

# CATALYST

DENVER MUSEUM OF NATURE & SCIENCE MAGAZINE  
AUTUMN 2015

## INSIDE ///

THE INTERNATIONAL EXHIBITION  
OF SHERLOCK HOLMES  
THE POWER OF POISON  
NEW IMAX 3D FILMS







# JEAN-MICHEL COUSTEAU'S SECRET OCEAN 3D

**NARRATED BY DR. SYLVIA EARLE**



3D ENTERTAINMENT DISTRIBUTION PRESENTS "JEAN-MICHEL COUSTEAU'S SECRET OCEAN 3D" AN OCEAN FUTURES SOCIETY & 3D ENTERTAINMENT FILMS  
DIRECTED BY JEAN-MICHEL COUSTEAU SCREENPLAY BY PAMELA STACEY PRODUCED BY DR. RICHARD MURPHY EDITED BY GAVIN MCKINNEY MUSIC BY CHRISTOPHE JACQUELIN

[www.SECRETOCEAN-THEFILM.com](http://www.SECRETOCEAN-THEFILM.com)



**NOW OPEN IN PHIPPS IMAX THEATER**

MEMBERS SAVE 30% ON TICKETS EVERY DAY • BUY TICKETS @ [DMNS.ORG/IMAX](http://DMNS.ORG/IMAX)

FIND DETAILS ON A SPECIAL SCREENING AND SKYPE CONVERSATION WITH JEAN-MICHEL COUSTEAU @ [DMNS.ORG/AFTERHOURS](http://DMNS.ORG/AFTERHOURS).



Dear Members:

It is difficult to believe, but it's that time again. Schools are reopening after summer break, and our education team is hard at work preparing for another busy academic year. As I've shared, we have recently renewed our commitment at the Museum to being a leading resource here, there, and everywhere, whether on Colorado Boulevard, at schools and public gatherings, or on a digital platform, accessible to all. We are developing new initiatives as well as building on efforts that have proven to successfully serve our community.

Over the past five years, Urban Advantage Metro Denver has reached more than 11,000 underserved middle school students, engaging them in authentic science investigations. Urban Advantage is a partnership among the Museum, the Denver Zoo, and the Denver Botanic Gardens, and two of Colorado's most diverse school districts, Denver Public Schools and Aurora Public Schools, because we are all committed to providing rich and rigorous educational opportunities.

Urban Advantage is an immersive experience for seventh graders who choose a research topic and apply the same methods used by working scientists. The students receive free access to the partner institutions, where they can conduct their research, meet science staff, and bring their families for visits and events. Their teachers receive access to free resources and supplies. The school year culminates with a celebration where the students share their projects with local scientists. We are pleased that Urban Advantage has been selected as a semifinalist for the 2015 Colorado Collaboration Award from the Colorado Nonprofit Association, and also has been recognized as "Accomplished" by the Colorado STEMworks Database.

These kinds of vital partnerships show once again why Colorado is a special place to live. For decades, the Museum has hosted schoolchildren in its halls. I imagine many of you recall a field trip to either this Museum or another one as a child. Urban Advantage is just one example of how inspiring our youth now can pay off for years to come. As a member, you are a part of this community partnership as the Museum continues to encourage children to do, think, and explore like scientists—both in and out of the classroom. Thank you for your support.



George Sparks  
President and CEO

You may contact George Sparks by e-mail at [president@dmns.org](mailto:president@dmns.org)



## CONTENTS

### 2 IN THE KNOW

Here's the latest about what's going on inside and outside the Museum.

### 4 FEATURED EXHIBITION

Come if convenient to the Museum. If inconvenient, come all the same. A mystery awaits in *The International Exhibition of Sherlock Holmes*.

### 6 MUSEUM INSIDER

The film archive contains scenes of a world gone by, but the Museum is committed to making sure these images are never lost to history.

### 8 MUSEUM TREASURES

Our amazing gems and minerals collection contains some specimens that are awfully pretty ... and poisonous.

### 10 GET INVOLVED

Let's work together to be catalysts and ignite the community's passion for science and nature.

### 12 DISCOVER SCIENCE

Poisons are a thing of the past in museum collections, including ours.

## FIND IT @ DMNS.ORG

- Print-at-home tickets for surcharged exhibitions, Planetarium and IMAX shows, lectures, and programs
- Reservations for members events
- Hours and showtimes
- Calendar of events
- Museum Scientists
- Museum Blog
- Today's Weather at the Museum
- Heavens Above sky information
- Membership renewals and purchases

Join Our Community:



### ON THE COVER

From the zoology collections

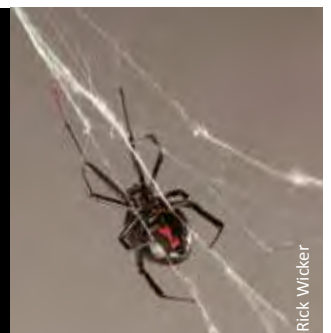
Black widow spider (female)

*Latrodectus hesperus* (family Theridiidae)

Live specimen

Locality: Moline Street, Denver

Bites can cause severe pain but are very rarely fatal.



Rick Wicker

## THE POWER OF POISON 10 THINGS TO DO

- Wander through a Colombian forest and explore poison in nature.
- See live poison dart frogs and learn how their toxins protect them from predators.
- Explore models of venomous insects at three times their normal size.
- Encounter the witches from Shakespeare's *Macbeth* as they surround their bubbling cauldron.
- See the Mad Hatter at his tea party and discover what poison inspired this famous character.
- Turn the pages of a "magical" Enchanted Book that reveals facts about poisonous plants.
- Watch the ancient myths of Hercules and Medea unfold in animations projected onto ceramic pots.
- Enjoy a live show about a real-life poisoning case from the 19th century that led to new methods of poison detection.
- Play forensic detective as you explore life-size shadow boxes depicting accidental poisonings.
- Walk under a model of a gigantic yew tree, which is poisonous if ingested by humans but whose bark contains a chemical proven effective in cancer treatments.

*The Power of Poison* is free for members. Please be prepared to present your membership card at the entrance to the exhibition. Find out more @ [dmns.org/poison](#).

## BRING A FRIEND FOR FREE

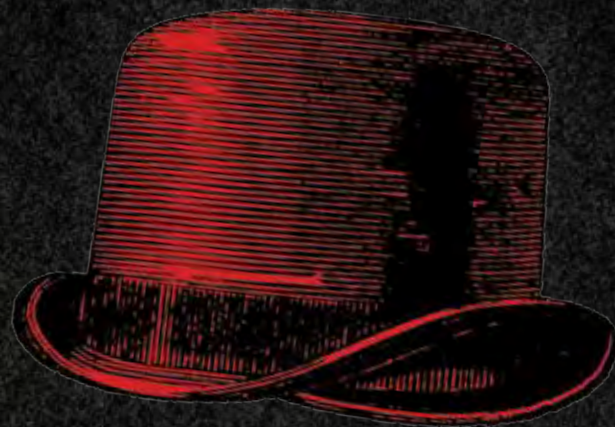
Bring a friend to the annual Night at the Museums during Denver Arts Week. On Saturday, November 7, the Museum will be open for free for all guests from 5 to 10 p.m. The entire Museum will be available, including the exhibitions *The Power of Poison* and *The International Exhibition of Sherlock Holmes* (discounted admission required for Sherlock). Find a complete list of events for Denver Arts Week @ [denver.org/denver-arts-week](#).

## EDUCATORS NIGHT: BIGGER AND BETTER THAN EVER

A free Educators Night will be held on Monday, September 21, and this year more than 60 SCFD organizations will be on hand to present performances, activities, and a taste of the rich opportunities available for students and teachers. Grab a snack and cocktail at the cash bar, preview IMAX and Planetarium shows, and have a blast with your colleagues at an evening you won't want to miss. Reservations required. Find out more @ [dmns.org/teachers](#).

## PARDON OUR DUST

The Museum is getting new escalators! The current escalators are 30 years old and due for replacement. They have moved an estimated 50 million Museum guests over the years. The south bank of escalators will be replaced first, from August to November. The timeline for replacing the north bank of escalators is January to April 2016. All galleries and theaters will be accessible during construction. Thank you for your patience.



# The POWER of POISON

**NOW OPEN**  
THROUGH JANUARY 10





©Adam Evans

## HEAVENS ABOVE

Andromeda Galaxy—also known as Messier 31, M31, or NGC 224—is one of the great astronomical showpieces for northern sky observers. The Andromeda Galaxy is the most distant object visible with our unaided eyes, more than 2 million light years away. When we look at the galaxy in our night sky and observe that hazy smudge of light, we see the bright, central core of the galaxy. Using binoculars, or a small telescope, the full elliptical shape of the galaxy is observed, appearing larger than the full moon. An eight-inch, or larger, telescope reveals more detail in the nucleus and outer disk, and its dark lanes below and left of the nucleus.

Find the Andromeda Galaxy by looking northward for the constellations Cassiopeia and Andromeda. The galaxy sits between the two, just above Andromeda's middle stars. A good star chart will help with locations, and get away from city lights if possible. The galaxy passes high overhead during the northern autumn months, crossing the sky zenith at about midnight in mid-October, and two hours earlier each month thereafter. It is fully visible in the early evening in the east in September, until it begins to set in the west, into the evening twilight, in February.

Find autumn sky information @ [dmns.org/heavensabove](http://dmns.org/heavensabove).

## TAKE A TRIP TO THE GALÁPAGOS

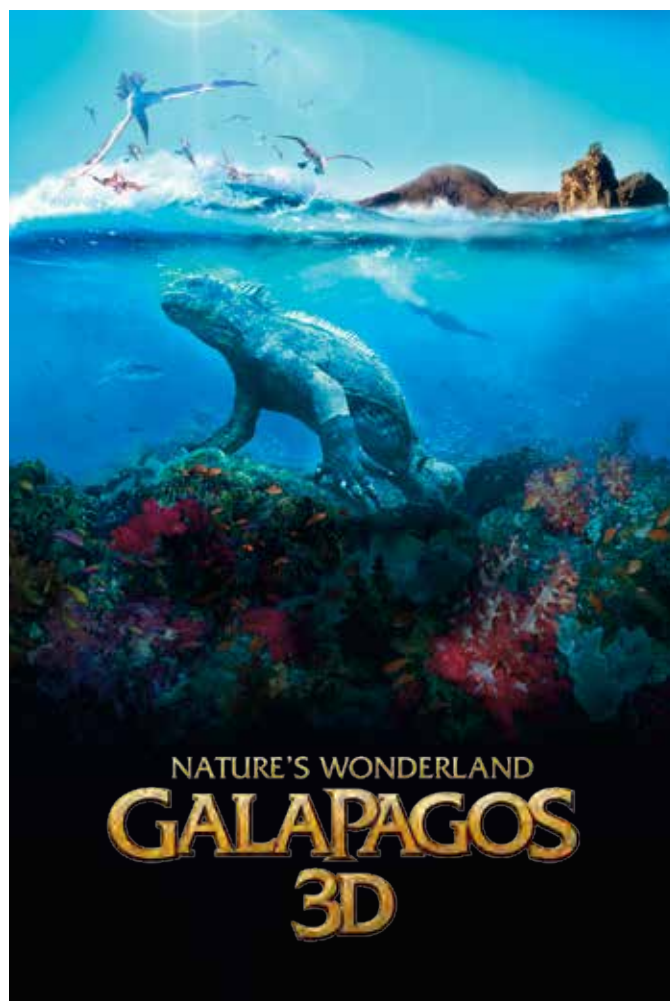
The new IMAX film *Galapagos 3D: Nature's Wonderland* showcases the place that changed the way humans understand the science of nature. The Galápagos Islands are an extraordinary paradise, where life played out over millions of years in relative isolation. Observing the wildlife of the archipelago in 1835 spurred Charles Darwin to develop his theory of evolution by natural selection, which he published in 1859. The rest is history.

After you see the film, go to the South America gallery on Level 3 and check out a diorama and newly refurbished exhibit case dedicated to the Galápagos Islands. In the exhibit case you can see some of the bird species, including Darwin's finches, that sparked a scientific revolution, as well as an early edition of *On the Origin of Species*. The diorama features giant tortoises and land and marine iguanas from Santa Cruz Island.

Find showtimes for *Galapagos 3D: Nature's Wonderland* and other IMAX films @ [dmns.org/imax](http://dmns.org/imax). Members receive a discount on IMAX tickets every day.

## FOSSIL FUN

Join us on Sunday, September 27, for a special SCFD Community Free Day as we celebrate National Fossil Day. Watch volunteers clean fossils, meet Museum paleontologists, see Mr. Bones the walking dinosaur, discover this year's national fossil, and celebrate the 20th birthday of *Prehistoric Journey*. In addition, we will welcome special guests from ARCINDA, an organization dedicated to sharing the arts and culture of Indonesia. Hear and play the instruments of the traditional Gamelan, watch the peacock, mask, and character dances, and even sing along to Indonesian-style karaoke!





THE INTERNATIONAL EXHIBITION OF

# SHERLOCK HOLMES

The game is afoot, but all is not what it seems! Step into Victorian London and test your powers of observation as you work alongside the world's most famous detective in *The International Exhibition of Sherlock Holmes*, which will run at the Museum from Friday, October 23, through Sunday, January 31. The experience combines science and history to bring to life the era vividly portrayed in the beloved Sherlock Holmes stories.

More than a century ago, physician-turned-author Sir Arthur Conan Doyle introduced Sherlock Holmes, who quickly became a literary sensation. Sherlock's methods of observation, testing, and deduction—created from Conan Doyle's scientifically trained mind—greatly influenced the development of practices and techniques for solving both fictional and real mysteries, many of which are still used today. Sherlock was an expert ahead of his time as his keen observations, missed by others, helped him solve crimes.

"Sherlock Holmes is the Jedi Master of scientific inquiry," said Dr. James Hagadorn, the Museum's curator for the exhibition. "Through the keen eyes of Sherlock, we learn that seeing is not the same as observing, and that solving a mystery requires the same skills as science: observation followed by interpretation. This exhibition allows guests to experience first-hand the early days when Conan Doyle's inspiration was coming to life, and the age of modern forensics and CSI was dawning."

The exhibition features detailed stage sets, elaborate Victorian-style exhibits, and interactive evidence stations that appeal to dedicated Sherlock enthusiasts, the merely curious, and families with older children who would enjoy playing detective.

- Observe a crime scene in a Victorian home and analyze evidence.
- Visit Sherlock Holmes's sitting room at 221B Baker Street where Sherlock and Dr. Watson spent hours discussing cases.
- Try experiments about ballistics, forensics, and other crime-solving techniques from the late 19th century that remain relevant today.
- Explore historic manuscripts, illustrations, letters, and forensic specimens that inspired author Arthur Conan Doyle to create Sherlock.
- Encounter Victorian-era characters portrayed by the Museum's popular historical enactors.
- See props and costumes from the film *Sherlock Holmes* and the television shows *Elementary* and *Sherlock*.



The International Exhibition of Sherlock Holmes was developed by Exhibits Development Group and Geoffrey M. Curley + Associates in collaboration with the Conan Doyle Estate Ltd, the Oregon Museum of Science and Industry, and the Museum of London.





## MEMBERS TIPS

See the back cover for your invitation to exclusive opportunities to experience *The International Exhibition of Sherlock Holmes*, including Members Preview Day on Thursday, October 22!

Members receive a deep discount to this surcharged exhibition and timed tickets are required. Book your print-at-home tickets for *Sherlock Holmes* @ [dmns.org](http://dmns.org) and avoid a handling fee.

Reservations for *Sherlock Holmes* are also available at 303.370.6000 (daily, 9–5). There is a \$2 fee per ticket by phone. Afternoon is the best time to call.

Weekday late afternoons and weekend early mornings tend to be less busy in our temporary exhibitions. School groups generally visit during weekday mornings.

Giving Club members may redeem their *Sherlock Holmes* “anytime” tickets by heading straight to the exhibition for quick and easy access, even if it’s sold out. Complimentary guest tickets that came with your membership may be upgraded for admission to *Sherlock Holmes*.

Find out more about the exhibition and related programs @ [dmns.org/sherlock](http://dmns.org/sherlock).

## THE FILM ARCHIVE: OUR CULTURAL MEMORY BANK

By René O'Connell

Long before the Internet made armchair traveling just a click away, the Museum presented a film series that took people around the world. When Phipps Auditorium opened in 1940, Museum director Alfred Bailey inaugurated a film lecture series on Sunday afternoons that was part of a national program about nature and travel. It became so popular it was expanded to Monday evenings. Color film was new and sensational, only increasing the demand. Sometimes as many as 3,000 people had to be turned away for lack of capacity!

Today, the Museum's Image Archives Department houses Bailey's entire film library that documents not only our historic fieldwork but other rare footage that captures flora, fauna, and locales from a bygone era.

With more than 900 reels of 35mm and 16mm film, the film archive has some real treasures, some of which are just being rediscovered. For instance, imagine seeing film of now-extinct birds or Museum staff in a Louisiana swamp wrestling an alligator. Or, our latest find, a feature-length film made by Osa and Martin Johnson, American adventurers and documentary filmmakers,

entitled *Simba: King of the Beasts*. No other copy of such high quality exists in the world today.

But perhaps the most unique and significant nature films housed anywhere are the Alfred M. Bailey Lecture Film Series. Bailey was director from 1936 to 1969 and believed fieldwork was the lifeblood of any museum. Under his leadership, our Museum's expeditions covered the globe several times over. The First National Bank of Denver thought so highly of his films, or "pictures," as he called them, they were annual sponsors of the series. Bailey also presented them to the National Geographic







Society more than a dozen times and to both the Chicago Natural History Museum and the American Museum of Natural History 14 years in a row! No one but Bailey can boast this.

Three years ago, thanks to a KT Challenge grant from the Museum's Giving Club, the Image Archives Department began preserving selected titles by copying them to new film stock. Without this support, we couldn't afford to do it. But sadly, the day is fast approaching where money is not the limiting factor for film preservation.

The three biggest film stock manufacturers were Kodak, Fuji, and Agfa. With Fuji and Agfa shuttering their film stock business, Kodak is left with 100 percent of a vastly shrinking market. However, having recently exited Chapter 11, their future is unclear. In addition, film labs that specialize in film preservation are hanging by a thread. Digital objects, seemingly the answer to this dilemma, are too fragile and unreliable. Remember floppy discs, CDs, and that hard drive that inexplicably failed? It takes a village to manage a digital object into the future, and there's no guarantee you won't lose data along the way.

To date, we have restored four of Bailey's lecture films for audiences to enjoy. And, yes, we show real film. Bailey shot silent film because the large amount of required audio equipment made it impossible to shoot in remote environs. For the Film Series, Bailey stood at a podium presenting a live lecture to accompany his film. These lectures were recorded, so CinemaLab Preservation in Englewood has used the audio and the

original film to create a whole new experience. So far today's audiences have had a chance to relive Bailey's trips to Hawaii, Alaska, Galápagos, and Baja, Mexico, and its surrounding islands.

In January 2016, we will present one of Bailey's favorites. First shown in 1954, *New Zealand Highlights* wowed audiences with looks at rare and endemic birds in rugged sheep country. Filmed well before there were established flights to this island country, the Denver audience was catching a first glimpse of a country they had only heard about. Imagine seeing the Maori cultural land of Rotorua before it became a popular tourist destination.

The film archive is one of our most precious collections, with tens of thousands of feet of film documenting moments in time that cannot be replaced in written form. It is our cultural memory bank.

---

## SEE IT

The newest film from the restored Bailey Film Series, *New Zealand Highlights*, will debut on Tuesday, January 26. Find out more @ [dmns.org/afterhours](https://dmns.org/afterhours).

## FIND IT @ DMNS.ORG

René O'Connell is image archivist in the Bailey Library and Archives. Find out more @ [dmns.org/science/bailey-library-and-archives](https://dmns.org/science/bailey-library-and-archives).

Facing page: Alfred Bailey at the helm of the *Kinkajou* with commander Bill Pemberton, 1940, San Benito Islands. This page: Bailey photographs Mount Cook in New Zealand, 1949.

## EARTH'S POISONOUS MINERALS

By Richard Pilatzke, Glenn Tucker, and James Hagadorn

Poison originates in two places. The major sources are organisms such as animals, plants, and fungi. But the other common source lies beneath our feet—rocks and minerals.

One of the most deadly of these minerals is named after our state. Coloradoite occurs in Rocky Mountain gold deposits, forming where hot, metal-rich fluids migrate and cool in networks of cracks in rocks. This is a “telluride” mineral because it is composed of tellurium bonded to mercury. Whereas tellurium is only mildly toxic, mercury is dangerous because it wreaks havoc with our central nervous system. We are exposed to mercury through various sources, including large fish such as swordfish, tuna, and mackerel; runoff from abandoned mines; and even in the air, from coal-fired power plant emissions. Although there are different types of mercury compounds, all are notable because mercury is one of the few metals that readily passes through our protective cell membranes and accumulates in fatty tissue stored in the body.







Cinnabar is mercury bonded to sulfur. It forms the same way as coloradoite, and it also occurs in hot spring deposits. Exposure to mercury vapors is the primary hazard, though inhaling the dust will also lead to illness. Spanish cinnabar miners were noted for their short life spans because they heated the cinnabar to recover the metallic mercury, releasing vapors. Hat makers were also exposed to mercury vapors when they used mercury nitrate to turn animal pelts into felt. They developed psychoses and tremors, giving rise to the term “mad as a hatter.”

Orpiment and realgar are varieties of arsenic bonded to sulfur. They form in the same way as coloradoite and cinnabar, and can even be found in Yellowstone’s hot springs. Orpiment, with its bright yellow-orange color, was historically used as a pigment, as a component of fireworks, as a poison on arrow tips, and together with realgar are still used in semiconductors, linoleum, and some glass products. Arsenic is notorious because it has been used for centuries to intentionally poison people, often family members among the wealthy and powerful. Because we can’t see, taste, or smell arsenic when mixed into food or water, it was the perfect “inheritance powder.”

Today, we rarely see deliberate arsenic poisonings, but many drinking water supplies, including some in the United States, contain high levels of arsenic and present a hazard to large

populations. This contamination is currently a major problem in Bangladesh, where most drinking water is heavily tainted with arsenic. On Colorado’s Western Slope, soils derived from the arsenic-rich Mancos Shale present a similar risk. Surface waters that drain through locales where these soils have been disturbed are regularly monitored for arsenic leaching.

Chrysotile is the most common asbestos mineral. It forms when hot water seeps through magnesium-rich rocks called peridotites and develops chrysotile-rich veins that are mined for use in insulation, flooring, and roofing tiles. Exposure to chrysotile and other asbestos particles is not immediately toxic like the examples above, but inhalation of even small amounts causes irreversible damage to the lungs and can lead to lung cancer and death. For example, over the course of the 20th century, asbestos-contaminated vermiculite was mined in Libby, Montana, where miners and residents continue to suffer serious health consequences.

Radioactive substances are also common poisons because elements like uranium and polonium are unstable. Thus they decay from one radioactive element into another, releasing invisible cell-destroying radiation in the process. Colorado has some of the world’s best deposits of these elements, which have been mined for radium, vanadium, and uranium since the 1870s.

One radioactive poison is particularly dangerous in Colorado. Anyone with a basement can be exposed to a toxic radioactive byproduct of uranium called radon. This invisible, tasteless, odorless gas accumulates in low areas because it is heavier

than air. In our state, radon gas is extremely common because our soils have broken-down bits of granite in them, including fragments of uranium-rich mica. These release radon into the soil pore space. The gas can then migrate into your basement. Compounding the problem, radon also decays and binds to dust and other small particles readily trapped in the lungs. Once inside your body, they continue to emit cell-destroying radiation. Fortunately it is possible to test for radon levels and basement radon pumps eradicate the problem relatively easily.

## SEE IT

Look for these and many other poisonous specimens on display, safely behind glass, in Coors Gems and Mineral Hall.

Don’t miss *The Power of Poison*, now open in the Anschutz Gallery. Admission is free for members.

## FIND IT @ DMNS.ORG

Richard Pilatzke and Glenn Tucker are longtime volunteers in the Earth Sciences Department, and James Hagadorn is the Tim and Kathryn Ryan Curator of Geology. Find out more @ [dmns.org/science/collections/earth-science-collections](https://dmns.org/science/collections/earth-science-collections).

The ultimate poison, arsenic, comes from orpiment (facing page, DMNS 18153) and realgar (above, DMNS 8786). Borne in hot springs, these two minerals have important industrial uses too.



## VOLUNTEERS MAKE A DIFFERENCE

Sonnie Talley says she always wanted to work in a lab in the Museum. After 35 years of volunteering at the Museum—including 20 years on the Board of Trustees—she is finally getting her wish.

Talley received her 35-year award during this year's volunteer recognition awards. Julianne De Temple, Judith Drury, Linda Feiman, Jean Gohde, Peter Modreski, Virginia Tidwell, Mary Yuhasz, and Karla Zeldin were all recognized for 25 years of service. In 2014, 1,800 volunteers contributed an astounding 238,847 hours to departments across the Museum.

Talley first became involved at the Museum in 1974 when the Junior League was organizing volunteers. She and her husband, Dick, had arrived in Denver from Florida with her master's in zoology and his medical degree in hand. She hoped to build a career as an environmental consultant, but the '70s oil bust put an end to that dream. Following a hiatus to raise her son and daughter (who are active in the Museum's Young Professionals program), Talley returned to the Museum in 1985 as a volunteer, helping with planning and fundraising for the Hall of Life.

She became a Trustee in 1992, and chaired fundraisers and served on numerous committees. Talley is now Trustee Emeritus, and she and Dick were recognized in 2013 with the annual Giving Club Special Recognition Award for outstanding leadership.

Now, at long last, Talley has time to volunteer in the lab in Expedition Health, helping to keep the very popular Bio Base Camp up and running. "The Museum empowers people. The staff trusts volunteers," said Talley. "They recognize that you are capable, valuable, and smart. They not only value you as a volunteer but also as a person."

There's a place for you too at the Museum. Find out more @ [dmns.org/join/volunteering](http://dmns.org/join/volunteering).

Above: President and CEO George Sparks presents Sonnie Talley with her 35-year award.

## LEAVE A LASTING LEGACY

The Museum was delighted to honor the members of the Edwin Carter Legacy Society at their annual luncheon in May. Fifty members and friends enjoyed lunch and a presentation by Dr. Steve Nash, chair and curator of archaeology in the Anthropology Department, as he delved into the fascinating Konovalenko Project and our incredible gem carving collection. It was a special way to celebrate this group's commitment to the Museum.

The Legacy Society was formed by Museum friends and volunteers committed to supporting the Museum through a planned gift. The society's namesake, Edwin Carter, was a dedicated naturalist who nearly single-handedly assembled one of the most complete collections of Colorado fauna in existence. This collection became the nucleus for the Museum's founding in 1900. This type of dedication—past, present, and future—allows the Museum to encourage lifelong learning through our innovative programming and science collections that are timeless in origin and value.

Supporters who notify us that they have named the Museum or the DMNS Foundation in their will, trust, or a beneficiary are invited to join this exclusive group and be recognized not only in the Museum's Annual Report but also through invitations to special events and the annual luncheon.

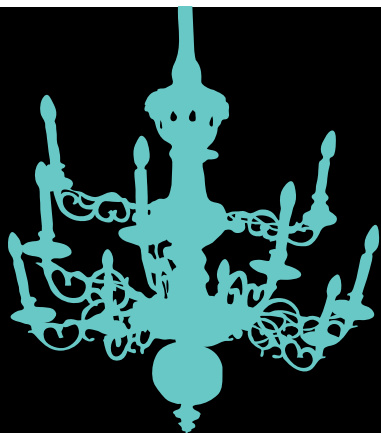
There is no question that members of the Legacy Society will sustain the Museum for generations to come—building on 115 years of this thriving cultural institution.

Find out more about the Edwin Carter Legacy Society @ [dmns.planmylegacy.org](http://dmns.planmylegacy.org) or 303.370.8251.

Below: Wilbur and Raye Jeanne Blundell are members of the Edwin Carter Legacy Society.







## MUSEUM *after* **DARK** MYSTERY *at the* MUSEUM

— < NOVEMBER 13, 2015 > —

Museum after Dark 2015 will enchant guests with elegance and intrigue at Mystery at the Museum. Please mark your calendars for an evening of festive sleuthing all while donning black-tie or sophisticated Victorian attire. Plus, enjoy the exhibition, *Sherlock Holmes*.

6:30–11:00 P.M.  
BLACK-TIE  
TICKETS START AT \$350\*

Or join us later for the  
YOUNG PROFESSIONALS  
*after* **DARK SOIREE**

The Museum's Young Professionals host as you explore, sip, dance, and bid. Tickets include exhibition entry, live entertainment, two drinks, appetizers, and desserts.

9:30 P.M.–1:00 A.M.  
COCKTAIL ATTIRE.  
\$50 MEMBER, \$60 NONMEMBER.

Tickets and information  
[WWW.DMNS.ORG/MAD](http://WWW.DMNS.ORG/MAD) OR  
303.370.6306

*\*After Dark Soiree ticket included in price.*

## UPGRADE TODAY AND ENJOY BEHIND-THE-SCENES NIGHT

Thank you for your membership support! You not only receive great benefits but your membership gift also helps the Museum inspire and serve our community.

We invite you to upgrade your membership today and join the Giving Club in time to enjoy the perennially favorite event, Behind-the-Scenes Night. This free evening will be held on Tuesday, October 13, and feature special access to Museum scientists, treasures, and collections not on public display as well as complimentary hors d'oeuvres and a cash bar.

Additional Giving Club benefits greatly increase your access to the Museum:

- Free "anytime" vouchers to all surcharged exhibitions, including *The International Exhibition of Sherlock Holmes*, October 23–January 31. No reservations are needed, even if it's sold out! The number of vouchers you receive is determined by your membership level.
- Free IMAX and Planetarium tickets for yourself or friends and family.
- Invitations to exclusive events throughout the year that provide Giving Club-only access to Museum scientists, exhibitions, and the latest scientific research.

Enjoy a whole new level of membership that will greatly enrich your Museum experience. It is easier and more affordable than ever to become a Giving Club member with monthly installments starting at just \$25 per month! Find out more @ [dmns.org/join/giving-club](http://dmns.org/join/giving-club).

## PLAN NOW FOR AN ENDURING FUTURE

By planning now for the future, you have the opportunity to ensure that the Museum's mission endures for generations to come. There are many options for creating a planned gift that will meet your needs while supporting the Museum. Find out more @ [dmns.planmylegacy.org](http://dmns.planmylegacy.org) for access to downloadable brochures and a free Estate Planning Kit to help you get started or evaluate your current plan.

## FUEL YOUR MUSEUM

Donate your used car, boat, motorcycle, truck, or RV to the Museum and support your favorite cultural institution while receiving a tax deduction. The Museum is partnering with Cars Helping Charities to give you the opportunity to quickly and easily donate a vehicle in any condition. Find out more or schedule a pickup @ [dmns.org/give/vehicledonation](http://dmns.org/give/vehicledonation) or 866.697.0697.

## DID YOU KNOW?

Your employer may be one of 10,000 companies that match employee donations to nonprofits such as the Museum. See your personnel office for more information and forms.



## ARSENIC AND OLD COLLECTIONS

By Jeff Stephenson

Since the earliest days of taxidermy and “cabinets of curiosities,” naturalists, scientists, and exhibitors have been concerned with pests. These biological agents of destruction damage or harm natural and cultural treasures because they enjoy eating wood, leather, skin, feathers, wool, leaves, fur, hair, horn, and even beeswax. In the old days, the answer to this problem was to enlist the “power of poison,” and our Museum was no different from any other.

Our Museum was established in 1900, and one of the founding collections was assembled by Edwin Carter, a self-taught taxidermist who worked in Colorado in the late 1800s. Carter rubbed arsenic paste into the hides of the birds and mammals he collected. Arsenic is a very effective pesticide; however, it is also potentially dangerous for people and may have contributed to Carter’s death.

In 1892, Carter nearly died after rubbing two pounds of arsenic into a buffalo bull. However, when he did die in 1900—narrowly missing the Museum’s founding—the official cause of death was listed as Bright’s disease, an older name for nephritis, which can be brought on by exposure to arsenic, other toxins, or cold weather. To compound the issue, at the time one of the recommended treatments for Bright’s disease was a dose of arsenic! We will likely never know whether poison or collecting expeditions during cold Colorado winters, or a combination of both, caused Carter’s demise.

The Museum continued to treat its own specimens with arsenic until 1972, when the substance was banned for such use by the Environmental Protection Agency. In addition, many specimens and artifacts donated to the Museum were treated with other poisons to address pest control, including mercury, naphthalene (mothballs), and DDT.

Today, the Museum does not treat its specimens or artifacts with poison. Instead, we aggressively monitor and eradicate pest activity throughout all spaces, public and private. We educate guests, staff,

and volunteers on the importance of pest control by prohibiting food and drink in certain parts of the building and keeping areas clean and free of other agents that attract vermin.

If we do find a problem, we immediately go into action with a process of isolation and freezing. It turns out that pests can be eliminated by bagging the object and placing it in a deep freeze (−4° F) for 15 days. This works with most specimens and artifacts; those too delicate to freeze are placed in an anoxic chamber to remove the oxygen vital to live pests. This takes much longer, but it is effective and avoids resorting to toxic treatments.

What do we do with all those specimens and artifacts from the past that were treated with arsenic or mercury? Safety of the objects and the people who visit and work at the Museum are our chief concerns. Staff, volunteers, and visiting researchers are all trained in proper handling of these materials, and everyone is required to wear appropriate protection while they interact with the specimens. And the millions of visitors and the thousands of schoolchildren we serve are shielded by impermeable barriers. The materials in our Education Collections are all tested for toxins before they go onto an exploration cart or into a classroom, so visitors and children are not be exposed to poisons of the past.

## SEE IT

The story of poison is surprising at every turn, as you’ll discover in *The Power of Poison*, now open in Anschutz Gallery.

## FIND IT @ DMNS.ORG

Jeff Stephenson is collections manager in the Zoology Department. Find out more @ [dmns.org/science/collections/dmns-zoology-collections](https://dmns.org/science/collections/dmns-zoology-collections).

Above: Jeff Stephenson examines a bison (DMNS ZM.2) prepared by Edwin Carter, from the Museum’s founding collection. The distinctive purple Nitrile gloves protect against heavy metal toxins of the past, such as arsenic and mercury, as well as potential zoonotic diseases.



## MEMBERSHIP BENEFITS AT YOUR FINGERTIPS

Experience the newest version of your membership eCard coming this fall. This free app is so much more than just a convenient way to store your electronic membership card!

- Redeem free general admission tickets or send them to a friend, right from your phone
  - RSVP for members events with just a few clicks
  - Read *Catalyst* magazine on the go
  - Renew your membership anytime, anywhere
  - Receive special members-only notification about upcoming events
- If you already have the app on your iPhone or Windows phone, it will auto update. Android users will receive notification that the app update is ready.

If you haven't taken advantage of your eCard yet, simply download it from your device's app store! Find out more @ [dmns.org/membcard](http://dmns.org/membcard).

## SAVE THE DATE

### VICTORIAN HOLIDAYS IN THE MUSEUM SHOPS

Friday–Sunday, November 6–8

Get into the Victorian spirit of the holidays and a jumpstart on your shopping during a special weekend in the main Museum Shop and the Poison and Sherlock shops. Enjoy extra discounts, giveaways, and new holiday merchandise. Watch your mailbox for details to come!

### MEMBERS APPRECIATION HOLIDAY WEEKEND

Friday–Sunday, December 4–6

- Save 20% in all Museum Shops.\*
- Save 20% in T-Rex Cafe—an extra 10% off for lunch.
- Save 10% on gift memberships for your family and friends.
- Save 50% on tickets for Phipps IMAX Theater and Gates Planetarium.

\*20% discount applies to all items except DVDs, CDs, and books. These special offers are valid in person only December 4–6, 2015, and cannot be redeemed over the phone or online.

## GET THE MOST FROM YOUR MEMBERSHIP

- Visit anytime for free 364 days a year!
- Read the monthly Members eNews with members-only news, tips, and special offers. By sharing your e-mail address, you can also take advantage of advance registration for popular programs such as Summer Day Camps and receive other insider updates. Not getting the eNews or advance notifications? Send your e-mail address to [members@dmns.org](mailto:members@dmns.org).
- Keep your membership current with Auto-Renew, an easy automatic renewal process. Enroll in Auto-Renew @ 303.370.6306 (daily, 9–5) and get a free gift. Your expiration date is printed on the mail label on the back of this magazine and under “Your Membership At-a-Glance” in your Members eNews.
- Add another adult to your membership for just \$20. Add-on members must be enrolled by name in case they want to visit on their own. Not valid on Individual level memberships.
- Visit 330 science centers and museums using your free admission through the ASTC Passport Program, [www.astc.org/passport](http://www.astc.org/passport). Free admission begins outside a 90-mile radius of Denver and your residence.



- Upgrade to Family Plus level membership and higher and enjoy a special reciprocity agreement with Fort Collins Museum of Discovery. (This agreement is separate from ASTC Passport program.)
- Find yourself frequently bringing the grandkids to the Museum? Check out the Grandparent membership level! It covers two adults living at the same address plus four of their own grandchildren, ages 3–18 years.

## SPECIAL MEMBERS OFFER

Members receive 20% off space rentals for special events held before the end of 2015. Our Catering and Events Services team will help you plan an event to remember. Find out more @ 303.370.6400 or [cateringandevents@dmns.org](mailto:cateringandevents@dmns.org).

## DON'T WAIT IN LINE—PRINT AT HOME!

Save time at the Museum and use print-at-home tickets for surcharged exhibitions, IMAX and Planetarium shows, and lectures and programs. Print-at-home allows you to print your tickets as soon as you finish making your purchase online—with no handling fee! When you arrive, proceed directly to the Ticket Taker booth with your printed tickets and begin enjoying the Museum.

## QUESTIONS?

- 303.370.6306 (daily, 9–5)
- [members@dmns.org](mailto:members@dmns.org)
- [dmns.org/members](http://dmns.org/members)
- Stop by the Members Lane at the Ticketing Desk

THANK YOU FOR YOUR SUPPORT! Your membership helps us provide outstanding science education programs, exhibitions, and research.



## **MEMBERS ONLY!**

### **THE INTERNATIONAL EXHIBITION OF SHERLOCK HOLMES**

#### **Members-Only Preview Day with Extended Hours**

Thursday, October 22 • 9 a.m.–9 p.m.

See it before it opens to the public! Enjoy an extra 10% off in the T-Rex Cafe and Deli this day only before 5 p.m. Entry by reserved timed ticket. \$7 adult member, \$6 senior/junior/child member, free ages 3 and under

#### **Members-Only After Hours (Ages 21+)**

Tuesday, November 17 • 6–9 p.m.

Enjoy a four-course meal, cash bar, and the exhibition. Menu at [dmns.org/memberevents](http://dmns.org/memberevents). \$50 member, \$60 nonmember

#### **Members-Only After Hours**

Wednesday, December 2 • 6–9 p.m.

See both The Power of Poison and Sherlock Holmes! Entry by reserved timed ticket. \$7 adult member, \$6 senior/junior/child member, free ages 3 and under. Optional prepurchased dinner available for additional charge. Menu at [dmns.org/memberevents](http://dmns.org/memberevents). \$10 adult/senior/junior member, \$7 child member (ages 3–12)

#### **Members-Only After Hours**

Wednesday, January 13 • 6–9 p.m.

Entry by reserved timed ticket. \$7 adult member, \$6 senior/junior/child member. Optional prepurchased dinner available for additional charge. Menu at [dmns.org/memberevents](http://dmns.org/memberevents). \$10 adult/senior/junior member, \$7 child member (ages 3–12), free ages 3 and under

RESERVATIONS OPEN ON SUNDAY, AUGUST 30, AND ARE REQUIRED FOR ALL EVENTS @ [dmns.org/memberevents](http://dmns.org/memberevents) or 303.370.6306 (daily, 9–5).





# WHAT'S HAPPENING AT THE MUSEUM

ADULTS | CHILDREN | FAMILIES | TEENS

AUTUMN 2015 | RESERVATIONS 303.370.6000 OR [WWW.DMNS.ORG](http://WWW.DMNS.ORG)

# The Science Lounge

ENTERTAINMENT  
MIND-EXPANDING SCIENCE  
COCKTAILS  
EVERY 3RD THURS 6:30 - 9:30 P.M.



**September 17: Prophetic Genetics** Crack the genetic code during this evening of alleles and mutations. Dive into the gene pool and ponder personalized genomics, test your skill at sequencing DNA, and consider your own family tree while sipping a chromosomal cocktail.

**October 15: Bloodsucker's Delight** Dress your Hallows' Eve best for this sanguine celebration of bloodletting! From creatures of the night to microorganisms of the blood, find out why vampires and parasites have more in common than you might imagine, and rest in peace at the bar with a concoction that could raise a corpse.

**November 19: Bust a Move** Show us your moves! Hop out of your seat and onto the dance floor with Denver's own contemporary dance troupe Wonderbound. Get physical with the science behind movement and human physiology, and try out the dating dance animals use to find their mates before side-stepping to the bar.

Buy tickets at [dmns.org/sciencelounge](http://dmns.org/sciencelounge)  
\$10 Museum member, \$12 nonmember

Media Sponsors

**5280**  
[ THE DENVER MAGAZINE ]

**Westword**



# AUTUMN 2015

---

## EXHIBITIONS

### Mythic Creatures: Dragons, Unicorns, and Mermaids

Now open through September 7 • Free with Museum admission • Phipps Gallery, Level 3  
Face off with legendary creatures that for centuries have inspired stories, music, art, and many theories about their origins and existence.

### The Power of Poison

Now open through January 10 • Free with Museum admission • Anschutz Gallery, Level 3  
Uncover the surprising secrets of poison, from the pages of fairy tales to the journals of modern medicine.

### The International Exhibition of Sherlock Holmes

Coming October 23–January 31 • Special ticket required • Phipps Gallery, Level 3  
Step into Victorian London and work alongside Sherlock as he tackles a baffling new case using your curious mind and scientific methods.

---

## PHIPPS IMAX 3D THEATER

Be swept away on adventures from the ocean’s darkest depths to the far corners of the universe.

*Galapagos 3D: Nature’s Wonderland*

*Humpback Whales 3D*

*Journey to Space 3D*

*Secret Ocean 3D*

---

## GATES PLANETARIUM

Sit back and take an incredible journey as you soar through the cosmos.

*Black Holes: The Other Side of Infinity*

*Cosmic Journey*

*Inside NASA: From Dream to Discovery*

*One World, One Sky: Big Bird’s Adventure*

*Perfect Little Planet*

*We Are Aliens*


---

**ADMISSION** Museum admission is free for members every day! Special ticket required for *Sherlock Holmes*.

	MUSEUM	IMAX	PLANETARIUM
Adult member	FREE	\$7	\$5
Senior member (65+)	FREE	\$6	\$4
Child/Junior member (3–18)	FREE	\$6	\$4

The Museum is open daily 9 a.m.–5 p.m., with extended hours at various times.  
Dates, times, and prices subject to change. • To plan your visit and for other information, go to [www.dmns.org](http://www.dmns.org).

# SEPTEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
				The Undocumented, p.5		
		1	2	3	4	5
	Mythic Creatures closes	Spider Biology, p.10	The Poison King, p.5			
6	7	8	9	10	11	12
Urban Ecology, p.14				Science Lounge, inside cover		
13	14	15	16	17	18	19
Dissection Connection, p.14	Fossil Essentials, p.10		Autumn equinox	Bird Walk, p.13 C-P Boundary, p.10		
20	21	22	23	24	25	26
SCFD Community Free Day 		Digital Earth, p.6 World of Telescopes, p.11	60 Minutes in Space, p.6			
27	28	29	30			



# OCTOBER

SUN	MON	TUE	WED	THU	FRI	SAT
				Elk Bugling, p.12		Bats (families), p.14
				1	2	3
		A Is for Arsenic, p.11	Indigenous Film Festival, p.6  Subirdia, p.9			
4	5	6	7	8	9	10
				Science Lounge, inside cover	Hallow-Teen: Elixirs, Potions, and Poisons, p.15	
11	12	13	14	15	16	17
SCFD Community Free Day  Evolutionary Biology, p.12			Avian Conservation, p.9	Value of Venom, p.6  Bird Walk, p.13  <i>Sherlock</i> Members Preview Day	<i>Sherlock Holmes</i> opens	
18	19	20	21	22	23	24
		Life in the Clouds, p.7	60 Minutes in Space, p.6  Beauty of the Sagebrush Sea, p.9		Family Overnight, p.14	
25	26	27	28	29	30	31

# NOVEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
Daylight saving time ends		Vertebrate Paleontology, p.12	Digital Earth, p.7		It's a Party, Dear Watson, p.8	Night at the Museums, open until 10 p.m.
1	2	3	4	5	6	7
	SCFD Community Free Day		Dinosaur Hunting, p.8		Museum After Dark annual gala	Dr. Scott, p.15
8	9	10	11	12	13	14
	The Horse, p.8	<i>Sherlock</i> After Hours for Adults	60 Minutes in Space, p.6	Bird Walk, p.19  Science Lounge, inside cover		What's Up, Watson! A Sherlock Holmes Party, p.15
15	16	17	18	19	20	21
	Holiday Break Camp, p.15			Thanksgiving, Museum open		
22	23	24	25	26	27	28
	Forensic Science, p.12					
29	30					



# AFTER HOURS



AT THE MUSEUM

Encounter new ideas, cutting-edge science, and captivating individuals.

## Archaeology of the Undocumented

The U.S.-Mexico border is the subject of great debate, but what is largely lost in news headlines is a nuanced understanding of the modern immigrant experience. Anthropologist Jason De León directs the Undocumented Migration Project, which uses forensic, archaeological, and ethnographic research to examine the trek north through harsh desert, putting a human face on the real life and death struggles of migrants. De León will share tragic and exhilarating stories from his groundbreaking work. This is the inaugural talk for the George McJunkin Lecture, recognizing the African American cowboy who discovered bison bones in Folsom, New Mexico, that eventually made archaeological history.



Thursday, September 3 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember



## The Poison King

Widely noted folklorist and science historian Adrienne Mayor brings to life the story of the world's first experimental toxicologist. Her book *The Poison King: The Life and Legend of Mithradates, Rome's Deadliest Enemy* examines the brilliant rebel leader who challenged Roman imperialism in the first century BC. His mastery of poisons allowed him to foil assassination attempts and eliminate rivals. Mayor, a research scholar at Stanford University, will explore how poison and power can operate in tandem to change the course of history.

Wednesday, September 9 • 7 p.m. • Phipps IMAX Theater • \$8 member, \$10 nonmember • book sale & signing



## Digital Earth: Dark Skies

We live in an artificially-lit world that allows us to be productive 24/7, at the expense of the night sky. National parks, such as Chaco Culture, Canyonlands, and Rocky Mountain, are havens where we can unplug and reconnect with our ancestral night skies, although human-generated lighting is encroaching. Using global satellite images, discover the beauty of the dark and how to protect the quality of the night sky in national parks. With special guests from the International Dark Sky Association, National Parks Conservation Association, and Western Energy Project.

Tuesday, September 29 • 7 p.m. • Gates Planetarium • \$8 member, \$10 nonmember

## 60 Minutes in Space

Go “behind the stories” with space scientists who will use the best images and animation available to help you understand new developments in space exploration. No reservations required; seating is first come, first served.

Wednesdays, September 30, October 28, November 18 • 7 p.m. • Gates Planetarium • FREE

## Indigenous Film Festival

The Museum is pleased to continue our partnership with the Indigenous Film and Arts Festival, presented by the International Institute for Indigenous Resource Management (IIIRM). Please check [www.dmns.org/afterhours](http://www.dmns.org/afterhours) for details about opening night. This collaboration extends to a monthly film series and discussions in partnership with IIIRM and the Denver American Indian Commission.

Wednesday, October 7 • 7 p.m. • Ricketson Auditorium • Free, reservations recommended

## The Value of Venom

Sink your fangs into the fascinating world and chemical richness of spider venom with Rick Vetter and Greta Binford, leading experts in the field. Very few spiders have venoms that can hurt people, and even fewer are aggressive toward humans. Better understand the unseen ways these animals contribute to our world, tackle myths and human fears, and come to appreciate these conspicuous and abundant arthropods.

Thursday, October 22 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember







### Life in the Clouds: Annual Marie Wormington Lecture

Anthropologist, archaeologist, and adventurer Mark Aldenderfer takes you to the remote basins and ranges of the Andes in Peru and the Himalayas in Nepal to discover the origins of settled village life and how humans adapted to high-altitude environments. Uncover fascinating objects and stories, dig through excavation projects, and delve into the health aspects of his research. Aldenderfer's adventures have been featured in PBS documentaries and *National Geographic*. The Marie Wormington Lecture is named for the renowned anthropologist who had an illustrious career at the Museum.

Tuesday, October 27 • 7 p.m. • Ricketson Auditorium • \$12 member, \$15 nonmember

### Digital Earth: Elephant Landscapes

Two species emerged on the African savannas 5 to 7 million years ago: the ancestor of modern elephants and an upright walking ape who eventually gave rise to the elephant's most feared hunter, *Homo sapiens*. Although each lineage spread out of the continent and diversified around the world, today we question whether these two animals can continue to live side-by-side. Join biologist Shermin de Silva as she shares her unique research on elephant conservation. Her story will be enhanced by immersive global satellite images of elephant range countries.

Wednesday, November 4 • 7 p.m. • Gates Planetarium  
• \$8 member, \$10 nonmember



## It's a Party, My Dear Watson

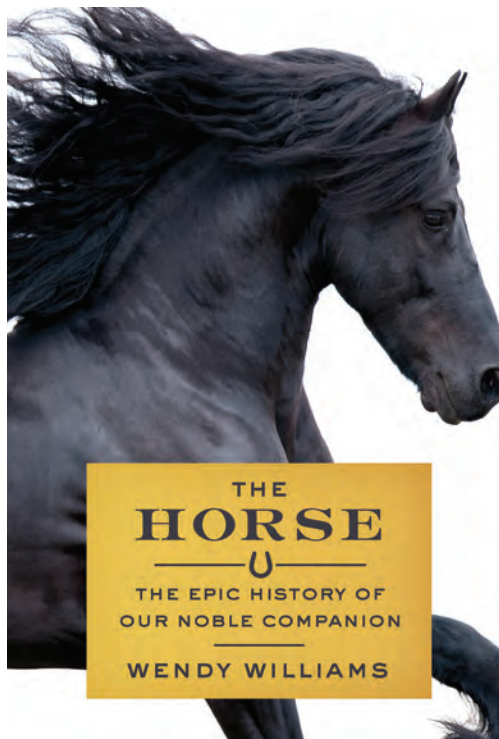
All is not what it seems! Channel Sherlock Holmes as you apply reasoning, adopt a disguise, and bring your mad forensic skills to this Victorian affair rife with mystery and intrigue. Investigate *The International Exhibition of Sherlock Holmes*, sip a cryptic cocktail, and taste the finer treats London's aristocracy has to offer. Ticket includes one drink, appetizers, and the exhibition. Victorian and Sherlock Holmes-inspired costumes are encouraged. For ages 21+ only. Friday, November 6 • 7 p.m. • \$38 member, \$43 nonmember



## Dinosaur Hunting

Meet the newest cousin in the *Triceratops* family tree, unearthed in Canada by paleontologist Dave Evans and his team and featured on the television show *Dino Hunt Canada*. The preparation of the horned dinosaur was live-streamed globally, and the fossil mounted for display at the Royal Ontario Museum. Evans will share the story of this exciting discovery, the latest for the Southern Alberta Dinosaur Project, which has introduced six new species of dinosaurs in the last five years.

Wednesday, November 11 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember



## The Horse: The Epic History of Our Noble Companion

Journey through the 56 million-year history of the horse with journalist and equestrienne Wendy Williams. She will share stories of the deep evolutionary fellowship between people and horses, a complex relationship that has included hunting, taming, and veneration. You'll travel the world as you hear about the Takhi horses of Mongolia, the Garrano horses of Galicia, the famous Lipizzaners of Vienna, and the free-roaming mustangs in the Wyoming mountains. Williams is the author of *The Horse: The Epic History of Our Noble Companion*, a revelatory account of the animal that has been at our side through the ages.

Monday, November 16 • 7 p.m. • Phipps IMAX Theater • \$8 member, \$10 nonmember • book sale & signing

## ANNUAL BIRD LECTURE SERIES

From your backyard to the sagebrush sea to the western hemisphere—bird conservation happens everywhere. Presented in partnership with Bird Conservancy of the Rockies.

### Welcome to *SubIRDia*

Renowned ornithologist and urban ecologist John Marzluff presents a surprising discovery: the suburbs of many large cities support a great variety of birds and other creatures that are adapting to the conditions of our increasingly developed world. In his fascinating book *Welcome to Subirdia*, Marzluff reveals how we can make our backyards and urban communities a healthy place for birds. Hear his fascinating stories and learn what you can do to help our feathered friends.

Wednesday, October 7 • 7 p.m. • Phipps IMAX Theater • \$12 member, \$15 nonmember • book sale & signing



### Awe-Inspiring Avian Conservation

As head of the Smithsonian Migratory Center, Peter Marra examines how climate, habitat, food, pathogens, and other factors influence migratory and resident birds. He is ambitiously pursuing innovative technological solutions for tracking animals throughout their lifetimes. From citizen science projects to satellite transmitters, he and his research teams are using methods that take advantage of our connected world. Flock to this lecture to get a big picture look at birds and their conservation needs.

Wednesday, October 21 • 7 p.m. • Ricketson Auditorium • \$12 member, \$15 nonmember

### The Beauty of the Sagebrush Sea

Stretching 250,000 square miles across North America, the sagebrush steppe is home to a surprising diversity of life, including songbirds, mule deer, and the powerful golden eagle. The new film *The Sagebrush Sea*, produced by the Cornell Lab of Ornithology, examines life in sagebrush country through the eyes of the charismatic greater sage-grouse and the human influence on this vital landscape. Marc Dantzker of the Cornell Lab will share clips, images, and stories about the film and sagebrush conservation.

Wednesday, October 28 • 7 p.m. • Ricketson Auditorium • \$12 member, \$15 nonmember





## COURSES



### Spider Biology

Whether you love spiders or fear them, this class will spin you in a web of wonder. Paula Cushing, curator of invertebrate zoology, shares the family ties between spiders and their closest relatives, weaving in facts about their biology, their importance in terrestrial environments, and their ecology and behavior. Learn how to identify different families of spiders and become certified for the Colorado Spider Survey, a citizen-science project.

Tuesdays & Thursdays, September 8–17 • 6:30–8:30 p.m. • Field trip: Sunday, September 13 • \$110 member, \$140 nonmember

### Fossil Essentials

Lay the foundation of your fossil know-how with paleontologist and research associate Lou Taylor. Beginning with the origins of life on Earth, this course progresses to the formation of fossils, their scientific significance, and the basics of collection, data recovery, curation, and study. Formerly known as Paleontology 101.

Mondays & Wednesdays, September 21–October 7 (no class September 23) • 6:30–9 p.m. • Field trip: Saturday, October 3 • \$150 member, \$180 nonmember



### The Cretaceous-Paleogene Boundary

The extraterrestrial event that caused the mass extinction of the dinosaurs now defines the Cretaceous-Paleogene (K-P) boundary. Paleontologist and research associate Lou Taylor leads you through a study of this catastrophic event and how it impacted the organisms living on land and in the seas. Includes a one-day field trip to a locale in southern Colorado near Trinidad, considered one of the best-known K-P sites.

Thursday & Friday, September 24 & 25, 6:30–8:30 p.m. • Field trip: Saturday, September 26, 8 a.m.–8 p.m. • \$110 member, \$140 nonmember



## The World of Telescopes

Gain a new understanding and appreciation of the mysteries of the cosmos during this fun course, then put it into action by assembling your own telescope! Space scientist Dimitri Klebe demonstrates how telescopes work and how they are used to gather data as he shares an overview of the formation of stars, galaxies, and planets. Experience stargazing away from city light with a 22-inch research grade telescope during a field trip to the Mount Evans Outdoor Education Laboratory.

Tuesdays & Thursdays, September 29–October 6, 6:30–8:30 p.m. • Field trip: Thursday, October 8, 6:30–8:30 p.m.  
• \$150 member, \$180 nonmember

## A Is for Arsenic, Z Is for Zinc

Our world is full of powerful poisons and treacherous toxins hidden in plain sight. With Sue Ware, Zoology Department associate, explore the valuable roles of poison, as protection against predators, mythical potions, paleontological talismans, medical marvels and historical causes of illness and death. We interact daily with poisons in one form or another, some are hazardous and some are helpful, but which is which and how do we know the difference? Includes three lecture and virtual lab sessions, and one session in the exhibition *The Power of Poison*.

Tuesdays & Thursdays, October 6–15 • 6:30–9:30 p.m. • \$150 member, \$180 nonmember





## Evolutionary Biology in Action

Join our Zoology Department curators to examine case studies of evolution in action, from genomes to arachnids to birds to beetles. Evolutionary biology focuses on understanding the processes that produce the mind-boggling diversity on our planet. This research has reached a new golden age where DNA analysis and other ever improving techniques and discoveries are being used to answer questions

about how species and traits evolved. View specimens and learn how our curators' global fieldwork contributes to a fresh understanding of evolution.

**Mondays, October 19–November 9 • 7-8:30 p.m. • \$60 member, \$75 nonmember**

## Vertebrate Paleontology: Mammals

Paleontologist and research associate Lou Taylor examines the origin and evolution of mammals, from the Mesozoic to today. Learn who evolved when and where, and who survived.

**Tuesdays, November 3–17 • 6:30–8:30 p.m. • \$110 member, \$140 nonmember**

## Sherlock Holmes and The Birth of Forensic Science

From the mind and pen of Sir Arthur Conan Doyle sprang the concepts, practices, and techniques of modern forensic science. Blood analysis, fingerprinting, crime scene investigation, and the acquisition of evidence were all standard procedures for Holmes and Watson. With Sue Ware, Zoology Department associate, put on your gloves and roll up your sleeves for the finer points of criminal investigation, forensic science, and shrewd analytical problem solving. Sherlock reminds us to “think outside the box,” be calm, look for the unexpected, and examine each and every clue from every angle. Includes three lecture and virtual lab sessions, and one session in *The International Exhibition of Sherlock Holmes*.

Caution: Content will be graphic and is not suitable for children under the age of 16.

**Mondays & Wednesdays, November 30–December 9 • 6:30–9:30 p.m. • \$150 member, \$180 nonmember**



## FIELD TRIP



## Elk Bugling

Enjoy a brisk autumn evening, brilliant fall colors, and the echo of bull elk bugling with research associate Ron Beane. The Museum has exclusive permission to visit Evans Ranch, a private ranch nestled at the base of Mount Evans that is home to a wide array of Colorado wildlife. Hike wooded areas to a secluded location where at sundown you will sit back, relax, and listen to the sounds of elk in full rut along with other

eerie evening sounds of the Colorado wilderness. Bus transportation and a light sandwich dinner are included. Ages 12 and up are welcome. Space is limited and reservations are required.

**Thursday, October 1 • 3–10 p.m. • \$75 member, \$100 nonmember**



## BIRD WALKS AND TRIPS

Explore destinations with expert bird guide Norm Lewis, Zoology Department associate.

### Barr Lake State Park

Barr Lake is a popular “migrant trap” this time of year and host to a Bird Conservancy of the Rockies banding station, where you will get to see captured songbirds. The riparian woodland often features warblers, hermit thrushes, and many sparrows. Loons, grebes, ducks, and geese should still be at the reservoir.

Thursday, September 24 • 8 a.m.–5 p.m. • \$27 member, \$35 nonmember

### Boulder Area

Visit lakes, ponds, and marshes in search of winter waterfowl, including a variety of ducks, grebes, and loons. Raptors are also abundant this time of year. You may also see downy and hairy woodpeckers, brown creeper, white-crowned sparrow, and likely some surprises!

Thursday, October 22 • 8 a.m.–4 p.m. • \$27 member, \$35 nonmember

### Eastern Plains Reservoirs

Join us for a day of exploring numerous lakes, streams, reservoirs, and the surrounding prairies for a wide variety of birds that will winter in Colorado, including waterfowl moving south to find open water and raptors in search of prey.

Thursday, November 19 • 8 a.m.–4 p.m. • \$27 member, \$35 nonmember

### Eastern Plains Raptors

Winter can be an exciting time on the eastern plains of Colorado, as winter raptors patrol the prairies and waterways; be on the lookout for rough-legged hawk, golden eagle, and prairie falcon. In the afternoon, travel to Jackson Lake State Park, where long-eared owls winter in the Russian olive thickets.

Thursday, December 3 • 7 a.m.–4 p.m. • \$27 member, \$35 nonmember



### Grand Migration of the Sandhill Cranes

Witness firsthand one of North America’s great wildlife spectacles—the migration of the sandhill cranes. Each spring, a half-million cranes converge along a relatively short stretch of the Platte River in central Nebraska. At dawn, flocks of thousands of cranes lift off the river in

a roar of wings and prehistoric calls. Don’t miss this spectacular display!

Saturday–Sunday, March 12–13 • \$610 single, \$665 double • itinerary: [www.dmns.org/travel](http://www.dmns.org/travel) • reservations: Leisure West Tours, 303.659.4858, 888.443.3350, [www.leisurewesttours.com](http://www.leisurewesttours.com)

## FAMILY PROGRAMS

### Urban Ecology in City Park • Ages 5–10 years

Gather the family and go on a wildlife adventure right in the middle of the city! This indoor and outdoor program led by a Museum wildlife expert will take you on a journey to find birds, varmints, and bugs while giving you an exclusive close up with Museum collections.

Sunday, September 13 • 9 a.m.–noon • \$12 member adult, \$8 member child • \$15 nonmember adult, \$10 nonmember child



### Dissection Connections • Grades 2–9

The family that dissects together stays together! With a skilled Museum educator as your guide, observe the dissections of a sheep brain, lung, and heart, then try your hand with a scalpel as you learn about amazing body systems.

Sunday, September 20 • 10 a.m.–noon • \$40 member pair, \$50 nonmember pair

### Live Bats • All Ages

Bring the whole family to meet Rob Mies, a Museum favorite and director of the Organization for Bat Conservation, and his traveling companions who help you explore the lives, habitats, and nocturnal strategies of bats. Encounter a big brown bat and hear its high-pitched echolocation with a “bat detector,” meet fruit bats from Africa and Asia, and come face-to-face with the world’s largest bat!

Saturday, October 3 • 10 a.m. or noon • Ricketson Auditorium • \$12 member adult, \$8 member child • \$15 nonmember adult, \$10 nonmember child



### Overnight at the Museum: A Poisonous Halloween • Grades K–8

An enchanting evening awaits your whole family at this spook-tacular sleepover. Ooey-gooley activities, ghostly good times, and trick-or-treat challenges are followed by camping out in the diorama halls. Wake up to breakfast, an IMAX film, and time to explore the temporary exhibition *The Power of Poison*. Includes pizza dinner, evening snack, and hot breakfast.

Friday, October 30–Saturday, October 31 • 5:30 p.m.–10 a.m. • \$65 adult member, \$55 child member • \$80 adult nonmember, \$70 child nonmember



### **Meet Dr. Scott • All Ages**

All aboard! Scott Sampson, the Museum's vice president for research and collections and host of the hit PBS KIDS show *Dinosaur Train*, will share his enthusiasm for dinosaurs during a short program sure to captivate your child. Afterward, Dr. Scott will be available for autographs and photos.

Saturday, November 14 • 10 a.m. or noon  
• \$12 adult member, \$8 junior member (ages 3–12) • \$15 adult nonmember, \$10 junior nonmember (ages 3–12)

### **Holiday Break Camps • Grades K-2 & 3-5**

Looking for something amazing to do for a few days during holiday breaks? Your child will experience the fun and wonder of the Museum. See IMAX films and Planetarium shows, and make the most of the exhibits, including the science of investigating mysteries in *The International Exhibition of Sherlock Holmes*. Early morning drop-off and late pickup options available.

3-day camps: Mondays–Wednesdays, November 23–25 & December 21–23 • 9 a.m.–3:30 p.m. • \$160 member, \$175 nonmember / 4-day camp: Monday–Thursday, December 28–31 • 9 a.m.–3:30 p.m. • \$210 member, \$235 nonmember

## **TEENS ONLY**

### **Hallow-Teen: Elixirs, Potions, and Poisons**

Be forewarned, this poisonous party is not for the faint of heart! Concoct your own powerful potion, venture into the darkest reaches of *The Power of Poison* exhibition, discern the difference between venomous and villainous, and dine on a dinner made for the undead.

Friday, October 16 • 6:30–9 p.m. • \$10 teen (ages 13–17 only)

### **What's Up, Watson! A Sherlock Holmes Party**

Pull out that magnifying glass and dapper top hat for a forensic party of mystifying proportions. Travel to Victorian London and work on a baffling case alongside Sherlock in *The International Exhibition of Sherlock Holmes*, and dine on fare that is fit for the Queen.

Saturday, November 21 • 6:30–9 p.m. • \$10 teen (ages 13–17 only)



## **RESERVATIONS AND GENERAL INFORMATION**

303.370.6000, daily, 9 a.m.–5 p.m., or [www.dmns.org](http://www.dmns.org)

## **MEMBERSHIP OFFICE**

303.370.6306 or [members@dmns.org](mailto:members@dmns.org)

## **PRINT-AT-HOME TICKETS**

Print-at-home tickets are available for exhibitions, IMAX and Planetarium shows, and lectures and programs, and there's no handling fee! When you arrive at the Museum, proceed directly to the Ticket Taker booth or to your program. Please always bring your membership card and photo ID when you visit the Museum. There is a \$2 handling fee per ticket for surcharged exhibitions reserved by phone.

## **RENEW YOUR MEMBERSHIP ONLINE**

[www.dmns.org/members](http://www.dmns.org/members)

## **E-COMMUNICATIONS**

Receive a monthly newsletter with updates and special offers as well as advance notices and other insider information when you share your e-mail address with us at [members@dmns.org](mailto:members@dmns.org).

## **CONFIRMATION**

For After Hours programs, classes, field trips, and programs for families and teens, you will receive a reminder e-mail with directions for entering the Museum and other details up to a week before the event. For children's programs, you will receive a confirmation letter and pertinent forms prior to the event.

## **REFUND POLICY**

Sales are final on all tickets unless the Museum cancels the event.

Published by the Denver Museum of Nature & Science © 2015

Hours, fees, and schedules are subject to change.

Photos © DMNS except p. 5, backpacks, © Michael Wells/[mwellsphoto.com](http://mwellsphoto.com); p. 7, elephant, courtesy Shermin de Silva; p. 13, cranes © Larry Crist/USFWS; p. 14, bat, courtesy Rob Mies.

## **USE YOUR MEMBERSHIP OFTEN! WE'RE OPEN 364 DAYS A YEAR!**

# PICK YOUR POISON!

## THE MUSEUM SHOPS—LEVELS 1 & 3



**Members Save 10% Every Day!**

Your purchases support Museum education, research, and collections.



# T-REX CAFE

SALAD BAR, GRILL, KIDS MEALS  
11 a.m.—2 p.m.

SANDWICHES, SNACKS READY TO GO  
10 a.m.—4 p.m.

Proudly serving locally sourced Colorado products.

