CRAYON AND STONE
Science Embraces the Lithograph, 1800-1899
Exhibition Opening March 28, 2013
President’s Message

When I arrived at the Linda Hall Library in 2008, I came with an intellectual background in literature, music, and art along with the hope that we might, from time to time, find ways to explore subjects existing at the intersection of science and art. This hope co-existed with the expectation that we would also continue to advance the Library’s mission to support research in science, engineering, technology, and their histories. To me, the possibilities seemed endless. Beautiful and graceful buildings and bridges are often referred to as “works of art” that belie the engineering and architectural calculations used to create them. High-powered telescopes hurtling through deep space dispatch dazzling images of the cosmos. Nature’s beauty is abundant on the Library’s grounds as well as in its large collection of books devoted to botany. Linking science to art did not seem to be an untenable prospect.

With the Library’s next two exhibitions, I am delighted to report that my hoped-for linkage will occur! Crayon and Stone: Science Embraces the Lithograph, 1800–1899, followed by Wheels, Pyramids, and Spinning Tops: The Scientific Approach to Color, promise to expand and illuminate our understanding of the ways that science both creates and informs art.

Accompanying programs will ask us to consider how illustration affects our understanding of complex scientific concepts, how one physicist uses his discipline to detect art forgeries, and the ways in which computer animation is transforming a very basic art form as well as the film industry itself.

I could not be more intrigued by this lineup of programs, and hope you will be too. Please join me as we begin our explorations into the convergence of science and art.

An Interview with Oliver Uberti

Oliver Uberti spent nine years in the design department of National Geographic Magazine, most recently as Senior Design Editor. His designs, information graphics, maps, illustrations, and art direction have won numerous international awards. Oliver left National Geographic in 2012 to form his own studio, Oliver Uberti Creative.

Uberti will speak at the Linda Hall Library on March 28 at 7:00 p.m. as the opening lecture for the exhibition, Crayon and Stone. On December 21, 2012, he spoke with Eric Ward, Director of Public Programming, about his work at National Geographic and the field of scientific illustration.

Eric Ward: National Geographic Magazine is well-known for its quality of writing, photography, and layout. How closely did you work with authors and photographers?

Oliver Uberti: Authors tend to work remotely. The text editors work with their authors on the manuscripts and when it’s ready it comes into layout. It’s the photographers who are generally more likely to be seen in the halls because they come and sit for a couple of days with a photo editor and narrow down thousands of pictures to maybe 50. So a photographer often gets to be part of the layout process. While all that is happening, the cartographers and the artists are working on their sketches for their maps and illustrations.

EW: So you get involved early in the process?

OU: Yes, all these individual ingredients have been brewing over the past year. Design is really kind of the kitchen where it all gets mixed together. That’s the process for the feature stories. What we call the front-of-the-book pages, or department pages, are a little bit different.

EW: How so?

OU: Things are a little bit more ad hoc and you want to fill those with new and interesting science and engineering news and discoveries. The key there is to always freshen it. That’s where I did a lot of creative work with information graphics and with photo shoots in the studio to try and take subjects that you may be familiar with and show them to you in a way you haven’t seen them before.

EW: You talked about that creative process in your 2011 Ted talk. You even painted with crude oil for one story.

OU: Those are the puzzles you get faced with when you come in to work at Geographic that you couldn’t predict when you woke up in the morning. You sit down in a story
idea meeting and somebody says, “Hey, there’s been a lot of new research done on oil spill prevention and measures taken since Exxon Valdez...could we do a short story on that?” And then the question becomes, How do you illustrate it? And suddenly I have to think, what would surprise me? What wouldn’t be boring to me? And that’s a question I often start with even if I don’t vocalize it. It’s something I’m always thinking, What would I be excited about if I saw it in a magazine?

EW: Do you have a favorite assignment or one that was particularly memorable or challenging?

OU: There have been a few that really stand out. The “pill fish” is always going to be a favorite of mine. We were doing a special issue in April 2010 on the world water crises and trying to cover every possible angle. And one that came across our desk was a pilot study from the EPA that was being conducted by researchers at Baylor University. They had a theory that everything we were ingesting into our bodies ultimately makes its way back into the ecosystem. It was really startling to find out—even though they were trace amounts—that there was a presence of pharmaceuticals in the tissue of fish. So I had this idea to make a fish out of pills.

EW: Did you find a doctor or pharmacist who was willing to help?

OU: A pharmacist in Washington, D.C., was willing to cooperate. We set up a mini photo studio in the aisle of the pharmacy. I had a little spreadsheet with the ratios of the pharmaceuticals that were found in the study. And I knew if it took 73 green pills to make one part of the fish, then that meant I needed X amount of pink pills and red ones. Our director of video came by and set up a stop motion camera. That’s how we got that video of me making it that you may have seen in the Ted talk. That one was a blast, because it goes from a hunch of an idea, something that could be cool, and then it worked out. It could’ve been a huge disaster.

EW: How much is trial and error in order to get that perfect look for a story?

OU: That’s all it is! If you’re not good with rejections and if you’re not good with having mistakes pointed out, and revising and revising and revising some more, then the publishing business, especially National Geographic, is not for you.

EW: You recently left National Geographic to start your own studio. How’s that going?

OU: It’s going real well. It’s a full service design, illustration, and information graphics studio and I’m working on projects across that whole spectrum currently.

EW: I imagine the collaboration process, particularly with a scientist, is a rewarding part of the job.

OU: That was one of my favorite parts and continues to be one of my favorite parts of doing information graphics or research-based art. I didn’t really set out to be a science-based artist, but found some of my favorite work is at the intersection of art and science. I enjoy calling up a scientist whose work I’ve read about in a journal or news article, and saying, “Hey, I’d like to visualize your findings. Can you share your data? Would you like to work together?” It’s a joy to have the scientist see the finished project and see how you visualized and translated all their hard work.

EW: You recently delivered a keynote address at the annual conference of the Guild of Natural Scientific Illustrators. Is scientific illustration as relevant today as it was in the 19th century?

OU: I think it’s more relevant now thanks to photography. Before photography—and I’m not speaking as a scientific illustration scholar—a lot of scientific illustration was about recording holotypes and documenting species and what things looked like. Photography can do that now in beautiful and surprising ways, which frees art and graphics and mapping to dig deeper and tell stories through the data and statistics, stories of processes and patterns, and geography and relationships.

EW: Thank you for your time. We’re looking forward to your lecture.
Upcoming Lectures

Thursday, February 21, 2013 at 7:00 p.m.
The Half-Life of Facts:
Why Everything We Know has an Expiration Date
Dr. Samuel Arbesman, Senior Scholar,
Ewing Marion Kauffman Foundation

Facts change all the time. Smoking has gone from doctor recommended to deadly. We used to think that Pluto was a planet. In short, what we know about the world is constantly changing. The Half-Life of Facts is a riveting journey into the counterintuitive fabric of knowledge, helping us find new ways to measure the world while accepting the limits of how much we can know with certainty.

Tuesday, March 12, 2013 at 7:00 p.m.
The Age of Edison:
Electric Light and the Invention of Modern America
Dr. Ernest Freeberg,
Distinguished Professor of Humanities,
University of Tennessee
Co-sponsored by Rainy Day Books

In The Age of Edison, Freeberg weaves a narrative that reaches from Coney Island and Broadway to the tiniest towns of rural America, tracing the progress of electric light through the reactions of everyone who saw it. It is a quintessentially American story of ingenuity, ambition, and possibility, in which the greater forces of progress and change are made visible by one of our most humble and ubiquitous objects.

Friday, May 10, 2013 at 7:00 p.m.
at Unity Temple on the Plaza
Cooked: A Natural History of Transformation
Michael Pollan, Best-selling author

In his new book Michael Pollan explores the previously uncharted territory of his own kitchen. Here, he discovers the enduring power of the four classical elements—fire, water, air, and earth—to transform the stuff of nature into delicious things to eat and drink.

A Rainy Day Books author event co-sponsored by the Linda Hall Library. Visit rainydaybooks.com for registration information.

Art and Science Lecture Series

Thursday, March 28, 2013 at 6:00 p.m.
Exhibition Opening
Crayon and Stone:
Science Embraces the Lithograph, 1800-1899
Curator: Dr. William B. Ashworth, Jr., Consultant for the History of Science and Associate Professor,
University of Missouri-Kansas City

Around 1800, Alois Senefelder, a German actor and playwright, introduced a new printing technique called lithography. He printed from a polished block of limestone instead of a copper plate or a wood block, and the resulting lithograph provided a new warmth and expressiveness that was difficult to achieve with an engraved plate or a woodcut.

“Science took to the new technique very quickly,” explains exhibition curator William Ashworth. “By 1830, Elizabeth Gould was making lithographs of birds for her husband John Gould. At the same time, explorer and naturalist John Richardson was publishing lithographs of Arctic animals discovered during the search for the Northwest Passage, and Wilhelm Beer and Johann Mädler were revealing new features of the moon in their large lithographed lunar map.”

One of the greatest applications of lithography to scientific illustration was the portrayal of fossils. A fossil in its stony matrix is very difficult to reproduce with an engraving or a woodcut. However, with lithography one can use a crayon to perfectly duplicate the texture and appearance of stone.
By the middle of the century, chromolithographs printed in several colors began to appear, and by the end of the century 14-stone lithographs illustrating books of birds and butterflies appeared. It was even possible to photograph directly onto a lithograph stone. The resulting photolithograph had the realism of a photograph, but the durability and reproducibility of a lithograph.

This exhibition will display 100 years of scientific lithography from the very first ever printed to the end of the 19th century. “Many of the most beautiful scientific illustrations ever printed are lithographs,” Ashworth says. “We wish to include as many as we can to create what should be a visually stunning exhibition.”

Crayon and Stone opens Thursday, March 28, at 6:00 p.m. followed by a lecture at 7:00 p.m. by Oliver Uberti, former Senior Design Editor at National Geographic. Exhibition galleries are open Monday through Friday from 9:00 a.m. to 5:00 p.m., and the second Saturday of each month from 10:00 a.m. to 2:00 p.m. Admission and parking are free.

Thursday, March 28, 2013 at 7:00 p.m.
Intersections: The Art of Science
Oliver Uberti, Scientific Illustrator & Former Senior Design Editor, National Geographic Magazine

Oliver Uberti is a scientific illustrator and visual journalist who has traveled the world with a sketchbook in hand. A former Senior Design Editor at National Geographic Magazine, he will share some favorite assignments, reveal the process of distilling stories into iconic images, and show why scientific illustration is as relevant in science today as it was for lithographers in the 19th century.

Thursday, May 9, 2013 at 7:00 p.m.
Using Nuclear Techniques to Analyze Art
Dr. Philippe Collon, Associate Professor of Physics, University of Notre Dame

Art forgery is big business with museum reputations and millions of dollars at stake. Join physicist Philippe Collon for a talk on recent advances in nuclear science that enable his team of scientists to analyze pottery glazes, determine the origins of clay, detect the age of inks, and penetrate multiple layers of paint without damaging the artworks or artifacts.

Thursday, September 12, 2013 at 7:00 p.m.
The Art and Science of Animation
Jason Schleifer, Head of Character Animation, DreamWorks Animation

Character animation is an ideal blend of art and science. Behind the scenes of Hollywood's biggest hits is a sophisticated combination of artistry, computer science, and physics. Join Jason Schleifer, lead animator for Weta Digital’s The Lord of the Rings, as well as for DreamWorks’ Madagascar, Shrek, Over the Hedge, and the forthcoming Peabody and Sherman, for a look at the technical innovations and challenges that come with making an animated film.

Fellows Lectures

Tuesday, February 26, 2013 at 3:00 p.m.
“...what a great many Authors have said...”:
Learning about New World Plants in Early Modern Europe
Jerusha Westbury, Ph.D. candidate, New York University

Thursday, March 7, 2013 at 3:00 p.m.
Colonizing Amazonia From Above:
Aeronautical Technology in the Brazilian Frontiers
Felipe Cruz, Ph.D. candidate, The University of Texas at Austin

Thursday, March 14, 2013 at 3:00 p.m.
Engineering the Environment: The Rise of a Control Technology in Federal Air Pollution Policy
Jongmin Lee, Ph.D. candidate, Virginia Tech

Friday, April 26, 2013 at 3:00 p.m.
Engineering as Institution: Technical and Social Elites in Germany and the U.S., 1870 to 1930
Dr. Adelheid Voskuhl, Associate Professor of the History of Science, Harvard University

Lectures are free and open to the public; however, seating is limited and e-tickets are required. The e-ticket registration form is available at www.lindahall.org/events. If you have questions, please email events@lindahall.org or call 816.926.8772 to leave a message.

Programs are continued on the following page.
11th Annual
Paul D. Bartlett, Sr. Lecture

Tuesday, April 16, 2013 at 7:00 p.m.
The Particle at the End of the Universe: How the Hunt for the Higgs Boson Leads Us to the Edge of a New World
Dr. Sean Carroll, Senior Research Associate, Department of Physics, California Institute of Technology

A select number of e-tickets will be available at a later date.

On July 4, 2012, scientists at CERN's Large Hadron Collider announced an achievement on par with splitting the atom: the discovery of the Higgs boson, a particle that holds the key to understanding why mass exists. Join Caltech physicist and acclaimed writer Sean Carroll for a behind-the-scenes look at this landmark event as he explains the importance of the Higgs boson and what it means for the future of science. This is an irresistible story with a certain amount of conniving, dealing, and occasional skullduggery—and Dr. Carroll explores it all.

The Linda Hall Library's Bartlett Lecture is presented in association with the Harvard-Radcliffe Club of Kansas City, the Princeton Alumni Association of Greater Kansas City, and the Yale Club of Kansas City. This lecture is made possible by generous support from Marilyn and Jim Hebenstreit and Mr. and Mrs. Paul D. Bartlett, Jr.

Mark your calendars
Join us for the inaugural Linda Hall Library Film Festival on April 12 and 13, 2013. A selection of feature films and documentaries will screen in two theaters on Friday, April 12, from 10:00 a.m. to 4:00 p.m. and Saturday, April 13, from 10:30 a.m. to 2:00 p.m.

The festival is free and open to the public. Details coming soon at lindahall.org.

Slow Fire

The award-winning 1987 film, Slow Fires, documented the deterioration of millions of library books, particularly those published in the last part of the 19th and early 20th century when books were printed on paper made from highly acidic wood pulp. The film's title referred to wood pulp paper's inevitable embrittlement and decay caused by the migration of acid from page to page, giving once flexible paper the texture of dried autumn leaves.

Preserving a brittle book's intellectual contents may be achieved by photocopying, microfilming, or digitizing. However, with a collection as large as Linda Hall's, the problem of identifying brittle books in need of reformatting can be as challenging as finding the proverbial needle in the haystack, despite continuous inspection. Occasionally, fate lends a hand.

During her recent residency, Library fellow Dr. Adelheid (Heidi) Voskul's research necessitated the page-by-page examination of several German language periodicals including Technik und Kultur: Zeitschrift des Verbandes Deutscher Diplom-Ingenieure. Dr. Voskul soon discovered that this periodical was so brittle that the only way to turn the fragile pages safely was to use a microspatula to lift and turn each page gently, making her task even more laborious and time-consuming.

To save the contents of this rarely-held scientific journal from further deterioration and facilitate Dr. Voskul's work, the Library chose reformatting by digitization. The digitized version preserves Technik und Kultur for future research by adding its electronic version to the Library's collection of digital surrogates that are available to anyone with an Internet connection. Although Technik und Kultur's original volumes cannot be restored, further deterioration has been mitigated by storing them in acid-free enclosures.

Connect with Linda Hall Library online with Vimeo, Tumblr, Flickr, Facebook, and Twitter.
The Library recently welcomed four new resident fellows, all expressing their delight with the Library’s collections and services.

Dr. Adelheid (Heidi) Voskuhl of Harvard University arrived in early August to begin research on her project, *Engineering as Institution: Technical and Social Elites in Germany and the US, 1870 to 1930*. She is examining engineers’ trans-Atlantic conversations in the contexts of the ‘Conservative Revolution’ in Germany and the ‘Efficiency Movement’ in the United States. Heidi commented that she was very happy to receive the fellowship award because it allows her to examine some late 19th and early 20th century German periodicals that are essential to her research. “The concentration of such material is unique at the Linda Hall Library,” she said, “and many titles are available nowhere else in the US.”

Jongmin Lee, a doctoral candidate from Virginia Tech, began a nine-month fellowship in August. His research project, *Engineering the Environment: Regulatory Engineers in the Environmental Protection Agency and Engineering Societies, 1969-1980*, focuses on engineers in the EPA and the engineering societies and the differing attitudes toward the role of technology in dealing with nature and society in 1970s America. Additionally, Jongmin’s research explains the emergence of the role of the environmental engineer. Jongmin has found more than he expected to find in the collections, noting that it is important for him to see entire periodical volumes, including letters to the editors and advertisements, to situate him within the 1970s. He remarked that Library staff have helped him find not just specific publications, but also related publications that help put his topic in the context of wider research of the time.

Jerusha Westbury, a doctoral candidate from New York University, arrived in September. Her research, *Marvelous and Monstrous: The Thorny Problem of Control in Colonial Atlantic Botany*, examines two plants, the agave and the prickly pear. Her research discusses the plants’ myriad uses by indigenous peoples, ranging from food to fortification, and also examines attempts at control of these plants, and of the populations that depended upon them, by colonial authorities. Jerusha has found the collection “remarkably interesting and the staff more helpful than I could have possibly hoped.”

Felipe Cruz, a doctoral candidate from The University of Texas at Austin, came to the Library in January 2013 to begin research for his project, *Flight of the Toucans: Culture and Technology in the Brazilian Airspace*. Felipe’s research focuses on the history of Brazil’s effort to control and monetize its territorial airspace. According to Felipe, the Library’s collections devoted to aeronautical engineering and radio navigation offer a unique opportunity to write two major chapters of his dissertation.

The Fellows will deliver public lectures on their research in Spring 2013. (See listing of Fellows Lectures in this issue.)

**Fellowship Grant**

The Linda Hall Library’s Fellowship Program has been awarded a $10,000 grant from the Gladys Kriible Delmas Foundation. This grant will provide support for scholars-in-residence at the Library during the 2013-2014 academic year. The Delmas Foundation “promotes the advancement and perpetuation of humanistic inquiry and artistic creativity by encouraging excellence in scholarship and in the performing arts, and by supporting research libraries and other institutions which transmit our heritage.” The Library is pleased to acknowledge the Delmas Foundation’s generosity with gratitude.
A Unique and Mysterious Painting

At the Linda Hall Library the history of science, engineering, and technology is documented in great detail. The back stories of some of the Library’s artifacts are less well-known. One such piece hangs over the mantel in the Trustees Room.

It’s hard to notice the painting without first admiring its gilded frame. The bottom third is a mirror with sconces on the bottom corners. According to Marilyn Carbonell, Head Librarian at the Spencer Art Reference Library of the Nelson Atkins Museum, the neo-classical design is likely inspired by the work of architect Robert Adams.

The painting depicts an informal pastoral scene. The central focus is a seated female, surrounded by tradesmen. The woman appears not to be the lady of the house, but more likely the housekeeper who would deal with tradesmen.

Other notable features are two gamekeepers with a dog, and another woman and a child. The woman appears to be the laundress. In the background are two fishermen, and far beyond them is another group of fishermen. According to Carbonell, the figures in the painting may have been derived from other studies or woodcuts, rather than posed by the artist. Carbonell was particularly interested in the fact that the workers shown are associated with a manor house where a mirrored over-mantel like this could serve as a “window” in an interior room.

The painting may be viewed during a regularly scheduled tour, which the Library offers daily at 10:00 a.m. and 2:00 p.m.