Exhibition Captures Science and Motion from Photo Innovators
July 16, 2016 - October 16, 2016

Bruce Museum, 1 Museum Drive, Greenwich, CT
203-869-0376 brucemuseum.org

GREENWICH, CT, JUNE 30, 2016 – The traveling exhibition Science In Motion: The Photographic Studies of Eadweard Muybridge, Harold Edgerton and Berenice Abbott opens at the Bruce Museum in Greenwich, CT, on July 16, 2016. This exhibition is provided by Bank of America’s Art in Our Communities program and is organized by Bank of America Corporation, by which all rights are reserved. The show offers an extensive view of the scientific studies carried out by three of photography’s greats—Eadweard Muybridge, Harold Edgerton and Berenice Abbott. Each of these artists invented devices that studied and represented aspects of science and motion photographically.

Muybridge and Abbott, both primarily artists, became interested in science as a photographic subject. In the course of their efforts to document scientific phenomena and motion accurately, they became inventors, as well. Muybridge’s success in making stop-motion photographs of a racehorse led to his famed studies in animal locomotion. Abbott’s role as photography editor for Science Illustrated led her on a path to become an innovator in scientific photography. First and foremost a scientist, Edgerton performed stroboscopic experiments and documented them photographically while teaching at the Massachusetts Institute of Technology (MIT), bringing
him providentially into the world of art when the Museum of Modern Art in New York featured his famous milk drop image in its first photography exhibition, in 1937. Though Edgerton, Muybridge and Abbott arrived at the nexus of photography and science in different ways, they revealed to us, intelligently and artistically, that which was previously unseen. Their successful partnering of science and photography led to the creation of new technologies and new teaching strategies that have helped to usher us into the modern age.

“The arts enrich our communities, celebrate the past and inspire our future,” said Bill Tommins, Southern Connecticut Market President for Bank of America. “We’re proud to partner with the Bruce Museum by lending pieces from our Bank of America Collection for the benefit of all visitors. By sharing these dynamic photographs, we hope to foster great learning and inspiration.”

Photography was born out of a passionate engagement between art and science, a hallmark of the Bruce Museum. The medium’s pioneers were inventors, scientists and artists whose combined revolutionary work dramatically affected art and forged a reciprocal relationship between art and science that has continued to this day. After the invention of photography and its announcement to the world in 1839, photography became a favored tool for scientific investigation while simultaneously spawning a new art form. The nineteenth century was a heyday for scientific amateurs, whose collective passion, intellectual openness and enthusiasm for experimentation yielded significant contributions to geology, astronomy, biology, chemistry, physics and the arts. Since then, photographic and scientific technologies have advanced rapidly in continuing symbiosis.

**Eadweard Muybridge**

Throughout the nineteenth century, there was a strong interest in the realistic depiction of movement, which led scientists and artists alike to experiment with ways to capture and illustrate the chronology of motion that could not be discerned by the human eye. Eadweard Muybridge’s role in this adventure was central. Muybridge (English, 1830-1904) was one of the nation’s most sought-after photographers in the years following the Civil War due in large part to his skillful views of the American West and its indigenous residents. Also known for his technical acumen, Muybridge was contacted in 1872 by Leland Stanford, a California politician, railroad tycoon and owner of a leading horse ranch, to settle a bet. This bet pertained to the positioning of a horse’s legs while trotting at full speed and whether all four feet were off the ground at the same time. Muybridge agreed to assist Stanford and, after many attempts, succeeded in making a stop-motion photograph of Stanford’s horse by exposing the negative for less than one-thousandth of a second, executing an image with a rapidity that had not been achieved before. It revealed that a horse did, indeed, have all four hooves in the air at once during a rapid trot. Another discovery that came of this, one particularly worthy of mention in the context of this exhibition, is that, unlike depictions in paintings created up to that point, a horse’s four legs were off the ground while aiming in rather than out. Thus, in addition to stopping motion, Muybridge changed the way horses were represented in paintings.

After successfully stopping sequential motion, Muybridge envisaged the next logical step, which was the possibility of reconstituting, or animating, his still photographs. To that end he developed a device called a
Zoopraxiscope. This tool consisted of a glass disk on which images were arranged equidistantly and consecutively, with the addition of a slotted counter-rotating viewer. The Zoopraxiscope was used, in Muybridge’s own words, “for synthetically demonstrating movements analytically photographed from Life.” These first “motion pictures” were seen by the Stanford family in 1879 and subsequently by European audiences that included artists, scientists and other intellectuals.

Late in 1883, the collaboration between Muybridge and Stanford ended. Muybridge then continued his work at the University of Pennsylvania, where he expanded the range of his subjects as well as the movements he studied. He photographed his subjects in front of a backdrop with a grid marked on it before a battery of 24 cameras about six inches apart in a line parallel with the grid; smaller groups of cameras were maneuvered into position to capture frontal, rear and foreshortened views. In a year and a half of work, Muybridge produced some 100,000 images. The university selected 781 of his motion studies for their publication *Animal Locomotion*, twelve of which are included in this exhibition.

**Harold Edgerton**

In the 1930s, the notion that time could appear to be stopped took another huge leap forward when Harold Edgerton (American, 1903-1990), at MIT, developed an electronic stroboscope that generated brief bursts of light, allowing high-speed moving objects, such as the blades of a fan, to appear as if frozen or static. He then synchronized the flashes with the motion of the subject, such as a tennis swing, while taking a series of photographs through an open shutter at the rate of many flashes per second, resulting in ultra-high-speed, chronological stop-motion photographs. This apparatus decreased exposure times significantly—to *millions* of a second. The resulting images captured moments that had been completely unfathomable due to their subjects’ rapid speed, such as a moving bullet. Edgerton’s invention allowed him to capture the very instant that a milk drop hit liquid, documenting the splash upon impact with a clarity and precision never before witnessed in photography.

Despite his brilliant inventions and longstanding teaching career at MIT, Edgerton’s miraculous stop-motion photographs were what earned him world renown. Whether the general populous understood their scientific and engineering import or not, people around the globe were stunned and amazed by these pictures. Edgerton was indeed depicting the unseen—poetically, and with absolute regard for their aesthetics. Due to the rapid pace of technological and scientific advancement over the last century, these photographs may not have the same impact that they did when first seen, as may also be the case with Muybridge’s works. Nevertheless, they continue to astound and evoke wonder while inspiring each successive generation of photographers.

**Berenice Abbott**

The ranks of inventors, scientists and artists who ushered in the modern technological and photographic age also include a number of important women. One of those is the famed photographer Berenice Abbott (American, 1898-1991). Though widely known for her brilliant documentation of New York City during the Great Depression, Abbott was dedicated to visualizing scientific phenomena. She wrote extensively about photography’s unique capacity to function as the “spokesman” for science and in 1939 turned her attention almost exclusively to science. For twenty years, Abbott worked tirelessly, inventing photographic apparatuses to assist in documenting various aspects of scientific study. She developed what she called “Projection Photography,” which was remarkably like the large format camera later developed by Polaroid. The concept was to enlarge an object itself via projection rather than to take an image and enlarge the negative.

In 1944, Abbott became the photography editor for *Science Illustrated*, a position that required her to ensure that the publication’s articles were properly illustrated. Though she often utilized images that had already been produced by other photographers, she would make photographs herself if the existing illustrations did not meet her standards. During this period, she created some of her earliest wave studies, as well as her famous soap bubble photograph. In 1947, Abbott opened the House of Photography—a commercial studio she used to
design, promote and sell her inventions. One of the tools created at the House that is still widely used today is the autopole, a moveable pole that reaches floor to ceiling and can be used to mount lighting equipment in a photographer’s studio or to hold large works of art in a museum storage room. The many ideas Abbott experimented with during that time distinguished her as an important designer of photographic equipment.

When the “space race” began in the 1950s, Abbott was promptly invited to join the Physical Science Study Committee at MIT, whose mission was to improve high school science education. For the next three years, Abbott researched, designed and photographed carefully controlled experiments dealing with magnetism, electricity and motion’s effects on matter. Her Science Pictures have the directness and simplicity inherent in all of her work, yet they also have an idealized beauty that speaks of Abbott’s hopes for the future and her insistence upon the power of photography and science together as one.

Photography and science have continued to move in lock step to this day, and the technological advances since Muybridge, Edgerton and Abbott made their groundbreaking pictures have been exponential. These developments have helped move us into a digital age that allows us to communicate via real-time video with someone on the other side of the Earth, effectively collapsing both time and space. Advancements such as these have not only helped to shape our understanding of the world; they have changed the way artists work, as well. Just as Muybridge’s early documentations of motion influenced painting at the beginning of the twentieth century, the digital technologies of today have altered the way that pictures can be made.

**Exhibition Programs**

Three programs, all free and open to the public, will complement the exhibition *Science In Motion: The Photographic Studies of Eadweard Muybridge, Harold Edgerton and Berenice Abbott.*

*Monday, July 18, 10:30 – 11:45 am. Film Screening, “Berenice Abbott: A View of the Twentieth Century,”* the hour-long film will be followed by a Q&A session with a Museum staff member.

*Monday, August 1, 10:00 – 11:15 am. Science In Motion Lecture.* Dr. David Fresko, Visiting Assistant Professor of Culture and Media, The New School, will discuss Eadweard Muybridge.

*Tuesday, September 13, 6:30 – 8:00 pm. Science In Motion Lecture.* *Synthetic Biology: Designing Living Things* by Dr. Christina Agapakis, Creative Director at Gingko Bioworks. Light refreshments will be served at 6:30 pm, lecture from 7:00 - 8:00 pm. Please register at info@brucemuseum.org or 203-413-6757.

**About the Bruce Museum**

The Bruce Museum at 1 Museum Drive in Greenwich, Connecticut, features more than a dozen art and science exhibitions annually. The Museum is open Tuesday through Sunday from 10 am to 5 pm; closed Mondays and major holidays. Admission is $7 for adults, $6 for students up to 22 years, $6 for seniors and free for members and children less than five years. Individual admission is free on Tuesday. Free on-site parking is available and the Museum is accessible to individuals with disabilities. For additional information, call the Bruce Museum at (203) 869-0376 or visit the website at brucemuseum.org.