Imagine that you are a young student. You have the bright idea that you would like to find out how the physics or astronomy you are learning was discovered, so you start searching for a book or a website to help you out. Lots of sources discuss Einstein, Heisenberg, Shapley, or Feynman. A student might conclude that no women, no African Americans, and no Hispanic Americans contributed much to the scientific enterprise. Of course, that student might note more generally that few people whose ancestors came from outside of northern Europe seem to be part of the exciting stories of modern science.

If this student is African American or female or from one of the other under-represented minorities in science, he or she will not see role models in science with whom they can identify.

With the opening of AIP’s Teaching Guides on the History of Women and African Americans in the Physical Sciences, teachers and students now have a place to begin to discover the richly diverse heritage of science. They can explore the contributions of women and African Americans to the Manhattan Project, astrophysics, string theory, and spectroscopy. They can discover the critical roles played by women in the development of computers and their application to physics. They can develop a deeper understanding of the role of women scientists in promoting opportunities in science, or of African-American physicists in debates about science education at the time of W.E.B. Dubois and Booker T. Washington. And maybe that boy or girl will be inspired to apply for science or engineering at a university. And maybe students generally will begin to change their preconceptions about race, gender, and science.

At the very least, the goal of the AIP History Programs in this project is to reflect the wide array of historical developments in science in which women and under-represented minorities have participated. It is a corner of history that needs to be brought to light. Of course, there are already some sources to turn to: History Makers comes to mind as especially well done. Our sources for the Teaching Guides are acknowledged and provide a means for the curious to make the effort to go deeper. Our goal in this resource is to make these stories as accessible as possible.

Both Teaching Guides include lesson plans and illustrations. Many of them include supplementary materials of

(Continued on page 2)
different kinds: newspaper articles from the time, reminiscences of scientists, quotations from oral history interviews, video clips, and more. Our goal is to provide resources that teachers can readily pick up and incorporate into their classroom lessons.

These Teachers Guides are the result of, so far, two intensive summers of work by interns and graduate research assistants. In 2013, Fiona Muir (Society of Physics Students Intern from Manchester UK) and Emily Margolis (now in the Ph.D. program in history of science at Johns Hopkins University) researched and wrote the Teachers Guide on the History of Women in the Physical Sciences. In 2014, SPS interns Jacob Salkind (Shippensburg University) and Simon Patane (Vassar College) joined graduate students Sharina Haynes (University of South Carolina) and Serina Hwang Jensen (University of Maryland) to produce the guide on African Americans in the physical sciences. For ten weeks, these teams worked hard to uncover important stories and imagine effective ways to tell them. The result is over 40 lesson plans.

In summer 2015 another team of four will join the History Center to test, revise, and extend the existing two guides. The Teaching Guides at this time are “beta” versions—trustworthy in their historical accuracy, but open for feedback and improvement. In July the Center for History of Physics will sponsor a one-week workshop with half-a-dozen teachers. The teachers will offer their insight into what works in the classroom, what works with students of different ages and backgrounds, and potentially new units to be researched and written. We are also exploring a web-means for teachers to easily upload class activities such as role-playing and hands-on units. Teachers who want to offer feedback in the meantime can email me at ggood@aip.org.

During the months between summer teams, our in-house web designer will incorporate suggested changes and additions into the lesson plans. And in the summer of 2016, we will turn toward telling the stories of Hispanics in the physical sciences.
Spencer Weart, retired director of AIP’s Center for History of Physics, has received the 2015 Abraham Pais Prize for History of Physics. The prize is awarded annually and was established in 2005 by the APS Forum on the History of Physics and by AIP to recognize outstanding scholarly achievements in the history of physics. Weart is being recognized “For foundational contributions to the intellectual progress, institutional underpinnings, and public impact of the history of physics, from nuclear physics to condensed matter to climate change.” He presented the Pais Prize Lecture, “Understanding the Impacts of Global Warming: a History,” at the March APS meeting. The following is an abstract of his talk:

The idea that fossil fuel emissions might cause global warming was first proposed around the end of the 19th century, and for the following half century it sounded like a good thing. In the 1950s, confirmation that warming really might be coming led to more varied speculations. Scientists could only state possible problems in vague terms. First on the list were sea-level rise and a threat to food supplies. New items were added through the 1960s and 1970s, ranging from the degradation of natural ecosystems to threats to human health. Experts in fields from forestry to economics, even national security, pitched in to assess a variety of possible consequences. It turned out to be impossible to make solid predictions, given the differences from one region to another and the ways human society itself might try to adapt to the changes. In the 1990s, lengthy technical studies abandoned specific predictions of impacts to address “vulnerabilities” under different likely “scenarios.”

Researchers also began to explore the risks and consequences of extreme weather events like droughts and floods. By around 2000 the major likely impacts were well understood. Now the task was to pin down the specific risks in each of the many different regions, ecosystems, and human systems. Meanwhile actual impacts began to appear, such as changes in species ranges and unprecedented deadly heat waves. Nearly all experts now understood that civilization faced a monumental challenge.

An extended version of the talk may be found at http://www.aip.org/history/climate/impacts.htm

2014 Recent Additions to the Niels Bohr Library & Archives

By Amanda Nelson, Associate Archivist

This year’s additions to our archival collections include records of the AIP Publishing Division Publishing Policy Committee reports, over 43 TB of AIP Publishing Peer X-Press backup files, an addition to the American Physical Society (APS) Southeastern section records, the Astrophysical Journal administrative files from the American Astronomical Society (AAS) and our annual addition to the AVS records and the Gravity Research Foundation (GRF) essay contest winners. We also received two sets of personal papers from Philip C. Fisher on his work with x-ray astronomy and Ted Gibbs Berlincourt on his work with superconductivity, the Office of Naval Research, and the Secretary of Defense.

Furthermore we received audio-visual collections for the recorded sessions of the APS Forum for History of Physics (FHP) at their annual meetings, three video recordings from the American Crystallographic Association (ACS) for sessions from their annual meeting and an acceptance speech for the Ken Trueblood Award, and the master tapes for AIP News Service Division’s Discoveries and Breakthroughs Inside Science.

As always, we received many smaller collections for our manuscript biographies, institutional histories and miscellaneous physics collections. These included highlights in the history of the physics department of the University of Illinois, Urbana-Champaign, autobiographical notes of Johannes M. Burgers from J. V. Sengers, lecture notes by Joanna Russ, a copy of Albert Einstein’s Last Will and Testament, the journal publishing censorship practices during World War II of AIP Publishing, the board game Disintegration, lecture notes of a class taught by D. H. Douglass, and a speech given at the Conference on 40 years of Ion Chemistry honoring Carl Lineberger’s 70th birthday by Lewis Branscomb.
Reimagining Einstein for Students and Teachers
By The Einstein Revolution Course Team

In The Einstein Revolution, we examine Einstein as a thread that ties together an understanding of the twentieth century from history and technology to visual art, film, and beyond. No scientist has generated as much controversy and interest as Einstein. His theories changed our understanding of the nature of atoms, time, light, and space. However, his theories had a reach far beyond the realm of the scientific.

The Einstein Revolution not only features a varied wealth of content, but being a MOOC it welcomes a diverse, global audience as well. We wanted to cover a broad array of historical inquiry, and we recognized the need to build our course to meet the needs of two distinct audiences: learners looking for the holistic view and learners interested in only one aspect or discrete area of Einstein’s life. Consequently, we chose to ensure that each lesson could be viewed on its own, without the context of the others.

To help our learners navigate our MOOC, we built an alternative-learning map that allows students to find the content of interest quickly. This map will allow learners to quickly find videos by topic or lesson. If you’re just interested in the artistic component, for example, it should be a breeze to find the lessons that matter most to you.

Finally, we recognized and have seen that many in our audience would be teachers themselves. To that end, we have produced a teacher support document for anyone taking the course interested in utilizing pieces as a supplement. The teacher support document aims to provide an overview of the course from multiple perspectives and some guidance on where we believe the content may be useful. It can be downloaded at http://goo.gl/C9cI7c.

We didn’t just develop the resource for teachers; our design process from the beginning included the goal of being easily incorporated in a blended or “flipped” classroom. While this has proven true in our experience, we hope it holds true for you if you choose to use the material in a blended environment.

Overall, we hope that this purposeful design process provides all of our learners a deeper, more enriching experience for the content of interest to them. Join us in The Einstein Revolution, which can be accessed at http://goo.gl/Ej909P.

Discovery in the Photo Archives: Kamerlingh Onnes Laboratory
By Savannah Gignac, Assistant Photo Librarian

Kamerlingh Onnes served as professor of experimental physics at the University of Leiden from 1882 to 1923. In 1904, he founded a large cryogenics laboratory. He became highly regarded in the scientific community for inviting other researchers to the lab. This laboratory is now known as Kamerlingh Onnes Laboratory.

A recent discovery in AIP’s Emilio Segré Visual Archives revealed an album of snapshots from daily life in the laboratory. These images depict the facilities, experimental lab equipment, and staff portraits. The album reveals an amateur photographer’s experience visiting the laboratory and its staff members. A Dutch phrase commonly seen throughout this historic photo collection is, “door meten tot weten” roughly translated to “knowledge through measurement,” a motto of Heike Kamerlingh Onnes. Other highlights include the illustrations drawn on the walls of the lab alluding to scientific experiments. To see these images, visit https://photos.aip.org and type “kamerlingh” in the search box.
AIP Grant Helps to Preserve and Improve Access to the O. W. Richardson Papers at the Harry Ransom Center

By Joan M. Sibley

Thanks to support from the History Programs of the American Institute of Physics, the Harry Ransom Center at The University of Texas at Austin has completed a one-year project to prepare an online finding aid for the O. W. (Owen Willans) Richardson Papers and improve collection housing for long-term preservation. The Richardson Papers form part of the Center’s History of Science holdings, which also include papers of the Herschel Family and Albert Einstein.

The Richardson Papers were originally processed during the 1960s and described on over 8,000 catalog cards, which were reproduced in A Catalogue of the Sir Owen Richardson Manuscript Collection in the History of Science Collection, The University of Texas (1968). The new finding aid replicates and replaces information previously available only through the catalogue, offering the first online electronic, searchable description of the Richardson Papers.

The 153-page finding aid was created in accordance with current archival practices and cataloging standards and includes a biographical sketch, scope and content note, series descriptions, and a detailed folder-level container list, plus three indexes that further reveal the contents of the papers: an Index of Works by O. W. Richardson (600 items), an Index of Correspondents (nearly 1500 names), and an Index of Works by Others (over 1200 items).

O. W. Richardson (1879-1959) was the English physicist best known for his work on thermonics and the discovery of Richardson’s Law, for which he was awarded the 1928 Nobel Prize in Physics. The rehoused papers now occupy 114 boxes (49 linear feet) and include research notes and manuscripts of his writings, both published and unpublished; his outgoing and incoming correspondence; manuscripts and proofs received from his colleagues; and papers, theses, and dissertations from his students.

In addition to Richardson’s work as a researcher, the papers also document his role as an educator and his work with students and faculty at several colleges and universities, his professional activities at conferences and in scientific organizations, as well as his work for various government agencies, especially during World War I and the years preceding World War II. Richardson’s contributions to several branches of physics—photoelectricity, spectroscopy, ultraviolet and X-ray radiation, the electron theory, and quantum theory—are well documented in the papers. His correspondence files include letters from many distinguished physicists (almost all Nobel laureates in physics prior to 1950 are represented), chemists, electrical engineers, mathematicians, and other scientists. Among Richardson’s most frequent correspondents in the papers are Edward Victor Appleton, Niels Bohr, William Henry Bragg, Percy Maurice Davidson, Clinton Joseph Davisson, Gerhard Heinrich Dieke, James Hopwood Jeans, Ernest Rutherford, Frederick Steell Robertson, George Paget Thomson, and J. J. Thomson.

The papers also include family correspondence, especially with his brothers-in-law, Clinton Joseph Davisson, Oswald Veblen, and Harold A. Wilson. In addition to renowned scientists, the papers also include materials from many lesser-known figures who may be of interest.

The Ransom Center offers more than 50 fellowships annually to encourage the use of its collections by funding research visits ranging from one to three months with stipends of $3,000 per month. Also available are $1,200 to $1,700 travel stipends and dissertation fellowships with a $1,500 stipend.

A 1914 letter from Niels Bohr in the Richardson Papers. Credit: Photo courtesy of Joan M. Sibley, the Harry Ransom Center at The University of Texas at Austin.
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www.physicstoday.org/jobs
19 January, 2015

Dear Dr. Good,

I am writing to inform you that, last August, I submitted my major research paper to Dr. Katharine Anderson, my supervisor in the Graduate Program in Science and Technology Studies at York University. It was reviewed, accepted, and I proceeded to graduation and convocation last October with my Master of Arts in STS.

The paper is titled “Smashing Atoms and Expectations—Entrepreneurial Science and the Dawn of Publicly-Funded High-Tech Venture Capital at Robert J. Van de Graaff’s High Voltage Engineering Corporation” and much of the information within came from the research I conducted at AIP. I was able to present portions of the paper at Cornell University, York University, Brock University (at the Canadian Society for the History and Philosophy of Science (CSHPS) annual conference) , and at The National Academies in DC via the STGlobal Consortium Conference for graduate students—thrilling experiences all.

I would like to thank the Friends of the American Institute of Physics for their generous grant-in-aid. It enabled me to visit the Centre’s Niels Bohr Library & Archives to investigate Van de Graaff, his colleagues, his accelerator, his corporation, and the state of physics during that time; and to listen to audio tapes and hear the voices of his peers. I also consulted photographs from the Emilio Segrè Visual Archives and took a trip into DC to conduct research at the Smithsonian Institution Archives and at the National Museum of American History Library. None of these visits would have been possible without the generosity of the Friends. I was able to do quality research for my major research paper and for the biography on Van de Graaff that is now under way.

I would also like to thank you Greg and to thank Joe Anderson, Orville Butler, Melanie Mueller, Savannah Gignac, and Stephanie Jankowski for their attention, assistance, kindness, and helpfulness. It was a wonderful experience that I shall never forget. Thank you all so much.

Best regards,
Edward Fenner, MA
Science & Technology Studies
York University
Toronto, Canada
Physics Heritage & Promise: Special Initiatives Campaign

The History Programs of AIP are seeking to raise $2,000,000 to build capacity by strengthening programs that currently have partial support, and to ensure the sustainability of these programs for the long term. The programs include the Science Heritage Public Lecture Series, Grants-in-Aid, Grants-to-Archives, and the Emerging Technologies Fund.

- We intend to use a portion of the funds toward fully endowing the Lyne Starling Trimble Science Heritage Lecture Series. The series was partially endowed at $100,000 by Dr. Virginia Trimble and will be fully endowed at $500,000. The lecture series is an important step in disseminating a humanistic perspective on science.

- The Grants-in-Aid and Grants-to-Archives programs fund research and collections in the history of physics and allied sciences. These programs have assisted more than 250 scholars to produce over 45 publications and helped archives make 69 major collections available for research. They are partially funded by AIP. The Institute aims to complete the endowment of these programs through this campaign.

- The Emerging Technologies Fund allows AIP History Programs to keep current with digital technologies that are emerging at an ever-increasing rate. The goal is to support projects such as in-house digitization of the rarest and most fragile books, allowing researchers around the world to access the information housed within AIP's collections.

Why are these projects important? We have developed an international reputation as a model for preserving and making known the history of physics, astronomy, and allied sciences. AIP History Programs support the community of historians and science writers who produce books, films, and other media products, and they provide interesting and authoritative science information for the public. These programs embody the core of how we remain successful at supporting the history and future of the physical sciences for both scholarly and popular audiences.

Why now? The AIP History Programs celebrated our 50th anniversary in 2012. During our first 50 years, we amassed great contributions to the physical and the allied sciences within the walls of the Niels Bohr Library & Archives—and that was just the beginning. Our most formidable challenge is preserving, presenting, researching, digitizing, disseminating, exhibiting, and expanding them. These initiatives help us preserve YOUR legacy into the next century.

Help us preserve the past and fuel the future. Donate today to the Physics Heritage & Promise campaign. For your convenience, you may use the attached envelope. For more information on our various funds and naming opportunities, contact the AIP Development Office at development@aip.org or at 301-209-3139.
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.

NEW COLLECTIONS

University of Toronto. University Archives. 120 St. George St., Toronto, Ontario M5S 1A5, Canada


Donald A. MacRae papers. Collection dates: 1933–1989. Size: 0.46 linear meters.


Library and Archives. 5241 Broad Branch Road NW, Washington, DC 20015, USA


Colgate University. Case Library. Special Collections Department. Hamilton, NY 13346-1398, USA


Ernest Fox Nichols papers. Collection dates: 1893–1925. Size: 0.3 cubic feet.

Columbia University. Oral History Research Office. Box 20, Room 801 Butler Library, New York, NY 10027, USA


James Stith (right) in uniform watching a student working on equipment in a classroom at West Point, NY. Students unidentified. Photo courtesy of AIP Emilio Segré Visual Archives.
Columbia University. Rare Book and Manuscript Library. Butler Library, 6th Floor East, New York, NY 10027, USA


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


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


Harvard University subscriptions records relating to the founding of the astronomical observatory. Collection dates: 1805–1825. Size: 1 container.

Harvard University Department of Astronomy syllabi, course outlines, and reading lists in astronomy. Collection dates: 1901–1941 Size: 3 boxes.


Harvard University. Houghton Library. Cambridge, MA 02138, USA


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


Indiana University. Office of University Archives and Records Management. Bryan Hall 201, 107 South Indiana Avenue, Bloomington, IN 47405, USA


J. Craig Venter Institute. Archives. 4120 Capricorn Lane, La Jolla, CA 92037, USA


Lawrence Berkeley National Laboratory. Archives and Records Office. One Cyclotron Road, Bldg. 69-107, MS: 69R0102, Berkeley, CA 94720, USA


Left to right: Andrew Granato, Gordon Baym, Charles Slichter, and Lillian Hoddeson converse at the History Solid State Physics Meeting. October, 1981. Credit: Department of Physics, University of Illinois at Urbana-Champaign, courtesy AIP Emilio Segré Visual Archives.


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


National Archives and Records Administration. Pacific Sierra Region. 1000 Commodore Drive, San Bruno, CA 94066, USA


North Carolina State University. Special Collections Research Center, NCSU Libraries. Box 7111, Raleigh, NC 27695-7111, USA

Roscoe Braham papers. Collection dates: 1863-2011. Size: 53 linear feet (91 archival boxes, 6 archival half boxes, 5 archival legal boxes, 4 card boxes, 2 flat boxes, 2 reel boxes and 2 flat folders).


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


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


Rice University. Fondren Library. Woodson Research Center. P. O. Box 1892, Houston, TX 77001, USA


Rockefeller Archive Center. 15 Dayton Ave., Pocantico Hills, North Tarrytown, NY 10591-1598, USA


Scripps Institution of Oceanography. Archives. Mail Code C-075-C. La Jolla, CA 92093-0175, USA


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

Alexander Dallas Bache papers. Collection dates: 1821-1869. Size: 0.9 linear meter.

James Henry Coffin papers. Collection dates: 1848-1884. Size: 0.1 linear meter.


University of California, Santa Barbara. Library. Dept. of Special Collections. Santa Barbara, CA 93106, USA

University of California, Santa Barbara Department of Physics records. Collection dates: circa 1954-1990. Size: 0.2 linear feet (1 half-size document box).

University of California, Santa Cruz. Mary Lea Shane Archives of the Lick Observatory. University Library, Rm. 359, Santa Cruz, CA 95064, USA


University of Michigan. Bentley Historical Library. Ann Arbor, Michigan 48109-2113, USA


University of Wyoming. American Heritage Center. Dept. 3924, 1000 E. University Avenue, Laramie, WY 82071, USA


Western Reserve Historical Society. East Blvd., Cleveland, OH 44106, USA


Wisconsin Historical Society. Archives. 816 State Street, Madison, WI 53706, USA


Yale University Library. Manuscripts and Archives. Box 208240, New Haven, CT 06520, USA


NEW FINDING AIDS

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


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


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


Nathan Prince papers. Collection dates: 1714-1747. Size: 0.22 cubic feet (1 flat box).

Harvard University. Baker Library, Harvard Business School, Manuscript Division, Soldiers Field, Boston, MA 02163, USA


Harvard University. Houghton Library. Cambridge, MA 02138, USA

Hermann Helmholtz letters and other papers. Collection dates: 1847-1891. Size: 0.5 linear feet (1 box).


George Sarton papers. Collection dates: 1906-1956. Size: 0.75 linear feet (7 volumes).

Indiana University. Office of University Archives and Records Management. Bryan Hall 201, 107 South Indiana Avenue, Bloomington, IN 47405, USA


North Carolina Department of Cultural Resources. North Carolina State Archives. Raleigh, NC 27611, USA

Reginald Fessenden papers. Collection dates: 1887-1935. Size: 60.5 feet (38,000 items).

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


Professor of Physics Charles P. Slichter (left) and Graduate Student William C. Holton examine a glass Dewar vessel used to cool materials to within a few degrees of the absolute zero of temperature. The Dewar vessel, large electromagnet (background), and microwave equipment (foreground) are part of a sensitive apparatus used by Mr. Holton for his doctoral research. With it he can study magnetic atoms which are present in nonmagnetic materials in concentrations of one part in one hundred billion. 1960. Credit: Department of Physics, University of Illinois at Urbana-Champaign, courtesy AIP Emilio Segrè Visual Archives.


Rockefeller Archive Center. 15 Dayton Ave., Pocantico Hills, North Tarrytown, NY 10591-1598, USA


Smithsonian Institution. National Museum of American History, Archives Center. MRC 601, 12th Street and Constitution Avenue, NW, Washington, DC 20560, USA


Institute for Advanced Study Computer Project records. Collection dates: 1950-1957. Size: 0.7 cubic feet.


Lewis M. Rutherfurd collection. Collection dates: 1846-1884. Size: 0.3 cubic feet (1 box, 1 oversize folder).


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


University of Notre Dame. Archives. 607 Hesburgh Library, Notre Dame, IN 46556, USA


Western Reserve Historical Society. East Blvd., Cleveland, OH 44106, USA

Warner & Swasey records. Collection dates: 1900-1985. n

Spencer Weart (left) conversing with Martin Schwarzschild (right) at an oral history interview. 1978. Credit: Photo courtesy of AIP Emilio Segré Visual Archives.
This Newsletter is a biannual publication of the Center for History of Physics, American Institute of Physics, One Physics Ellipse, College Park, MD 20740; phone: 301-209-3165; fax: 301-209-0882; e-mail: chp@aip.org or nbl@aip.org. Editor: Gregory A. Good. The Newsletter reports activities of the Center for History of Physics and Niels Bohr Library & Archives, and other information on work in the history of physics and allied fields.

Any opinions expressed herein do not necessarily represent the views of the American Institute of Physics or its Member Societies. This Newsletter is available on request without charge, but we welcome donations (tax-deductible) to the Friends of the AIP Center for History of Physics (www.aip.org/donate). The Newsletter is posted on the Web at http://www.aip.org/history/newsletter.