To Boldly Go Lecture Series

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President’s Message

Welcome to our latest edition of the Hedgehog containing news of the Library’s spring lineup of programs, along with other information about our current activities.

As you will see, in addition to our signature evening lecture series, we are initiating a new feature for the Library’s Second Saturdays. Beginning Saturday, February 14, the Library will host a series of informal talks by local and regional speakers. First up is Dr. Norton Starr who will share his passion for collecting the beautiful and intricate geometric puzzles currently on exhibition.

I am also eager to share with you news concerning the establishment of the Linda Hall Library Foundation. Created at the end of 2014, the Linda Hall Library Foundation is a 501(c)3 public charity. Its purpose is to engage in activities in conjunction with the Linda Hall Library that promote public understanding of science, and to further scholarship in science, engineering, technology, and their histories. The programs made possible by the Linda Hall Library and the Linda Hall Library Foundation are designed to encourage the public, scholars, and researchers to learn, investigate, explore, and increase knowledge.

When you donate to the Linda Hall Library Foundation, you are making possible the kinds of programs and events that have engaged your interest through the years. Your gifts will enable the Library and the Foundation to continue a tradition of programming excellence that has contributed so much to the Kansas City community and beyond. Additionally, with your help, we can continue to live stream the Library’s lectures and make their recordings permanently available on our website, and create the kinds of compelling exhibitions that insist upon second and third viewings.

I am so very grateful for the support you have given to the Linda Hall Library and its programs, and I urge you to continue that commitment in the years to come by supporting the Linda Hall Library Foundation.

A Not So Puzzling Story

A casual conversation with some Linda Hall Library staff members initiated a series of events that has resulted in the new exhibition, Ingenious Objects: Geometric Puzzles by Stewart Coffin. Puzzle collectors Norton and Irene Starr, frequent attendees at Library events, mentioned their upcoming European trip to participate in an international puzzle conference attended only by serious collectors and puzzle designers. It wasn’t long before the Starrs’ enthusiasm for intricate, mathematically-based puzzles captured our attention and imagination, and the idea to combine selections from their vast collection with rare mathematics books from the Library’s History of Science Collection was born.

Dr. Norton and Irene Starr
Raised, educated, and married in Kansas City, Norton and Irene Starr left their hometown for Cambridge, MA in 1959 where Norton earned a PhD in mathematics at MIT, and Irene completed her education at Smith College in Northampton. Norton became a professor of mathematics and computer science at Amherst College, and Irene pursued a career in technology management while they raised their children. Concluding a 43-year teaching career at Amherst, Norton retired in 2009, and in 2013, the Starrs returned to Kansas City, settling in Mission.

The Starrs' passion for puzzles began in 1966. Norton designs as well as collects the puzzles which he has assembled and reassembled. He and Irene travel to puzzle conferences around the globe each year. The hundreds of beautifully-crafted puzzles in the Starrs' collection represent not only a myriad of mathematical challenges, but also possess the beauty of artifacts crafted from unique woods and exotic materials.

Among the most beautiful and intriguing of the puzzles are the ones devised by well-known puzzle designer Stewart Coffin. The Coffin puzzles will be on exhibition at the Linda Hall Library from January 30 through May 31. Rounding out the exhibition are selected rare mathematics books from the Library's History of Science Collection.

The Linda Hall Library is grateful to Norton and Irene Starr for sharing their private enthusiasm for ingenious objects with a public that is sure to be fascinated by them.

This exhibition is funded with generous support from the Linda Hall Library Foundation.
Doing Research at the Top of the World: An Interview with Dr. Bruce Johnson

In 2012, Dr. Bruce Johnson, Professor of Medicine and Physiology at the Mayo Clinic, led a science team from Mayo on an expedition to Mount Everest, sponsored by North Face and National Geographic. The team spent six weeks at base camp, elevation 17,500 feet, studying a group of climbers, six of whom reached the summit. The researchers gained insight into heart failure, lung disease, and sleep apnea—all conditions related to a low-oxygen, or a hypoxic, state that climbers experience at high altitude. A better understanding of such changes could eventually lead to drugs that artificially induce acclimatization and help with heart and lung diseases that limit oxygen levels in the body.

Dr. Johnson will speak at the Linda Hall Library on April 21 at 7:00 p.m. as part of the To Boldly Go lecture series. Joining Dr. Johnson will be Conrad Anker, lead professional climber of the expedition, who summited Everest for the third time.

In early January, Dr. Johnson spoke with Eric Ward, Vice President for Public Programs, about the Everest expedition.

How did the Everest expedition come about?

Bruce Johnson: We had done a project in 2009 with the North Face company. We climbed Mt. Aconcagua together in Argentina, which is the highest mountain in the Southern and Western hemispheres. We got to know some of the management of North Face and we started talking about who tests their equipment, certifying clothing and gear for, say, -20° F or -40° F.

Something you had the expertise to help with.

BJ: Right, our goal was to develop and co-test, and we had a lot of ideas about how we thought we could help them make things better, taking advantage of body heat and respiratory heat and some other novel things. We were going to innovate together. We knew the physiology, they knew the clothing design.

To quote a famous movie line, it was “the beginning of a beautiful friendship.”

BJ: Yes, the Everest expedition evolved from our earlier adventure with North Face and keeping in contact and helping them bring more physiology into their equipment and clothing designs. It got us to working together. When the Everest climb came along, it was just one of those things where everybody got on board, but I wasn't exactly sure how it would all come together.

How so?

BJ: These are such hard studies to get going. It takes considerable funding and the planning doesn't seem like it, but you have to figure out how you're going to get every vial there and how you're going to get it back. The data downloads, the things you think are going to work in the field, it never works like you think it will.

How does studying climbers at high altitude further heart disease research?

BJ: There are similar responses if you take a healthy person into high altitude. They don't develop heart failure, but a lot of the pathophysiology is similar. For example, one of your first responses to high altitude is you start to breathe more. And patients with heart failure, one of their adaptations is they tend to breathe more. And that sets off a whole other cascade of events. Your CO2 in the blood falls and cells start to involve the sympathetic nervous system. And then you develop Cheyne-Stokes breathing in heart failure and you develop periodic breathing when you're sleeping at night, so it's the same kind of gasping that occasionally you'll get at altitude.
When watching videos of climbers on Everest, I'm always amazed by how much effort they exert to take small steps.

BJ: When you're operating at altitude, your energy levels ratchet back about 40 to 50 percent. If you think twice at sea level about running the length of a football field, you think twice, there, just walking ten yards to go to the bathroom.

That had to present its own problems trying to do research.

BJ: Right, our job was to set up a lab and do studies. Our summit was base camp, but the adaptation process takes a while. We did a pretty gradual ascent to base camp. Your body is amazing at adapting. You're always kind of on this edge between good adaptation and bad, maladaptation. And then the climbers who go higher are dancing between their bodies deteriorating and their bodies adapting at the same time.

What's next?

BJ: There's a really interesting guy, Paul Magelli, who's a professor at the University of Illinois and an entrepreneur. The list of companies he's self-started is like a Who's Who list. He's 83 and wants to be the oldest guy to climb Mount Kilimanjaro. We've started a series of studies on aging and this fits with our dreams. He and some of his former students are helping to fundraise for an aging study at high altitude. If we can get our act together and he continues to stay active and healthy—he still teaches full-time and gets up at 4:30 a.m. every day to work out—that research expedition will be our next goal.

Why study people who work in extreme environments?

BJ: My philosophy is we spend too much time in medicine studying one end of the spectrum and there are things we can learn by studying the super active, healthy, fit, pushing-the-limits people at the other end of the spectrum. But my philosophy doesn't always get funded.

But when an expedition does get funded, it's a lot of fun, right?

BJ: Well it's work, but it is fun to be able to blend stuff you enjoy doing with work.

Thank you for your time. We're looking forward to hearing about your experiences on Everest.

Further reading: For more information about the 2012 Everest Expedition, check out the Library's copy of The Call of Everest: The History, Science, and Future of the World's Tallest Peak, published by the National Geographic Society in 2013. Dr. Bruce Johnson and Conrad Anker contributed chapters to the book.
Now in its fourth year, the Linda Hall Library’s residential fellowship program has hosted a number of impressive young scholars who are already making significant contributions to their fields of endeavor. The Library is proud to have contributed to their successes and will, from time to time, share news of their accomplishments with you.

The Library’s first fellow, Francesco Luzzini (Adjunct Professor of History of Biology at the University of Milan), was in residence in 2012 and 2014. He has continued his investigation into the life and work of 18th century Italian scientist, Antonio Vallisneri, publishing several journal articles and book chapters in Italian publications. Francesco has been awarded a two-year position as Edition Open Sources postdoctoral fellow at the University of Oklahoma where he will edit a critical edition and an English translation of Vallisneri’s unpublished 1705 manuscript, *Primi itineris permontes Specimen physi-medicum* (“Physical-medical example of a first journey through the mountains”).

Recipient of a 2013 fellowship, Katie Kendig was subsequently awarded a National Science Foundation Research Opportunity Award for her project, “How synthetic biology reconfigures biological and bioethical categories.” The State of Missouri awarded Katie its 2014 Governor’s Award for Excellence in Education. Additionally, Katie saw her work published in the journal, *Ratio*, and in the *Encyclopedia of Food and Agricultural Ethics*. She is currently editing a book in Pickering & Chatto’s “History and Philosophy of Biology” series.

After completing his 2012 fellowship, Jongmin Lee became a lecturer at the University of Virginia where he teaches environmental, social, and ethical aspects of science and technology for engineering students. Additionally, Jongmin serves as a thesis advisor for graduate students whose topics include the environmental consequences of algae-based biofuel production in the Gulf of Mexico, and the establishment of decentralized solar power-based sanitation systems in Sub-Saharan Africa.
A Recent Acquisition in The History of Science Collection

William E. Wilson. *Astronomical and Physical Researches Made at Mr. Wilson's Observatory, Daramona, Westmeath* [privately printed, 1900].

Upon his return, he began to build an observatory on the grounds of his family’s estate, Daramona, in the township of Street, near Dublin.

During Wilson’s life several observatories existed in his homeland despite the frequently overcast Irish sky. Trinity College, Dublin had Dunsink, and William Parsons, 3rd Earl of Rosse, built the largest reflector in the world, the great six-foot aperture telescope at Birr Castle.

Birr Castle’s telescope, known as the Leviathan, could not match the advantage of long camera exposures. Wilson found he was able to capture greater detail in his photographs captures with a two-foot aperture telescope than the images seen through the Leviathan. In the description of his photograph of the spiral nebula M51, Wilson notes that Lord Rosse had described and drawn the nebula, “but even with the use of this great instrument he was evidently unable to see the numerous details here photographed.”

For his observations of the sun, Wilson devised an instrument called a cinematograph and created the first sequential images of sunspots. His investigations of the sun included important contributions toward establishing its surface temperature, and his heliostat, a device that tracks and redirects sunlight, is described in the book.

Transitions

This fall the Linda Hall Library’s staff bid hail and farewell to 11 of its longest-serving members. Those retiring after distinguished careers at the Library were:

Rose Mary Beuthien, Cataloger (38 years)  
Stuart Biggerstaff, Systems Administrator (27 years)  
Bruce Bradley, Librarian for the History of Science and Special Collections (36 years)  
Julie Brinkman, Head, Technical Services (33 years)  
Nancy Green, Head Digital Services Unit (16 years)  
Daryl Limpus, Head, Collection Development (19 years)

Mary Moeller, Director of Collections and Services (36 years)  
Chris Olson, Reference Librarian (18 years)  
Scott Reiter, Head Groundskeeper (28 years)  
Beate Robinson, Cataloger (34 years)  
Donna Swischer, Director of Fellowships and Special Projects (35 years)

Their combined service to the Linda Hall Library is an astonishing 320 years! Each of these extraordinarily dedicated professionals brought unique talents and abilities to their respective roles, and for that reason no attempt will be made to replace them. Their successors, on the other hand, will inherit a legacy of achievement and devotion, and the new staff members will be tasked with the responsibility of carrying the Linda Hall Library forward into a bold new future.

The Library also said goodbye to Keri Cascio, Director of Innovative Technologies and Library Resource Management. Keri is the new Executive Director of the Association for Library Collections and Technical Services (ALCTS), a division of the American Library Association. We thank her for her outstanding work on the Library’s behalf and wish her all the best.
Second Saturday Schedule

New this spring, the Library will unveil Science Matters: Second Saturday Conversations, a series of interactive, informal lectures. The themes for the spring series are mathematics and computer science. Topics include geometric puzzles, baseball sabermetrics, Bitcoin, and Alan Turing's first computer.

“This series will explore how math and computer science are part of our everyday lives,” said Eric Ward, Vice President for Public Programs. “But it won’t be an intimidating classroom environment,” he added. “It will be a casual setting with plenty of time and opportunities for attendees to ask questions and interact with the guest speakers.”

Science Matters lectures will be held on the second Saturday of each month from February through May at 11:00 a.m. in the Library’s Auditorium. Specific information about each event can be found in the enclosed program insert and on the Library’s website at lindahall.org/events. Admission and parking are free, but seating is limited and e-tickets are required.

sa· ber· met· rics \sa-bar-'me-triks\: the statistical analysis of baseball data
TO BOLDLY GO
Science & Exploration in Extreme Environments

MARCH 19
Ocean Exploration
Dr. David Gallo, Director of Special Projects
Woods Hole Oceanographic Institution
Thursday, March 19, 2015 at 7:00 p.m.
Are we taking the oceans for granted? David Gallo thinks we are and he feels strongly that we need to recognize the oceans’ critical role in providing the air we breathe, the water we drink, and the food we eat. Dr. Gallo is personally committed to conveying the excitement and importance of ocean exploration to the public-at-large.

APRIL 21
Everest Expedition
Dr. Bruce Johnson, Professor of Medicine and Physiology, Mayo Clinic and Conrad Anker, Mountain Climber and Author
Tuesday, April 21, 2015 at 7:00 p.m.
What do extreme athletes who can summit the peaks of Mt. Everest have in common with people with heart failure? The answer is: more than you might think. In 2012, researchers at Mayo Clinic teamed up with extreme climbers to ascend the slopes of that mountain. One of their goals: to discover more about the body as it responds to high altitude in hopes of developing new ways to treat disease.

BARTLETT LECTURE - APRIL 1
Too Much Information: Identity and Privacy in the Digital Age
13th Annual Paul D. Bartlett, Sr. Lecture
Dr. Edward Felten, Robert E. Kahn Professor of Computer Science, Princeton University
Wednesday, April 1, 2015 at 7:00 p.m.
From attacks against retailers, merchants and banks to the revelations about the broad scope of government surveillance around the world, the assurance of privacy and the safety of personal information are increasingly difficult online. Even popular social media outlets such as Facebook, where people publish detailed information about their lives, are vulnerable to security breaches and the mishandling of personal data. This talk will examine the technical tradeoffs and the future of information security policies in the Digital Age.

MAY 14
NASA's Asteroid Redirect Mission
Steve Stich, Director of Exploration Integration and Science, NASA Johnson Space Center
Thursday, May 14, 2015 at 7:00 p.m.
Is this NASA's most daring mission yet? Called the Asteroid Redirect Mission, NASA's plan involves capturing a relatively small asteroid using a robotic spacecraft and placing it into orbit around the moon where astronauts can visit the asteroid in 2025, testing the capabilities needed for a crewed mission to Mars.

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.
Ingenious Objects: Geometric Puzzles by Stewart Coffin
Dr. Norton Starr, Brian E. Boyle Professor Emeritus of Mathematics and Computer Science, Amherst College
Saturday, February 14 at 11:00 a.m.

Learn more about the world of geometric puzzles that are on display in the Library's current exhibition. Dr. Norton Starr will discuss his private collection and have puzzles available for hands-on activities.

Bitcoin: What Is It and Why Should I Care?
Bryan Ballard, Founder and Chief Technology Officer, Netsolus
Saturday, March 14 at 11:00 a.m.

Bitcoin customers represent 75 percent of the revenue for Kansas City-based Netsolus, which is now building custom data centers for large industrial Bitcoin mining customers. Bryan Ballard will explain what the online currency is and discuss its future.

Sabermetrics and the Empirical Analysis of Baseball
Dr. Daniel Mack, Director of Baseball Analytics for Research Science, Kansas City Royals
Saturday, April 11 at 11:00 a.m.

Dr. Daniel Mack will explore sabermetrics, the empirical analysis of baseball statistics, and describe how it has become an integral part of player development in Major League Baseball.

A Just Machine
Dr. Perry Alexander, AT&T Distinguished Professor of Electrical and Computer Science, University of Kansas
Saturday, May 9 at 11:00 a.m.

Years before the first physical computer, Alan Turing's A-Machine embodied everything we know about modern computers. What motivated Turing? What were the problems he was trying to solve? Was his creation just a machine, or A Just Machine?

Science on the Big Screen - Coming Soon in the Cosmology Theater

NOVA: Killer Typhoon (60 minutes)
It was the strongest cyclone to hit land in recorded history. On November 8, 2013, Typhoon Haiyan—what some are calling “the perfect storm”—slammed into the Philippines, whipping the low-lying and densely-populated islands with 200 mile-per-hour winds and sending a two-story-high storm surge flooding into homes, schools, and hospitals.

NOVA: Decoding Neanderthal (60 minutes)
Over 60,000 years ago, the first modern humans left their African homeland and entered Europe, then a bleak and inhospitable continent in the grip of the Ice Age. But when they arrived, they were not alone: the stocky, powerfully built Neanderthals had already been living there for hundreds of thousands of years. So what happened when the first modern humans encountered the Neanderthals? Did they make love or war?

NOVA: Deadliest Volcanoes (60 minutes)
Millions of people around the world live in the shadow of active volcanoes. From Japan’s Mount Fuji to the “Sleeping Giant” submerged beneath Naples to the Yellowstone “Supervolcano” in the United States, NOVA travels with scientists who are attempting to discover how likely these volcanoes are to erupt, when it might happen, and exactly how deadly they could prove to be.