



AMERICAN MUSEUM OF NATURAL HISTORY

ROTUNDA

Member Magazine
Fall 2014 Vol. 39 No. 4

NATURE'S FURY

THE SCIENCE OF NATURAL DISASTERS

OPENS NOV. 15

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EXPEDITION TO
A MODERN POMPEII

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A TALE OF
TWO ISLANDS

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From the President

Ellen V. Futter

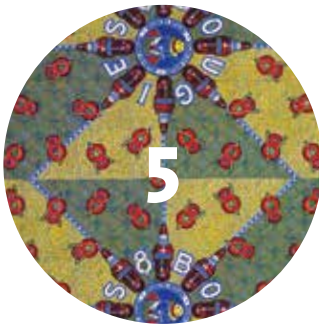


Fall is back-to-school time and at the Museum the words “school” and “classroom” are taking on new and inspiring meaning. Of course, our “classrooms” include the Museum’s 45 exhibition galleries and all the wonders they contain, which provide invaluable experiences to the nearly 400,000 schoolchildren who visit with their schools, to families, and to the general public. Increasingly, “school” for us also means post-secondary and professional education, as the Museum has forged a new leadership role for museums in the broader education landscape. This fall, our second class of Kathryn W. Davis Teaching Fellows will complete our innovative Master’s program to prepare science teachers. These exceptional new teachers will receive their Master of Arts in Teaching (MAT) degree alongside promising young scientists from the Richard Gilder Graduate School on whom the Museum

is conferring Ph.D. degrees in comparative biology. For both of these groups, “classrooms” have included the field, the lab, the galleries, and the Museum’s world-renowned collections. In our digitally connected world, “classroom” can also mean your living room or your tablet, of course. The Museum continues to offer its enormously popular—and free—Massive Open Online Courses (MOOCs) through Coursera, with Museum scientists and educators teaching fall courses on *The Dynamic Earth*, *Evolution*, and *Genetics and Society*. These programs represent just a few ways that the Museum is applying its longstanding mission in education to meet the challenges and opportunities of our time. We hope that the learner in each of you will continue to find new and exciting classrooms and experiences at the Museum, this fall and beyond.

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ROTUNDA

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2014 Margaret Mead Film Festival Looks to Bring the “Past Forward”



Sepideh—Reaching for the Stars is one of more than 40 films at this year’s Margaret Mead Film Festival.

How do traditions help cultures survive and thrive, even in the face of adversity? That question, and the tension between traditions and contemporary life, are at the core of the Museum’s 2014 Margaret Mead Film Festival, which this year features 43 films from more than 50 countries. In *How a People Live*, for example, two-time Emmy Award-winning director Lisa Jackson turns her lens on the Gwa'sala-'Nakwaxda'xw First Nation, whom the Canadian government forcibly relocated from their traditional territories on the northwest coast of North America in 1964. Jackson brings to vivid life people who overcome incredible hardships through their strong connection to the land and shared traditions, including the theatrical dances for which they are known. *Let's Get the Rhythm*, which makes its world premiere at this year’s festival, peers under the surface at the history of hand-clapping games around the world. Through wars and migrations, across language barriers and oceans, young girls connect with each other through thousands of hand-clapping variants as ancient as they are global. In *Sepideh—Reaching for the Stars*, an Iranian teenager discovers an unquenchable interest in astronomy only to face daunting barriers to her professional aspirations, including an aggressively conservative uncle, marital expectations, and financial struggles. These are just a sampling of the films shown at the festival, which runs from Thursday, October 23, through Sunday, October 26, and also includes special multi-media installations and performances.

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Your Ticket to the Mead

Members receive a discount on tickets to the Margaret Mead Film Festival (\$10 per film; \$13 for opening or closing night programs), which can be purchased in advance online or in person during Museum hours at the Member Sales desk in the Theodore Roosevelt Rotunda and at the Rose Center for Earth and Space. During the festival, tickets can be purchased up to one hour prior to showtime at the 77th Street entrance only. Special Student, Film Lover, and One-Day Pass packages are also available to filmgoers who are interested in seeing a set number of films and having access to free standby tickets to any film on a first-come, first-served basis. For more details about ticketing and for online purchases, visit amnh.org/mead. Members are admitted free to special Mead events in the Grand Gallery during festival hours. *Gapuwiyak Calling* is a mixed-media installation celebrating the cellphone as technology of creativity and connection. Created by an arts collective based in the remote Australian community of Gapuwiyak, the exhibition features evocative phone-made content from collages to family photos to video fragments and more. *Hollow*, a film installation, invites you to explore the rural communities of McDowell County, West Virginia, through an interactive, online interface that lets you choose your own path through video, audio, photos, and graphics. Also free for Members are a discussion of innovations in storytelling called Culture Labs: Collaborations with Makers, Scholars, and Communities, Saturday, October 25, at 3:30 pm in the Orientation Center, and the Margaret Mead Filmmaker Award ceremony in Café on One at 9 pm Saturday, October 25.

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LIVELY LIFE CYCLE

Female birdwings lay their eggs on pipevine plants after dramatic courtship rituals. After hatching, larvae feed first on their own eggshells and then on the host plant, which contains toxins that are harmless to the developing birdwing but will protect it against predators. After about six weeks, the larva enters the pupa stage, from which the butterfly emerges about a month later. Adults live about three months; during that time, females can lay more than 200 eggs.

PROTECTING A POPULATION

The species is classified as “Endangered” on the Red List of the International Union of Conservation of Nature (IUCN) and is one of only three insects—all butterflies—to be listed in Appendix I (most endangered) by the Convention on International Trade in Endangered Species (CITES). This designation indicates a species threatened with extinction and prohibits commercial trade.

THE NAME GAME

Queen Alexandra’s Birdwing is now generally regarded as belonging to the *Ornithoptera* genus, although older sources placed it under *Troides* or *Aethoptera*, a name that is no longer in use. The Museum’s collection includes six Queen Alexandra’s specimens, two males and four females, which were acquired some 50 years ago.

THE ULTIMATE COLLECTOR

Born into the wealthy British banking family, Lord Walter Rothschild (1868–1937) collected animal specimens from childhood. Employing a network of specialists, including the naturalist who discovered *Ornithoptera alexandrae* in Papua New Guinea, he created an unsurpassed private zoological museum that included more than two million butterflies.

LEPIDOPTERA AT THE MUSEUM

The Museum’s collection of moths and butterflies ranks among the five largest in the world and includes an unrivaled collection of North American butterflies and significant holdings from around the globe. Launched in the late 19th century with the acquisition of several major collections, the holdings more than doubled under Frederick H. Rindge, curator from 1949 to 1994, who personally collected some 150,000 specimens.



Ornithoptera alexandrae

A Rare Beauty

The world’s largest butterfly is now also one of the most endangered, surviving only on a tiny plot of coastal rain forest in the Popengetta Valley of eastern Papua New Guinea. The spectacular Queen Alexandra’s Birdwing (*Ornithoptera alexandrae*) has been forced into an ever-smaller range by decades of deforestation and natural disaster.

This species, which feeds exclusively on the vines and foliage of local pipevine (*Aristolochia*) plants and thrives only in lowland old-growth rain forest, lost a large part of its habitat with the eruption of Mount Lamington in 1951. Habitat loss later escalated as forests were cleared for logging and farming—for rubber and cocoa plantations and, increasingly, for large-scale palm-oil operations. To add to the pressure, collectors continue to chip away at this fragile population by paying high prices for Queen Alexandra’s specimens on the black market, even though commercial trade in this species is illegal.

Queen Alexandra’s Birdwings have long been prized by collectors for their size, color, and distinctive shape. The female, a huge, mostly brown butterfly with yellow and white markings and broad wings, beats out all other butterflies with a wingspan of almost 10 inches and a body more than 3 inches long. The smaller male, shown above, has narrower, iridescent blue-green and black wings and a bright yellow abdomen.

The first European credited with discovering Queen Alexandra’s Birdwing was Albert Stewart Meek (1871–1945), an English naturalist and collector who obtained the first specimens in Papua New Guinea in 1906 while working for Lord Walter Rothschild. Improbably, Meek used a shotgun to bring down the high-flying butterfly. (Intact specimens were obtained later from eggs and pupae collected closer to the ground.) Rothschild, himself a zoologist and collector who amassed an enormous private collection, named the species in honor of Queen Alexandra of Denmark.

See more than 500 live butterflies in *The Butterfly Conservatory*, which opens November 1.

Photos © AMNH/D. Firmin

A Wordly Fabric

Vibrant, wax-printed cotton fabrics like the one pictured here have been displayed and sold in the markets of West and Central Africa for generations. Highly sought-after as luxury goods, the textiles may seem quintessentially African to Western eyes, but in fact these dizzyingly intricate double-sided patterns reflect a complex history of cultural, colonial, and commercial interactions.

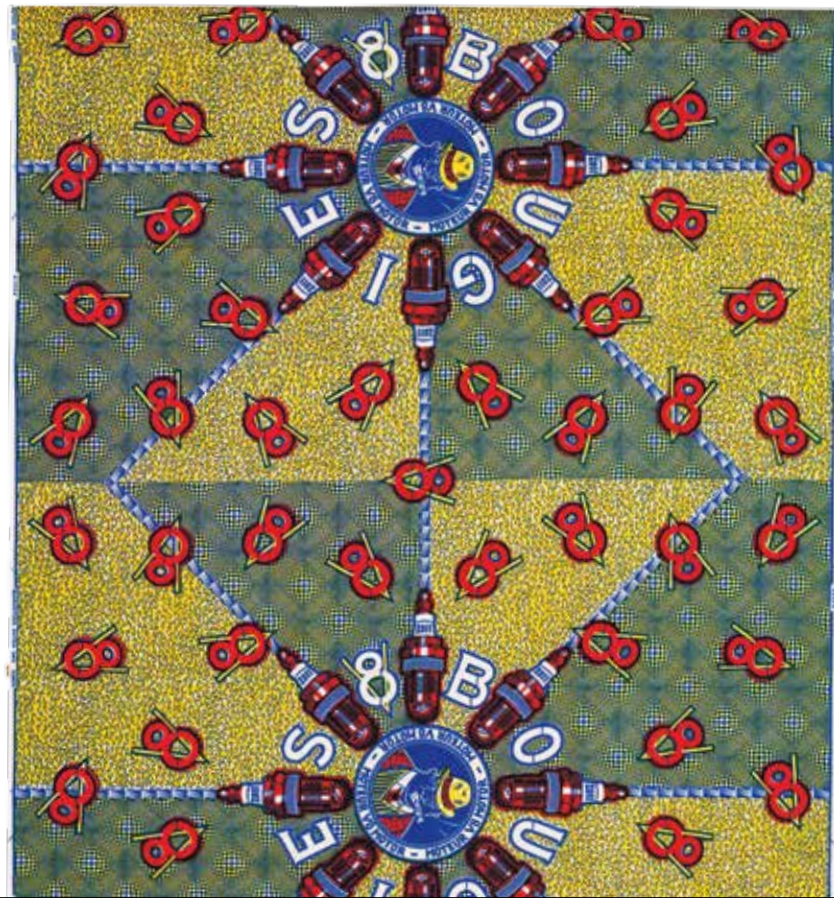
The market for these spectacular fabrics got its start in the 19th century, when beautifully patterned Javanese batik textiles made their way to Africa, brought first through Christian missionaries and later by West African soldiers who carried batik home as gifts from the Dutch East Indies, now Indonesia.

Dutch manufacturers operating in Asia had been experimenting with hand-made and machine-made prints similar to batik for years and seized on the wax prints’ popularity, adapting the production process and designs for the African market and establishing a lucrative industry in the process. Competitors from England, France, and China, among others, joined in the fray, although none achieved the sales or status enjoyed by Dutch producers.

Today such textiles are sold throughout Ghana, Nigeria, Ivory Coast, Democratic Republic of the Congo, and neighboring countries, where tailors transform brightly colored bolts of cloth into elaborate outfits. Manufacturers consult local vendors and consumers to develop textile designs, which range from abstract patterns to nature subjects to motifs that reflect such everyday objects as bathtubs, table fans, and keys—all marks of modernity.

Fittingly for a luxury good, fabric patterns often include elements that signal affluence and cosmopolitan taste. The “V8” featured prominently in the textile shown here—named “8 Bougies,” or eight sparkplugs—is a reference to a powerful and expensive automobile. The fabric was designed and produced in 2011 by the world’s leading producer of premium wax-print fabric, a Dutch company called Vlisco, which was founded in 1846.

Catalog no. 90.2/9920



CONTEMPORARY COLLECTING

Assistant Curator Alex de Voogt purchased this textile for the Museum directly from Vlisco to get a sample with original packaging and dimensions. The pattern is noteworthy as the “male” counterpart of a pattern featuring “Mama Benz,” the name given to West African market women who have become wealthy selling Vlisco cloth and often own Mercedes-Benz cars. Mama Benz has been the subject of two documentaries, which were shown at the Museum’s Margaret Mead Film Festival in 1995 and 2002.

INSPIRING DESIGNS

Dutch wax-print fabrics with African motifs figure prominently in the creations of visual artist Yinka Shonibare, a self-described “post-colonial hybrid.” Born in London and raised in Lagos, Shonibare explores questions of identity and authenticity in globalized cultures in his art. Among his best known works are installations featuring headless mannequins adorned in these textiles in varied settings as well as famous European paintings reimagined with figures dressed in batik-style clothing.

FASHION FORWARD

While African buyers dominate the market for wax-print fabrics, major international fashion houses and retailers have begun to feature similar textiles in dresses, suits, handbags, and even upholstered furniture. Burberry, agnès b., and H&M’s Marni collection are among the prominent labels to embrace the bold prints for worldwide distribution.

PAINSTAKING PROCESS

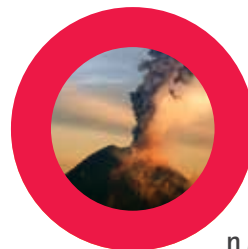
In Indonesia, artisans create batik by hand by drawing patterns on cloth in dye-resistant wax. When the cloth is soaked in dye, areas under the wax retain their original color. Although many have used similar techniques, Indonesian batik is the most highly regarded. It was named a “masterpiece of oral and intangible heritage of humanity” by UNESCO in 2009 to encourage its protection as a form of cultural expression.

TEN THOUSAND TEXTILES

The ethnographic collection in the Museum’s Division of Anthropology houses more than 10,000 textiles from Africa, Europe, Asia, the Pacific Islands, and the Americas. These fabrics range from clothing and utilitarian items to specialty textiles used in ceremonial functions. Digital images of the items in the collection are accessible on the Museum website at amnh.org/our-research/anthropology.

Expedition to a Modern Pompeii

MUSEUM GEOLOGIST
ON THE SCENE
OF A 1902 DISASTER



On May 14, 1902, Museum geologist Edmund Otis Hovey boarded the U.S. cruiser *Dixie*, bound for the Caribbean. He had been sent by Museum President Morris K. Jesup to investigate volcanic eruptions that had killed nearly 30,000 people in less than 24 hours the previous week.

The first came on the afternoon of May 7, when Mt. Soufrière, on the island of St. Vincent, erupted in a boiling mudflow of steam and ash, killing 1,565 people. The next morning, 75 miles to the north on Martinique, Mt. Pelée exploded in a cloud of hot gases, volcanic ash, and rocks. Traveling at a speed of 300 miles an hour, the searing mass rushed down the mountainside, incinerating everything in its path, including the picturesque seaside town of Saint-Pierre and nearly all the ships in the harbor. Within two minutes, some 27,000 people were dead. On May 20, the day before Hovey's arrival in Martinique, a second equally powerful eruption covered the now uninhabited town of Saint-Pierre again.

The scene he encountered defied words. "The devastation wrought by the eruption cannot be appreciated from a verbal description," Hovey wrote in *The American Museum Journal* of 1902, "and even photographs do not convey an adequate idea of what has happened" to a city that had enjoyed a reputation as the Paris of the Caribbean. Once a hub of trade in rum, sugar, cocoa, and coffee, its boulevards lined with handsome homes and showy shops, Saint-Pierre, as Hovey found it, was now a smoldering ruin with barely a brick left standing. Lying as the

city did in a cul-de-sac in the path of incandescent volcanic discharge, Hovey wrote, Saint-Pierre and its residents had been "as helpless as an animal in a trap."

The eruptions were of a type called *nuée ardente*, French for "glowing cloud." Magma or molten rock, supercharged with gases, is less dense than rock and so rises to the surface through cracks and crevices. If the gases can boil off gradually at the surface, the potential force is diffused, sometimes creating the effusive flow of lava we tend to associate with volcano eruptions. But in a *nuée ardente*, the gaseous magma is blocked and pressure builds until it is eventually released as a dense, swirling mass of hot gas, incandescent dust, and rock fragments known as a pyroclastic flow.

The explosive cloud can first rise high into the air and then collapse downward, as Pliny the Younger observed in what is thought to be the earliest recorded description of a volcanic eruption. In letters written years after the AD 79 eruption of Vesuvius, the Roman magistrate gave a remarkably detailed description of what he had seen as an 18-year-old across the bay. Vesuvius is sited east of what is now Naples, Italy, and the AD 79 *nuée ardente* killed some 20,000 people in the towns of Pompeii and Herculaneum.

Add water to the mix—as at Mt. Soufrière, which was known for its beautiful crater lake—and the result is the addition of a mudflow, or lahar. The mass of gaseous magma also can create chemical changes that eat away at rocks, weakening them, until the cloud of ash and gas blows out the mountainside before



Museum geologist Edmund Hovey, second from right, at Mt. Soufrière volcano in 1902.
Left: Rubble covers a side street in northern Saint-Pierre in 1902.



Nature's Fury: The Science of Natural Disasters

Opens Saturday, November 15

From earthquakes and volcanoes to hurricanes and tornadoes, nature's forces shape our dynamic planet and often endanger people around the world. *Nature's Fury: The Science of Natural Disasters* uncovers the causes of these natural disasters, explores the consequences, and examines how people cope and adapt in their aftermath. The exhibition features compelling interactive displays and animations to help visitors understand how natural phenomena occur. By monitoring earthquakes around the world in real time, manipulating a model earthquake fault, generating a virtual volcano, standing within the center of a roaring tornado, and watching the power of Hurricane Sandy via an interactive map of New York City, visitors will learn how scientists are helping to make better predictions, plan responses, and prepare for future events. The exhibition, which is free for Members, is overseen by Edmond A. Mathez, curator in the Department of Earth and Planetary Sciences.

Nature's Fury: The Science of Natural Disasters was originally created by The Field Museum, Chicago, with additional content developed by the American Museum of Natural History.

Nature's Fury is proudly sponsored by Travelers.

**Member Preview
Thursday, November 13
4–8 pm**

Members are invited to see *Nature's Fury: The Science of Natural Disasters* at a special preview on Thursday, November 13, beginning at 4 pm. View the exhibition and stay for a wine reception from 5 to 8 pm. Please RSVP by calling the Membership Office at 212-769-5606.

rushing fast and furiously downward. This was documented firsthand at Mount St. Helens in 1980 and is believed to have happened at Mt. Pelée in 1902.

"This type of volcano is the most explosive, literally analogous to twisting off the top of a soda bottle," explains geologist James Webster, curator in the Department of Earth and Planetary Sciences. "When the mountain is ripped open, the volcanic blast is faster and potentially more deadly because it has less distance to travel to reach the surface... What Hovey observed about trees at Mont Pelée is consistent with Mount St. Helens."

Hovey described an odd sight. "The line between scorched and unscorched areas was strikingly sharp," he wrote. "In many places the line of demarcation passed through single trees, leaving one side scorched and brown while the other side remained as green as if no eruption had occurred."

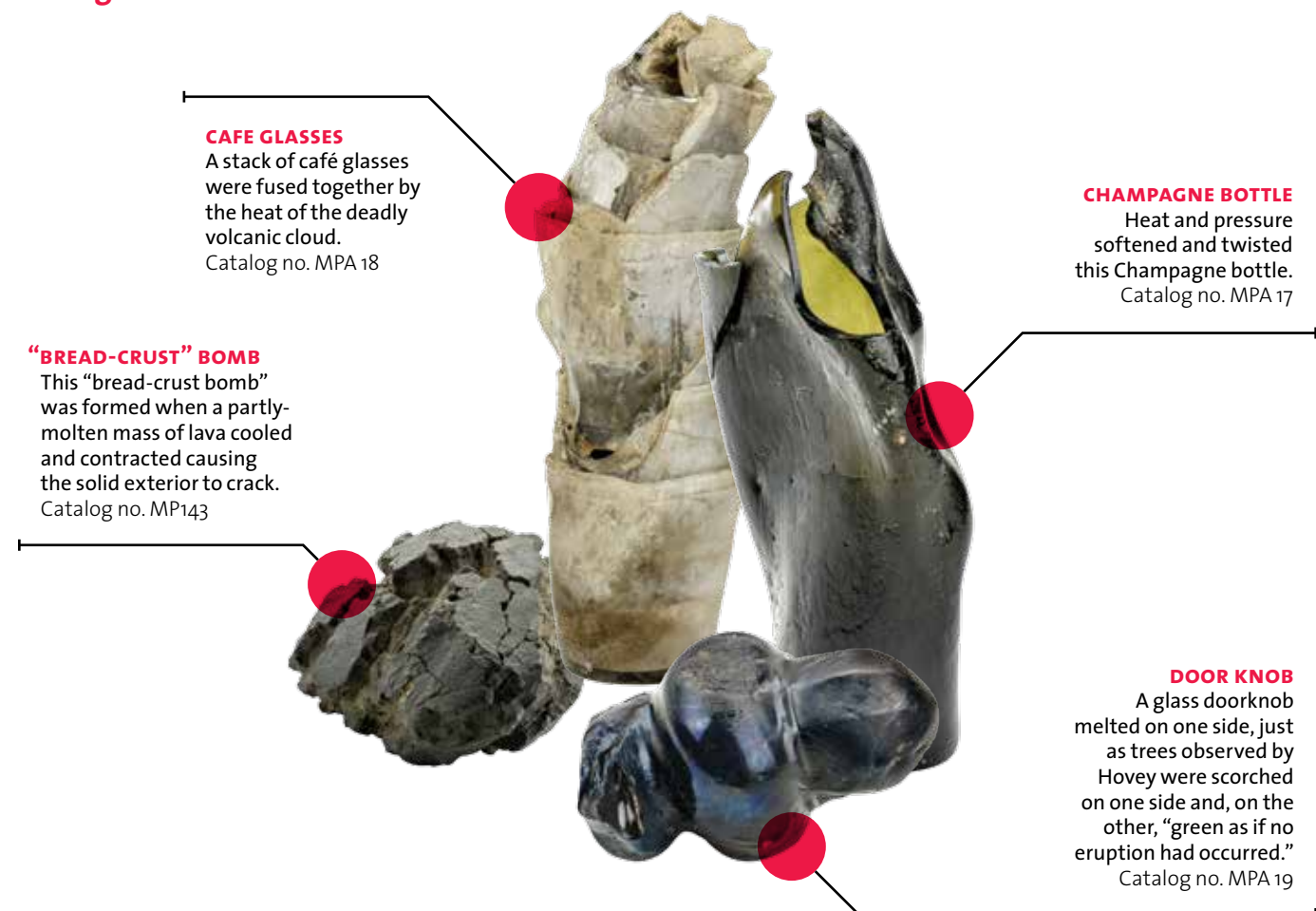
During his Martinique expedition, Hovey also collected and sent back to the Museum invaluable specimens, molten household objects, pulverized street signs, and lumps of half-melted lava—called "bread-crust bombs" for their cracked tops—which had been thrown out of the volcano during the eruption. A number of these artifacts will be on view in the Museum's special exhibition *Nature's Fury: The Science of Natural Disasters*.

At the time, volcanology was still in its infancy. A crude seismometer was first introduced in 1840, but even with that technology, scientists simply lacked a clear understanding of how volcanoes erupt. "Since that time we have learned much more about gases, the relationship between seismic activity and magma movement, even about gas opening the rock and providing a pathway for magma to follow," says Dr. Webster.

Hovey's research was part of that long, steady progression toward a better understanding of volcanoes, of which better prediction is the goal and in which the Museum continues to play an important role. Webster, for example, has explored Vesuvius eight times and teaches a course in Naples every fall. The Museum's collection of samples from Vesuvius is among the best in the world, after the University of Naples Federico II and the University of Pisa.

© Steve Geer / Inset © AMNH Library/109702

Telling Artifacts



With little knowledge of how volcanic eruptions occurred, the residents of Mt. Pelée woefully underestimated the risks of living in its vicinity and ignored signals that it was still active. Occasional spewings of steam and ash were taken less as a warning than an occasion for picnics near the mouth of the volcano. As J. Chatenay of Seaboard National Bank, who had lived in Saint-Pierre until shortly before the 1902 eruption, told *The World* newspaper on May 10, 1902: "No one ever thought of fearing the volcano, which all thought to be extinct... The people wandered about by thousands, never dreaming that there was any danger."

Even ominous signs in the months and weeks before the May 8 eruption failed to raise adequate alarm. On April 23, earthquakes dislodged dishes from shelves in Saint-Pierre. The next day, fine ash fell for two hours on a town nearby. On May 2, a lightning-lit column of ash and fumes rose nearly two miles high above the mountain, and an inch of ash covered Saint-Pierre. On May 5, a mudflow from the volcano killed 23 people north of the city, and a tsunami reached the harbor 15 minutes later. On May 6, the mountain flung huge molten rocks in the air.

Given the state of the science in the 1900s, the people of Saint-Pierre couldn't possibly have foreseen what was to befall them. But even today, with better science to back up predictions, an estimated half a billion people live within range of an active volcano, including more than 4,000 townspeople of the rebuilt Saint-Pierre and, perhaps more strikingly, roughly 4 million people who live in and around Naples. In fact, Naples recently built an emergency response hospital on the slopes of Vesuvius.

"It's a strange concept," says Webster. "The first place you'd go is the first place that would be destroyed."

Bear in mind that as natural disasters go, the risks worldwide associated with earthquakes and hurricanes are orders of magnitude greater in loss of life and property damage than those associated with volcanic eruptions. Earthquakes alone affect the lives of some five million people a year. And where volcanoes are being monitored, scientists can generally predict eruptions in advance.

Still, the prospect of evacuating a population as dense as that around Vesuvius is daunting. In modern history, Vesuvius had relatively large eruptions in 1631 and 1944, with smaller ones in between—so it is by no means dead. But complicating the assessment of actual risk is the difficulty humans have appreciating geological time scales in which patterns are measured not in decades but in thousands and tens of thousands of years. In addition, even scientists disagree. Vesuvius operates on a very long cycle of major eruptions every 500 to 1,000 years, says Webster, and there is one camp that theorizes a large eruption is not imminent and another that believes Vesuvius could erupt catastrophically soon.

Asked which side he falls on, he says, "I don't know enough. But it definitely warrants heavy monitoring."

Nature's Fury: The Science of Natural Disasters opens on November 15 and is free for Members.

A TALE OF TWO ISLANDS

MUSEUM PROJECT
LINKS SAMOA
AND NEW YORK CITY

MORE THAN 7,000 MILES separate the Pacific island nation of Samoa from the borough of Staten Island. But as coastal communities vulnerable to severe weather events—most recently, Cyclone Evan in Samoa and Hurricane Sandy in New York—both have struggled with similar questions: how do we rebuild, if at all? Should we stay, risking another devastating storm? And how can neighborhoods and communities remain intact when physical structures are destroyed and residents driven away?

Enter Jenny Newell, assistant curator in the Museum's Division of Anthropology and an expert on the cultural impacts of climate change in the Pacific, where rising sea levels and coastline erosion have led to flooding, compromised residents' livelihoods, and even caused some to flee ancestral homes and homelands. For the past year, Dr. Newell and Curatorial Associate Jacklyn Lacey have been working with Lumepa Apelu, Principal Museum Officer at the Museum of Samoa, to lead a cultural exchange between Samoa and New York City and to document shifting ideas of "home" for people forced by climate change and extreme weather to question their houses as reliable shelters and even to reevaluate their long-term ties to particularly vulnerable areas. "We've been bringing together two small groups, about 15 people, to consider and talk about these destructive events that have had impacts on their homes—how will they rebuild, and what kinds of things can we learn from each other cross-culturally?" says Newell.


The one-year initiative, called "Rethinking Home," is supported by the American Alliance of Museums and the U.S. Department of State through its Museums Connect program, and has included video and in-person workshops for participants in Samoa and New York as well as trips across the Pacific for several members of each group. On one such exchange, which took place over Memorial Day weekend, Newell and Lacey organized

a tour of a neighborhood on southeast Staten Island for several Samoans, including Faainu Latu, lecturer in environmental science at the National University of Samoa, and anthropologist-filmmaker Dionne Fonoti. Helping lead the tour were residents displaced by flood damage, including Aiman Youseff, who hosted the group in a community space on Midland Avenue that he created after the storm as a place for neighbors to gather as well as to find food, supplies, and information. Seth Wollney, formerly an educator at the Staten Island Museum, offered an overview of a neighborhood where rebuilt houses stand shoulder-to-shoulder with boarded-up homes slated for demolition.

Many houses on Staten Island's southeast coast, Wollney explained, were built in the 1920s as beach bungalows. Over several decades, they were winterized and became full-time residences, though most were never brought up to building code. When Hurricane Sandy hit in October 2012, houses were lifted off their foundations by the storm surge. Flooding and subsequent mold growth left many uninhabitable. In some cases, empty homes attracted squatters, putting additional pressure on scarce community resources and further distressing longtime residents.

The Samoan participants were particularly interested to hear about the different roles the federal government and local communities take in providing relief and rebuilding. "In Samoa, the relationship with the government is different—our local village governments are more powerful than the national government," Fonoti explained to the group. "National aid is a new thing for Samoans. [Traditionally,] everything had to be handled within." But both Samoans and New Yorkers agreed

that the grueling task of recovery after a major storm can keep individuals and communities occupied with short-term fixes at the expense of thinking about solutions to the long-term prospect of rising sea levels and other effects of climate change. As Staten Island resident Leila Rassi, who spent 15 months after the storm staying with friends and family because of damage to her home, wrote in a blog post for the project, "We are tired. It becomes understandable that many of us so-called Sandy survivors... have little capacity to engage with the larger narrative of climate change, despite the bone-deep realization that climate change is precisely where we must focus our energies."

Of course, the issue is just as pressing for every other New Yorker. With 520 miles of coastline—that's longer than the coastlines of Miami, Boston, and San Francisco combined—New York City is considered to be one of the most vulnerable coastal megacities in the world. Efforts to shore up New York against extreme weather and long-term impacts of climate change are already underway but, in the meantime, "Rethinking Home" has begun the intriguing and important work of considering how climate change is affecting not just infrastructure, but local and global cultures as well. 

Find out how Hurricane Sandy affected all five New York boroughs and see objects from Samoa in *Nature's Fury: The Science of Natural Disasters*, which is free for Members.

To learn more about "Rethinking Home," visit amnh.org/our-research/anthropology and click on "Projects."



LISTEN

to Jenny Newell's
10/1 SciCafe on
amnh.org/podcast

Museum curator Jenny Newell (far right) and colleague Jacklyn Lacey (seventh from left) organized a tour of Staten Island for the participants of Rethinking Home, including a stop at Aiman Youseff's (center in blue T-shirt) community-led Midland Avenue Neighborhood Relief effort.

Anatomy of a Spider

This alluring arachnid is a superstar.

They make up about 2 percent of the 44,500 known species of spiders, but tarantulas boast a particularly outsized public profile. They are frequently the movie-star spider of choice, cast to add drama to scenes where they usually signal mortal danger, elicit shrieks of fear, or both.

Off screen, a tarantula like this vividly colored Mexican red knee is actually relatively harmless. It does produce venom that is toxic to its prey—insects, small frogs, lizards, and mice. But it is not a threat to humans and, in fact, is a coveted pet.

Popularity has its pitfalls, however. Although all trade in this spider in the wild is illegal, high demand—along with habitat loss in its native Mexico, southwestern United States, and Panama—has earned the species, *Brachypelma smithi*, a “near-threatened” designation on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List.

Life Size

Spiders must shed their hard body shell to grow. Newborn Mexican red knee tarantulas molt every two weeks for the first four months of life.



1 VENOM GLANDS
The spider's venom paralyzes prey. Bites are relatively harmless to humans, comparable to the sting of a bee or wasp.

2 EYES
Like most spiders, this species has eight eyes but poor vision. The spider depends more on sensitive hairs on its legs and body to orient itself.

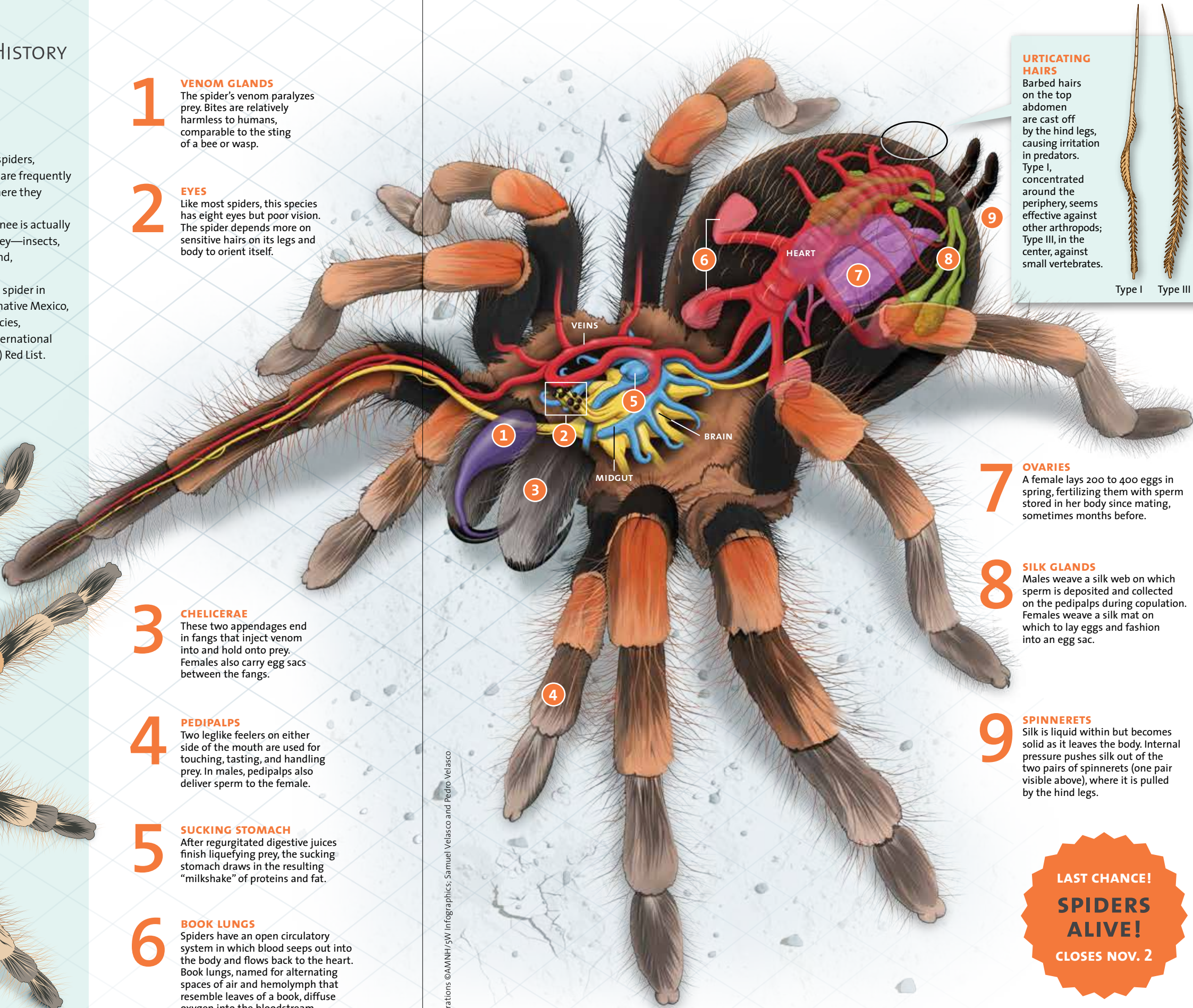
3 CHELICERAE
These two appendages end in fangs that inject venom into and hold onto prey. Females also carry egg sacs between the fangs.

4 PEDIPALPS
Two leglike feelers on either side of the mouth are used for touching, tasting, and handling prey. In males, pedipalps also deliver sperm to the female.

5 SUCKING STOMACH
After regurgitated digestive juices finish liquefying prey, the sucking stomach draws in the resulting “milkshake” of proteins and fat.

6 BOOK LUNGS
Spiders have an open circulatory system in which blood seeps out into the body and flows back to the heart. Book lungs, named for alternating spaces of air and hemolymph that resemble leaves of a book, diffuse oxygen into the bloodstream.

Illustrations ©AMNH/r5W Infographics, Samuel Velasco and Pedro Velasco



URTICATING HAIRS
Barbed hairs on the top abdomen are cast off by the hind legs, causing irritation in predators. Type I, concentrated around the periphery, seems effective against other arthropods; Type III, in the center, against small vertebrates.



7 OVARIES
A female lays 200 to 400 eggs in spring, fertilizing them with sperm stored in her body since mating, sometimes months before.

8 SILK GLANDS
Males weave a silk web on which sperm is deposited and collected on the pedipalps during copulation. Females weave a silk mat on which to lay eggs and fashion into an egg sac.

9 SPINNERETS
Silk is liquid within but becomes solid as it leaves the body. Internal pressure pushes silk out of the two pairs of spinnerets (one pair visible above), where it is pulled by the hind legs.

LAST CHANCE!
**SPIDERS
ALIVE!**
CLOSES NOV. 2

Programs and Events

For more programs and to purchase tickets, visit amnh.org/calendar.

For updates and reminders, sign up for monthly Calendar Highlights for Members by sending your membership number and request to subscribe to members@amnh.org. The Museum does not trade, rent, or sell this information.

Tickets

Tickets are available by phone at 212-769-5200, Monday–Friday, 9 am–5 pm, or by visiting amnh.org. Please have your membership number ready.

Availability may be limited. Please purchase tickets in advance.

Please be aware that ticket sales are final for all Member programs. All programs go ahead rain or shine. There are no refunds unless the program is cancelled by the Museum.

OCTOBER

A Night at the Museum Sleepover
Saturday, October 11, 18, November 15, 22, and December 13
6 pm–9 am
\$135
\$105 Members Special Pricing with code MEMSLEEP for October and November

Break out your sleeping bags on this after-hours adventure for children ages 6 through 13 and their caregivers.

Member Family Highlights Tour
Sunday, October 12
10:30 am–noon
Free (Reservations required; call 212-769-5200)
Expert guides will lead you through the Museums halls to explore some family favorites.

You Are Here with Chris Hadfield
Tuesday, October 14
7 pm
\$12
Join astronaut **Chris Hadfield** for a virtual orbit of Earth as experienced from the International Space Station, described in his latest book, *You Are Here*. Book signing will follow.

Family Astronomy in the Dome: I Spy in the Sky
Saturday, October 18
6:30 pm
\$10
Come for an evening of star hopping as we look at fall and winter constellations using the Zeiss Star projector. For ages 4–11.

Sackler Brain Bench One-Day University: Illuminating the Brain
Saturday, October 18
9 am–4 pm
\$85
The field of neuroscience has experienced dramatic advances in imaging technologies over the past 20 years. Join us for a day of deciphering images and illuminating the brain.

A Decade at Saturn
Monday, October 20
7:30 pm
\$12
In 2004, the Cassini spacecraft and its Huygens probe reached Saturn, setting off a decade-long exploration of that planet. Cassini Imaging Team Leader **Carolyn Porco** shares some of the enchanting sights.

2014 Margaret Mead Film Festival
Thursday–Sunday
October 23–26
\$10 for most tickets
The **2014 Margaret Mead Film Festival**—the preeminent showcase for contemporary cultural storytelling—will screen more than 40 documentaries and host multimedia installations and powerful performances.

Strange New Worlds with Jackie Faherty
Tuesday, October 28
6:30 pm
\$12
Astrophysicist **Jackie Faherty** uses the Digital Universe Atlas software to reveal exoplanets and more in our galaxy.

Member Behind-the-Scenes Tour: Live Animals
Thursday, October 30
6:30 pm (family tour); **7 pm; 8 pm**
\$35
Learn about the Museum’s live animals, including the butterflies and spiders on public display, from Associate Director of Living Exhibits **Hazel Davies** and Exhibitions Assistant **Patricia Kay**. For ages 10 and up.

Exhibitions

Admission is by timed entry only.

Nature’s Fury: The Science of Natural Disasters
Opens Saturday, November 15
Free for Members
From earthquakes and volcanoes to tornadoes and hurricanes, nature’s forces shape our dynamic planet and affect the lives of people around the world. Discover the causes of these natural events and explore the risks associated with each.

Pterosaurs: Flight in the Age of Dinosaurs
Free for Members
The fossils of ancient winged reptiles known as pterosaurs puzzled paleontologists for hundreds of years. Find out about how incredible new discoveries are revealing more about this extraordinary group of animals.

Lonesome George
Free for Members
Lonesome George, the world-famous Pinta Island tortoise who was the last of his kind when he died in June 2012, has been preserved in consultation with Museum scientists and will be on display for a limited time.

Natural Histories
Free for Members
View reproductions of beautifully illustrated scientific works from the Museum Library’s Rare Book collection in an exhibition inspired by the book *Natural Histories*.

Halloween
Friday, October 31
4–7 pm
\$10
Come in costume for trick-or-treating, crafts, live music, performances, and more.

NOVEMBER

Live Bat Encounter
Saturday, November 1
11 am (recommended for younger children); **1 pm; and 2 pm**
\$10
Learn about bats from around the world. **Rob Mies**, director of the Organization for Bat Conservation and author, will bring a live bat.

Sackler Brain Bench Course for Adults: Human Brain Development and Aging
Five Mondays
November 3, 10, 17, 24, December 1
6–8 pm
\$240
In this five-session adult course, you will be able to probe the neuroscience behind how your brain grows and ages. Join us on a journey of the brain’s growth, development, and change over time.

Please check amnh.org for Member ticket prices for live-animal exhibits, IMAX and 3D films, and the Space Show.

Spiders Alive!
Closes Sunday, November 2
Featuring 20 species of live arachnids, including the goliath bird eater, black widows, and African whip spiders, *Spiders Alive!* immerses visitors in the fascinating and complex world of spiders.

The Limits of Science and the Search for Meaning
Monday, November 3
7:30 pm
\$12
Renowned theoretical physicist **Marcelo Gleiser** and acclaimed philosopher and novelist **Rebecca Goldstein** discuss the limits of knowledge. Book signings will follow.

SciCafe: Antibiotics and Obesity
Wednesday, November 5
7 pm
Free (21+ with ID)
Physician and microbiologist **Martin Blaser** will discuss how changes in the human microbiome brought on by the overuse of antibiotics and hand sanitizers may be contributing to a rise in chronic conditions including obesity.

Member Highlights Tour
Saturday, November 8
10:30 am–noon
Free (Reservations required; call 212-769-5200)
Join a guide for an insider’s introduction to all that the Museum has to offer, from world-famous habitat dioramas to the Rose Center for Earth and Space.

The Butterfly Conservatory: Tropical Butterflies Alive in Winter
Opens Saturday, November 1
This live-animal exhibit features up to 500 free-flying tropical butterflies from Central, South, and North America, Africa, and Asia. Housed in a vivarium that approximates their natural habitat with live flowering plants, species include striking scarlet swallowtails and large owl butterflies.

Glacial Earthquakes: Using Seismic and GPS Observations to Map Changes in Glaciers and Ice Sheets Worldwide
Wednesday, November 12
6:30 pm
Free for Members (Call 212-769-5200 for required reservations)
Earthquakes are increasing while polar ice-sheets are losing mass. Join Columbia professor **Marion Nettles** to learn how the two phenomena may be connected.

Member Preview: *Nature’s Fury*
Thursday, November 13
4–8 pm
Free (RSVP required; 212-769-5606)
Members are invited to see the new exhibition *Nature’s Fury: The Science of Natural Disasters* at a special preview with a wine reception.

Member Field Trip to the Moon
Wednesday, November 19
6 pm
\$12
Guided by a live presenter, take a virtual trip to the Moon from the Hayden Planetarium! Experience a thrilling NASA rocket launch, orbit the Earth, and get an astronaut’s view of a sunrise in space. For ages 5 and up.

Hayden Planetarium Space Show: Dark Universe
Narrated by Neil deGrasse Tyson, the new Space Show celebrates pivotal discoveries and the cosmic mysteries that remain.

LeFrak Theater *Great White Shark*
This IMAX film unravels the mystery of the creature we love to fear—the much maligned, and misunderstood, great white shark. 2D and 3D showings.

Member Hall Tour: Gottesman Hall of Planet Earth
Sunday, November 23
3–4 pm
Free (Reservations required; call 212-769-5200)
How did Earth form? How do we know what it was like 4 billion years ago? Join a Museum guide in an exploration of the planet we call home.

Grand Tour of the Universe
Tuesday, November 25
6:30 pm
\$12
Explore planets, exoplanets, nearby stars, and the myriad galaxies that populate the universe while you “fly” with educator **Brian Abbott** through the 3D Digital Universe Atlas.

Credits
Nature’s Fury: The Science of Natural Disasters was originally created by The Field Museum in Chicago, with additional content developed by the American Museum of Natural History. Nature’s Fury is proudly sponsored by Travelers.

Credits continue on page 16

DECEMBER

Painting the Natural World in Acrylic
Eight Tuesdays
December 2, 2014–January 20, 2015
7–9 pm
\$240 (Easels provided; other materials not included.)

Working with the dioramas of the Bernard Family Hall of North American Mammals, artists **Eric Hamilton** and **Greg Follender** teach painting techniques.

SciCafe: Imaging Space Rocks
Wednesday, December 3
7 pm
Free (21+ with ID)

Museum Curator **Denton Ebel** and colleagues discuss the imaging and analysis of meteorites and samples of Comet Wild-2 returned to Earth by the Stardust mission.

In Search of the True Universe
Monday, December 8
7:30 pm
\$12

Award-winning astronomer and author **Martin Harwit** discusses his new book about human understanding of the universe. Book signing will follow.

Member Behind-the-Scenes Tour: Mammalogy
Tuesday, December 9
6:30 pm (family tour); **7 pm; 7:30 pm**
\$35

Explore the Museum’s extensive mammal collections with Collections Manager **Neil Duncan** and Senior Scientific Assistant **Eileen Westwig** as they focus on some remarkable ways these animals adapt to extreme climates and other aspects of their natural surroundings. For ages 10 and up.

Member Family Highlights Tour
Sunday, December 14
10:30 am–noon
Free (Reservations required; call 212-769-5200)

Expert guides will guide you through the Museum halls to explore some family favorites.

Members-Only OrigamiFest
Sunday, December 14
10:30 am–2:30 pm
30-minute sessions
\$5 (Registration required; call 212-769-5200)

Volunteers from OrigamiUSA will help you and your kids create origami ornaments like those found on the Museum’s famous origami holiday tree. Coffee, tea, milk, and cookies will be served.

Winter Skies Telescope Party
Monday, December 15
6:30 pm
\$12

Learn about winter astronomical events and, weather permitting, head outside to observe with members of the Amateur Astronomers Association.

KWANZAA 2014: Our Brightest Lights
Saturday, December 27
Noon–6 pm
Free

Join in the fun as the Museum celebrates its annual Kwanzaa festival with family-friendly activities, exciting performances, raffles, an international marketplace, and a special film screening.

Earth—As Seen From Space, with Carter Emmart
Tuesday, December 30
7:30 pm
\$12

With the Museum’s Director of Astrovisualization **Carter Emmart** as your guide, drift over Earth and witness the unparalleled beauty of our home planet.

Credits:
Support for Hayden Planetarium Programs is provided by the Schaffner Family and the Horace W. Goldsmith Endowment Fund.

The SciCafe series is proudly sponsored by Judy and Josh Weston.

Support for Kwanzaa 2014! and the Margaret Mead Festival is provided, in part, by the Sidney, Milton and Leoma Simon Foundation, the May and Samuel Rudin Family Foundation, Inc., the family of Frederick H. Leonhardt, the Weinig Foundation and The Max and Victoria Dreyfus Foundation.

The Margaret Mead Film Festival is made possible by the New York State Council on the Arts with the support of Governor Andrew Cuomo and the New York State Legislature.

The Museum greatly acknowledges The Mortimer D. Sackler Foundation, Inc. for its support to establish The Sackler Brain Bench, part of the Museum’s Sackler Educational Laboratory for Comparative Genomics and Human Origins, in The Spitzer Hall of Human Origins.

The Museum also gratefully acknowledges major funding from the Charles Hayden Foundation.

Presented with special thanks to NASA and the National Science Foundation.

Dark Universe was developed by the American Museum of Natural History, New York (www.amnh.org), in collaboration with the California Academy of Sciences, San Francisco, and GOTO Inc, Tokyo, Japan.

Made possible through the generous sponsorship of Accenture.

And proudly supported by Con Edison.

Lonesome George is presented in collaboration with the Galapagos National Park Directorate and Galapagos Conservancy.

The presentation of Natural Histories at the American Museum of Natural History is made possible through the generosity of the Arthur Ross Foundation.

Generous support for Pterosaurs: Flight in the Age of Dinosaurs has been provided by Mary and David Solomon.

Credits continued from page 15

Pterosaurs: Flight in the Age of Dinosaurs was organized by the American Museum of Natural History, New York (amnh.org). The Museum gratefully acknowledges the Richard and Karen LeFrak Exhibition and Education Fund.

Generous support for Pterosaurs: Flight in the Age of Dinosaurs has been provided by Mary and David Solomon.

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The Limits of Science and the Search for Meaning

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emblem of extinction

LONESOME GEORGE WAS A BELOVED SYMBOL
OF BIODIVERSITY UNDER THREAT.

Lonesome George, the last known Pinta Island tortoise, died of natural causes in 2012.

By the time Lonesome George, the last known Pinta Island tortoise (*Chelonoidis abingdoni*), died in June 2012, the 5-foot-long, 165-pound reptile was an international celebrity—and a powerful reminder that a species' spiral toward extinction is difficult if not impossible to reverse.

Native to the Galapagos archipelago, 600 miles west of mainland Ecuador, Pinta Island tortoises had been subjected to waves of human-caused depredation. During the 18th and 19th centuries, seafarers filled their ships with live tortoises to ensure a ready source of fresh meat during their voyages. The tortoise population dwindled to near zero.

By the early 20th century, the Pinta Island tortoise had been considered extinct in the wild. But in 1971, a Hungarian scientist discovered a male who would come to be known as Lonesome George. The following year, the tortoise was taken to the Charles Darwin Research Station in Puerto Ayora, on Santa Cruz Island to the southeast, where he became a popular symbol of the Galapagos Islands—his image emblazoned on stamps, logos, and souvenir T-shirts—as well as a potent symbol of ever-increasing extinctions.

“From the moment he came to Santa Cruz, Lonesome George was beloved by visitors and the local community,” says Arturo Izurieta, director of the Galapagos National Park. “His story was a powerful lesson.”

Although the last living representative of his species, Lonesome George was hardly alone. For decades, he shared his living area with females from other Galapagos tortoise species;

GALAPAGOS ISLANDS

PINTA

SANTA CRUZ

hopes for offspring were high. But when two females ultimately laid 15 eggs in 2008, all proved to be sterile. Lonesome George was thought to be over 100 years old when he was found dead in his corral. Galapagos giant tortoises are thought to live anywhere from 150 to 200 years. A necropsy revealed signs of aging in his liver and determined that he died of natural causes.

The possibility for reestablishing the Pinta Island species still remains, however.

“Although Lonesome George is no longer with us, recent genetic work has made the exciting discovery of hybrid Pinta Island tortoises on nearby Isabela Island,” says herpetologist Christopher Raxworthy, who is also associate dean of science for education and exhibition at the Museum. “These hybrid tortoises offer us the hope of returning tortoises to Pinta with a high percentage of Pinta genes.”

That said, the effects of even a single species' extinction can be significant, if not immediately apparent.

Giant tortoises, for example, play an important role in maintaining habitat for other species, and are classified as organisms that function as “ecosystem engineers,” according to Eleanor Sterling, chief conservation scientist for the Museum's Center for Biodiversity and Conservation.

“It is difficult to estimate the role that any single species plays in a particular environment, nor can we predict what the effects of a species loss will be on an ecosystem,” says Dr. Sterling, who was working in the Galapagos at the time of Lonesome George's death. “But certainly the loss of ecosystem engineers means that a system is going to go through major changes. For instance, Galapagos tortoises knock over plants and disperse seeds throughout their range.”

And as he was in life, in death Lonesome George will continue to serve as a reminder of the need to protect species and ecosystems before the balance tips inexorably toward extinction. “The last known individual of a species is gone because of human activity,” says Sterling. “We humans have a moral responsibility to recognize our role in its extinction. We are obliged to think about how we can support healthy people and healthy ecosystems.”

After the death of Lonesome George, the Galapagos National Park Directorate and Galapagos Conservancy intensified their efforts to ensure the recovery of all tortoise populations in Galapagos. “His death stimulated us to strengthen our work even more, to ensure that no other tortoise species in Galapagos will reach extinction on our watch or over the long term,” says Linda Cayot, science advisor of Galapagos Conservancy, who supervised the care of Lonesome George over 10 years while working for the Charles Darwin Research Station.

This fall, Lonesome George—who has been prepared for permanent display in his native Ecuador in a collaborative effort that included the Museum, the Galapagos National Park, Galapagos Conservancy, and the State University of New York College of Environmental Sciences and Forestry—is on view for a limited time at the Museum. 🌐

The Lonesome George exhibit is on view now in the Astor Turret on the fourth floor through January 4, 2015.

Lonesome George is presented in collaboration with the Galapagos National Park Directorate and Galapagos Conservancy.

A Noted Naturalist

The *éminence grise* of North American ichthyology



SAVE 20%
During Member Double Discount Days
11/10–11/16 and 12/8–12/14

The highly venomous spines of the red lionfish (*Pterois volitans*) are used entirely for defense.

The following essay is excerpted from *Opulent Oceans: Extraordinary Rare Book Selections from the American Museum of Natural History Library* (Sterling Signature, 2014), third in a series showcasing the spectacular holdings of the Rare Book Collection in the Museum Library.

By **Melanie L. J. Stiassny**

David Starr Jordan was a towering figure in the North American science of the late 19th and early 20th centuries, and one of the best known naturalists and educators of his time. He was born in upstate New York to progressive parents who shunned religious stricture and traditional social mores—characteristics that he inherited and which stayed with him throughout his life. Remarkable for the time, from the age of 14 until graduation, Jordan attended a local girl’s high school, and spent much of his time outdoors observing nature, collecting butterflies, and cataloging local plant life. At the age of 18, he enrolled at Cornell University, where he majored in botany in which he excelled as both a student and a teacher. After graduation, he taught at various small Midwestern colleges and was extremely popular with his students, whom he took with him during summer breaks on collecting trips.

Photo of illustration © AMNH/ R. Mickens

Jordan was a lifelong proponent of the influential aphorism of Louis Agassiz (1807–1873) that biologists should “study nature, not books.” Jordan had come under Agassiz’s influence while visiting his newly established school for natural history and marine biology on Penikese Island off the Massachusetts coast, a school that was to become the inspiration for the world-renowned Marine Biological Laboratory established by Agassiz’s students at Woods Hole in 1888. It was Agassiz who initially advised Jordan to take up ichthyology, and this was advice Jordan took to heart. In the years that followed, David Starr Jordan rapidly rose to prominence as one of the most influential of all American ichthyologists, the one to whom it is said that virtually all North American ichthyologists can trace back their professional ancestry.

In 1879 Jordan was appointed professor of zoology at Indiana University, and by 1884 his oratory skills, administrative acumen, and the popularity of his lectures and field trips made him an ideal choice for university leadership. He was appointed university president at the age of 34 and immediately came to prominence as the nation’s youngest.

Jordan’s successes did not escape notice and his reputation as a progressive educator and persuasive proponent of secular coeducation attracted the interest of the former California senator Leland Stanford and his wife, Jane. The couple was planning to build an academic institution in the American West to match the prestigious schools of the East Coast. But the Stanfords wanted to build a university and a museum that was coeducational, nondenominational, and, above all, practically geared to produce “cultured and useful citizens.” Jordan was offered the job of president, and at the age of 40, he left Indiana for Leland Stanford’s Palo Alto Stock Farm and began the foundational work that was to become Stanford University—an institution he guided through tumultuous early years and helped to establish as a center of academic excellence. From the opening of its doors in 1891 until he stood down in 1913, Jordan served as president of Leland Stanford Junior University, so named in memory of the Stanford’s only child, who had died of typhoid fever at the age of 16, but more commonly known today as Stanford University.

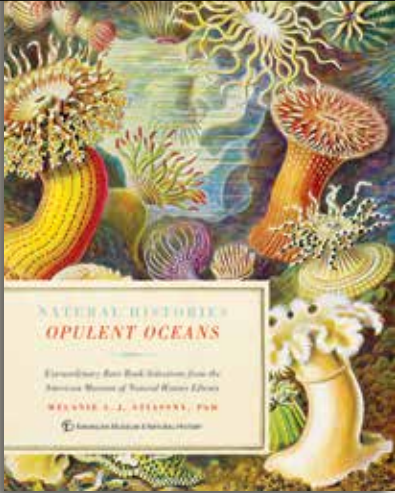
Early in Jordan’s career, he had come to the attention of Spencer Fullerton Baird (1823–1887), the influential secretary of the Smithsonian Institution in Washington, D.C., and the first commissioner of the newly established United States Commission of Fish and Fisheries. The commission had been created to assess the nation’s fish and marine resources, determine if their status was in decline, and, if so, make recommendations for remedial action. Baird provided Jordan with financial support and access to government facilities, and Jordan worked closely with the Smithsonian and the Fish Commission (which in 1903 was reorganized into the U.S. Bureau of Fisheries, the precursor of today’s National Marine Fisheries Service) for most of his career.

During a 1902 expedition he led to what was then American Samoa, Jordan wrote that “the coral reefs of the South Seas literally swarm with fishes,” and, quoting from a record of the voyage of Captain Cook, noted that “their colors were the most beautiful that can be imagined: blue, yellow, black, red, etc., far excelling anything that can be produced by art.”

Many of the colored plates that accompany his treatise were based on field sketches drawn by Jordan himself during the expedition. One of the most striking of these images is of a lionfish of the genus *Pterois*, a name derived from the Greek word *pteron*, which means wing or fin, and refers to the very large wing-like pectoral fins that are so characteristic of these fishes. There are 10 species of lionfish in the genus *Pterois*, and all are known for their bold patterning and beautiful coloration as well as for their venomous dorsal fin spines.

Such striking coloration in a venomous animal is considered to be an example of aposematism—a warning coloration or signaling that serves as an anti-predator device by advertising to potential predators the inadvisability of attack.

Melanie L. J. Stiassny is the Axelrod Research Curator in the Department of Ichthyology and was lead curator for the Milstein Family Hall of Ocean Life.



Marine Marvels

Published this month, this illustrated volume includes essays about pioneering biologists who shaped the study of marine life and scientific illustrations that brought new discoveries to a growing audience of scientists and laypeople alike. Like the preceding *Natural Histories* (2012) and *Extraordinary Birds* (2013), *Opulent Oceans* is presented in a deluxe edition packaged in a clamshell box with 40 prints for framing.

Rotunda asked Dr. Stiassny about her work on *Opulent Oceans*

Q: Any particular favorites among the scientists you feature?

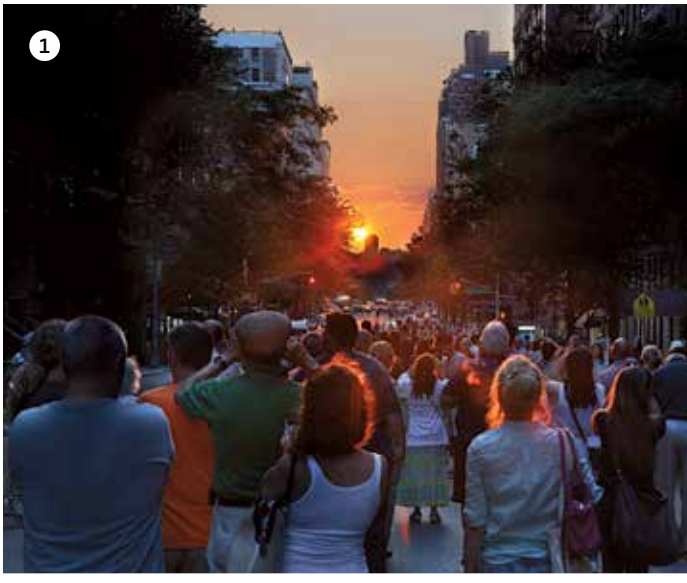
A: One of my favorites is Johann David Schöpfung (1752–1800), who was an iconic example of a polymath, adventurer, and humanitarian. He was a medical doctor, as so many of them were, fascinated by natural history, paleontology, weather patterns, botany, geology—everything. His travels through post-Revolutionary America were an amazing feat of courage and discovery.

Q: What surprised you in preparing the book?

A: I could not find a single volume in the Museum’s Rare Book Collection containing the work of a female marine naturalist. I managed to find a few women doing great stuff but unacknowledged by the scientific community of their time. There was one botanist, William Henry Harvey (1811–1866), who went to great pains to single out and thank the women who had contributed to his work. He is a favorite too!

Q: What was your personal take-away?

A: Tremendous respect for the extraordinary courage and commitment of these early marine explorers. And camaraderie with their drive to understand the natural world. That mission and excitement is very much the same for curators today.



1. Museum visitors watched the setting sun on the Upper West Side during Manhattanhenge on July 11.
2. Campers learned about dinosaurs at the Paleo Adventures: Exploring Dinosaurs Camp this summer.

3. A capacity crowd enjoyed the first-ever Grown-Up Sleepover at the Museum on August 1.
4. The Milstein Science Series: Sharks was a hit with children and adults on June 22.

5. Exhibitions Maintenance Manager Brittany Janaszak gave the blue whale in the Milstein Hall of Ocean Life its annual scrubdown in July.

© AMNH/R. Mickens, D. Finnin, and M. Shanley



1. Guests savored a summer evening on the Arthur Ross Terrace at the Junior Council event "Inside Dark Universe" on June 26.
2. Co-chairs Gaelin Rosenwaks and Nicole Mihnovecs enjoyed cocktails on the Arthur Ross Terrace at the Junior Council event "Inside Dark Universe."

3. Steve Burke, CEO of NBCUniversal, was honored at the 2014 Corporate Dinner on June 9.
4. After a special presentation of Dark Universe, guests listened to live jazz at the Junior Council event on June 26.

Save the Date! Upcoming Events at the Museum

OCTOBER

10/21 The **Annual Family Party** features entertainment and hands-on activities, including activities in the Museum Science Center, for children of all ages. Please call 212-769-5675 for ticket information.

10/23–10/26 The annual **Margaret Mead Film Festival** features international documentaries, performances, intimate conversations with filmmakers, and more.



10/31 Trick-or-treat in the Museum's halls for the annual **Halloween celebration**.

NOVEMBER

11/1 *The Butterfly Conservatory* returns with **more than 500 live, free-flying tropical butterflies**.

11/13 Members are invited to an **exclusive preview of *Nature's Fury: The Science of Natural Disasters***, a new exhibition that explores how nature's forces shape our dynamic planet.

11/10–11/16 On **Double Discount Days**, Members receive a double discount (20 percent off) in Museum stores and amnhshop.com.

11/15 *Nature's Fury*, which is free for Members, opens to the public.

11/20 The dazzling **Museum Gala** helps support the Museum's scientific and educational work. For ticket information, please call 212-769-5675.

11/24 The delightfully decorated **Origami Holiday Tree** returns.

11/27 The Museum is **closed for Thanksgiving**.

DECEMBER

12/8–12/14 On **Double Discount Days**, Members receive a double discount (20 percent off) in Museum stores and amnhshop.com.

12/25 The Museum is **closed for Christmas**.

12/27 The Museum's annual **Kwanzaa celebration** will feature performances, tastings, a market, and more.

Central Park West at 79th Street
New York, New York 10024-5192
amnh.org



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From hurricanes and tornadoes to earthquakes and volcanoes, nature's forces shape our dynamic planet and affect people around the world. *Nature's Fury: The Science of Natural Disasters*, which opens at the Museum November 15, will uncover the causes of these natural phenomena, explore the consequences, and examine how people cope and adapt in their aftermath.

General Information

HOURS

Museum: Open daily, 10 am–5:45 pm;
closed on Thanksgiving and Christmas.

ENTRANCES

During Museum hours, Members may
enter at Central Park West at 79th Street
(second floor), the Rose Center/81st Street,
and through the subway (lower level).

RESTAURANTS

Museum Food Court, Café on One,
Starlight Café, and Café on 4 offer
Members a 15-percent discount.
Hours are subject to change.




MUSEUM SHOPS

The Museum Shop, Dino Store,
Shop for Earth and Space,
Cosmic Shop,
Pterosaurs Shop, Nature's Fury Shop,
and Online Shop (amnhshop.com)
offer Members a 10-percent discount.

PHONE NUMBERS

Central Reservations 212-769-5200
Membership Office 212-769-5606
Museum Information 212-769-5100
Development 212-769-5151

TRANSPORTATION AND PARKING

Subway:  (weekdays) or  to 81st Street;
 to 79th Street, walk east to Museum
Bus: M7, M10, M11, or M104 to 79th Street;
M79 to Central Park West
Parking Garage: Open daily, 8 am–11 pm;
enter from West 81st Street. Members can park
for a flat fee of \$10 if entering after 4 pm.
To receive this rate, show your membership card
or event ticket when exiting the garage.