

MIST0-001



IIT students and NMHM staff stand with the replica artificial kidney during the Kolff Symposium on August 31, 2009. Pictured (l-r): Christopher Jones, IIT student; Jim Curley, NMHM Historical Collections; Michael Turturro, IIT student; Adrienne Noe, Ph.D., Director of the NMHM; Paul Fagette, Ph.D. of IIT.

Museum Project Honors 'Father of Artificial Organs'

A replica of an artificial kidney device once used to treat soldiers during the Korean War was recently presented to an artificial organs museum at the Willem Kolff Foundation in Kampen, the Netherlands. The original artifact, on display at National Museum of Health and Medicine of the Armed Forces Institute of Pathology in Washington, D.C., is part of the Museum's exhibit on battlefield medicine during the Korean War.

The replica, built by students from the Department of Biomedical Engineering at the Illinois Institute of Technology, is based on a device first invented by Willem Kolff, known as the "father of artificial organs." While working at a hospital in Nazi-occupied Holland in 1942, Kolff succeeded in developing the first clinically useful machine to remove toxins from the blood before returning that blood to the patient. Kolff's invention and the subsequent development of improved designs of the device resulted in dramatically better outcomes for patients suffering from acute kidney failure.

"The unique partnership between biomedical engineering students and

Artificial Kidney, to page 4



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Memento Mori, from the exhibit *OUTBREAK: Plagues that Changed History* by Bryn Barnard, all rights reserved

Infectious Disease On Display At NMHM Through January 22, 2010

OUTBREAK: Plagues That Changed History, an exhibit of artwork depicting the impact of disease on human history, is presently featured in a limited engagement at the National Museum of Health and Medicine, through January 22, 2010.

OUTBREAK is the work of artist and author Bryn Barnard and is based on his book of the same name (published by Crown Publishers). The paintings illustrate key moments in world history by educating the visitor on the impact certain epidemiological disasters have had on shaping human population and world civilization. The exhibit includes original paintings partnered with maps and text from the book. This is the first major East Coast installation for *OUTBREAK*.

In the book's introduction, Barnard writes: "...whether fast or slow, epidemic, pandemic, or endemic, these infectious diseases can force enormous, sometimes cataclysmic changes on societies. They can reshuffle power, serve the greater good, or solidify the status of the ruling class. They can determine not just who lives and who dies, but who wins and who loses, who gets wealthy and who stays poor, which ideas become popular and which ones wither away. Without epidemics, ours would be a very different world indeed. *Outbreak* is the story of epidemics that have transformed human society."

"This institution's historic interest in combating infectious disease goes back to Captain Walter Reed himself when he was curator of the Army Medical Museum at the turn of the 20th century," said Adrienne Noe, Ph.D., Museum director. "Reed's

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ScienceFest 2010

In 2010, the Museum will be thrilled to be among many of the country's leading science organizations as a key partner in the first ever USA Science and Engineering Festival! According to the event's organizers, the inaugural USA Science & Engineering Festival will be the country's first national science festival and will descend on the Washington, D.C. area in the fall of 2010. The Festival promises to be the ultimate multi-cultural, multi-generational and multi-disciplinary celebration of science in the United States, culminating in a two-day expo (October 23 & 24, 2010) where more than 500 science & engineering organizations from all over the country will offer hands-on activities to inspire the next generation of scientists and engineers. NMHM is a partner organization at the Science Festival and will showcase our exhibits and collections to throngs of people visiting the National Mall that weekend. As the event draws closer, we'll feature more news and information about the Science Festival and NMHM programming here in the newsletter and on the Web site. Learn about USA Science and Engineering Festival at usasciencefestival.org.



Teddy Bear Clinic Excites Younger Visitors

Children and their parents attended our "Teddy Bear Clinic" on September 12, 2009. Museum docents and medical professionals taught kids the importance of leading a healthy lifestyle. Children brought along their favorite stuffed friend as they visited five stations: Vitals, Dental, Immunization, Fitness and Nutrition. The 'Clinic' was held in conjunction with the visiting exhibition, "David Macaulay Presents: The Way We Work: Getting to Know the Amazing Human Body."



Children learn the importance of brushing their teeth during the "Teddy Bear Clinic."



Howard University Medical student, Matthew Harmon, teaches a child how to check his stuffed animal's vitals, during the "Teddy Bear Clinic."

OUTBREAK, from page 1

thorough methods and scientific approach led to improved treatment regimens and vaccines for yellow fever and also served to institutionalize the role of the medical scientist in the armed forces. We're glad that Barnard's exhibit further educates our visitors about the impact infectious diseases have had on human history and how modern medicine has worked to combat the threat of such diseases."

OUTBREAK focuses on the medical and social impact of six epidemics: how

the Black Death in the 14th century created ideal conditions for the rise of capitalism; how smallpox stacked the deck in favor of nascent European colonialism; how yellow fever helped end the trans-Atlantic slave trade and how wave after wave of 19th century cholera epidemics created the modern city; how tuberculosis catalyzed the development of the welfare state; and how the H1N1 Spanish Influenza of 1918 shaped the outcome and aftermath of the first World War.

Bryn Barnard has illustrated numerous books and is the author of *Dangerous Planet: Natural Disasters That Changed History*. The author lives in Friday Harbor, Washington.

"Outbreak: Plagues That Changed History" is written and illustrated by Barnard and published by Crown Publishers, an imprint of Random House Children's Books, a division of Random House, Inc.

Johns Hopkins Teaching Models Find a New Home

In the summer of 2009, Museum staff members acquired teaching models from Johns Hopkins University School of Medicine. While the models are significant to more than one of the five Museum collections, four staff members played a key role: Jim Curley (Historical Collections), Liz Lockett (Human Developmental Anatomy Center), Emily Wilson (Human Developmental Anatomy Center) and Beth Eubanks (Museum Registrar). The models are believed to have been used at Hopkins in the 1940s and 1950s, but it appears as if they were made either in the late 19th century or, more likely, early 20th century.

One of more important pieces of this acquisition is the reuniting of some of the Carnegie Models of Embryological Development. Liz Lockett explained that there were originally about 900 models in this collection. While the Museum presently has about 375 of these models, some are missing because they were loaned out or destroyed in transit before being sent to the Museum. Each model the Museum is able to add back to its collection is significant because the teaching models “represent the basic fundamental research that was done in embryology,” said Lockett.

Another key part of the acquisition is a large number of Ziegler wax models. These models will be housed in Historical Collections.

Other items in the acquisition include: ear models pictured in the seminal text “Gray’s Anatomy,” Auzoux papier-mâché models; a Franz Joseph Steger sectioned torso (plaster); brain



Beth Eubanks, Museum Registrar, is shown carefully cleaning a artifact before preparing the artifact for storage.

stems (rubber); Mueller-Ward heart models; and models by Franklin Mall which focus on normal development in the first eight-weeks, which will be housed in the Human Developmental Anatomy Center.



Children and their parents make ‘macaroni skeletons’ at an arts-and-crafts station offered by Museum docents.

Halloween at the Medical Museum

Nearly 200 children, parents and other visitors participated in one of the most successful Halloween programs ever in the history of the Museum! Kids made ‘macaroni skeletons’ and medieval plague masks, and had the opportunity to try out some ‘scary’ yoga postures. A costume contest hosted by Washington Family Magazine was a big hit with visitors.



Costumed visitors stand with a mannequin depicting a medieval plague physician, at the entrance to the visiting OUTBREAK installation, during the Halloween program.

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Kolff, from page 1

our own staff intrigued us," said Adrienne Noe, Ph.D., director of the NMHM. "This project offers yet another important example of how the Museum's collections are actively sought by researchers to work on contemporary bioengineering challenges. Resolving some lingering engineering questions about this 20th century device will inform future developments in artificial organ technologies for decades to come."

Kolff, who died in early 2009, was one of the world's leading pioneers in artificial organs research. He was involved in the development of the total artificial heart, the membrane oxygenator, the heart-lung machine, the intra-aortic balloon pump, the artificial arm and the artificial eye, and began the first blood bank in Europe. His medical inventions formed the basis for modern biomedical technology and have saved or extended countless lives. Kolff was awarded with 13 honorary doctorates and received 127 awards for his lifetime achievements.

The Museum's artifact was built in 1950 by the Edward A. Olsen Co. of Ashland, Massachusetts. It was purchased by Walter Reed Army Medical Center to replace a machine sent to Korea for use by the U.S. Army. Records indicate it was retired from service in 1961 after treating 73 patients between February

1954 and June 1961.

Professor Paul Fagette, an historian and lecturer at the Illinois Institute of Technology's Department of Biomedical Engineering, has made a study of Kolff's devices and developed a component of an IIT course to require an in-depth study of the artificial kidney leading up to the manufacturing of a replica device. The course on dialysis design used the Museum's artificial kidney to help the students analyze early solutions for hemodialysis in order to offer them insights as they develop future devices. In late 2008, Fagette and several of his students visited the Museum in order to take a series of precise measurements on the Museum's artifact. Working with Alan Hawk and Jim Curley of the Museum's Historical Collections, the IIT team studied the device's many components while contributing to the Museum's understanding of the important role the device and its inventor played in the development of artificial organs.

"Dr. Kolff's influence in major innovations in the field of bio-medical engineering in the 20th century is underappreciated and we were honored to work on this project that sheds new light on artificial organ development," said James Curley, manager of the Museum's Historical Collections. "In applying

technological solutions to medical problems, Kolff asserted that if the structure and function of one of the parts of the body can be understood, it can be built. At the same time, he was convinced that many of the best ideas stem from a lack of materials. During various iterations in the design of his first artificial kidney devices, he used sausage casings from a butcher shop, a basin from a local factory, a water pump from a Model T Ford and metal from a downed German fighter plane. Though the materials were raw, his solutions were elegant."

"It has been invigorating to work with these students and faculty who followed Kolff's insistence to 'do it with your own hands,'" said Curley. "They actively engaged with the artifact: precisely measuring each part, making free-hand and mechanical drawings which led to 3-D computer modeling, taking photographs and filming video of the artifact's few moving parts, inspecting the wiring and investigating the construction materials. This reverse-engineering process has been illuminating and it was such a thrill to witness the moment when their finished model was unveiled."

Civil War Living History Reenacted in October

Over 150 people attended the first-ever Civil War Living History Day held at the Museum, on October 3, 2009. Attendees listened to performances by the Federal City Brass Band, infantry drilling exercises, medical demonstrations and camp life demonstrations (including the role of the Sanitary Com-

mission and Company Laundresses). Young visitors enjoyed making medical unit flags, replicas of the hospital ship USS Red Rover, and pinhole cameras. The reenactment was made possible by members of the 3rd U.S. Regular Infantry Reenactors.



Visitors learn about Civil War amputations during Civil War Living History Day.



A young visitor watches as the 3rd U.S. Regular Infantry Reenactors perform an infantry drilling exercise during Civil War Living History Day.

Staff On The Go:

- **Franklin Damann**, Curator of the Anatomical Division, participated in a conference focused on forensic identification in mass casualty disaster situations, sponsored by the National Transportation Safety Board and the Office of the Chief Medical Examiner for the City of New York, held in New York City earlier last fall. Damann also participated in the National Institute of Justice Forensic Anthropology Grantees Focus Group Agenda held on 7-8 December 2009, in Alexandria, Virginia.
- **Brian Spatola**, Anatomical Collections Manager, and Franklin Damann, Curator of the Anatomical Division, once again led the 22nd Annual Forensic Anthropology Course, in conjunction with the Armed Forces Institute of Pathology and with support from the American Registry of Pathology. The course uses hands-on lab sessions to introduce basic techniques of skeletal analysis while lectures provide the theoretical methodological basis of human osteology and introduce applications used by forensic anthropologists in their work. Spatola and Damann also served as course directors for the first Forensic Bone Histology Course, in conjunction with the Armed Forces Institute of Pathology and with support from the American Registry of Pathology.
- **Michael Rhode**, Chief Archivist in the Otis Historical Archives, offered a paper, Graphic Tales of Cancer in Modern America, at the 2009 meeting of the History of Science Society, held in November in Phoenix, Arizona.
- **Tim Clarke**, Deputy Director for Communications, presented at the Health 2.0 DC STAT meeting in Silver Spring, Maryland. Attendees represented federal health agencies, healthcare consultants and application developers working primarily in the areas of improving health behaviors and the broader adoption of participatory medicine.
- **Andrea Schierkolk**, Public Programs Manager, attended the 2009 Visitor Studies Association conference in St. Louis, Missouri. The mission of the VSA is to understand and enhance the visitor experience in informal learning settings through research, evaluation and dialogue.

New Staff:

- **Craig Schneider** joined Historical Collections as an Assistant Collections Manager. He recently received a master's degree in American Studies with a concentration in Museums and Material Culture from The George Washington University in Washington, D.C. and holds a bachelor's degree in History and Civil War Era Studies from Gettysburg College in Gettysburg, Pennsylvania.



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Remembrances:

James J. DePersis, of Adelphi, Maryland, a long-time docent and Museum volunteer, passed away unexpectedly on Saturday, October 24, 2009. Jim had been a docent at the Museum for nearly 20 years, where he was well respected as a mentor to new volunteers.

National Museum of Health and Medicine

The museum is an element of the Armed Forces Institute of Pathology on the campus of Walter Reed Army Medical Center in Washington, DC

6900 Georgia Avenue, NW, Bldg 54, Washington, D.C. 20307

www.nmhm.washingtondc.museum

Flesh and Bones [ISSN 1535-0878] is a publication of the National Museum of Health and Medicine of the Armed Forces Institute of Pathology. It contains information about upcoming events and public programs, and general news about the museum. There is no charge for *Flesh and Bones*, but donations are gratefully accepted and may be made by sending a check drawn on U.S. funds made payable to "National Museum of Health and Medicine - Registry."

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Open daily from 10 a.m.– 5:30 p.m.

Closed December 25.

Museum Director—Adrienne Noe, Ph.D.

Deputy Director (Communications)—Tim Clarke

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Graphics—Fran Card



The screenshot shows the header of an e-newsletter from the National Museum of Health and Medicine, dated September 2009. It includes the museum's logo and name, a brief welcome message, and a list of events for the month. A featured section highlights the closing of the 'The Way We Work' exhibit, which is described as a temporary exhibition by David Macaulay. The exhibit is titled 'The Way We Work: Getting to Know the Amazing Human Body' and is scheduled to run through September 20, 2009. The text describes the exhibit as featuring Macaulay's original drawings, a discovery room with toys for children, and a scavenger hunt. A small image of the exhibit is also visible on the right side of the screenshot.

Monthly E-News Helps You Stay in Touch!


Want to be the first to know what's new at the Museum? Be the first to register for special programs? Then sign up for our monthly e-newsletter! Each month, this short but informative email will let you know about exhibits coming or going, news about the Museum and tips about upcoming programs. Occasionally, we'll send special program announcements to subscribers, too. It's easy to subscribe: email nmhminfo@afip.osd.mil with your request.

Follow us on Twitter! Become a Fan on Facebook!

Do you Tweet? Are you on Facebook? Social networking sites such as Twitter and Facebook are changing the way organizations communicate with their audiences. The Museum's social media activities will complement traditional outreach methods such as this newsletter and the Museum's main Web site. We hope you will follow us on Twitter (<http://www.twitter.com/MedicalMuseum>) and become a Fan of the Museum's Facebook Page at <http://www.facebook.com/MedicalMuseum>.

Please let your friends, colleagues and networks know about these new ways to stay in touch with the Museum, its programs and collections. Check us out online and let us know you are listening!



 National Museum of
Health and Medicine

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NATIONAL MUSEUM OF HEALTH AND MEDICINE