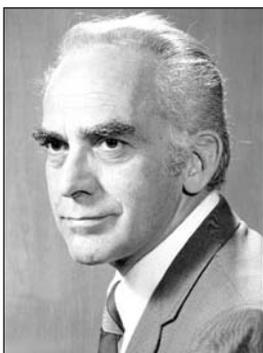
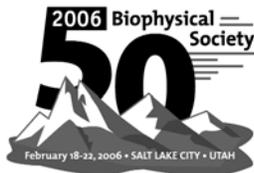


Biophysicists in Profile



Courtesy of the Lawrence Berkeley National Laboratory.

William E. Siri

Among the nearly 500 attendees of the 1957 First Biophysical Conference was *William E. Siri*, who presented a paper entitled "*Determination of Total Fat, Water, Protein, and Mineral in the Human Body*". His story typifies the diversity inherent in the group that attended this first meeting and in the field of biophysics in general. Born in Philadelphia, Pennsylvania, on January 2, 1919, Siri became known as one of the world's foremost mountain-climbing scientists, spending much of his life focusing on how the body reacts to extreme situations. According to his wife, *Jean Siri*, he was a "scientist, adventurer, and mountaineer."

A physicist by training, Siri became a research engineer on the Manhattan Project in 1943, helping to create the atomic bomb. He did not enjoy that work and soon after the war ended, he joined the Lawrence Berkeley National Laboratory, later becoming a leading bio-

physicist at its Donner Laboratory. At Donner, he worked on the application of radioisotopes to biology and medicine. There, Siri teamed up with *John Lawrence*, a medical physicist known as the father of nuclear medicine, to research technologies to help the human body.

It was this research that led Siri to the mountains, where he spent the next twenty years on climbing expeditions to test the effects of altitude and oxygen deprivation on the human body. His interest in biophysics developed, according to his wife, "because he loved mountains and could use blood and urine studies as part of it—and would be funded by NSF or ONR and NASA." Studying how altitude affects dizziness, appetite and red blood cell counts, he used himself as a guinea pig for most of the tests. By tying in climbing with physiology, he remained an integral part of the Lawrence Berkeley Lab. "On every expedition,

"Studying how altitude affects dizziness, appetite and red blood cell counts, he used himself as a guinea pig for most of the tests."

mountains or Antarctica," says Jean Siri, "he did physiological studies and published papers on the work."

Siri climbed mountains in the Peruvian Andes, Antarctica, the Sierras, the Himalayan Mountains and many other locations. He was co-leader of the first American expedition to successfully climb Mount Everest, and once even helped rescue *Sir Edmund Hillary's* climbing team from an icy crevice.

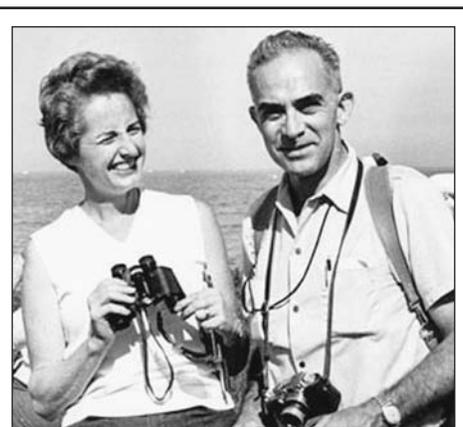
His love of nature extended to all aspects of his life. Siri hiked the Sierras with famed photographer *Ansel Adams*, and in 1964 was elected National

President of the Sierra Club. During his Presidency he brought the club from a wilderness group to an environmental activist force. He remained

active in the club for decades, receiving its highest accolade, the John Muir Award, in 1994.

Though Siri spent most of his time studying the human body, his research interests also included analyzing water intake of grazing sheep and determining environmental consequences of energy usage and nuclear power. After retiring from the University of California, Berkeley in 1982, the lifetime environmentalist helped many ecological protection groups from the Bay Institute, of which he never missed a meeting, to the Save the Bay Association.

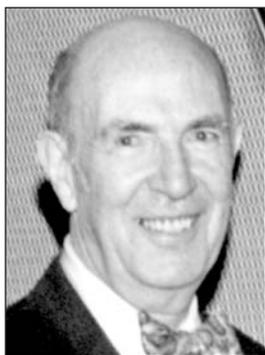
Siri died in 2004 at the age of 85 after a decade-long battle with Alzheimer's disease.



William Siri and wife, *Jean Siri*.
(San Francisco Chronicle file photo, 2965, by *Duke Downey*.)

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Ernest C. Pollard

Although—or perhaps because—he was born in a remote part of China in 1906 to English missionaries, *Ernest C. Pollard* became determined by the age of 11 to become a scientist. His youth in China exposed him to the negative impact that superstition can have on people and on the land in which they live. Science, he believed, could change that.

Pollard graduated from Cambridge University in 1928 where he also received

his PhD in nuclear physics in 1932. In an oral history compiled by the IEEE, Pollard noted that he didn't choose nuclear physics; at the time there were simply no other options for him. Luckily, he liked it. He left England to take a position at Yale in 1933. Over the ensuing years, Pollard's research focused on how radiation affects cells and viruses, and on the repairing of radiation-induced cellular damage.

From 1941 to 1945, Pollard worked in the MIT Radiation Laboratory on radar development for use in World War II. He received a patent for Li'l Abner, radar used by the military to determine the altitude of enemies, but worked on many other projects including MEW, the moving target indicator. He later received a Citation of Merit from

“Pollard also had the unique ability to obtain grant monies from numerous sources, which enabled his staff and students to research freely.”

President *Truman* for his work during WWII.

During that time, Pollard thought about ways to use physical techniques to look at viruses and molecules. He returned to Yale where he founded its department of Biophysics in 1954 and served as its Chair until 1961. There he worked closely with *Richard Setlow*, then an Associate Professor and the Director of Undergraduate Students in both the Physics and Biophysics departments. "It was Ernie's great abilities as a teacher and

mentor that led to probably the most successful biophysics department in the world," says Setlow. Later, Pollard moved to Penn State University where

also there he founded a Department of Biophysics. Pollard remained at Penn until his retirement in 1971, after which he served as a research scholar at Duke University, University of Florida, and the National Institute of Environmental Health Sciences. Penn State established the Ernest C. Pollard Lecture in his honor.

Together with *Samuel Talbot*, *Kenneth Cole*, and *Otto Schmidt*, Pollard was a member of the Committee of Four that organized the 1957 National Biophysics Conference. *Ellis Kempner*, currently at the NIH, attended that first conference as a graduate student and remembers Pollard's contribution to the Society. "The Biophysical Society wouldn't exist without him," Kempner states, "he was one of the most powerful people in its founding." Pollard went on to serve as Biophysical Society president from 1960-1961, and Executive Council and Board member until 1972.



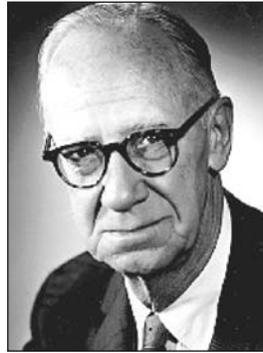
Founders at the 1981 Annual Meeting in Denver, Colorado. Pictured left to right: *Britton Chance*, *Ernest Pollard*, *A.K. Solomon*, *Andrew G. Szent-Gyorgyi*, *Les Lipitz*, and *Max Lauffer*.

Donald Fluke of Duke University was a graduate student of Pollard's. "Pollard was a deeply cultured, educated, empathetic person, loving music, good conversation, and good company," Fluke says. He is remembered for his efforts to promote science in general and the field of biophysics in particular. He had the ability to make the people around him excited, which came in handy when he was teaching. He considered himself a gifted teacher, and Setlow and others agree, he was that and more.

Pollard also had the unique ability to obtain grant monies from numerous sources, which enabled his staff and students to research freely. "It is obvious to me," says Setlow, "that without Ernie, I would not be where I am today—and the same goes for many other ex-faculty and students." He worked to make science interesting and accessible to all, including non-scientists. He even started a course at Penn State called "*Physics for Poets*."

Pollard also advocated the idea that scientists should become involved in public policy. In addition to his numerous scientific papers, Pollard published a novel in 1988 called *The Cataclysm: Just the Facts*. The novel showed how a group of average, ordinary Americans is capable of assembling, delivering and exploding a nuclear bomb in New York City. The novel went into gruesome detail about the consequences of this action. Pollard hoped that by describing what would happen, he could make the world aware of the horrors of nuclear war. He published his book through his own publishing company, Woodburn Press.

Pollard died of a stroke in 1997 at the age of 90.



Kenneth S. Cole

The Biophysical Society Membrane Biophysics Subgroup awards a medal each year to the winner of the KS Cole Award. The design on the medal shows the simultaneous records of the action potential and impedance change in a squid axon, which was the most famous illustration produced by *Kenneth S. Cole*, known as '*Kacy*' to those closest to him.

Cole was born on July 10, 1900, in Ithaca, New York. From an early age, Cole showed a strong interest in electricity, collecting worn out parts from the local telephone company and manipulating them to produce shocks and sparks. Cole attended Oberlin College, but took some time off to work at the General Electric Research Laboratory in Schenectady, New York. It was at this lab that Cole met *Irving Langmuir*, whose work on surface films at an air-water interface influenced Cole to work on the surface membranes of living cells. Eventually Cole went back to Oberlin, and received his Bachelor's degree in Physics.

He went on to earn his PhD in 1926 from Cornell University. While at Cornell he developed an electron spectrograph to study the photographic action of electrons. Around that time, Cole began going to the Marine Biological

Laboratory in Woods Hole, Massachusetts, where he studied the squid axon. He also worked on heat production by the eggs of the sea urchin *Arbacia*. Slowly his interests shifted to biological objects that could be investigated by physical techniques, especially electrical. His talent for looking at organisms in this way did not go unnoticed. *William Knox Chandler*, who worked with Cole as a post doctorate from 1959 to 1961, and again from 1965 to 1966 explains that, "He was able to bring physical techniques to biology. He was one of the first people who did that in a specific way."

After receiving his PhD, Cole worked as a post doctorate at the National Research Council. His work there focused on the membrane capacity of sea-urchin eggs. He chose Harvard for his fellowship but continued to visit Woods Hole to conduct his experiments.

In 1929 Cole became an Assistant Professor at Columbia University in the Department of Physiology, and was soon promoted to Associate Professor. He also became a Consultant Physicist at the Presbyterian Hospital. While there, Cole calibrated radiotherapy machines, advised on safety when using cyclopropane as an anaesthetic (there had previously been an explosion in an operating room), overhauled a medical physiology laboratory, lectured, and collaborated with surgeons in developing an operation for aortic aneurysm using an electrically heated wire.

From 1941 until 1942, Cole took leave from Columbia and worked as a Guggenheim Foundation Fellow at the Institute for Advanced Study at Princeton. Still on leave, from 1942-1946, Cole was Principal Biophysicist at

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the Metallurgical Laboratory at the University of Chicago. He also helped on the Manhattan Project, studying the effects of radiation on living things. In 1946, the University of Chicago set up a new Institute of Radiobiology and Biophysics and Cole became Professor of Biophysics and Physiology and head of the Institute. Here he met and worked with *George Marmont*. Together they developed the voltage-clamp apparatus, which Cole used in 1949 to measure the early inward and late outward currents underlying the action potential in squid giant axon.

By the late 50s many biophysicists felt there were no existing scientific societies that catered to their scientific needs. Cole, along with the rest of the

Committee of Four (*Otto H. Schmidt*, *Samuel A. Talbot*, and *Ernest C. Pollard*) organized the First National Biophysics Conference in 1957. Cole became an advocate of the Society and went on to be President from 1963-1964. He was also an Executive Board Member in 1961 and an Executive Council Member in 1958 and again in 1962. Cole also helped to establish the International Union of Pure and Applied Biophysics (IUPAB).

In 1959, Cole set up a new Laboratory of Biophysics at the NIH National Institute of Nervous Diseases and Blindness Institute. In 1966, Cole stepped down as head of the lab, but con-

tinued to work there as Senior Research Biophysicist. While at NIH, Cole worked with many scientists, including *Clay Armstrong*, a post doctorate at that time.

“He was able to bring physical techniques to biology. He was one of the first people who did that in a specific way.”

Armstrong says that, "Kacy, was a great experimental scientist. He had colleagues which included, notably, *H.J. Curtis* and *George Marmont*,

who were great pioneers in the study of electrical properties of cells."

Cole died on April 18, 1984.

The K.S. Cole Award, established in his honor, is given to those who make advances in the field of Membrane Biophysics.

Molecular Motors: Point Counterpoint

BIOPHYSICAL SOCIETY DISCUSSIONS MEETING
OCTOBER 19–21, 2006
ASILOMAR, CALIFORNIA

The Discussions are small meetings that focus on a cutting-edge or emerging topics in biophysics, topics that benefit from intense discussions. The meetings are patterned after the Farraday Society and have a unique format that stresses discussion over formal presentations. Plenary sessions consist of five-minute presentations by speakers, followed by a lengthy discussion. In addition there are poster sessions. This format allows for greater, less-inhibited participation by participants. Discussions meetings are limited to 150–200 participants and last for approximately three days.

The 2006 Discussions topic will be *Molecular Motors: Point Counterpoint*. Organized by *Sharyn Endow* of Duke University and *Steven Rosenfeld* of Columbia University, *Molecular Motors: Point Counterpoint* will focus on aspects of the motor mechanism, juxtaposing recent findings from the kinesins with those from the myosins and dyneins. Presentations on other motors will be included where relevant. Talks will emphasize mechanistic themes among motors of different families, pointing out differences and similarities. Discussions will focus on findings from biophysical and biochemical approaches, taking into account those from biological and theoretical methods.

Visit the Biophysical Society website, www.biophysics.org, for application information and program updates.