For more than 50 years, AIP has interviewed and preserved the stories of outstanding physical scientists, most of them Member Society members. From 2007 to 2013 with the help of two National Endowment for the Humanities (NEH) grants, the Niels Bohr Library and Archives placed over 1,000 of the 1,500 oral history interview transcripts in our collection online. This initiative made interviews with luminaries like Niels Bohr, Paul Dirac, Werner Heisenberg, Richard Feynman, and hundreds of others globally available.

In 2014, our transcripts were viewed over 130,000 times and used in a variety of research projects and published works. This past year we’ve been hard at work upgrading the web pages and adding new features, thus making it easier than ever before to browse and search the transcripts. We welcome you to use the new website and to keep coming back, as more interviews continue to be added as they become available.

AIP’s new oral history home page enables visitors to efficiently browse transcript and audio excerpts, with the ability to search the full text of all transcripts; and it lists the newest available transcripts and a selection of audio excerpts.

Transcript pages now integrate with the rest of the history web pages with easy access to key browsing functions, including: “Topics discussed in this interview”; institutions, subjects, and people mentioned in the interview, which allows users to see a list of other interviews discussing a chosen topic; and “Related images”—up to five images from ESVA related to the interview.

The search results page gives users all the information on an interview, a photo (if available), and the beginning of the abstract. Results are shown in order of relevance. The search results page also allows users to filter searches using the institutions and subjects; this ability to refine searches saves time for more efficient research.

Experience how history comes alive through the words of those who have dedicated their lives to advancing the physical sciences. We invite you to spend some time perusing this resource and hope that you find it useful and inspiring. Please note, with these updates the URLs for the interviews have changed, so make sure to update any bookmark you have to them. For any questions or comments, please email nbl@aip.org.

Voices of the Past Reimagined
By Amanda Nelson, Associate Archivist, Niels Bohr Library & Archives

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Physics, like most academic disciplines, is ever growing. Pressed by competition and by the fast pace of discoveries, physicists work in ever-specializing subfields, compelled by investors and patrons to focus on technological advancements. A consequence of this is that the cultural content of physics is at risk of being forgotten: a major enterprise of humanity to understand the universe, physics seems unable to say anything concerning the meaning of existence.

What can be done to rectify this tendency? Unfortunately, the to-do list for a young physicist-to-be is already packed with necessary concepts and experiences. Nevertheless, I see university courses in the History of Physics as an opportunity to preserve a background unity of the discipline and to emphasize its deep cultural connections.

History of Physics is an opportunity to keep physics connected with history, philosophy, art, and all that is usually meant by “culture.” I consider a few historical themes indispensable for the cultural formation of physicists. I present them in the form of dualities, i.e., polarities of thought which exhaust most of each argument, although without excluding, of course, a plurality of interpretations and/or a synthesis. These dualities include contrasts between Galileo and Bacon, Newtonianism and mechanicism, Popper and Kuhn, and instrumentalism and realism before and after quantum mechanics. I describe physics concepts as “semantic-increment generators,” i.e., as structures of thought able to add meaning also when used metaphorically outside their technical ground.

This didactic approach, through dualities, highlights the cultural issue at stake and helps students remember these critical aspects of physics. (See Good’s article, p. 6.)

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**Dualities Worth Knowing in the History of Physics**

*By Leonardo Colletti, University of Trento, Italy*

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**A Profile in American Innovation:**

**A Lyne Starling Trimble Science Heritage Public Lecture**

*By Greg Good, Director, Center for History of Physics*

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Stanford Ovshinsky was an American scientist who approached invention with intuition and drive. He founded Energy Conversion Devices, an American Institute of Physics Corporate Associate, in the 1960s and developed innovative new products that have spurred entirely new industries.

The AIP community learned more about Ovshinsky, his life, work, and impact at its April 2015 Lyne Starling Trimble Science Heritage Lecture, given by Dr. Lillian Hoddeson, a well-known historian of the physical sciences. Hoddeson was awarded the 2012 Abraham Pais Prize “for her leadership and contributions to writing the history of 20th-century physics, her pioneering studies of American research labs—particularly Bell Labs, Los Alamos, and Fermilab—and her perceptive biography of John Bardeen.”

Hoddeson spoke movingly of the enthusiastically unconventional scientist and entrepreneur, Stanford Ovshinsky, whose biography she is currently writing. Ovshinsky was important in establishing the investigation of amorphous and disordered materials, but he was not bound by disciplinary identification. Hoddeson quoted Richard Zallen (professor emeritus of physics, Virginia Tech) as saying, “What Stan does is not science. It’s more interesting than science.”

Hoddeson described Ovshinsky’s intuitive and visual approach, his willingness to forge ahead with trials and experiments based on his visualizations and pattern recognition, and his occasional dismissal of the lack of a theory. He and his associates took the amorphous and disordered materials he had created and sought to invent technologies using them. Over decades they developed nickel metal hydride batteries, thin-film solar panels, the Ovitron (the first amorphous switch), and then the threshold switch and phase-change memory.

Hoddeson traced Ovshinsky’s unorthodox methods to his upbringing. He was born in Akron, Ohio, in 1922, where his mother and father had settled after emigrating from Lithuania and Belarus. His father collected scrap metal from factories, and Stan’s first jobs in his teens were as a tool maker and machinist. His ideas came from materials and processes. He was always at home in industrial settings.

During World War II, Ovshinsky conceived of his first successful invention, a high-speed, center-drive lathe, while working in tool shops for the rubber industry. He established his first company, a machine shop, to develop this lathe, patent it, and sell it. In the 1950s, he directed research for the Hupp Motor Company and broadened his interests to include machine intelligence and cybernetics. He and his brother founded another company, General Automation, with this general interest, which they combined with new techniques to produce an amorphous, thin-film switch, the Ovitron.

In 1960, Ovshinsky—a serial entrepreneur—started the company Energy Conversion Laboratory (ECL) with the goal of solving an energy crisis that would not be generally recognized until a decade later. The working-class Jewish immigrant community in his Akron years had in-
stilled in him a dedication to solving social problems. He always saw his work in science and invention as aimed at solving problems important to society. ECL developed electronic memory, new batteries, solar cells, and more. Devices in our pockets and on our desktops owe their existence in part to this pioneering work.

Ovshinsky died in 2012.

Hoddeson also spoke to a smaller group of strong supporters of AIP’s History Programs at a reception graciously hosted by Nancy Greenspan at her home. Hoddeson reflected back to her first contacts with Charles Weiner, who directed the Center for History of Physics and Niels Bohr Library in New York City. She worked closely with Spencer Weart, who became director of these programs in 1975.

She wrote much of her dissertation and first book in the library at AIP. She already had a PhD in physics, but, she said, Spencer taught the physicist how to be a historian. Dr. Hoddeson worked on several of AIP’s groundbreaking projects and wrote or cowrote The Birth of Particle Physics (1983), True Genius: The Life and Science of John Bardeen (2002), and several other respected works. Her latest book, which she wrote with Michael Riordan and Adrienne W. Kolb, will be released this fall: Tunnel Visions: The Rise and Fall of the Superconducting Super Collider.

The XXIX International Astronomical Union (IAU) General Assembly, held in Honolulu, Hawaii, in August 2015 presented AIP’s History Center with an opportunity to preserve the history of modern astronomy on Mauna Kea, one of the finest astronomical observing sites in the world. David DeVorkin, senior curator for astronomy at the Smithsonian National Air and Space Museum, and Teasel Muir-Harmony, AIP associate historian, spent the conference working with past and present members of the Institute for Astronomy (IfA) at the University of Hawaii, collecting and commemorating this history.

The week started with an informal gathering honoring John Jefferies, the former director of the IfA. Guests—dressed in aloha shirts—reminisced about the early years of establishing the observatory site and institute. An IAU Heritage Session “The Development of Mauna Kea as an Astronomical Site,” followed this social get-together. Introduced by DeVorkin and moderated by Muir-Harmony, the forum highlighted John Jefferies’s contribution to the IfA and the broader astronomical community. Four astronomers who had worked with Jefferies—Ann Merchant Boesgaard, Eric Becklin, Alan Stockton, and Alan Tokunaga—shared stories and asked the former director questions about his tenure at the IfA. Later that week, at the institute, Jefferies gave a lecture followed by another lecture given by Jim Harwood, who had been responsible for the Mauna Kea site survey in the early 1960s. Both Jefferies and Harwood shared memories and photographs for an audience made up of astronomers and “Friends of the Institute.”

Over the course of the general assembly, DeVorkin and Muir-Harmony also conducted oral history interviews with members of the IfA at the University of Hawaii, including Alan Tokunaga, Eric Becklin, Ann Merchant Boesgaard, Alan Stockton, Ray Wolstencroft, and Ginger Plasch. In the final oral history session of the week, DeVorkin and Muir-Harmony conducted an in-depth interview with John Jefferies lasted over five hours. This interview complements an oral history with Jefferies taken by former History Center director Spencer Weart in 1977 (available at https://www.aip.org/history-programs/niels-bohr-library/oral-histories/4693). Largely meant to extend the chronological scope of Weart’s interview, and flesh out key details in the establishment of Mauna Kea as an observatory site, the new interview with Jefferies, along with the other oral histories, will be transcribed and added to the History Center’s website.
The Center for History of Physics continues to support important new historical research regarding the physical sciences through its Grants in Aid program. This program was partially endowed by a grant from the Lounsbery Foundation over a decade ago, and AIP seeks to complete this endowment as part of its “Physics Heritage & Promise” campaign (see p. 27). The following are among the roughly two dozen projects funded in 2014 and 2015.

- Prof. Amit Hagar (Indiana University) interviewed Edward Fredkin (1934-) about his research career at the intersection of physics and computing. Fredkin worked on DARPA-funded projects and was a professor at MIT.

- Alexandre Bagdonas Henrique (Federal University, Bahia, Brazil) investigated George Gamow’s contributions to relativistic cosmology and astrophysics.

- Prof. Thomas Scheiding (University of Wisconsin–Stevens Point) worked in the records of AIP Corporate Associates on aspects of the role of industry in physics.

- Prof. Andrea Candela (University of Milan, Italy) used records in the Niels Bohr Library & Archives related to the history of uranium mining and nuclear technology transfer.

- Jaco de Swart (MSc student, theoretical physics, University of Amsterdam) visited AIP, Princeton University, and MIT to uncover the development of the problem of dark matter. He conducted a dozen oral history interviews, which are being transcribed.

- Samuel Robinson (PhD student, University of Manchester, UK) was supported to present his research on physical oceanography in the Cold War at the conference “Place and Practice: Doing Science in and on the Ocean, 1800-2012” in Halifax, Nova Scotia.

- Prof. Catherine Westfall (Michigan State University, Lyman Briggs College) was supported for an oral history interview with Roy J. Holt (Argonne National Laboratory).

This is not a complete listing. Several short articles by other grantees appear in this issue of the newsletter.

Please visit our website for more information about applying for a Grant in Aid.

[www.aip.org/history-programs/physics-history/grants](http://www.aip.org/history-programs/physics-history/grants)
Note of Appreciation

To Whom It May Concern,

I would like to take this opportunity to express all my gratitude to The American Institute of Physics for awarding my research project on history of uranium, and entitled: Exploring radioactive resources: Nuclear energy, mining and technological transfer during the Atomic age (1950–1970). The Grant in Aid was broadly useful in order to arrange some starting points of analysis for my three years post-doctoral research. First and foremost documentary materials, kept at the Niels Bohr Library and Archives, were helpful to establish as well as find out the outstanding role played by U.S. Atomic Energy Commission in fostering a worldwide peaceful use of atomic energy since the early 50’s. A deep and detailed analysis of some primary sources – i.e. A) U.S. Atomic Energy Commission Office of Public and Technical Information records, 1946-1952 (3 boxes); B) Spencer Weart research material for his book, Nuclear Fear: A History of Images, 1957-1987 (2 boxes); C) Press releases and letter, 1935-1967; D) One World or None (edited by D. Masters and K. Way, London, Latimer House, 1947) – revealed that AEC attempted to attain this aim both supporting uranium exploitation, with huge laymen’s participation as well, and promoting international agreements in order to guarantee safer civil uses of nuclear technology.

During the two months I spent at AIP, I also focused my readings on the different Prospector’s guides and handbooks which the Atomic Energy Commission fostered and published for increasing uranium mining and, consequently, supplies. Not only are these booklets interesting primary sources to better understand the cultural backdrop of well-known ‘uranium rush’, which widely involved self-made prospectors and laymen over the 50’s and 60’s, but they also represent a unique sample of geological and, more generically, science popularization. Together with different instructions, for example, on how using a geiger counter or claiming a stake, they included easy explanations about radioactivity and physical processes of ore deposit genesis, indeed. They, undoubtedly, epitomized that ‘entrepreneurial atom’ which distinguished a specific attitude of the American nuclear culture. Moreover, considering their rhetoric and language, Prospector’s guides and handbooks played an important role in propaganda activities of some American scientific institutions, whose purpose was to promote positive representations, images, and imaginaries of atomic energy.

Finally I would like to thank all staff members of the Niels Bohr Library & Archives for hospitality, availability, kindness and supporting my research. I’m really grateful to them and I appreciated the interest that the Center for History of Physics showed on my proposal. I look forward to sharing outcomes of my research soon.

Sincerely,

Andrea Candela

Università degli Studi dell’Insubria
Department of Theoretical and Applied Sciences
Via Mazzini 5, 21100 Varese (VA, Italy)
Every year scholars and researchers visit the Niels Bohr Library & Archives to investigate historical topics or to find material to improve their teaching of physics and its history. We encourage many of these visitors to present lunch-time talks for the ACP staff. On these few pages we print descriptions of the research and talks presented by several visitors in 2015. Professor Leonardo Colletti, of the Physics Department at the University of Trento, Italy, is a condensed matter physicist with a strong interest in history of science. He has lectured to high school students and philosophers on topics such as “Scientists and War” and “Why Quantum Mechanics Matters.” He serves on the Committee on Informing the Public of the American Physical Society (article on p. 2).

Víctória Flório Andrade, a PhD student who is working with our colleague and friend Professor Olival Freire in Brazil, visited AIP on a Grant in Aid to conduct archival work for her dissertation (see below). She also shared a work-in-progress talk with us.

Gabe Henderson, now a postdoctoral researcher at the University of Aarhus, Denmark, chaired the organizing committee of the 2nd AIP Early Career Conference in History of Physical Science in 2014. (See his article in AIP History Newsletter, vol. 46, no. 2, Fall 2014, p. 19.) He writes now about Helmut Landsberg and the history of atmospheric science. Printed on p. 7 is the abstract of his lunch-time talk.

Ben Johnson has been a recipient of several AIP Grants in Aid. Like Dr. Colletti, he is not a full-time historian of science but spends his days involved in research at the Fritz Haber Institute in Berlin. He nevertheless is conducting several distinct historical investigations. This piece (on p. 7) summarizes his work on Charles Galton Darwin, which is under consideration in a fuller form at a scholarly journal.

Albert (Skip) Theberge, a retired NOAA scientist with a long interest in the history of oceanography, presented his argument that the Mid-Atlantic Rift was established in a publication by Gunter Dietrich before World War II and that claims of priority for Bruce Heezen and Marie Tharp are misplaced (see p. 9).

Professor Joseph Bassi, who has just published A Scientific Peak: How Boulder Became a World Center for Space and Atmospheric Science, with the American Meteorological Society Press, presented an overview of this book for another lunchtime audience at ACP.

Lastly, a PhD candidate at Georgetown University, Robynne Mellor, presented a work-in-progress talk on her dissertation on uranium mining (see p. 14).

Through Worlds and Words: The Reception of the ‘Great Debate’ in Early-20th Century American Popular Science and Science Fiction Literature

By Víctória Flório Andrade, PhD student, Universidade Federal da Bahia, Brazil

“What are galaxies? No one knew before 1900. Very few people knew in 1920. All astronomers knew after 1924.”

Allan Sandage summarized in one passage the establishment and outcomes of the controversy regarding the existence of other galaxies. This controversy is known by historians of astronomy as The Great Debate, a public debate held by the National Academy of Science in April 1920, in Washington, DC. Later developments of the debate redefined our understanding of the structure of the Milky Way and the Universe. The disagreement among astronomers Harlow Shapley and Heber Curtis on the nature of nebulae and astronomical scales was solved when Edwin Hubble correctly calculated the distance to the nebula M31. The episode is well known by historians, but its reception in popular science and science fiction literature remains unstudied.

Thanks to the support I received from the American Institute of Physics Center for History of Physics Grants-in-Aid program, I was able to expand my doctoral research project to include primary sources held in the Niels Bohr Library & Archives, such as biographical files of Harlow Shapley, Edwin Hubble, and Heber Curtis, and the microfilmed papers and correspondence of Shapley. Going further, my aim is to explore the disclosure of new galaxies and worlds through popular science and science fiction magazines, and to provide some understanding of the scientific influence of the new genre of science fiction in early 20th-century America. The disclosure of new worlds opens the possibility for social and political discussions on a new framework.

My initial research points to attempts from astronomers, journalists, and science fiction authors to demystify the concept and measurement of distances in astronomical scales. For the astronomers it meant that they had to address technical aspects such as new methods for calculating distances and the technical limitations of the telescope. Popular science journalists and science fiction authors exposed these scientific limitations to the lay-public and dealt with the more dramatic aspect of the subject. This understanding of the distances in astronomical scale meant several things: the universe could be much larger than previously thought; humanity might not be unique in the universe; the solar system was not the center of the universe; and the possible existence of other galaxies like our own. Later, the confirmation of the existence of other galaxies marked an increase in science fiction stories with themes of interstellar travel.

Identifying transmitted and received messages and their differences is historically relevant, according to Peter Burke in his History and Social Theory. My goal is to explore the influence of scientific ideas on narratives in science fiction literature, and to find a bridge to connect scientific knowledge and culture at large, specifically through historical analysis of the context of scientific controversy.
Shaping a Middle Ground: Emergence of the AGU Committee on Environmental Quality, 1970-1974
By Gabriel Henderson, Postdoctoral Researcher, Aarhus University, Denmark

In 1970, Helmut Landsberg, renowned climatologist and president of the American Geophysical Union, established the Committee on Environmental Quality (CEQ). Chaired by atmospheric physicist S. Fred Singer, the CEQ was envisioned as a unique opportunity to strengthen the role of American geophysicists in national discussions of environmental degradation while providing a robust institutional platform to challenge what many interpreted as exaggerated public claims of future environmental catastrophe. Although it was dissolved shortly thereafter in 1974, the brief existence of the CEQ illuminates the precarious risk of pursuing what Singer conceived of as a sober-minded “middle course” within an increasingly polarized political environment.

Charles Galton Darwin and the Statistical Conservation of Energy
By Benjamin Johnson, Fritz Haber Institute, Berlin, Germany

Charles Galton Darwin (1887-1962), the grandson of the famous biologist, was a theoretical physicist known for his daring contributions to the physics of the early 20th-century. He began his career under Ernest Rutherford at the University of Manchester and ultimately became the director of the National Physical Laboratory. My research on Darwin and the development of quantum mechanics was supported by an AIP Grant-in-Aid and highlights Darwin’s role in the evolution of quantum dispersion theory and places him and his work in proper historical context.

The story begins with the roots of Darwin’s thought in his examination of Max Planck’s radiation law in the 1910s, follows him through the 1920s and the birth of quantum mechanics, and ends in the early 1930s, when physicists were left to deal with the aftermath of what they had discovered.

At the brink of a historical discovery, H.A. Kramers’ quantum theory of optical dispersion of 1924 supplied critical insight into Werner Heisenberg’s formulation of matrix mechanics one year later. In 1922 Charles Galton Darwin had already offered his own preliminary quantum theory of dispersion, which presaged key ideas later found in Kramers’ theory. Specifically, he abolished classical electron orbits in the description of the interaction of light and matter and replaced them by a rudimentary form of harmonic oscillator combined with probabilities of atomic excitation. The latter remains an important tool for the visualization of quantum mechanics today. Also, the use of “observables” (transition frequencies) was emphasized for the proper expression of atomic dynamics.

Correspondence and scientific publication show that, on the subject of conservation of energy during interactions of light and matter, Darwin played a key role in influencing the thought of some of the most prominent scientists laboring on the subject, most notably, Niels Bohr. Darwin’s contributions are evident throughout the discussions of the topic preceding the Bohr-Kramers-Slater (BKS) theory, although they are often not explicitly acknowledged. An early advocate of requiring only a statistical conservation of energy in atomic processes, Darwin often relied on physical conceptions of joining classical wave trains and quantum discontinuities in a single model and the rejection of the possibility of a “frequency” associated with the quantum of light. His ideas were developed, often in tandem with Niels Bohr, although Bohr relied on philosophical, causal arguments that the wave characteristics of light exclude the possibility of conservation of energy in his favorite example, the photoelectric effect.

However, Darwin’s use of the wave description of light and his reliance on the statistical conservation of energy soon became obsolete. Like many of Darwin’s theories, his description of dispersion in the context of these two concepts was taken seriously by his professional colleagues and inspired further scientific development; but like many of Darwin’s theories, although stimulating, it later proved to be incorrect. While his work allowed him to continually gain a foothold in the new physics, he often did not arrive at a complete solution.

For this reason, Darwin makes appearances in the historical literature while tackling high-risk subjects, and historians often use his quotes to illustrate the state of physics during his career. His ability to simply relate complex physical ideas is well documented, and his colleagues were aware of and admired him for this talent. Darwin occupies a sagelike or visionary position in the history of 20th-century physics, with a well-regarded ability to ignite interest in pioneering areas of research.
How are scientific “peaks,” or centers of significant achievement in research and technology, created? Places such as Silicon Valley and Route 128 near Boston come to mind. Do they spring from the Earth like Venus arising from the sea in Botticelli’s painting? No, scientific centers are the result of complex historical processes, and a prime example of this is the complexity of how Boulder, Colorado, became a world center for space and atmospheric sciences in the early Cold War era. From being considered a “scientific Siberia” in the 1940s, Boulder developed into “AstroBoulder” by the mid-1960s. So, how did a small town in the foothills of the Rocky Mountains, home to only a then-middling state university, become a world center for atmospheric and space sciences in less than two decades? Unlike places such as Los Alamos or the scientific cities of the former Soviet Union that were intentionally created by governments for very specific purposes, Boulder rose to scientific prominence organically from the swirls of opportunities in the post-World War II era. The key was that Boulder became a home for solar-terrestrial science right after WWII.

There was a fascinating confluence of individual scientific ambitions relating to solar-terrestrial research, the post-WWII context of science in the United States, and political machinations at various levels of government. In early phases of this process, solar astronomer Walter Orr Roberts, Colorado Senator “Big Ed” Johnson, the Boulder Chamber of Commerce, and others combined to bring Sun-Earth science, including meteorology, to Boulder in the late 1940s and early 1950s. The Chamber of Commerce launched a “prosperity insurance drive” to collect money from citizens and businesses to buy land to bring the National Bureau of Standards Central Radio Propagation Lab (CRPL) there—an early form of “crowd funding”! Benefitting from the CRPL, Boulder was then poised to become home for much science of the International Geophysical Year (1957-1958). Soon after, Boulder was ideally suited to become home of the NSF’s National Center for Atmospheric Research—among the first federally funded scientific centers in the United States.
Various histories, both in published books and found on the Internet, give Bruce Heezen, Marie Tharp, and Maurice Ewing credit for the discovery of the central rift valley of the Mid-Atlantic Ridge, and by extension, the world-wide rift system. According to Heezen and Tharp, they discovered the rift valley both by developing bathymetric profiles of the North Atlantic seafloor and by tracking earthquake epicenters. However, a little-known paper published prior to World War II by the German scientist Gunter Dietrich clearly establishes Dietrich’s priority of discovery of the Mid-Atlantic Rift Valley. It will be shown that Heezen was aware of this paper and engaged in a form of bathymetric plagiarism by following Dietrich’s tracklines throughout the North Atlantic and claiming Dietrich’s discoveries for himself and Marie Tharp. Ironically, in doing so Heezen was the first to encounter large Atlantic fracture zones, but because of confusion and possibly fear of ridicule he suppressed this information for over ten years. As a result, the first physiographic map of the Atlantic Ocean had errors approaching 100 nautical miles in the location of the rift valley and no indication of fracture zones. Heezen and Tharp ignored their own data in production of this map and followed the time-honored method of placing the legend over their area of greatest confusion. Surprisingly, Heezen’s apparent fascination with Dietrich continued into the 1960s when he formed a polygon with a ship trackline that enclosed Dietrich’s “most striking depression” and declared the existence of the Kane Fracture Zone.

Visit from National History Day Competitors
By Melanie Mueller, Assistant Director, Niels Bohr Library & Archives

In July, the Niels Bohr Library & Archives enjoyed a visit from two young scholars competing in the 2015 National History Day contest—Gabrielle Goodgame and Alexandria Sarkissian, students at the Kainalu Elementary School in Kailua, Hawaii. The students used the Center for History of Physics web exhibit, “Marie Curie and the Science of Radioactivity,” as one of their sources when creating their two-person dramatic performance, titled “Marie Curie: The Mother of Modern Physics.”

The students were excited to hear that the Center for History of Physics and the Niels Bohr Library & Archives were close enough to visit when they were in town for the competition, and they chose to visit the American Institute of Physics when they had a free day to tour the area. The students met with library and archives staff and took a brief tour of the library, and posed with the photographs of Pierre and Marie Curie displayed in our photo gallery of Nobel laureates.

The Niels Bohr Library & Archives welcomes scholars of all ages, and with more of our resources online, we are able to reach students as far away as Hawaii. Next year’s National History Day theme is “Exploration, Exchange, and Encounter,” and we wish Gabrielle and Alexandria good luck!
The Niels Bohr Library & Archives at the American Institute of Physics continues to seek book donations. We are especially looking for books in our allied fields of rheology, crystallography, optics, acoustics, meteorology, and physics in medicine. Your book donations in these fields will help us with our goal of documenting and promoting the history of the physical sciences and allied fields in the 19th and 20th centuries.

What type of books do we collect?

- Textbooks
- Lab manuals and other instructional materials
- Instrument catalogs
- Published correspondence
- Biographies and history of science monographs
- Institutional histories
- Conference proceedings

Successive editions of texts and conference proceedings are of particular importance to us.

Through collecting books that document the history of science, the Niels Bohr Library & Archives aims to preserve this valuable information for future generations and to provide access for researchers.

We appreciate your help in preserving historical documentation and we will reimburse shipping costs.

Please contact Elaina Vitale at evitale@aip.org or nbl@aip.org if you have any questions or books you wish to donate.

Fax: 301-209-0882
Joe Anderson, a key staff member of the AIP History Programs for 22 years, retired on November 30, 2015. He joined AIP as head of the Niels Bohr Library, then part of the Center for History of Physics, in November 1993, three weeks after the Institute moved to College Park from New York City. He was named assistant director of the Center in 1997 and associate director in 2002, and he has been director of the Niels Bohr Library & Archives since 2006. Joe’s position was endowed as the R. Joseph Anderson Directorship in 2013 by the Avenir Foundation.

The Niels Bohr Library & Archives has long been recognized internationally as an innovative leader in the archives of modern science, and it has expanded existing programs and initiated new ones over the last two decades, dramatically increasing the resources available to the scholarly community. Today the library and archives continues to forge relationships between the physical sciences, archives, and history communities to insure that the history of modern science is preserved and made known.

Joe is a Fellow of the Society of American Archivists, and his previous experience includes positions at the Archives of the Wisconsin State Historical Society; the Department of Manuscripts and Archives, Yale University; and the Library & Archives of the Balch Institute for Ethnic Studies. He has published in The American Archivist, ISIS, and other publications, and has served in a number of national and international archival organizations.

Joe Anderson on vacation a few years ago.
New Digital Repository for Books and Manuscripts
By Chip Calhoun, Technical Services Archivist, Niels Bohr Library & Archives

The Niels Bohr Library & Archives is proud to be launching a new digital repository to house our growing collection of digitized materials. The new repository will launch with more than 40 books which have not previously been available online. The books include the entire collection of well-known historian of science Paul Forman, and his rare and influential German mechanics texts from the late 19th and early 20th centuries. We will also be adding 20 newly digitized manuscript biographies.

In addition to these new materials, the repository will also become the new home for our existing online digital collections, including the Samuel Goudsmit papers and the Society of Rheology’s *Rheology Bulletin*.

The new repository uses the Islandora platform, which integrates the open-source Fedora Commons digital repository with the Drupal content management system used across www.aip.org. Our repository is hosted by a vendor, Lyrasis. We have spent most of 2015 working with Lyrasis to move our collections and metadata into the new repository, test the new system, and to train our staff to use the repository effectively. This new platform makes it much simpler to place new materials online and will allow us to grow our online collections.

This is a critically important step in “future-proofing” the collections of the Niels Bohr Library & Archives.

The new repository launched November 1st and can be accessed through our website at

www.aip.org/history-programs/niels-bohr-library

Additions to NBLA
By Amanda Nelson, Associate Archivist, Niels Bohr Library & Archives

Each year the Niels Bohr Library & Archives acquires historically relevant and valuable materials through donations from AIP’s Member Societies and from individuals interested in preserving the history of physics. This past year we’ve received numerous collections to help us document topics such as the history of physics societies, the teaching of physics, and new manuscript biographies from the physicists themselves.

With the appointment of Robert G. W. Brown as the new AIP CEO, we received a new set of records that span the work of our former Executive Directors Marc Brodsky and Fred Dylla. We also received Fred Dylla’s journals from his time here and two additions to email collections from Marc Brodsky and former AIP Secretary Ben Snavely. These email collections mark a big step forward in the archives being able to accept born-digital records and make them available to researchers when permitted. To round out our AIP-centered collections, this year we were given an addition to the AIP Office of the Secretary records and the master tapes of the AIP News Services Divisions’ Discoveries and Breakthroughs Inside Science (DBIS).

Additionally, we have had a productive year in growing our American Institute of Physics Member Society collections. From the American Astronomical Society (AAS), we now have the administrative files from Helmut Abt’s time as editor of *The Astrophysical Journal* and the records from Joseph Tenn’s tenure as the AAS Historical Astronomy Division (HAD)’s secretary-treasurer. The AVS sent us their annual addition to their records that includes awards, committees, divisions, and conference material. The American Physical Society (APS) sent us sets of records of the APS Committee on Applications in Physics (CAP) and the APS Division of Biological Physics (DBP), and we collected the presentations sponsored by the APS Forum on the History of Physics (FHP) from the APS March and April 2015 meetings. The American Crystallographic Association (ACA) sent us biographical interviews and additional materials from their newsletter and John R. Helliwell’s acceptance lecture for the Patterson Award. Lastly, we received an addition of video interviews from the American Association of Physicists in Medicine (AAPM) to bring our collection up to date.

Other highlights we’ve received this year include the annual addition to the Gravity Research Foundation (GRF) essays; a set of papers from Samuel Goudsmit’s daughter, Esther Goudsmit; a documentary on Henrietta Leavitt by P. Papacosta; two DVDs of lectures from the 10th Hawaii Conference on High Energy Physics; and recorded television programs of Holger Moller Hansen and Robert Bruce Lindsay. We also received manuscript biographies by Louis Brown on “Beryllium-8: A Half-Century of Nuclear Physics,” two sets of remembrances of Norman Foster Ramsay, and Walter Harrison’s "Tunneling into Physics.” Finally, we continue to receive single folder collections, which become part of our Miscellaneous Physics collection, to help round out the sources available to our researchers. These included atomic weapons training booklets from Janet Wert Crampton; sets of correspondence from Wilhelm Conrad Rontgen and between Richard Dalitz and Michael Jones; lecture notes from the Brandeis University Summer Institute in Theoretical Physics in 1959; and sets of correspondence and supplementary material between Karl Darrow and three APS divisions during his time as secretary.
With History Center director Greg Good, I initiated a new multiyear oral history project on the history of heliophysics. Motivated by the question of how heliophysics coalesced into a distinct discipline, this project aims to capture the history of a scientific field in formation through the collection of roughly fifty oral history interviews with heliophysicists and related scientists. In August I conducted one of the first oral history interviews for the project with Shadia Habbal, an astronomer specializing in space physics at the University of Hawaii. This oral history will not only contribute to the new heliophysics project but also be part of the History Center’s initiative to collect oral histories with women and minorities in the physical sciences. I also conducted oral history interviews in August during the International Astronomical Union General Assembly, a project which is also described in this newsletter on p. 3.

We have begun initial planning for the Third Conference for Graduate Students and Early-Career Scholars in the History of the Physical Sciences, which will be held in Annapolis, Maryland, in April 2016. The conference has been held on a biannual basis and attracts early-career historians from universities in the United States, Europe, and around the world.

Along with Martin Collins, a curator at the Smithsonian Institution, I am co-editing a special issue of the Pacific Historical Review, which will bring the history of science and technology into the journal’s usual stream of conversation, which focuses primarily on the history of the American West and the Pacific World. We are working with four historians on topics ranging from the Philippine mahogany trade to the “Alaskan Salmon War,” to explore the ways that bilateral relationships, and commodity production and consumption, contribute to larger issues in the Pacific region. My other upcoming publications include a chapter in the volume Reasserting America in the 1970s: U.S. Public Diplomacy and the Rebuilding of America’s Image Abroad (University of Manchester Press, 2016) and an in-depth essay, “Foreign Policy and the Space Race,” for the Oxford Reference Encyclopedia in American History (Oxford University Press, 2016). In addition, I contributed two articles to the Physics Today website, including a piece based on a talk I gave at AIP in March.

With Pennsylvania State University Professor Greg Eghigian, I organized a session for the upcoming History of Science Society Annual Meeting in November. The session, “Imagining Science and Technology in the Shadow of the Cold War,” includes three speakers and one commentator who will explore how the evolving geopolitical landscape in the postwar world helped shape compelling narratives about scientific fact, technological progress, and the makeup of scientific communities. My own contribution to the session, “Projecting the Best of American Science Abroad During the ‘Crisis of Confidence’: US Science-themed Propaganda Films in the 1970s,” examines a critical period when public diplomats, seeking to support the country’s foreign relations objectives, attempted to refashion America’s scientific image through their propaganda programming. This will be the first presentation based on archival research that I initiated as AIP’s associate historian.

Since coming to AIP I have also been invited to speak at the Special Libraries Association Conference and the Space Policy and History Forum at the Smithsonian Institution. I have presented my research at the Society for Historians of American Foreign Relations Annual Meeting, the Artefacts XX Conference, and The World’s Fair Since ’64 Workshop, and discussed the History Center’s web exhibitions at the American Association of Physics Teachers Meeting in July. At the 2014 History of Science Society Annual Meeting I moderated a panel discussion on the television series Cosmos. I also moderated a forum at the International Astronomical Union Congress on “The Development of Mauna Kea as an Astronomical Site.” In addition to presenting my work at conferences, I was asked to give guest lectures at MIT for a graduate course in the Aero/Astro Department on the history of Project Apollo and at Auburn University for a course on US technology through foreign eyes.

Teasel Muir-Harmony discussed the use of the American Institute of Physics’ web exhibits in teaching at the AAPT summer meeting in College Park, Maryland.

Come visit our web exhibits at
www.aip.org/history/exhibits.html
As a PhD candidate at Georgetown University, I have spent several months doing dissertation research in the Niels Bohr Library & Archives, and I presented a talk on my findings there on December 18, 2014. My research examines the history of uranium mining and milling in North America and the Soviet Union from 1945 to 1985, using and building upon approaches from environmental history, diplomatic history, and international comparative history. To do this, I will use four case studies from Canada, the United States, and the Soviet Union. These case studies include Elliot Lake, Ontario; Grants Mineral Belt, New Mexico; the Pyatigorsk region, Stavropol Territory; and Krasnokamensk, Zabaikal Territory. The examination of these case studies will illuminate the complex connections among science, technology, government, economic policy, culture, and the environment. The main hypothesis of my dissertation is that indirect and direct connections intricately interwove the history of uranium procurement in North America and the Soviet Union. Ideological opposition and the arms race directly linked the programs, and the similar radioactive legacy that all government programs created indirectly linked the programs.

My research connects nuclear technology to its origins in nature in order to bring to light the history of oft-ignored historical actors, such as uranium miners and populations who lived around the mines. It also illuminates how nuclear technology development programs affected the environment. My dissertation will be based on archival research in Canada, the United States, and Russia, providing a new analysis of Cold War history through the examination of the war’s direct effects on people and landscapes connected with uranium mining.

Editor’s Note: Robynne is spending this year conducting archival research in various cities in the United States, Canada, and Russia.

Quick: name a physicist. If you immediately thought of Albert Einstein, Robert Oppenheimer, or some other white, male physicist, you are not alone. How many of you thought of a woman? How many of an African American? The Center for History of Physics is working to broaden the image of scientists to be more inclusive by focusing attention on women and underrepresented minorities who have been successful scientists throughout history.

AIP’s Center for History of Physics began developing teaching materials on women and African Americans in science and engineering so that more K-12 students can see role models with backgrounds like theirs. Each summer since 2013 a team of undergraduate and graduate students has worked at AIP to add to and refine online teaching materials. The undergrads are members of the Society of Physics Students (SPS) and were SPS Summer Interns.

In July 2015 we took this process to a new level. Nine teachers from across the United States participated in a week-long workshop at the American Institute of Physics to learn real histories about women’s and African Americans’ lives in science. The teachers also offered ideas for how to include the stories of these role models in an active, hands-on classroom. Teachers came from California, Texas, Wisconsin, Mississippi, Alabama, Georgia, Virginia, Maryland, and Massachusetts. They included teachers from public and private schools, from elementary, middle, and high schools.
The teachers critiqued AIP’s Teaching Guides, digging deeply into some of the lesson plans. They learned that many more women scientists besides Marie Curie should be well known: Jocelyn Bell Burnell, Inge Lehmann, and Mildred Dresselhaus, for example. Likewise, well-known African American scientists Sylvester James Gates, Jr., and James West are only two among many whom students should know.

The teachers learned that antinepotism laws kept women with PhDs from working at the same institutions as their husbands until the mid-20th century. They learned that women astronomers observed at Harvard Observatory before 1900 and that women worked on the Manhattan Project, at NASA, and in computing. They learned that the first African American to obtain a PhD in physics was in 1876 (Edward Bouchet, Yale) and that African American physicists first found employment outside of historically black colleges and universities (HBCUs) with the US military, with NASA, and in other government scientific agencies.

Workshop participants reacted positively to their experiences. One participant, Dr. Pamela Quintana, physics professor at the Alabama School of Mathematics and Science (ASMS) in Mobile, AL, wrote: “I feel confident that the lesson plans provided by AIP’s Center for History of Physics will be very useful in classrooms across the country and will help to encourage women and other underrepresented groups of people to explore possible careers in physics. I also feel honored to have been selected to help in the development of these lesson plans.”

Taz Daughtrey, the incoming physics teacher at E.C. Glass High School, in Lynchburg, VA, wrote: “This experience drew on my interest in the history of science to help provide information and possible role models for underrepresented groups as professional scientists. I intend to share lesson plans and resources that can be used at all grade levels within Lynchburg City Schools.”

Dana Krejcasek, Kohler (Wisconsin) High School science teacher, earned graduate credit for her participation in the workshop through a cooperative agreement with Marian University in Fond du Lac, WI.

Justin Sanders, a physics teacher at Huffman High School (HHS) in the Birmingham City School District, is interested in integrating various storytelling elements into his classroom to actively engage different types of learners. Mr. Sanders is a strong proponent of science, technology, engineering, arts, and mathematics (STEAM) education, sponsors the HHS Robotics Team, and is an active member of the Red Mountain Makers’ Teacher Grant Program. He wrote: “The AIP CHP workshop has been an invaluable experience! The Teacher Guides are excellent resources which offer a refreshing perspective on physics education, and I am honored by the opportunity to assist in their development.”

Phyllis Friello from the Baltimore School for the Arts noted: “The AIP workshop was an invaluable opportunity. Not only did we increase our knowledge base, but we also had the opportunity to contribute to the effort to encourage young women and African Americans to pursue careers in the physical sciences.”

Whitman-Hanson High School (Massachusetts) physics teacher Dan Moriarty wrote: “The opportunity to attend this workshop has provided terrific insight into difficulties that women and African Americans experienced while pursuing their careers in physics. These stories provide real life examples that our students in science and history can use to investigate the discrimination and injustices that these people endured. It was a fantastic opportunity to work with the AIP’s History Center and thank them for allowing me the opportunity.”

Dr. Renuka Rajasekaran, AP Physics and AP Chemistry teacher from Luella High School in Locust Grove, GA, capped off the testimonials saying: “I take a great feeling of excitement and commitment from the workshop on Telling Stories of Women and African Americans in the Physical Sciences by the American Institute of Physics. The extraordinary deliberations, teaching guides, and the lesson plans provide me the impetus to take this work to the next level. I will be implementing these stories in my classroom, in my school through other teachers, and am determined to spread it beyond our school. I am pretty convinced that students are going to reap the benefits of these stories in abundant measures. In this workshop, we have indeed created a professional learning community of nine great teachers who would serve as physics ambassadors to spread this great message across the nation and countries around the world.”

The feedback of all of these teachers provided a wonderful experience for our SPS interns and graduate student research assistant. Equally important, the workshop provided useful feedback for the Center for History of Physics.

Our thanks go out to the American Association of Physics Teachers (AAPT), which helped us find teachers for the workshop. We would also like to thank our SPS interns, Brean Prefontaine and Connor Day, as well as our graduate research assistant, Joanna Berhman.
Albert Einstein remains the iconic figure of modern physics, and his name conjures up the complexities of science as well as its attraction for the public. On March 14—his 136th birthday—AIP History Programs launched a small web exhibit to celebrate the centennial of the publication of his theory of general relativity. The exhibit briefly traces the progression of the theory from Einstein’s initial three publications in November 1915 through tests offered by Karl Schwarzschild, David Hilbert, Arthur Ed-dington, and others; to the revival of interest in general relativity after World War II; and to the results expected from new gravitational detectors like LIGO and eLISA.

The exhibit grew out of a joint project by AIP, the Einstein Papers Project at Caltech, and the Albert Einstein Archives at the Hebrew University of Jerusalem. The illustrations and text were first used in AIP’s annual calendar, which was sent to donors and friends at the end of 2014. The web exhibit enables the project to reach an international audience and links to three major sites that provide additional information.

AIP’s Niels Bohr Library & Archives contains a variety of publications by Einstein and others on general relativity, and the History Program’s popular web exhibit, “Albert Einstein, Image and Impact,” draws more than 750,000 users each year to learn about his life and science. In addition, our extensive collection of online oral histories contains

In 1915, Karl Schwarzschild (1873-1916) proposed the first exact solution to Einstein’s field equations of general relativity. It contained a singularity that, under certain conditions, produces what today is called a black hole.

In November 1915, the mathematician David Hilbert (1862-1943) wrote a paper containing the gravitational field equations in an implicit form, based on variational principles.
information on relativity from both his contemporaries and later scientists.

Einstein’s original correspondence, notebooks, and other papers are preserved at the Hebrew University of Jerusalem, and the Einstein Papers Project, now at Caltech, is an ongoing, decades-long undertaking to translate, annotate, and publish the papers. The project reached a major milestone on December 5, 2014, when it published 5,000 of the documents online dating to 1923 and covering the first 44 years of his life. The Digital Einstein Papers, created by the Einstein Papers Project at Caltech with the support of Princeton University Press, provides scholars and the public alike with an easily accessible panorama of Einstein’s work and personal life. In its first four months the site has had 135,000 users with 1.5 million page views.

Our work with the California Institute of Technology’s Einstein Papers Project and the Albert Einstein Archives typifies the American Institute of Physics’ core philosophy in preserving and making known the history of the physical sciences. The physicists who created the American Institute of Physics’ History Programs in the early 1960s specified that we would work cooperatively with other repositories and programs to support an international effort to document the history of our fields. The History Programs’ staff continues to work to accomplish this important and ambitious goal.

In 1922 Alexander Friedmann (1888–1925) discovered nonstatic solutions to Einstein’s cosmological equation and predicted that the universe can expand and, in some scenarios, also contract, collapse, and be born again. Even before the astronomical discovery of the redshift, Friedmann was able to estimate the age of the universe at the order of 10 billion years.

Einstein predicted the existence of gravitational waves in 1916. Although indirect evidence has been provided by measurements of the Hulse-Taylor binary system, definitive results are expected from current and future gravitational detectors, such as LIGO (Laser Interferometer Gravitational-Wave Observatory) and eLISA (Evolved Laser Interferometer Space Antenna).
In late July 1969, the Apollo 11 crew successfully landed on the Moon and returned safely back to Earth. After they splashed down in the Pacific Ocean, President Nixon greeted them on the USS Hornet aircraft carrier and asked them to act as his representatives on a goodwill tour that took them to nearly 30 cities around the world in just under two months. When they returned from their trip, Nixon thanked them for acting as his ambassadors and, according to Neil Armstrong, told the crew “He had been trying for years to get a meeting with Romanian President Nicolae Ceaușescu, and, after leaving the Hornet, he was able to get an appointment. President Nixon said something to the effect, ‘That meeting alone paid for everything we spent on the space program.’” The meeting Nixon was referring to laid the groundwork for normalizing relations with China, which would become one of the Nixon administration’s major accomplishments in foreign relations. Although Nixon’s comment is clearly not a formal evaluation of Project Apollo, it does reflect the broad criteria used to assess the value of federally funded scientific and engineering programs during the Cold War.

Project Apollo was an enormous national investment. It became the largest scientific and technological program in US history and, at the time, the greatest open-ended peacetime commitment by Congress. Sending men to the Moon cost the United States roughly $25 billion in the 1960s, more than 18 times what the country spent on the Panama Canal, over five times the expense of the Manhattan Project, and even more than the Eisenhower administration’s Interstate Highway System. This large-scale national investment highlights the political priority placed on international prestige during the Cold War, as well as the significant role that science and technology had come to play as diplomatic instruments in US foreign relations.

What factors should we take into account when funding and evaluating science? This question was as vital to American policymakers in the 1960s as it is today. The Cold War was a period when the “international political–psychological factors” of scientific and engineering programs were considered when allocating funding and assessing science and engineering programs. Science was viewed not only as an engine of progress, but also as a direct index of national power, which made it a key element in maintaining a strong geopolitical position during the Cold War. Project Apollo epitomizes this symbiotic relationship between science and diplomacy in this period.

Roughly a month before the first lunar landing, Nixon met with his advisors to discuss the upcoming Apollo 11 lunar landing. In
that meeting he decided that he would fly to the Pacific to greet the Apollo 11 crew when they returned from the Moon, which would not only demonstrate his enthusiasm for the mission, but also provide him with an opportunity to visit Romania. According to his speechwriter, “Nixon wanted an excuse to go [to Romania], and he wanted a note of triumph to set the tone for his initiative. The trip to the far Pacific was a perfect answer.” Nixon hoped to send the message through President Ceausescu to both North Vietnam and China that the United States was ready to consider normalizing relations.

According to Nixon, a postlunar landing diplomatic tour would also provide National Security Advisor Henry Kissinger with “the perfect camouflage” for a secret meeting with the North Vietnamese. Since Kissinger would be expected to fly to Paris to brief the French on Nixon’s tour, he could use the trip as an opportunity to meet in secret with the North Vietnamese’s chief negotiator in Paris. This would be Kissinger’s first of a series of secret meetings leading up to the Paris Peace Accords and an attempt to end US military involvement in Vietnam.

So, when the Apollo 11 crew splashed down in the Pacific on July 24, 1969, Nixon was there to greet them. Later that day he flew to Guam to begin his “Moonglow” diplomatic tour of Asia and Europe to promote “the spirit of Apollo” and present for the first time what would later come to be known as the Nixon Doctrine. Throughout the rest of his trip—which took the president to the Philippines, Indonesia, Thailand, Vietnam, India, Pakistan, Romania, and the United Kingdom—Nixon drew on space-themed rhetoric to couch larger foreign relations issues, especially the United States’ role in Vietnam.

This story exposes some of the diverse ways that policymakers and diplomats can engage with science to advance and support foreign relations objectives. Nixon’s “Moonglow” tour, as well as the subsequent Apollo 11 crew’s world tour, provided what were considered “nonpolitical” opportunities to have political discussions. By taking advantage of the soft power potential of this popular science and engineering program, the Nixon administration gained a foothold to begin the process of normalizing US relations with China, which would ultimately alter the trajectory of the Cold War.
Our report of new collections or new finding aids is based on our regular survey of archives and other repositories. Many of the collections are new accessions, which may not be processed, and we also include previously reported collections that now have an online finding aid available.

To learn more about any of the collections listed below, use the International Catalog of Sources for History of Physics and Allied Sciences at www.aip.org/history/icos. You can search in a variety of ways, including by author or by repository.

Please contact the repository mentioned for information on restrictions and access to the collections.
Collections Library. Hanover, NH 03755, USA


**Harald Ulrich Sverdrup papers.** Collection dates: 1931-1948. Size: 0.5 linear feet.

Eidgenössische Technische Hochschule Zürich. Handschriftenabteilung. Zurich, Switzerland


Fermilab. History and Archives Project Office, MS-109 PO Box 500, Batavia, IL 60510, USA


George Washington University, Department of Special Collections. University Archives. 2130 H Street NW, Washington, DC, USA


Georgetown University. Library. Special Collections Division. 37th and O Streets NW, Washington, DC 20057, USA

**Georgetown University Seismological Observatory records.** Collection dates: 1907-1971. Size: 1.5 linear feet.

Harvard University. Archives. Pusey Library. Cambridge, MA 02138, USA

**Henrietta Swan Leavitt notebooks.** Hawaii State Archives. Iolani Palace Grounds. Honolulu, HI 96813, USA


**Henry E. Huntington Library. 1151 Oxford Road, San Marino, CA 91108, USA**

**Lorand Eotvos Warmelehre autograph notebook.** Collection dates: circa 1868. Size: 1 item (24 pages).


**Sir William Herschel letters.** Collection dates: 1777-1807. Size: 8 letters.


**Albert D. Wheelon papers.** Collection dates: 1940s-2012. Size: 32 banker boxes, 2 smaller boxes, 5 loose binders.

**Institute for Advanced Study. Shelby White and Leon Levy Archives Center. 1 Einstein Drive, Princeton, NJ 08540, USA**


**Harish-Chandra papers.**


**Institute for Advanced Study School of Natural Sciences records.** Collection dates: 1930-1986. Size: 3 linear feet.


**Hermann Weyl collection.** Collection dates: 1938-1955. Size: 0.5 linear feet.

Jet Propulsion Laboratory. Archives. JPL Archive, MS 512-110, 4800 Oak Grove Drive, Pasadena, CA 91109-8099, USA


Library of Congress. Manuscript Division. James Madison Memorial Building, First Street and Independence Avenue SE, Washington, DC 20540, USA

**Evelyn Briggs Baldwin papers.** Collection dates: 1649-1933. Size: 7.2 linear feet (18 containers and 2 oversize).


Massachusetts Institute of Technology. Institute Archives and Special Collections. M.I.T. Libraries, Rm. 14N-118, Cambridge, MA 02139, USA

**Victor Starr papers.** Collection dates: 1948-1975. Size: 13.9 cubic feet (13 records cartons, 2 manuscript boxes, 1 half-size manuscript box).

**Herbert Bridge papers.** Collection dates: undated.

**Peter T. Demos papers.** Collection dates: undated.

**Martin Deutsch papers.** Collection dates: undated.

**Peter S. Eagleson papers.** Collection dates: undated.

**Herman Feshbach papers.** Collection dates: undated.

**Hermann A. Haus papers.** Collection dates: undated.

**Henry W. Kendall papers.** Collection dates: undated.

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Denis Robinson papers. Collection dates: undated.


Rainer Weiss papers. Collection dates: undated.

National Academy of Sciences. 2101 Constitution Avenue NW, Washington, DC 20418, USA


Oregon State University, Libraries. Special Collections. Corvallis, OR 97331, USA


Pennsylvania State University. Libraries. Special Collections Division. University Park, PA 16802, USA


Princeton University. Department of Rare Books and Special Collections. 1 Washington Road, Princeton, NJ 08544, USA


Ogden Rood correspondence. Collection dates: 1843-1902. Size: 0.2 linear feet (1 half-size archival box).


Schenectady Museum. Nott Terrace Heights, Schenectady, NY 12308, USA


General Electric General Engineering Laboratory papers. Collection dates: 1918-1926. Size: 0.3 linear feet.


Simon Fraser University. University Archives. Burnaby, British Columbia V5A 1S6, Canada


Smithsonian Institution. Archives. Capital Gallery, Suite 3000, MRC 507, 600 Maryland Avenue SW, Washington, DC 20024-2520, USA


Smithsonian Institution Office of Telecommunications records of “Search for

Smithsonian Institution Polaris Expedition records. Collection dates: 1871-1876. Size: 2 linear feet (1 record box, 1 half-size document box).

Smithsonian Institution. National Air and Space Museum. Archives Division. MRC 322, Washington, DC 20560, USA


Stanford University. Department of Special Collections and University Archives. Stanford, CA 94305, USA


State University of New York at Stony Brook. Frank Melville Jr. Memorial Library. Stony Brook, NY 11794, USA


Max Dresden papers. Collection dates: undated.


University of California, Berkeley. The Bancroft Library. Berkeley, CA, 94720-6000, USA


University of California, Los Angeles. University Research Library. Department of Special Collections. Los Angeles, CA 90024-1575, USA


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University of Illinois at Chicago. Richard J. Daley Library. MC 234, 801 S. Morgan, Chicago, IL 60607, USA


University of Kansas. Libraries. Kenneth Spencer Research Library, University Archives. Lawrence, KS 66045, USA


American Philosophical Society. Library, 105 South Fifth Street, Philadelphia, PA 19106, USA


University of Miami. Richter Library. Archives Division. Main Library, 8th Floor, Coral Gables, FL 33124, USA


University of Washington. University Archives. Mailstop #0-10. Seattle, WA 98195, USA


Woods Hole Oceanographic Institution. Archives. McLean Lab, MS 8, 360 Woods Hole Road, Woods Hole, MA 02543, USA


Aarhus University. Institute for the History of Science. Aarhus, Denmark


American Philosophical Society. Library, 105 South Fifth Street, Philadelphia, PA 19106, USA

Carnegie Institution of Washington. Library. 1530 P Street NW, Washington, DC 20005, USA


Columbia University. Rare Book and Manuscript Library. Butler Library, 6th Floor East, New York, NY 10027, USA


Robert B. Canfield manuscripts. Collection dates: 1858-1862. Size: 0.5 linear feet (19 items in 1 box).


Ogden N. Rood papers. Collection dates: 1855-1902. Size: circa 1,000 items (5 boxes, 2 portfolios).
Cornell University. Carl A. Kroch Library. Division of Rare and Manuscript Collections. 2B Carl A. Kroch Library, Ithaca, NY 14853, USA


Blake and Rood families papers. Collection dates: 1847-1906 (bulk 1847-1891). Size: 0.2 cubic feet.


Dwight D. Eisenhower Library. Abilene, KS 67410, USA


President’s Committee on Scientists and Engineers records. Collection dates: 1956-1958. Size: 16 linear feet (approximately 32,800 pages).

Fisk University. Library & Special Collections. Nashville, TN 37208, USA


Augustus Shaw records. Collection dates: 1925-1926. Size: 0.5 linear feet.

George Washington University. Department of Special Collections. University Archives. 2130 H Street NW, Washington, DC, USA


Institute for Advanced Study. Shelby White and Leon Levy Archives Center. 1 Einstein Drive, Princeton, NJ 08540, USA


Library of Congress. Manuscript Division. James Madison Memorial Building, First Street and Independence Avenue SE, Washington, DC 20540, USA


Minnesota Historical Society. Division of Archives and Manuscripts. 345 W. Kellogg Blvd., St. Paul, MN 55102, USA


Massachusetts Institute of Technology. Institute Archives and Special Collections. M.I.T. Libraries, Rm. 14N-118, Cambridge, MA 02139, USA

MIT Office of the Vice President records. Collection dates: 1932-1938. Size: 0.3 cubic feet (1 manuscript box).

National Academy of Sciences. 2101 Constitution Avenue NW, Washington, DC 20418, USA


New York University Polytechnic School of Engineering. Bernard Dibner Library. Archives and Special Collections. 6 MetroTech Center, Brooklyn, NY 11201, USA


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Smithsonian Institution. Archives. Capital Gallery, Suite 3000, MRC 507, 600 Maryland Avenue SW, Washington, DC
20024-2520, USA


Photograph collection relating to physics and allied sciences. Size: 25 cubic feet.


Stanford University. Department of Special Collections and University Archives. Stanford, CA 94305, USA


University of California, Berkeley, The Bancroft Library. Berkeley, CA 94720-6000, USA

Luis W. Alvarez papers. Size: 36.5 linear feet (78 boxes, 3 cartons).


University of California, San Diego. Mandeville Special Collections Library, 9500 Gilman Drive, La Jolla, CA 92093, USA


University of Chicago. The Joseph Regenstein Library. Department of Special Collections. 1100 East 57th Street, Chicago, IL 60637, USA


University of Washington. University Archives. Mailstop #0-10. Seattle, WA 98195, USA


Virginia Polytechnic Institute and State University. Carol M. Newman Library. Special Collections Department. P. O. Box 90001, Blacksburg, VA 24062-9001, USA


Learn more about the new collections at www.aip.org/history/icos
The American Institute of Physics’ History Programs are seeking to raise two million dollars to build capacity by strengthening programs that currently have partial support and to ensure their sustainability for the long term. The programs include the Lyne Starling Trimble Science Heritage Public Lecture Series, Grants-in-Aid, Grants to Archives, and the Emerging Technologies Fund—all of which are instrumental in making widely known the human face of science and the physical sciences’ impact on modern life.

Trimble Lectures

AIP History Programs intend to use a portion of the funds toward fully endowing the Lyne Starling Trimble Science Heritage Public Lecture Series. The series was partially endowed at $100,000 from Professor Virginia Trimble, in memory of her father, and will be fully endowed at $500,000. The lecture series is an important public outreach initiative featuring prominent science historians and writers who aim to highlight the important roles that science plays in modern society and culture.

Grants-in-Aid & Grants to Archives

The Grants-in-Aid and Grants to Archives programs fund research in the history of physics and allied sciences (such as astronomy, geophysics, and optics) and their humanistic interactions. These programs have assisted more than 250 scholars to produce dozens of publications and helped archives make 69 major collections available for research. The programs are partially funded by AIP and endowment income. The Institute aims to expand the programs and complete its endowment of these programs through this campaign.

Emerging Technologies

The Emerging Technologies Fund allows AIP History Programs to keep current with digital technologies. The goal is to satisfy the growing demand for robust online, interactive resources and to make our collections more available to the global community of scholars and historians. New technologies will also enable staff to preserve and digitize the rarest, most fragile books and documents in AIP’s history collections.
We gratefully acknowledge the support of many Friends whose contributions have helped to preserve and make known the history of physics and allied sciences. This list is our public acknowledgment of Friends who contributed in 2014 to the Center for History of Physics. Patrons contributed $2,500 or more; Sponsors contributed $1,000 to $2,499; Colleagues contributed $500 to $999; Associates contributed $250 to $499; and Members up to $249. Bookplate donations honor or memorialize a colleague while supporting the purchase or conservation of rare books. * Designates our Physics Heritage Donors, who have given each year for the past seven years or more. ‡ Designates a recently deceased donor. If you would like to join the Friends in supporting the Center for History of Physics, please write to us at: One Physics Ellipse, College Park, MD 20740-3843, call 301-209-3006, e-mail historyfriends@aip.org, or visit our web page at www.aip.org/history/historymatters.

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