The world's southernmost species of mammal, the Weddell seal thrives both on and under fast ice.

if at all, during the weeks when they nurse their young—or so seal observers have long assumed. Over the course of pupping season, the huge mothers shrink by nearly half their initial mass, while their pups—nourished on rich mother's milk—quadruple their weight in the first six weeks of life. Yet not all mother seals are huge when they start the pupping season. Those that are small and lean when they haul out onto the ice to give birth may need to forage for food during lactation to obtain the energy and nutrients their bodies need to feed themselves and convert to milk for their pups.

Fading niche

Oftedal and Eisert are trying to learn if hunting during lactation is something that just some or nearly all Weddell mothers do. If most seal mothers supplement their energy reserves by fishing under the fast ice, then Weddell breeding colonies need to be in places that provide adequate prey and access—through ice cracks—to that food. This would mean the colonies are highly sensitive to environmental conditions that affect fish populations and the ice cover.

“Weddell seals are creatures of the fast ice; it is their unique ecological niche,” Eisert says. Could that niche disappear? In both 2000 and 2002, icebergs broke free of the Ross Ice Shelf and blocked McMurdo Sound, leading to changes in the condition of the fast ice, changes that “resulted in Weddell seals leaving their traditional breeding areas,” she says.

To study mother seals and their pups, an eight-member National Zoo team set up camp on the ice last fall at a site called Hutton Cliffs, a spot about eight miles as the skua, an Antarctic sea bird, flies from McMurdo Station, the hub of the U.S. Antarctic Program.

From October 2006 to January 2007,

under constant daylight and in temperatures averaging minus 4 degrees Fahrenheit, the team lived in small, trailerlike huts or in tents and spent their days doing research on a nearby seal colony, part of the Ross Sea's breeding population of some 50,000 Weddell seals.

Focusing on 12 mother-pup pairs, the scientists used several methods to investigate seal lactation and foraging.

They kept track of whether mothers (and eventually their pups) were entering the water, and how deeply they dove, by attaching computerized time-depth recorders and radio transmitters to their backs with epoxy. Radio collars can't be used on Weddell seals because collars slip



off the seals' torpedo-shaped bodies.

The study's dive records may shed light on whether mother seals actively teach their pups to hunt, particularly if they show that mothers and pups are in the water at the same time and at the same depth, "a necessary prerequisite for any kind of observational learning," Eisert says.

Biomarkers

However, the recorders won't show whether the seals are actually feeding. "We still can't observe them directly," Eisert says. What the scientists can do is look for evidence of feeding in the seals' blood and in the milk they produce for their pups, by searching for what Eisert calls "biomarkers."

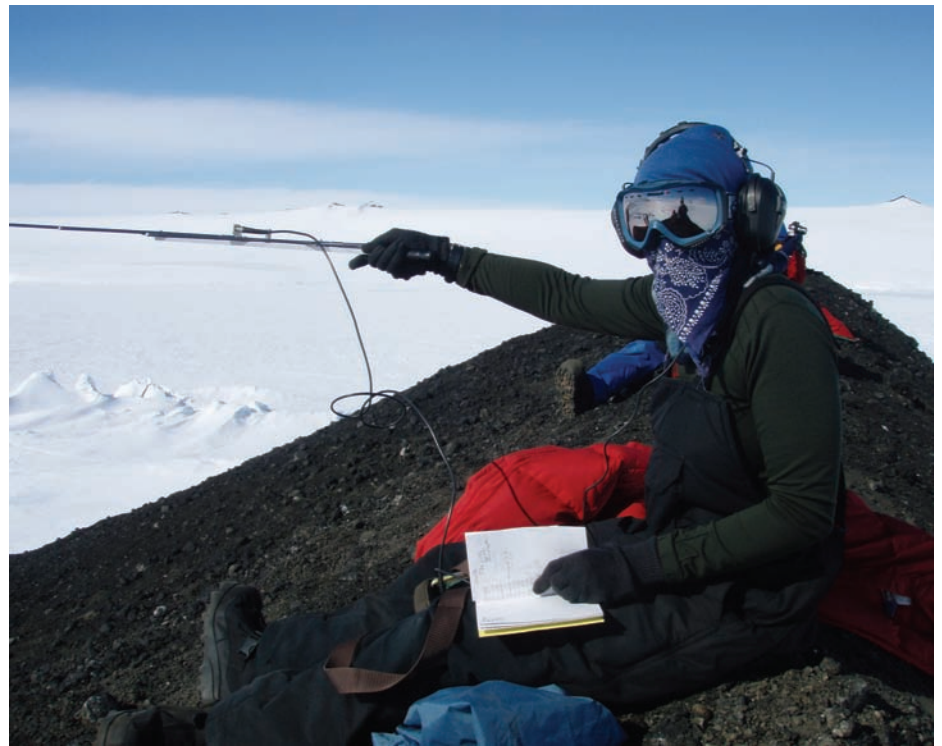
Rather like looking for alcohol in the blood of a suspected drunk driver, this biomarker method, she says, can "look for compounds that only occur in fish and other marine prey and that do not naturally occur in mammals" unless they have consumed such prey.

Blood, milk and other seal samples are being analyzed by Eisert this summer, using the Nutrition Lab's atomic absorption spectrometer—a device that shoots a beam of light through an atomized sample to highlight the presence of specific elements. One biomarker that she is looking for is arsenobetaine, an arsenic compound that shows up in mammals that have recently eaten marine fish or invertebrates. Finding it could tell Eisert not only if mothers are feeding but also at what age their pups begin catching fish.

The Zoo researchers also injected seals with naturally occurring isotopes of hydrogen and oxygen; these are then tracked in ways that reveal what proportion of a mother seal's body consists of fat, how much energy she is expending during lactation and even how much milk her pup is consuming.

Nutritional costs

To Olav Oftedal, who has studied lactation in mammals ranging from bats to



bears and who has investigated seals in particular for 25 years, the isotope and biomarker information "helps us to model the whole system, in terms of trying to understand what is the nutritional cost of reproduction to a female and how does she obtain that? Does she obtain it all from her stored reserves or does she also rely on food?"

By answering such questions, he says, scientists come closer to "understanding the forces that have driven the evolution of seal reproductive behavior."

In pursuit of that knowledge, Oftedal and Eisert will spend a second season among the seals of McMurdo Sound this fall. Their work is being conducted under both a Marine Mammal Permit and an Antarctic Conservation Act Permit.

Once they are back on the ice, Antarctica's energy-burning cold and the physical strain of wrangling thousand-pound seals into nets for weighing will force the researchers to confront their own metabolic facts of life. For just as mother Weddell seals furiously shed pounds during pupping season, so do the scientists studying them.

"I seem to be perpetually hungry," Eis-

ert complained in a dispatch from the ice, posted on the Zoo's Web site at national.zoo.si.edu, last fall. "All of us lost weight," Oftedal says. "No matter how much you eat, you're still losing weight." Forget the South Beach Diet. The South Pole Diet, with its extremes of cold and wind, slims man and beast alike. ❖

Opposite top: A mother seal and her pup sleep on the ice. As the lactation period progresses, both mothers and pups dive for longer periods. "They are really very active," Regina Eisert explains. "With weaned pups, a mother and pup may dive under the ice continually for six to 10 hours and then rest on the surface for a similar length of time." (Photo by Regina Eisert)

Opposite bottom: A Weddell seal pup nurses on the ice. (Photo by Mike Lara)

Above: Dressed to avoid sunburn under the glare of the Antarctic summer sun, Regina Eisert uses a directional radio antenna to locate seals fitted with instruments that allow her to monitor their diving activity. (Photo by Regina Eisert)

Saving lives and fighting poverty in the developing world with design

By John Barrat
Smithsonian Office of Public Affairs

Fill a 5-gallon bucket with water and carry it for one mile. Your back should be telling you what millions of people around the globe—mainly women—already know quite well. Without plumbing, water is a heavy necessity. Carrying it is hard, time-consuming work.

In developing countries around the world, women do most of the water hauling, lugging it in jerrycans for miles from a river or well to their homes and crops. To ease this burden, brothers Hans and Pieter Hendrikse—one an architect and the other an engineer—created the Q drum, a durable 7.5-liter container made

of low-density polyethylene that can be filled with water and pulled with a rope.

The Q drum is emblematic of an emerging groundswell of design work aimed at solving the challenges faced by many of the world's poor, says Cynthia Smith, curator at the Smithsonian's Cooper-Hewitt, National Design Museum in New York City.

The Q drum is one of 30 recent innovations that Smith has gathered for Cooper-Hewitt's "Design for the Other 90%," an exhibition whose title underscores the fact that most designers focus their work on the desires and needs of the world's richest 10 percent. Ninety percent of the

6.5 billion people living today don't have access to the products and services that many of us take for granted.

Advisory group

"What I found as I began my research for this exhibition," Smith says, "were the many ways that individuals and organizations are working to eliminate poverty and to give people around the globe a better standard of life."

For example, Godisa Technologies in Botswana has designed and manufactured a solar-powered device that recharges hearing-aid batteries—one of the greatest expenses to hearing-aid users. Vestergaard



Left: The yellow extension on the rear of this standard bicycle has transformed it into a Big Boda load-carrying bicycle. The Big Boda can carry hundreds of pounds of cargo at a lower cost than other forms of human-powered transportation. (Photo courtesy of WorldBike)

Opposite left: In Africa, two children roll home 50 liters of water inside a plastic Q drum. (Photo courtesy of Q Drum)

Opposite right: A woman drinks from a pool of water using the LifeStraw. About half of the world's poor suffer from water-borne diseases, and more than 6,000 people, mainly children, die each day by consuming unsafe drinking water. (Photo courtesy of Vestergaard Frandsen)



Frandsen, an international company that produces disease-control textiles, is manufacturing a long-lasting polyester mosquito net impregnated with a synthetic insecticide that kills mosquitoes for up to four years.

And in Nigeria, designer Mohammed Bah Abba has enlisted local potters to make his pot-in-pot cooler. This low-tech device consists of one earthenware pot nestled inside another and uses evaporating water to keep fruits and vegetables cool, allowing farmers to preserve them longer and command better prices at market.

To assist in her task of combing the globe for new innovations, Smith enlisted the help of members of an advisory group “who have been doing work in this area of design for a while,” she says. “They provided suggestions and made me aware of a multitude of different projects from around the world.”

Smith and her advisers looked specifically for low-cost designs that are affordable for the poor and can boost income and improve health. They also looked for designs that can be “replicated and even sold by the users, thus providing them the means to become entrepreneurs in their own right,” Smith says.

The pot-in-pot cooler, for example, “does not require electricity, and the raw materials needed to make the pots are free,” says the cooler’s designer, Bah Abba. In addition, they are easy to produce.

Making and selling them represents an opportunity for jobs and income.

Big Boda

One innovation Smith and her advisers found in Africa is the Big Boda load-carrying bicycle, an extension bolted to the back of a standard adult bicycle—a universal tool of travel and commerce in developing countries. With Big Boda, a bicycle is transformed into the two-wheel equivalent of a pick-up truck. “It is able to carry hundreds of pounds of cargo at a substantially lower cost than other forms of human-powered utility vehicles,” Smith says.

Another innovation from the exhibition is LifeStraw, a simple, 1-inch-diameter straw that cleans water as it is sucked through the straw and into a user’s mouth. Easy to carry, each LifeStraw can filter as much as 700 liters of water, removing microorganisms responsible for diarrhea, dysentery, typhoid, cholera and other diseases. Every year, these and other waterborne diseases cause some 2 million deaths around the world.

In the developing world, explains Paul Freedman of WorldBike, the company that makes Big Boda, even “a modest design effort” has the potential to benefit many people. For designers, the developing world represents “a huge opportunity,” as well as a potential base of millions of underserved customers.

Money Maker

A second water-related design that has a positive impact in developing countries is a line of manually operated micro-irrigation pumps—some that work like stair-master machines and others like bicycle pumps—that can pull water up from a well for irrigation. A small farmer using the Money Maker Pump, designed by KickStart International, can increase crop yields by a factor of 10, increasing income and helping a family climb out of poverty.

Affordability was a critical consideration in designing the Money Maker Pump, says Martin Fisher, co-designer of the pump and director of KickStart International. Designing them so they can be produced locally and promoting the pumps to farmers also was critical to their success.

“Design for the Other 90%” offers visitors a broad survey of other innovations in the areas of technology, education, transportation and health. It demonstrates how design is saving lives, empowering people and combating poverty.

“My hope is that this exhibition will open both designers’ and the public’s eyes to the multitude of ways any of us can take action to improve people’s lives,” Smith says. ❖

“Design for the Other 90%” will be on view at Cooper-Hewitt through Sept. 23. A exhibition Web site and a blog are accessible at the address cooperhewitt.org.

Photograph may be new evidence that grizzly bears once roamed Labrador

By John Barrat
Smithsonian Office of Public Affairs

It was only the skull of a small, young adult grizzly bear, unearthed in 1975 by Harvard archaeologist Steven Cox near an 18th-century Eskimo house in the northern part of the Canadian province of Labrador. Still, the skull had great significance in that it marked the first evidence that grizzly bears had once roamed the Canadian subarctic east of Hudson's Bay. The discovery confirmed long-standing Inuit (Labrador Eskimo) and Innu (Naskapi-Montagnais Indian) legends that told of a great savage red bear in the Labrador barrenlands.

Now, Stephen Loring, an anthropologist at the Smithsonian's National Museum of Natural History, has discovered a second important piece of evidence placing grizzly bears in Labrador well into the early 20th century. While working in the Smithsonian Institution Archives organizing the journals and photographs of William Brooks Cabot (1858-1949), an explorer in Labrador from 1899 to 1925, Loring discovered a previously overlooked photograph of a bear skull strapped to a spruce pole. Cabot had taken the photograph at an Innu hunting camp in Labrador near Mistinipi Lake in 1910.

The Innu traditionally placed the skulls of bears they killed high on poles as a mark of respect, Loring says. "Such rites, they believe, appease the spirit of the bear.

"The photo shows a left oblique view of the bear skull, with a good view of the anterior dentition [front teeth] and the left upper premolar-molar row," Loring explains in a recent article, co-authored with Arthur Spiess of the Maine Historic



Preservation Commission, in the journal *Arctic*. The bear's jawbone is shown attached to the skull in its proper anatomical position with sinew or twine.

After finding the photograph, Loring and Spiess confirmed it most likely showed a grizzly skull—and not that of a black bear or polar bear, two bear species still found in Labrador. They did this by carefully comparing the skull in the photo to actual bear skulls in the collection of the Natural History Museum's Division of Mammals. The researchers compared the photo to black bear specimens from Ontario, Nova Scotia and Newfoundland and

grizzly specimens from the Northwest Territories.

The skull's ruggedness and "a clear upward concavity in the frontal nasal region," Loring and Spiess write, distinguished the skull in Cabot's photo as most likely that of a grizzly.

For more than a decade, Loring has been working closely with Innu communities in Labrador and with the Tshikapisk Foundation, an Innu experiential education initiative, on archaeological and heritage conservation projects.

In 2005, he and four Innu students located the camp where the bear skull had been photographed, and they looked for additional artifacts and evidence. The team also conducted an archaeological survey of Innu ancestral hunting grounds in the Lake Mistinipi region.

During the survey, they uncovered a number of large stone caches and walled cliff crevasses once used by the Innu to store game. During the caribou migration, excess "meat, fat and furs" were commonly cached by the Innu who would return later in the season to collect the stored food and supplies.

Cached food had to be protected against wolves, black bears and wolverines, Loring says, but the substantial size of some of the boulder caches "suggests they may have served to protect against more robust creatures"—such as grizzly bears.

"The region around Lake Mistinipi, including the area where Cabot photographed the bear skull in 1910, seems to have been a core area for a small grizzly



Opposite: Researchers believe the skull in this photograph, taken in 1910 by William Brooks Cabot, is that of a grizzly bear.

Above top: This 1910 photograph shows William Cabot, with his back to a boulder, conversing with a trio of Innu hunters on their way to the Hudson's Bay Co. trading post on the coast of Labrador.

Above bottom: In the fall of 2005, Stephen Loring, seated at right, and several Innu students conducted an archaeological survey of traditional Innu travel routes and located the Innu camp Cabot visited in 1910. This 2005 photograph shows the same two boulders that are visible in the top photograph, taken in 1910.

bear population that apparently survived into the 20th century,” Loring and Spiess write.

While researching past writing on bears in Labrador—writings that Loring describes as “a motley corpus...derived from fur traders, visiting naturalists and explorers”—the researchers discovered a previously unpublished study by Lucien Turner (1848-1909), an intrepid Smithsonian naturalist, who lived and worked for more than a decade in Alaska, the Aleutian Islands and northern Quebec and Labrador. Turner lived in northern Quebec from 1882 to 1884, was an expert in northern wildlife, befriended Innu and Inuit families, and “made expansive collections of plants, birds, fish and insects for the Smithsonian,” Loring says.

In his unpublished paper about wildlife in the northern Ungava district of Quebec-Labrador, Turner cites three distinct species of bears—polar bears, black bears and grizzly bears.

What Turner knew of the Labrador grizzly was based on accounts of Inuit and Innu hunters. “This animal is not plentiful, although common enough and too common to suit some of the natives who have a wholesome dread of it,” Turner wrote. “I was informed that this animal is extremely savage, rushing up on its foe with a ferocity characterized by no other species of bear.” Although he was unable to procure a grizzly specimen for the museum, Turner did report seeing skins of grizzlies killed by the Indians.

The Inuit and Innu both described grizzlies to Turner as “fat and healthy” upon first emerging from their winter hibernation. After a few days, their condition was described as a “huge mass of skin and bones.” These observations, Loring points out, closely conform to modern studies of grizzly bears.

Taken together, the researchers say, “Cabot’s photo and Turner’s paper serve to further substantiate the fact that a small population of grizzly bears once lived in the Quebec and Labrador peninsula.” ❖

A visual history of Times Square spectacles

By Alan Cutler

Special to Inside Smithsonian Research

Rushing crowds, chorus girls, sailors on liberty, New Year's revelers all moving against a swirling backdrop of flashing neon—this is the enduring image of New York City's Times Square. Few other places on Earth better symbolize the glitter, excitement and frenetic pace of modern urban life.

How this once-peaceful intersection of two New York City streets—Broadway and Seventh Avenue—grew to become an iconic symbol of 20th-century America is the focus of *Times Square Spectacular: Lighting Up Broadway*, a new book by Darcy Tell, editor at the Smithsonian's Archives of American Art.

Filled with rare photographs, maps, restaurant menus, hand-colored lantern slides, postcards, magazine covers and other archival images of Times Square, *Times Square Spectacular* is a visual his-

tory that tells the story of this remarkable streetscape and its rise to fame.

Billboard visionary

Tell's interest in Times Square was sparked in 2000 when the Archives of American Art—a repository of more than 16 million items relating to the visual arts in America—obtained the papers of sign and lighting designer Douglas Leigh. Leigh was the creator of one of the most famous advertisements of all time: the Camel cigarette billboard featuring a huge man's face blowing gigantic smoke rings out into the air. The sign was a Times Square landmark from 1942 to 1966.

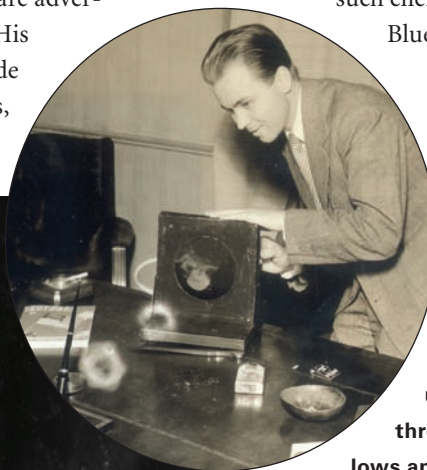
“For nearly 50 years, Leigh was the Big Kahuna of Times Square advertising,” Tell explains. His papers—which include photographs, sketches, scrapbooks, corre-

spondence and other ephemera—were an unusual acquisition for the Archives. “We usually get museum records and the papers of painters, sculptors, illustrators and art dealers,” Tell says. Once she began reading Leigh's papers, however, she became enthralled.

“The word visionary is greatly overused these days, but he *was* a visionary,” she adds. His thinking took him beyond just signs above streets. “He viewed New York City as a giant panoramic sculpture.”

Drawing crowds

Piecing together the story of Times Square's glittering ascension, Tell studied Leigh's records, which included files for such clients as 7-Up, Amoco, BlueCross-BlueShield, Coca-



Far left: Douglas Leigh unveiled his Camel sign—the most famous sign of the 20th century—in Times Square on Dec. 12, 1941. This billboard used steam blown through a kind of giant bellows and remained a New York City landmark until 1966.

Inset above: Leigh is shown in 1941 with a miniature version of the mechanism used in his Camel “spectacular” billboard.

Opposite: Times Square at night (detail), photographed from above looking north, late 1920s-early 1930s (All images courtesy of a private collection)



Cola, Eveready Batteries, Four Roses Whiskey, Fram Oil Filters, Old Gold Cigarettes and Schaefer Beer. Leigh also kept records for displays he created on the Allied Chemical Tower, the Helmsley Building, the Pan Am Building, Grand Central Terminal and even a number of lighted dirigibles that hovered in New York's night sky after World War II.

Leigh's career, covered in detail in *Times Square Spectacular*, "was the culmination of a tradition that began in 1904 when the first electric sign was put up in Times Square," Tells explains. In 1904, Mayor George McClellan named Times Square in honor of the not-yet-complete New York Times Building. The Times Square subway station opened in 1904 as well. It quickly became New York's busiest station.

"Times Square was attractive to advertisers because hundreds of thousands of people passed through each week," Tell says. And, of course, Broadway—the undisputed center of American popular entertainment—drew its share of crowds.

Broadway's "Great White Way," so named in the early 1900s because of its halo of incandescent lights, soon spread its illumination into Times Square. By 1925, sign man Oscar Gude, who made his mark by constructing a giant electrified Heinz pickle in Madison Square, transformed Times Square with towering advertisements intended to amaze viewers. These awe-inspiring signs—"spectaculars" in advertising parlance—quickly became famous around the world.

Exclusive restaurants and cabarets, where celebrities and other stylish folk mingled and enjoyed the good life, also drew crowds to Times Square. Fast, showy and champagne-soaked, the scene was irresistible to writers, journalists, playwrights, songwriters and others who sensationalized it in popular culture.

In researching Times Square's upward trajectory in the early 1900s, Tell combed through collections in the Library of Congress; the Archives Center of the Smithsonian's National Museum of American History, Kenneth E. Behring Center; the



American Sign Museum in Cincinnati; the Theatre Historical Society of America; and the Academy of Motion Picture Arts and Sciences in Los Angeles, among other institutions.

Neon

Although businesses in Times Square began to slump in the 1930s with the Great Depression, the advertising signscape that had begun to define Times Square was entering a golden age. Much of this had to do with the growing availability of neon lights, which gave sign designers unlimited possibilities to dazzle pedestrians. When the Alabama-born Leigh arrived, the scene became charged like never before.

Leigh's first spectacular in Times Square was a 1933 advertisement for A&P coffee that featured real steam rising from a 25-foot-tall coffee cup. In the following years his signs became ever bigger and more elaborate, often with intricate animations, such as a winking penguin on a cake of ice for Kool cigarettes.

Many of today's Times Square signs—the high-tech video screens covering the facades of buildings, for instance—might easily have been made by Leigh, Tell says.

"That was the kind of thing Douglas Leigh was imagining back in the '30s. He just didn't have the technology to do it."

Leigh's ambitions went beyond Times Square. He had ideas of turning the Empire State Building into a giant cigarette billboard and of using the Rock of Gibraltar as a colossal ad for Prudential Insurance. Nothing ever came of these plans, but Leigh did get a crack at the Empire State Building—he designed the enormously popular red, white and blue lighting scheme used on the building for America's 1976 Bicentennial.

In the decades following World War II, Times Square hit the skids, but by the late 1990s, it had revived, "once again the fantastic advertising carnival it had been before," Tells says. Leigh's views on its rebirth never made it into print before his death in 1999 (his New York Times obituary dubbed him "The Man Who Lit Up New York"). "But he must have been pleased," Tell says. ♦

Times Square Spectacular: Lighting Up Broadway will be published in the fall by Collins/Smithsonian Books.

Cheetah facility. The Smithsonian's National Zoological Park has broken ground on a new Cheetah Science Facility at its Conservation and Research Center in Front Royal, Va. The facility, the first new construction at the center in 25 years, is made possible by Bill McClure, a long-time friend of the National Zoo. The facility will be the Zoo's cheetah home base for research in animal care, reproduction, endocrinology, behavior, nutrition and genetics.

Scheduled to open this fall, the facility will provide a training program for post-



A female cheetah and her cubs at the National Zoo (Photo by Jessie Cohen)

doctoral fellows, graduate students, interns and animal keepers. It will house 15 to 20 adult cheetahs.

Scholarly series online. Many volumes from the Smithsonian Contributions series and the Smithsonian Studies series have recently been digitized and are available online at www.sil.si.edu/SmithsonianContributions. The following series are now available: Smithsonian Annals of Flight (1964–1974); Smithsonian Contributions to Anthropology (1965–present); Smithsonian Contributions to Botany (1969–2001); Smithsonian Contributions to History and Technology (1969–present); Smithsonian Contributions to Paleobiology (1969–present); Smithsonian Contributions to the Earth Sciences

(1969–2002); Smithsonian Contributions to the Marine Sciences (1977–present); Smithsonian Folklife Studies (1980–1990); and Smithsonian Studies in Air and Space (1977–1990).

Encyclopedia of Life. A new effort to document the 1.8 million known species of insects, animals, plants and other forms of life on Earth and make this information available worldwide on the Internet was launched in May by the Smithsonian; the Field Museum in Chicago; Harvard University; the Marine Biological Laboratory at Woods Hole, Mass.; the Missouri Botanical Garden; and the Biodiversity Heritage Library.

Known as the Encyclopedia of Life, the project will create an Internet page for each known species and organize the pages at the Web address www.eol.org. This ever-growing resource of written information, photographs, videos, sounds, maps and other data will be created and maintained by experts around the globe.

Milestone. On May 11, the Smithsonian's National Museum of African American History and Culture opened its inaugural exhibition, "Let Your Motto Be Resistance: African American Portraits," at the International Center of Photography in New York City. Featuring an intriguing collection of 100 photographs from the permanent collection of the Smithsonian's National Portrait Gallery, the exhibition examines 150 years of American history and shows how photographers and their subjects worked to create positive images, challenge demeaning stereo-



Elsie, the Borden Co. mascot, was on hand for the donation of memorabilia to the Smithsonian. (Photo by Richard Strauss)

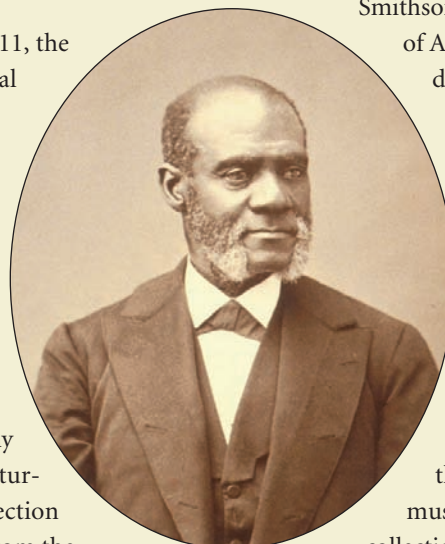
types and shape new attitudes about race and status.

Borden acquisition. The Borden Co. recently donated a collection of memorabilia documenting the company's participation in the 1939 New York World's Fair to the

Smithsonian's National Museum of American History. The donation from Borden, a nationally known milk-products company, was made in commemoration of the company's 150th anniversary. It includes year-books, photographs, personal scrapbooks and other materials that will be added to the museum's Archives Center collections. These items will

supplement existing collections related to the 1939 World's Fair.

This 1881 photograph of abolitionist Henry Highland Garnet is in the exhibition "Let Your Motto Be Resistance."



Population decline in North American bird species follows West Nile Virus

Using population survey data of North American birds compiled since 1981, scientists at the Migratory Bird Center of the Smithsonian's National Zoological Park in Washington, D.C., and the Wildlife Trust in New York have documented a significant population decline among several bird species following the introduction of the West Nile Virus in North America.

The affected species include some of America's most familiar birds, including the American robin, American crow, blue jay, Eastern bluebird, house wren, tufted titmouse and black-capped chickadee.

Although it has long been known that West Nile Virus—an introduced, invasive pathogen—does cause bird mortality, only recently have scientists been able to demonstrate the large-scale impact of the virus on the populations of a number of bird species.

“Our work demonstrates the broad and potentially devastating impacts that an invasive pathogen can have on our native wildlife,” says Shannon LaDeau, lead researcher of the survey and a Smithsonian postdoctoral fellow.

“Some species, like the American crow, showed population declines up to 45 percent regionally,” LaDeau continues. “It is also important to emphasize that we have only looked at a small subset of bird species in the United States. Most species, such as birds of prey and waterbirds, aren't monitored at these scales, so we have no way of knowing how or if their populations are declining.”

Peter Marra, a National Zoo ornithologist and co-author of the survey study, emphasized that “with increasing globalization often come dire consequences for native wildlife and their dependent

ecosystems, including unprecedented movement of invasive pathogens around the world.

“The West Nile Virus serves as a clear example of how other pathogens, such as highly pathogenic avian influenza, might easily enter and affect our ecosystems,” Marra says. These results also emphasize the risks associated with global trade in wildlife. International wildlife trade, legal and illegal, is one of the primary ways pathogens move around the world. The United States and other countries in the Western Hemisphere should carefully consider banning future trade in wildlife, Marra says. —John Gibbons



Blue jay (Photo by Jessie Cohen)

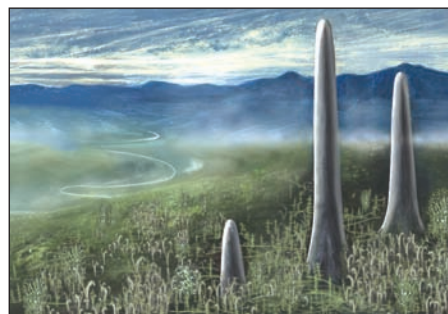
Carbon isotopes help classify prehistoric organism as a humongous fungus

When fossils of the fungus *Prototaxites* were first discovered in the mid-1800s in Quebec, Canada, the size of this 20-foot-high, towering, cactus-shaped organism caused scientists to classify it as a conifer. Later, researchers argued it was a lichen, fungus or, possibly, algae.

In 2001, more than 150 years after its discovery, Francis Hueber, a paleobiologist at the Smithsonian's National Museum of Natural History, examined the internal structure of *Prototaxites* fossils—an interwoven mesh of tiny tubes—with a regular microscope and a scanning electron microscope. Hueber then published a paper identifying *Prototaxites* as “an extinct form of fungus with sporophores (structures that release spores) that exceed comparable forms living today and exceed the imagination as well...”

Now, a new study by Hueber, Carol Hotton, also of the National Museum of Natural History, C. Kevin Boyce of the

University of Chicago and their colleagues has produced new scientific evidence to support Hueber's theory and finally resolve the identity of this



This illustration shows how *Prototaxites* may have dominated the Devonian landscape. (Illustration by Mary Parrish)

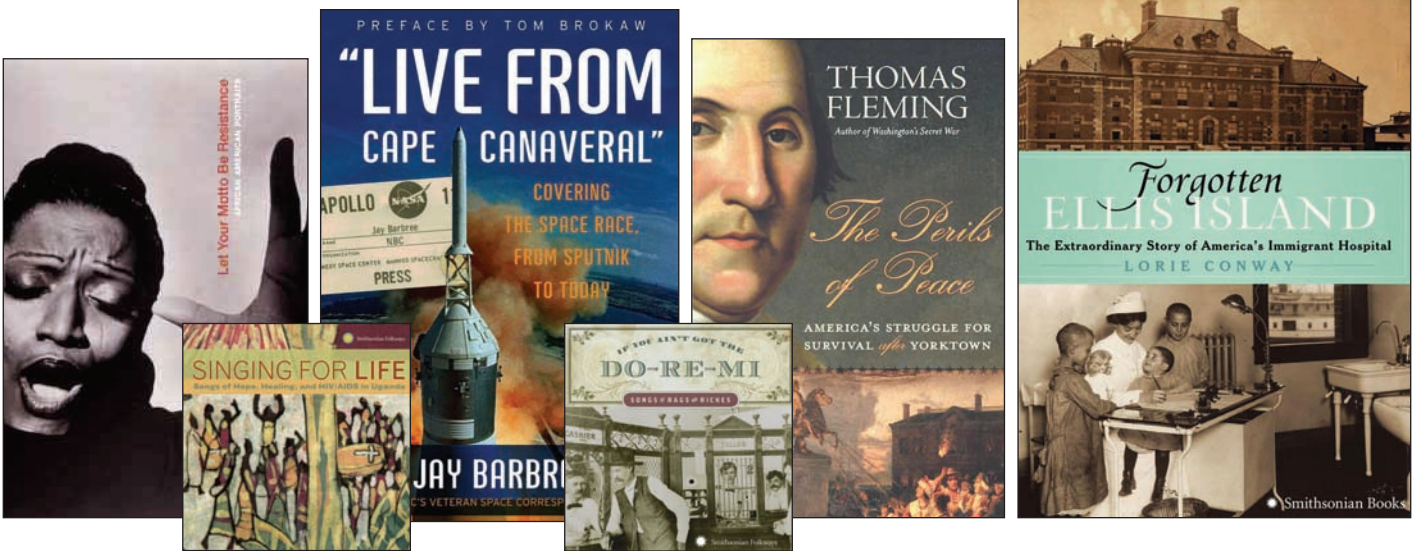
mysterious organism. The team analyzed carbon-12 and carbon-13 isotopes found in *Prototaxites* fossils and compared their ratios to carbon isotopes in fossils from plants that lived in the same environ-

ment some 400 million years ago.

Deriving energy from the sun and carbon from carbon dioxide in the air, plants living in the same environment will typically contain similar carbon-12 to carbon-13 ratios. *Prototaxites* fossils, however, displayed a much wider variation in the ratio of carbon-12 to carbon-13 isotopes than would be expected in any plant. Rather, its carbon isotope ratio is more indicative of a ground-dwelling fungus that, as it grows, absorbs carbon from a variety of elements in the soil.

“*Prototaxites* was the most bizarre and, for the greater part of its existence, the largest and tallest element in the terrestrial floras of the Devonian [period],” Hueber wrote in 2001.

Its humongous size may have enabled it “to distribute its spores widely, allowing it to occupy suitable marshy habitat that may have been patchily distributed on the landscape,” Hotton says. —John Barrat



Buffalo Bill's Wild West Warriors: A Photographic History by Gertrude Käsebier, by Michelle Delaney (Collins, 2007, \$34.95). An extraordinary collection of Native American portraits from Buffalo Bill's Wild West Show, the spectacle that long defined the frontier in America.

Do All Indians Live in Tipis? 101 Questions and Answers from the National Museum of the American Indian (Collins, 2007, \$14.95). The most common myths and stereotypes about Native Americans are laid bare in this friendly and informative book written by experts in Native American studies.

Let Your Motto Be Resistance: African American Portraits, by Deborah Willis (Collins, 2007, \$35). This book serves as the companion volume to the inaugural exhibition of the Smithsonian's newest museum, the National Museum of African American History and Culture.

'Live From Cape Canaveral': Covering the Space Race, From Sputnik to Today, by Jay Barbree (Collins, 2007, \$26.95). Affectionate portraits and amusing anecdotes of astronauts and an engaging behind-the-scenes account of Amer-

ica's 50 years in space by NBC's veteran space correspondent.

Dogs: A Natural History, by Jake Page (Collins, 2007, \$24.95). An engaging and informative guide to everything science can tell us about man's best friend.

The Perils of Peace: America's Struggle for Survival After Yorktown, by Thomas Fleming (Collins, 2007, \$27.95). A dramatic new look at the Revolution after the battle of Yorktown had been won, when the former Colonies' fate remained dangerously unsettled.

Forgotten Ellis Island: The Extraordinary Story of America's Immigrant Hospital, by Lorie Conway (Collins, 2007, \$26.95). The first-ever narrative history of the Ellis Island Hospital, which will soon be restored and open to the public.

Lines of Contention: Political Cartoons of the Civil War, by P.J. Huff and J.G. Lewin (Collins, 2007, \$19.95). Political cartoons from Vanity Fair, Collier's and Leslie's Illustrated offer fresh insight into the American cultural and political climate during the Civil War.

If You Ain't Got the Do-Re-Mi: Songs of Rags and Riches (Smithsonian Folkways Recordings, 2007, \$15). Songs and singers whose words express the human side of money: hope, frustration, humor and desire.

Singing for Life: Songs of Hope, Healing and HIV/AIDS in Uganda (Smithsonian Folkways Recordings, 2007, \$15). A blend of traditional music that affirms the profound strength of a people's music in promoting positive change.

Classic Old-Time Fiddle From Smithsonian Folkways (Smithsonian Folkways Recordings, 2007, \$15). A collection of songs by vintage Southern Appalachian old-time fiddle masters, including Clark Kessinger, Wade Ward, Tommy Jarrell and Marion Sumner.

Books listed on Pages 14 and 15 can be ordered through online book vendors or purchased in bookstores nationwide.

Recordings can be ordered from Smithsonian Folkways Mail Order, Smithsonian Folkways Recordings Dept. 0607, Washington, D.C. 20073-0607. To order by phone, call (800) 410-9815 or (202) 275-1143.

Crazy '08: How a Cast of Cranks, Rogues, Boneheads and Magnates Created the Greatest Year in Baseball History

By Cait Murphy (Collins, 2007, \$24.95)

In the opening pages of her new book, *Crazy '08: How a Cast of Cranks, Rogues, Boneheads and Magnates Created the Greatest Year in Baseball History*, author Cait Murphy revisits early 20th-century Chicago, a town that was stormy, brawling, lusty, “violent, corrupt and outrageous.” Chicago and baseball were “like pork and beans,” Murphy observes, “the ingredients are modest, but the result is appealing to all palates.”

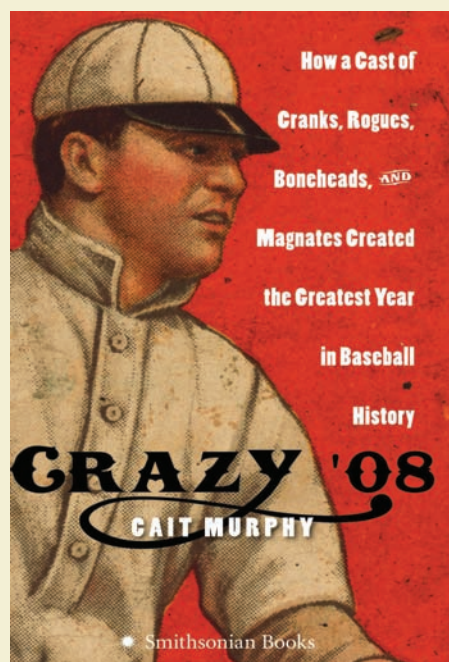
In *Crazy '08*, Murphy serves up an entertainingly palatable tale, taking readers down into the dugouts, out onto the field and in among the riotous fans of America's 1908 baseball season. The year witnessed the greatest pennant race the National League has ever seen, Murphy writes, a season when the Chicago Cubs' Frank Chance and his teammates took on John McGraw and Christy Mathewson's New York Giants and Honus Wagner's Pittsburgh Pirates.

“Every baseball season is like a Dickens novel—a tale told in installments, until in the last chapter, known as the World Series, all the loose ends are tied up and the heroes go home, tired but happy,” Murphy writes. “In 1908, there are simply more chapters, more surprises and more drama than in any other.”

In the early days, the rules of baseball were pretty much the same as they are to-

day, with a few notable exceptions. For example, pitchers could do anything with the ball. “They can apply spit, slime, mud, soap, licorice or tobacco juice, or scrape, sand or puncture it—anything short of taking an ax to it,” Murphy points out.

For the fans, the world of baseball was different, too. With no television or instant replay, it was a real, live American pastime. Radio had not yet come to the masses. If Americans wanted baseball action, they had to get out to the fields. “Twenty-thousand to 30,000 people pour into ballparks at a time in 1908, routinely in New York



and Chicago, and occasionally elsewhere,” Murphy writes. “Tens of thousands more block traffic or fill concert halls to watch electric scoreboards by the hour.”

It was the National League's—and the Cubs'—year. In *Crazy '08*, Murphy carefully recounts baseball's history leading up to 1908 and introduces readers to the Cub's Joe Tinker and Johnny Evers, Giant Joe McGinnity, umpire Hank O'Day and others.

Murphy follows the action game-by-

game and player-by-player, offering in-depth portraits of the strengths and weaknesses of each team. She recounts the incredible saves, boneheaded errors and game scores while the tension builds as the Cubs, Giants and Pirates battle it out for first place.

So grandly contested were the American League and National League races, “so great the excitement, so intense the interest, that in the last month of the season the entire nation became absorbed in the thrilling and nerve-wracking struggle,” boasted the October 1908 edition of *Sporting Life*.

Crazy '08 offers up all the excitement of this remarkable season, while also revealing the forces that created modern baseball and the American culture that produced it. In 1908, crooked pols ran Chicago's First Ward, and gambling magnates controlled the Yankees. Fans regularly invaded the field to do handstands, argued with the umpires and shot guns from rickety grandstands prone to fires. Baseball's anthem, “Take Me Out to the Ball Game,” became a hit.

Dynamic and dramatic, 1908 was a season during which so many weird and wonderful things happened that it is somehow unsurprising that a hairpiece, a swarm of gnats and a sudden bout of lumbago all play a role in its outcome. And sometimes, the events are downright depressing. There are several deaths, and the shadow of corruption creeps closer to baseball's heart—the honesty of the game itself.

“Just as the introduction of the Model T in 1908 foreshadows the year of the car as an item of mass consumption, in the intense interest generated in Chicago and New York by the pennant races, the nation glimpses the future of baseball as a mass phenomenon,” Murphy writes. “In 1908, baseball comes of age.” —Daniel Friend

Innovative solar-powered Pathfinder Plus lands at the Air and Space Museum

With a top flight speed of 25 miles per hour, the Pathfinder Plus will never be a contender for air shuttle service between New York and Boston. Still, this odd, flying-wing airplane is a high flyer—in 1998, it set an altitude record for propeller-driven aircraft, climbing 80,201 feet into the stratosphere. It also can stay aloft for 15 hours at a time without burning any fuel.

Made from lightweight materials—Kelvar, carbon fiber, Nomex and plastic sheeting—the unmanned Pathfinder Plus floats silently through the air like a giant bird. Its wingspan is an impressive 121 feet. Piloted remotely from the ground, eight electric-powered propellers pull it slowly through the sky. Solar panels covering the plane's upper wing surface provide the power.

In January, this experimental plane—built and operated by AeroVironment Inc. of Monrovia, Calif., and designed by aviation pioneer Paul MacReady—was acquired by the Smithsonian's National Air and Space Museum. It is now on exhibit in the museum's Steven F. Udvar-Hazy Center in Chantilly, Va.

"Pathfinder Plus is a direct descendant of the the Gossamer Albatross and the Gossamer Condor, two human-powered, very high-lift, slow-speed aircraft that also are in the Smithsonian collections," says Robert van der Linden, curator of experimental

aircraft at the National Air and Space Museum. The Gossamer Albatross made history in 1979 when it became the first human-powered aircraft to fly across the English Channel.

Pathfinder, as it was originally called, was developed in the early 1980s as part of a classified government program experimenting with high-altitude, remotely piloted surveillance planes.

It made its first flight in 1983.

In 1993, the aircraft was deployed in classified tests by the Ballistic Missile Defense Organization. The following year, it was used in experiments by NASA's Environmental Research Aircraft and Sensor Technology Program.

Pathfinder became the Pathfinder Plus in 1998 when NASA engineers doubled the length of its center wing section, increasing the plane's wingspan from 98.4 feet to 121 feet.

In 2002, NASA tested Pathfinder Plus for its potential to monitor crops, forests and remote areas with special cameras. The aircraft also completed a series of telecommunications tests, the world's first from above 65,000 feet, demonstrating its potential for maintaining communications links during an emergency. While flying over the Hawaiian island of Kauai, Pathfinder Plus transmitted several hours of mobile voice, data and video services to handheld devices on the ground. —John Barrat



Pathfinder Plus in Hawaii, June 24, 2002 (Photo courtesy of NASA)

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