



One of the many photos in AIP's Web exhibit on Einstein at [www.aip.org/history/einstein](http://www.aip.org/history/einstein). New material is being added to the exhibit to help those preparing for the centennial celebrations of his classic 1905 papers. Credit: Library of Congress, courtesy AIP Emilio Segrè Visual Archives.

## Endangered Interview Recordings Preserved for Posterity

In 1969-1972 a young scholar with degrees in engineering science and the philosophy of science, Ian Mitroff, conducted a remarkable series of interviews with leading geoscientists. He asked what they expected to learn from the Apollo moon landings, and he followed up after the landings by asking what they had in fact learned. It was a time of exciting science and raging controversy, and the tape recordings captured a rich variety of personal, social, and scientific information. After using the tapes

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## World Year of Physics 2005 Will Celebrate Einstein's "Miraculous Year"

The year 2005 will be the centennial of Albert Einstein's "miraculous year." In March of 1905 he sent the *Annalen der Physik* a paper that generalized Planck's quantum to explain the photoelectric effect, introducing the concept of the photon. In May he sent the journal a paper showing how Brownian motion could validate the much-debated theory of statistical mechanics. In a June paper he laid out his theory of special relativity, followed by one in September in which he derived the formula  $E=mc^2$ . Physicists and historians around the world are laying plans to use the centennial to celebrate physics and explain its importance to the public.

At the World Congress of Physical Societies in Berlin in 2000, more than 40 physics societies from around the world approved a proposal to declare 2005 as the World Year of Physics (WYP2005). The declaration was duly issued by the International Union of Pure and Applied Physics (IUPAP), with the goal of raising awareness of physics around the world. The proposal moved up to the General Assembly of UNESCO, which recently added its endorsement and invited the Director-General of the United Nations to request the UN General Assembly to declare 2005 the International Year of Physics. Meanwhile some groups have informally named 2005 the "Einstein Year."

Much of the WYP2005 activity will indeed revolve around celebrations of Einstein, his work, and his influence on modern life. While many historians of modern physics are being drawn in, the chief initiatives are coming from the science community. Physicists are concerned, as the WYP 2005 Web site puts it, that "The general public's awareness of physics and its importance in our daily life is decreasing. The number of physics students has declined dramatically. Action must be taken by the international physics community to share its visions and convictions about physics with politicians and the public at large." The centennial celebration of Einstein's legendary papers offers an opportunity for such action.

To coordinate efforts, IUPAP has set up an international steering committee with members from more than a dozen countries. International Preparatory Conferences took place in Graz, Austria

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in July 2003 and in Montréal in March 2004. In the United States the physics community's work is led by the American Physical Society, the American Association of Physics Teachers and the American Institute of Physics, under the theme "Einstein in the 21st Century." The European Physical Society is likewise making preparations and urging all national physics societies to begin organizing for the year.

The World Year of Physics 2005 will get off to a running start with an event in Paris in January featuring prominent scientists and political and cultural figures. Another major conference will be held in Bern, Switzerland, where Einstein wrote the 1905 papers (there will be walking tours of Einstein sites for visitors and many other activities). Conferences involving both physicists and historians will be found in many other locales, for example Durban, South Africa; Alexandria, Egypt; Jerusalem and Beijing. Physicists in the United Kingdom will hold parties on March 14 to celebrate Einstein's birthday; the Max Planck Institute for History of Science in Berlin and others are organizing a Science Festival and an extensive Einstein Exhibition; the Korean Physical Society will mount an exhibition in Seoul featuring Einstein's work, and so forth.

In addition to organizing the many international conferences, symposia, and large-scale national projects, the planners are encouraging physics departments, science museums, teachers and others to plan local events. The WYP2005 Web site explains that "A WYP event can increase the profile of your organization, build relationships within your community, attract new avenues of funding and support, improve the communication skills of your staff and volunteers, and, perhaps most importantly, inspire the next generation of scientists." Further information will be posted on the Web site at [www.physics2005.org](http://www.physics2005.org) as it emerges, and anyone planning an event is urged to submit information there.



The AIP Center for History of Physics maintains what is probably the most popular Web site for Einstein information, with thousands of visitors each day. Additions to the site will provide historical information for WYP2005 participants. A page of links and a bibliography by Historian David Cassidy, organized in categories and restricted to particularly useful items, are being updated every few months. Early this year the exhibit was enhanced with an essay by Gerald Holton on Einstein's worldview (from a recent issue of the journal *Daedalus*), and further supplementary material will be added from time to time.

(continued from page 1, *Endangered Interview Recordings Preserved for Posterity*)

as raw material for a book (*The Subjective Side of Science: A Philosophical Inquiry into the Psychology of the Apollo Moon Scientists*, 1974), Mitroff deposited them in the archives of AIP's Niels Bohr Library. He has since moved on to become a distinguished expert on business policy.

The Library has been examining the condition of its oral history interview audio tapes, beginning with the oldest ones. Magnetic tape has a limited lifetime, deteriorating physically and accumulating noise. The solution is provided by a standard set by the National Archives based on ANSI/ISO testing. Following this standard, we have employed a local vendor who copies the original cassettes or reels onto one-quarter inch wide, 1.5 mil thick polyester-base audio tape in full track (monaural) mode on one side only. The new tape is stored on 10-inch reels in 30-minute segments; these

are called "preservation masters." The work is expensive, and the budget has allowed only a fraction of the endangered tapes to be preserved each year, but all the oldest ones are now remastered in a form that should last a century or more.

Working forward through time has brought us to several collections in the archives with audiotaped interviews dating from the early 1970s. After prioritizing the list by both age of the tapes and importance of the material recorded (as judged especially by the names of the scientists interviewed), we selected 43 audio cassettes from over 270 in Ian Mitroff's Lunar Scientists Interviews collection. Additional tapes from this and other collections will be remastered in future years, to the extent allowed by donations from our Friends and other budgetary support.

## Why Collect Old Physics Textbooks?

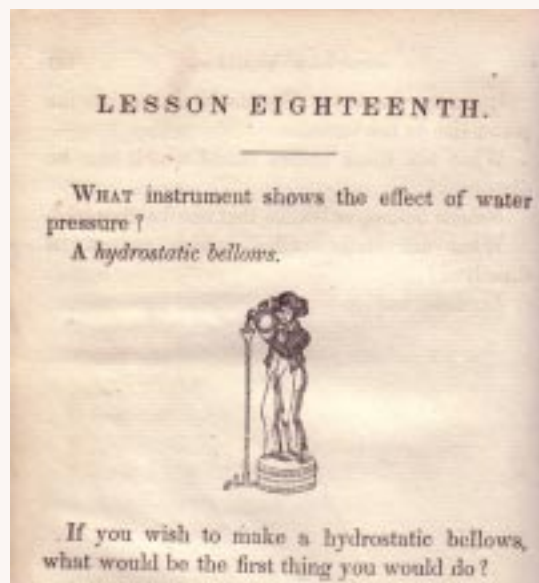
Recently the Niels Bohr Library received a fine collection of old natural philosophy and physics textbooks donated by Thomas W. Sills. This collection, concentrating on textbooks from the eighteenth and nineteenth centuries, is the result of twenty years of collecting. As a serious bibliophile, Sills assembled the collection because he holds a Ph.D. in both physics and education, and because he often reviews college physics textbook manuscripts for various publishers.

Dr. Sills feels that educators underestimate the role of textbooks in the development of young scientists and the new science they create. For example, in an article in the *Journal of College Science Teaching* (November 1987) titled "First-Generation Teaching," he argues that Isaac Newton's college science textbook, *Geographia Generalis* (1650), may well have helped Newton toward the idea of universal gravitation.

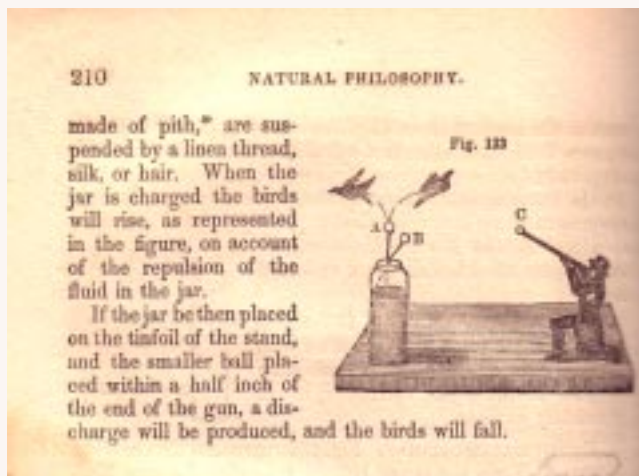
According to Dr. Sills, "Collecting books is a great avocation for physics students of all ages. Collecting rare books is all the fun of the successful book, *Gold in Your Attic*, and PBS television's 'Antiques Roadshow.' There is nothing better than discovering a used bookstore with a proprietor who buys great books. You can visit such a store on a regular basis to raid the shelves. For antiquarian or rare books, you can know more about the authenticity of

your purchase by reading reference works on books in your local used book store or library.

"Today used, rare, and antiquarian books are best found on the Internet. For rare and antiquarian books a good



From a book recently donated by T.W. Sills. A lesson from Mary A. Swift, *First Lessons in Natural Philosophy for Children, Part Second* (Hartford, 1853). Such books were widely used for home instruction in rural areas.



From a book recently donated by T.W. Sills. A classroom experiment explained in Richard Green Parker, *A School Compendium of Natural and Experimental Philosophy, 17<sup>th</sup> edition* (New York, 1850). As one learns from the book's front matter, it was used in the schools of Boston from 1838. In 1847, Parker (a principal of a Boston grammar school) issued a revision to incorporate recently purchased teaching apparatus "substituted for the cheap and defective sets" formerly in use.

center is run by the Antiquarian Booksellers Association of America ([www.abaa.org](http://www.abaa.org)) with the sites of 50 dealers. They know what they have and do not hesitate to ask a strong price. Antiquarian dealers offer their books on their individual Web sites, via catalog mailings, and at book fairs. If you have \$100 to spend, you will never regret buying one book for \$100 instead of 20 books for \$5 each. General Internet auctions like those on eBay allow individuals to sell books they know nothing about. Bids will escalate dramatically at the auction's close when more than one knowledgeable bidder waits until the last minute. If there's no competition, you can become a big winner."

Currently Dr. Sills teaches at Wright College in Chicago, Illinois. He created a new course there, "Great Books Astronomy," where students read English translations of several great astronomers and physicists. For example, original definitions of time, authored by Aristotle, Newton and Einstein, are compared. He is the author of two award-winning guidebooks for parents and teachers, *Science Fun in Chicagoland* and *Science Fun with Toys*.



*Dedication of NRAO on October 17, 1957. L-R: Dr. R.M. Emberson, Dr. L.V. Berkner, G.A. Nay, Dr. J.W. Findlay (seated), Prof. N.L. Ashton, Dr. D.S. Heesch, and H. Hockenberry. A model of the 140-foot telescope is on the table behind Dr. Findlay. Image courtesy of NRAO/AUI.*

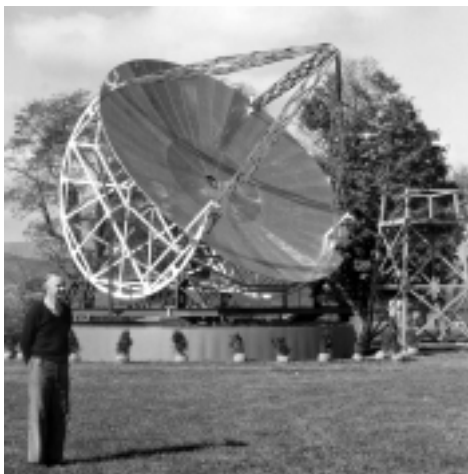
## Archival Program Established at National Radio Astronomy Observatory

by Ellen N. Bouton

Starting from scratch – that is the challenge of the National Radio Astronomy Observatory (NRAO) Archives. The NRAO, a facility of the National Science Foundation (NSF), was started in 1957. Headquartered in Charlottesville, VA, NRAO has offices and radio telescopes in four states, and is a partner in several international cooperative projects.

Although there had been occasional suggestions over the years that we consider archives, no effort was ever made to collect and organize the materials relating to NRAO's founding and history, nor to save documentation of the decision-making and construction processes for the many different instruments we have built and operated. These materials – those that still exist – are certain to be scattered about in attics, storage buildings, barns, staff offices and even the basements of retired staff, in any one of four states. Identifying what we have and what we ought to have are among the challenges ahead.

In summer 2001, as NRAO's Observatory Librarian, I approached the NRAO Director with recommendations gleaned from the newly-published *AIP Study of Multi-Institutional Collaborations* and urged development of an archival policy, with input from NRAO staff and from librarians and historians at other institutions. During the course of this study, I learned that most North American astronomy institutions had neither policies nor archives. The NRAO policy and plan for the archives were approved in November 2002. The Archives home page is at [www.nrao.edu/archives](http://www.nrao.edu/archives) and our Archives policy is at [www.nrao.edu/archives/archpolicy.shtml](http://www.nrao.edu/archives/archpolicy.shtml)



*Grote Reber and his radio telescope. This picture shows the telescope as restored at the NRAO site in Green Bank, West Virginia. Image courtesy of NRAO/AUI.*

In April 2003, after retiring as Librarian after 28 years in the NRAO library, I began working part-time as NRAO's first archivist. Material for the archives has begun to appear like magic.

The first completed project is a Web resource describing Nannielou Hepburn Dieter Conklin's career as the first U.S. woman working in radio astronomy: [www.nrao.edu/archives/Conklin/conklin.shtml](http://www.nrao.edu/archives/Conklin/conklin.shtml). Dr. Conklin wrote "Nan Dieter Conklin: A Life in Science" in 2001, covering her work from 1946-1977, beginning at the Maria Mitchell Observatory and ending at University of California, Berkeley.

Other work in progress includes:

- ◆ Papers of **Grote Reber**, 1911-2003. Reber was the "father" of radio astronomy, who built the first radio telescope in his backyard in Wheaton, IL, in 1937. (For biographical information see [www.nrao.edu/whatisra/hist-reber.shtml](http://www.nrao.edu/whatisra/hist-reber.shtml)) NRAO is already listed in the AIP's International Catalog of Sources as the repository for Reber materials, and I am beginning to inventory and arrange the collection, which is contained in multiple packing crates and three file cabinets; we expect to receive more material from his estate.

- ◆ Papers of **John Wilson Findlay**, 1915-1994, donated by his family. He was a long time NRAO employee, a project manager and engineer involved in building our 140-foot, 300-foot, and 85-foot telescopes in Green Bank, WV, and our 12-meter telescope in Tucson, AZ. He was a member of the National Academy of Sciences Space Sciences Board in the late 1960s into the early 1970s, and active over many years, including a period as chair, with the Inter-Union Commission for the Allocation of Frequencies for Radio Astronomy and Space Science.

- ◆ In late spring, I will begin an inventory of files from the **Director's Office** dating back to 1957, currently in an attic storage area. No one has any detailed knowledge or listing of what is in those multiple file cabinets.

NRAO has an addition to its headquarters building in Charlottesville under construction, with a targeted completion

This new building will include a large, dedicated archives space. That space is certainly an indication of NRAO's commitment to developing and maintaining its archives. The new space will be available in the nick of time. An increasing number of people are contacting me about materials they have that will be wonderful additions to our archives. My current 8X12 foot office cannot hold too many more cartons!

For further information contact Ellen N. Bouton, Archivist, National Radio Astronomy Observatory, 520 Edgemont Rd, Charlottesville, VA 22903-2475 Phone: 434-296-0203, E-mail: [ebouton@nrao.edu](mailto:ebouton@nrao.edu).



L-R: Wolfgang Pauli, Werner Heisenberg and Enrico Fermi, 1927, Lake Como. CERN photo.

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## Cataloging Underway in Huge CERN Archive

by Anita Hollier

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In the aftermath of the Second World War, a small group of distinguished scientists and politicians had the dream of rebuilding European science through international collaboration. Nuclear physics, in particular, was a field where the focus had shifted very clearly from Europe to the United States, and early discussions soon crystallized into a call for the creation of a European center for nuclear research. The idea received decisive support at the 1950 UNESCO General Conference from the American delegation's Isidore Rabi, and plans began to take shape. The dream was realized in 1954 with the creation of CERN, the European Organisation for Nuclear Research, in Geneva, Switzerland. Its modest goal: to build the biggest particle accelerator yet seen.

By its 25<sup>th</sup> anniversary in 1979 CERN had plenty to celebrate, including the achievement of its first ambitious project with the start-up of the proton synchrotron in 1959. Among other celebrations, a history of CERN was commissioned.<sup>1</sup> Historic documents were rescued from offices and basements and brought together to form the kernel of the CERN Archive. The Archive now contains ca. 1 linear kilometer of records. It pursues an active collection policy with contact persons in each of CERN's divisions and in selected experimental collaborations. The records reflect not only CERN's scientific

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1. A. Hermann, J. Krige, U. Mersits and D. Pestre, *History of CERN, Vols. 1, 2* (1987, 1990) and J. Krige, ed., *History of CERN, Vol. 3* (1996).

work, but also international relations, general policy and management.

The Archive is cataloged to item level on a bibliographic database which is available on-line from the Archive home page at <http://library.cern.ch/archives/archnet/index.html>. The archive team is working to provide descriptions for the backlog of material still unlisted. A series of collection-level descriptions is also underway to facilitate browsing, and a brief Guide gives an overview of the whole Archive and acts as a gateway to other finding aids.

The CERN Archive is also home to the archive of **Wolfgang Pauli** (1900-1958). Pauli's discoveries, notably his neutrino hypothesis and Exclusion Principle (for which he won the Nobel prize for physics in 1945), made an important contribution to the rapid development of modern nuclear and particle physics. During his lifetime he became known as "the conscience of physics," and his incisive criticism was equally appreciated and feared by his colleagues. The bulk of the archive comprises Pauli's imposing scientific correspondence with Einstein, Bohr, Heisenberg and many others (these letters are being published in German by Springer Verlag). It also includes Pauli's notes and manuscripts, his collection of books and reprints, photographs and personal items. A digitization project is underway. So far, around 2000 letters and 200 photos have been made available on-line at <http://library.cern.ch/archives/pauli/paulimain.html>.

For information, contact Anita Hollier ETT/SI - CERN Archive, CERN - European Org. for Nuclear Research, Geneva 23, Switzerland, CH-1211, Tel.: +41 22 767 49 53, Fax: +41 22 767 28 60 or E-mail: [Anita.Hollier@cern.ch](mailto:Anita.Hollier@cern.ch)



On 24 November 1959, the Proton Synchrotron accelerated particles to 24 GeV. John Adams, leader of the construction team, announced the achievement in the Main Auditorium. In his hand can be seen an empty vodka bottle, which he had received from Nikitin with the message that it was to be drunk when CERN passed Dubna's world record energy of 10 GeV. The bottle now contains a polaroid photograph of the 24 GeV pulse ready to be sent to the Soviet Union. CERN photo.

## Grants and Meetings

The listings of grants and meetings in this *Newsletter* have often been incomplete, and we find that more information is regularly available on the Web sites of the History of Science Society and of the American Physical Society's Forum on the History of Physics Newsletter. We are therefore no longer carrying such information here.

At the History of Science Society's Web site, you can view the listings for *Grants & Prizes* and *Conferences and Colloquia*, as well as *Jobs & Fellowships* and *News*, at [www.hssonline.org/profession](http://www.hssonline.org/profession).

The American Physical Society's Forum on the History of Physics Web site is at [www.aps.org/units/fhp](http://www.aps.org/units/fhp). Click on 'Newsletter' for information on grants, meetings, and other history of science community news.

## Recent Publications of Interest

Compiled by Tanya Levin

This is our usual compilation of some (by no means all) recently published articles on the history of modern physics, astronomy, geophysics and allied fields. Note that these bibliographies have been posted on our Web site since 1994, and you can search the full text of all of them (along with our annual book bibliography, recent Catalog of Sources entries, exhibit materials, etc.) by clicking on the "Search" icon on our home page ([www.aip.org/history](http://www.aip.org/history)). Use the drop-down menu to limit the search to the History Center site. If you get too many hits, you can limit your search to our bibliographies by entering "Recent Publications" (in quotes) in the refine-query box on the results page.

**Annals of Science**, vol. **60**, no. 4 (October 2003) includes L. Boschiero, "Natural Philosophical Contention Inside the Accademia del Cimento: The Properties and Effects of Heat and Cold," 329-350, R.R. Hamerla, "Edward Williams Morley and the Atomic Weight of Oxygen: The Death of Prout's Hypothesis Revisited," 351-372, and A.A. Mills, "Early Voltaic Batteries: An Evaluation in Modern Units and Application to the Work of Davy and Faraday," 373-398. Vol. **61**, no. 1 (January 2004) features, C. Reinhardt, "Chemistry in a Physical Mode: Molecular Spectroscopy and the Emergence of NMR," 1-32, and D.L. Simms, "Newton's Contribution to the Science of Heat," 33-78.

**Bulletin of the Atomic Scientists**, vol. **59**, no. 6 (November/December 2003) features Leonard Weiss, "Atoms For Peace," 34-44.

**CERN Courier**, vol. **43**, no. 7 (September 2003) includes Johann Rafelski and Torleif Ericson, "The Tale of the Hagedorn Temperature," 30-34. Vol. **43**, no. 9 (November 2003) includes Robert

Eisenstein, "Constructing ATLAS: A Modern 'Ship in a Bottle'," 26-29, and Nikolai Tyurin, "Forty Years of High-Energy Physics in Protvino," 31-34.

Vol. **43**, no. 10 (December 2003) features "Neutral Currents and W and Z: a Celebration," 25-28.

**Endeavour**, vol. **27**, no. 4 (2003) features Eric Buffetaut, "Continental Drift Under the Third Reich," 171-175, and Rita Griffin-Short, "The Ancient Mariner and the Transit of Venus," 175-179.

**Foundations of Physics**, vol. **33**, no. 10 (October 2003) includes Daniel Greenberger and Abner Shimony, "The Presence of David Mermin," 1419-1422.

**Historical Studies in the Physical and Biological Sciences**, vol. **34**, part 1 (2003) includes Michael S. Goodman, "Grandfather of the Hydrogen Bomb? Anglo-American Intelligence and Klaus Fuchs," 1-22, Shizue Hinokawa, "A Comparative Study of Cyclotron Development at Cambridge and Liverpool in the 1930s," 23-39, Shaul Kitzi, "From Explanation to Description: Molecular and Phenomenological Theories of Piezoelectricity," 69-94, David Munns, "If We Build It, Who Will Come? Radio Astronomy and the Limitations of 'National' Laboratories in Cold War America," 95-113, Robert A. Myers and Richard W. Dixon, "Who Invented the Laser: An Analysis of the Early Patents," 115-149, and Hallam Stevens, "Fundamental Physics and its Justifications, 1945-1993," 151-197.

**History of Science**, vol. **41**, no. 134, part 4 (December 2003) features Ronald E. Doel, "Oral History of American Science: A Forty-Year Review," 349-378, and Hannah Gay, "Science and Opportunity in London, 1871-1885: The Diary of Herbert McLeod," 427-458.

**Interdisciplinary Science Review**, vol. **27**, no. 3 (Autumn 2002) includes Klaus Hentschel, "What History of Science Can Learn from Michael Frayn's 'Copenhagen'," 211-216.

**Isis**, vol. **94**, no. 3 (September 2003) includes Jeffrey R. Wigelsworth, "Competing to Popularize Newtonian Philosophy: John Theophilus Desaguliers and the Preservation of Reputation," 435-455, and Theresa Levitt, "Biot's paper and Arago's Plates: Photographic Practice and the Transparency of Representation," 456-476.

**Journal of Astronomical History and Heritage**, vol. **6**, no. 2 (December 2003) features Patricia S. Whitesell, "Detroit Observatory: Nineteenth-Century Training Ground for Astronomers," 69-106, Rudi Paul Linder, "Rebuilding Astronomy at Michigan: From Hussey to Goldberg," 107-119, and Donald E. Osterbrock, "The California-Michigan Axis in American Astronomy," 120-136.

**Journal of Research of the National Institute of Standards and Technology**, vol. **107**, no. 3 (May-June 2002) includes Arno Laesecke, "Through Measurement to Knowledge: The Inaugural Lecture of Heike Kamerlingh Onnes (1882)," 261-277.

**Naturwissenschaftlich Rundschau**, vol. 55, no. 11 (2002) includes Klaus Hentschel, "Zur Geschichte visueller Darstellungen von Spektren," 577-587.

**Notes and Records of the Royal Society of London**, vol. 57, no. 3 (2003) features W.P. Griffith and P.J.T. Morris, "Charles Hatchett FRS (1765-1847), Chemist and Discoverer of Niobium," 299-316, B. Bleaney FRS and O.V. Lounasmaa, "Nuclear Orientation and Nuclear Cooling Experiments in Oxford and Helsinki: Part 1, Progress Before 1940," 317-322, "... Part 2, Progress From 1945 to 1970," 323-330, and "... Part 3, Progress From 1975 to 2001," 331-344.

**Osiris** (Second Series), vol. 17, (2002) includes Jessica Wang, "Scientists and the Problem of the Public in Cold War America, 1945-1969," 323-347. Vol. 18, Second Series (2003) features David Aubin, "The Fading Star of the Paris Observatory in the Nineteenth-Century: Astronomers' Urban Culture of Circulation and Observation," 79-100, and Theresa Levitt, "Organizing Sight, Seeing Organization: The Diverging Optical Possibilities of City and Country," 101-115.

**Perspectives on Science**, vol. 11, no. 1 (Spring 2003) includes Gregory B. Moynahan, "Herman Cohen's *Das Prinzip der Infinitesimalmethode*, Ernst Cassirer, and the Politics of Science in Wilhelmine Germany," 35-75, Thomas A. Ryckman, "Surplus Structure from the Standpoint of Transcendental Idealism: The 'World Geometries' of Weyl and Eddington," 76-106. Vol. 11, no. 2 (Summer 2003) features Koffi Maglo, "The Reception of Newton's Gravitational Theory by Huygens, Vaqrignon, and Maupertuis: How Normal Science May Be Revolutionary," 135-169, Patrick McDonald, "Demonstration by Simulation: The Philosophical Significance of Experiment in Helmholtz's Theory of Perception," 170-207, and Jonathan Tsou, "Reconsidering Feyerabend's 'Anarchism'," 208-235.

**Physics in Perspective**, vol. 5, no. 3 (September 2003) features A. Loettgers, "Samuel Pierpont Langley and His Contributions to the Empirical Basis of Black-Body Radiation," 262-280, and J.R. Goodstein, "A Conversation with Lee Alvin Dubridge—Part II," 281-309. Vol. 5, no. 4 (December 2003) includes M. Leone and N. Robotti, "Are the Elements Elementary?: Nineteenth-Century Chemical and Spectroscopical Answers," 360-383, A. Gambassi, "Enrico Fermi in Pisa," 384-397, I.T. Durham, "Eddington and Uncertainty," 398-418, and C.H. Holbrow, "Charles C. Lauritsen: A Reasonable Man in an Unreasonable World," 419-472.

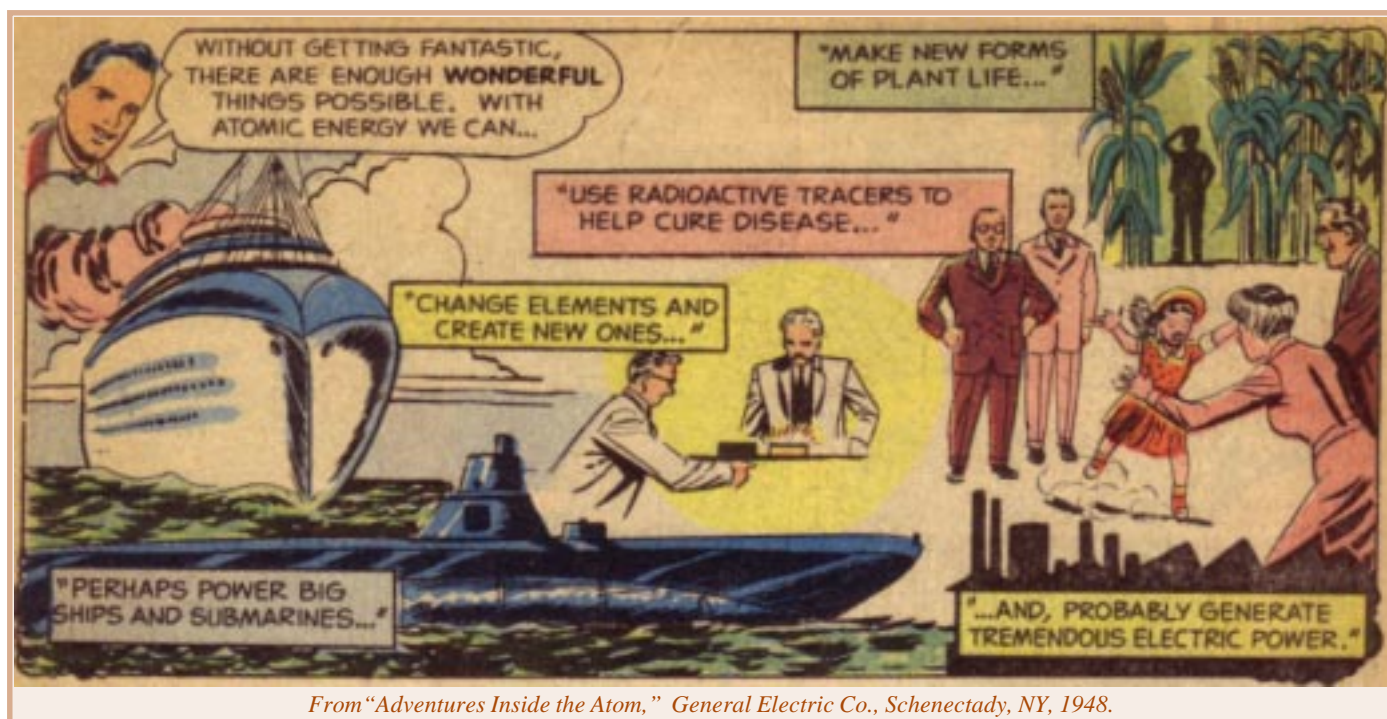
**Physics Today**, vol. 57, no. 2 (February 2004) includes Ella Ryndina, "Family Lines Sketched in the Portrait of Lev Landau," 53-59, and "Nobel Prizes, 1962," 61-63 [reprint of Dec. 1962 article].

**Physics-Uspekhi**, vol. 46, no. 9 (October 2003) includes V.I. Sanyuk and A.D. Sukhanov, "Dirac in 20th Century Physics: A Centenary Assessment," 937-956.

**Physics World**, vol. 16, no. 9 (September 2003) features Jeff Hughes, "Occultism and the Atom: The Curious Story of Isotopes," 31-35. Vol. 16, no. 10 (October 2003) includes Barton J. Bernstein, "The Death of a Nuclear Legend," 5-6. Vol. 16, no. 12 (December 2003) features Robert Seidel, "John von Neumann: The Fastest Brain in the West," 29-33.

**Physik Journal**, vol. 2, no. 11 (November 2003) includes Brenda P. Winnawisser, "Hedwig Kohn—eine Physikerin des zwanzigsten Jahrhunderts," 51-55.

**Science, Technology, and Human Values**, vol. 28 no. 4, (Autumn 2003) features Andrea H. Tapia, "Technomillennialism: A Subcultural Response to the Technological Threat of Y2K," 483-512. Vol. 29, no. 1 (Winter 2004) includes Ivan Tchalakov,

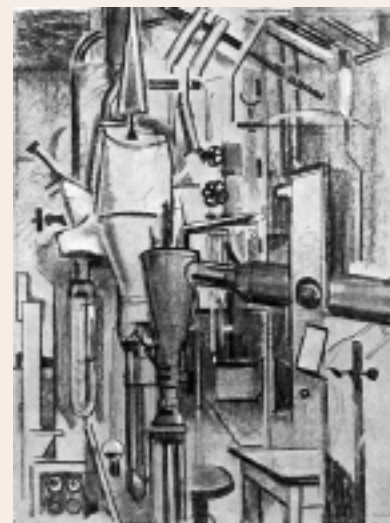


From "Adventures Inside the Atom," General Electric Co., Schenectady, NY, 1948.



We continue to find excellent pictures to add to our Visual Archives in books that we select for microfilming in our Brittle Books Preservation project. Left: Heike Kamerlingh Onnes, from *Het Natuurkundig laboratorium der Rijks-Universiteit te Leiden in de jaren 1882-1904*, Leyden. Rijksuniversiteit. Kamerlingh Onnes Laboratorium, Leiden : E. Ijdo, 1904. Photo courtesy AIP Emilio Segrè Visual Archives.

Right: Drawn by Heike Kamerlingh Onnes, view of a helium liquefactor in his lab, from *Het Natuurkundig Laboratorium der Ruksuniversiteit te Leiden in de Jaren 1904-1922*, Leyden. Rijksuniversiteit. Kammerlingh Onnes Laboratorium, Leiden : E. Ijdo, 1922. Photo courtesy AIP Emilio Segrè Visual Archives.



“The Object and the Other in Holographic Research: Approaching Passivity and Responsibility of Human Actors,” 64-87.

**Social Studies of Science**, vol. 33, no. 4 (August 2003) includes Walter G. Vincenti and David Bloor, “Boundaries, Contingencies, and Rigor,” 469-507, and Felicity Mellor, “Demarcating Science from Non-Science in Popular Physics Books,” 509-538. Vol. 33, no. 5 (October 2003) includes Ronald E. Doel, “Constituting the Postwar Earth Sciences,” 635-666, Kristine C. Harper, “Research from the Boundary Layer: Civilian Leadership, Military Funding and the Development of Numerical Weather Prediction (1946-55),” 667-696, Naomi Oreskes, “A Context of Motivation: US Navy Oceanographic Research and the Discovery of Sea-Floor Hydrothermal Vents,” 697-742, Kai-Henrik Barth, “The Politics of Seismology: Nuclear Testing, Arms Control, and the Transformation of a Discipline,” 743-781, Allison Macfarlane, “Underlying Yucca Mountain: The Interplay of Geology and Policy in Nuclear Waste Disposal,” 783-807, and Michael Aaron Dennis, “Earthly Matters: On the Cold War and the Earth Sciences,” 809-819.

**Studies in History and Philosophy of Science**, vol. 34A, no. 1 (March 2003) features Eric Watkins, “Forces and Causes in Kant’s Early Pre-Critical Writings,” 5-27, Michael Friedman, “Transcendental Philosophy and Mathematical Physics,” 29-43, Lisa Shabel, “Reflections on Kant’s Concept (and Intuition) of Space,” 45-57, and Martin Carrier, “How to Tell Causes from Effects: Kant’s Causal Theory of Time and Modern Approaches,” 59-71. Vol. 34A, no. 2 (June 2003) includes Paolo Palmieri, “Mental Models in Galileo’s Early Mathematization of Nature,” 229-264, Athanassios Raftopoulos, “Cartesian Analysis and Synthesis,” 265-308, Maria Rosa Antognazza, “Leibniz and the Post-Copernican Universe:

Koyré Revisited,” 309-327. Vol. 34A, no. 3 (September 2003) includes Xiang Chen, “Why Did John Herschel Fail to Understand Polarization?: The Differences Between Object and Event Concepts,” 491-513, and Olivier Darrigol, “Number and Measure: Hermann von Helmholtz at the Crossroads of Mathematics, Physics, and Psychology,” 515-573. Vol. 34A, no. 4 (December 2003) features H.M. Collins, “Lead into Gold: The Science of Finding Nothing,” 661-691, Tad M. Schmaltz, “Cartesian Causation: Body-Body Interaction, Motion, and Eternal Truths,” 737-762, and E.B. Davies, “The Newtonian Myth,” 763-780.

**Studies in History and Philosophy of Modern Physics**, vol. 34, no. 4 (December 2003) includes Robert W. Batterman, “Falling Cats, Parallel Parking, and Polarized Light,” 527-557, John Earman, “The Cosmological Constant, the Fate of the Universe, Unimodular Gravity, and All That,” Shaul Katzir, “Measuring Constants of Nature: Confirmation and Determination in Piezoelectricity,” 579-606, Daniel Parker, “Finding Your Marbles in Wavefunction Collapse Theories,” 607-620, Michela Massimi and Michael Redhead, “Weinberg’s Proof of the Spin-Statistics Theorem,” 621-650, and Aharon Kantorovich, “The Priority of Internal Symmetries in Particle Physics,” 651-675. Vol. 35, no. 1 (March 2004) features Robert C. Bishop, “Nonequilibrium Statistical Mechanics Brussels-Austin Style,” 1-30, Frank Arntzenius, “Time Reversal Operations, Representations of the Lorentz Group, and the Direction of Time,” 31-43, Hans Halvorson, “Complementarity of Representations in Quantum Mechanics,” 45-56, R.E. Kastner, “Weak Values and Consistent Histories in Quantum Theory,” 57-71, Mario Castagnino and Olimpia Lombardi, “Self-Induced Decoherence: A New Approach,” 73-107, and F.A. Muller, “Maxwell’s Lonely War,” 109-119.

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## Documentation Preserved

Compiled by Katherine A. Hayes

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ACADÉMIE DES SCIENCES. ARCHIVES ET PATRIMOINE HISTORIQUE. 23 QUAI DE CONTI, 75006 PARIS, FRANCE. CONTACT: FLORENCE GREFFE.

Papers of **Louis Néel, 1904-2000**. 1934-1999. 7 lin. meters (62 boxes). Some boxes contain restricted materials.

Papers (fonds) of **Francis Henri Perrin, 1901-1992**. 1946-1972. 1917-1973. 11 cartons.

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RUSSIAN ACADEMY OF SCIENCES. ARCHIVE. UL. 34 NOVOCHEREMUSHKINSKAIA, 117218 MOSCOW, RUSSIA. CONTACT: ARCHIVIST.

Addition to the scientific works, biographical documents, work-related documents, and correspondence of **V. I. (Vitalii Iosifovich) Goldanskii, 1923-2001**. 1956-1999. 1.5 lin. meters (232 folders); additional material, 3.5 lin. meters.

Addition to the scientific works, research materials, biographical documents, and correspondence of **IA. B. (IAkov Borisovich) Zeldovich, 1914-1987**. 1932-1984. 202 folders; additional material, 4.5 lin. meters.

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## More UK Survey Records

This is the third set of results from the survey of archival repositories in the United Kingdom that we are sponsoring jointly with the National Cataloguing Unit for the Archives of Contemporary Scientists, University of Bath.

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SCIENCE MUSEUM (GREAT BRITAIN). LIBRARY. IMPERIAL COLLEGE ROAD, LONDON SW7 5NH, ENGLAND. CONTACT: ROBERT SHARP.

“Design of superconducting machines” by **A. D. (Anthony Derek) Appleton**. 1977. 253 pp.; illustrated (some color); 30 cm. bound.

Materials relating to repetition of the “Cavendish experiment” by **C. V. (Charles Vernon) Boys, 1855-1944**. 1888-1894.

Draft report on certain optical and other instruments in the Paris [Universal] Exhibition by **Sir David Brewster, 1781-1868**.

1856. 53 pp. plus title page, on 31 leaves; 23.5 X 19 cm. Holograph signed.

Correspondence with **F. A. B. Ward** and **Sir James Chadwick, 1891-1974**. 1938. 9 leaves (9 items); 26 x 21 cm. or smaller.

Volume of manuscript letters from **Sir William Crookes, 1832-1919**, to his laboratory assistant, C. H. Gimingham. 1 volume; 22.5 x 18 cm.

Manuscript laboratory notebooks of **Sir William Crookes, 1832-1919**. 1875-1883. 5 volumes; 23.5 x 19.5 cm. (1-3); 32.5 x 21 cm. (4-5). (1-2) and (4-5) have recorded slightly higher than background radiation and have consequently been withdrawn; the copying of these volumes is currently under consideration. (3) is available.

Magnetism & electricity manuscript notebook by **Willis F. Dent**. 1869 November 3. 1 volume (75 pages are used); illustrations; 23 x 19 cm.

Correspondence to **J. D. Hamilton Dickson** regarding his experiments with the vacuum flask by **James Dewar**. 1898-1903. 1 portfolio case.

Collection of biographical material regarding **Sir Norman Lockyer** and **Alfred Fowler**, chiefly collected by **Herbert Dingle, 1890-1978**. 1896-1940. 1 box.

Physics, practical notes of **Sir David H. (David Henry) Follett, 1907-**. 65 leaves; 23 cm.

Radar claims (transcripts of hearings) from the **Royal Commission on Awards to Inventors (Great Britain)** to **Sir Robert Watson Watt, Dr. E. G. Bowen** and **A. F. Wilkins**. 46 parts in 4 boxes; typescript; [boxes] 35.5x23.5 cm.

Papers regarding astronomical instrument making, particularly the Cape telescope from **Sir Howard Grubb, 1844-1931**. 1869-1903. 1 archive box.

Catalogue of spectra from **Sir Walter Noel Hartley, 1846-1913**. 4 volumes.

Manuscript physics exercise book of **Douglas Keens, 1933-**. 1951-1956. 1 volume; illustrated; 25.5 x 20.5 cm.

Letters to **Sir Arthur and Lady Rucker** by **Sir Oliver Lodge, 1851-1940**. 1894-1913. 11 items.

Memorandum on a 250 ft. aperture Steerable Radio Telescope by **Sir Bernard Lovell, 1913-**. One volume (104 leaves); illustrated, maps, photos, charts.

Our present knowledge of the universe by **Sir Bernard Lovell, 1913-**. 9 March 1967. 1 sound disc: analog, 33-1/3 rpm. 12 in.



*Myriam Sarachik at Bell Labs in 1963. Photo courtesy AIP Emilio Segrè Visual Archives/Gift of M. Sarachik.*

Printed material regarding the history and work of the **National Physical Laboratory (Great Britain)**, 1924-1957. 9 booklets.

Materials relating to astronomical and meteorological observations made at Rousdon, near Lyme Regis, Devon, Peek, by **Sir Edgar Cuthbert, 1855-1901**. 1886-1900. 5 items.

Correspondence of **Ernest, Lord Rutherford of Nelson, 1871-1937**. 9 volumes; [each] 32.5 x 29 cm. This correspondence is not public and should only be made available for purposes of private study to specifically authorized persons.

On developments of spectroscopic apparatus in the 19th century by **Elizabeth A. Sarson**. 279 pp.; illustrated, photos; 26 x 21 cm.

Unpublished biography of **William Henry Maw** by **William Edward Simnett, 1880-1958**. 251 pp.; 28.5 x 23 cm.

“Catalogus Novus Stellarum Duplicium et Multiplicium maxima ex parte in Specula Universitatis Caesariae Dorpatensis per magnum telescopium achromaticum Fraunhoferi detectarum” by **F. G. W. (Friedrich Georg Wilhelm) Struve, 1793-1864**. The copy of **J. F. W. Herschel**; 1 volume; 33.5 x 21.5 cm.

Papers on the life and work of optical instrument makers **H.D.**

*The historical investigation of the development of a science is most needful, lest the principles treasured up in it become a system of half-understood pre-scriptions, or worse, a system of prejudices.*

—Ernst Mach

**(Harold Dennis) Taylor, 1862-1943**, and his son **E. W. Taylor**. 1907-1995. 1 folder.

Correspondence between **University of Oxford Physical Chemistry Laboratory** and Metropolitan-Vickers concerning Mass Spectrometer Type MS 2 serial no. 1. 1948-1954. 1 file.

Letter to **F. A. B. Ward** dated March 26, 1935 by **Charles Thomson Rees Wilson, 1869-1959**. 2 pp. on one leaf; 17.5 x 11.5 cm. Holograph signed.

Three letters to **F. S. Taylor** by **Charles Thomson Rees Wilson, 1869-1959**. 1954 April 12-27. 6 pp. on four leaves; 17.5 x 13.5 cm. Holograph signed.

Papers of **A. B. (Albert Beaumont) Wood**. 1912-1980. 3 boxes; 38 x 29 x 13 cm.

UNIVERSITY OF BRISTOL. ARTS AND SOCIAL SCIENCES LIBRARY. SPECIAL COLLECTIONS. TYNDALL AVENUE, BRISTOL, BS8 1TJ, ENGLAND. CONTACT: HANNAH LOWERY.

Papers and correspondence of **Peter Howard Fowler, 1923-1996**. 1940-2002. 33 boxes. Processed. Visits by appointment only; identification required.

UNIVERSITY COLLEGE, CORK. ARCHIVES SERVICE. CORK, IRELAND. CONTACT: CAROL QUINN.

Papers of **George Boole, 1815-1864**. 1847-1856. 1 linear meter (377 items). Access is by prior appointment with the archivist only.

UNIVERSITY OF EDINBURGH. UNIVERSITY LIBRARY, SPECIAL COLLECTIONS. GEORGE SQUARE, EDINBURGH EH8 9LJ, SCOTLAND. CONTACT: RICHARD OVENDEN.

Papers of **Charles Glover Barkla, 1877-1944**. 1903-1919. 1 box (ca. 24 letters, 1 Nobel Laureate Diploma). Generally open for consultation to bonafide researchers, but please contact repository for details in advance.

UNIVERSITY OF NEWCASTLE UPON TYNE. THE ROBINSON LIBRARY. NEWCASTLE UPON TYNE NE2 4HQ, ENGLAND. CONTACT: SPECIAL COLLECTIONS LIBRARIAN.

Miscellaneous manuscripts of **Baron William Thomson Kelvin, 1824-1907**. 1859. 1 folder. Users from outside the University are advised to give 2 days notice.

Miscellaneous manuscripts of **James Clerk Maxwell, 1831-1879**. Ca. 1859. 22 diagrams. Users from outside the University are advised to give 2 days notice.

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UNIVERSITY OF STRATHCLYDE. ARCHIVES AND RECORDS MANAGEMENT CENTRE. McCANCE BUILDING. 16 RICHMOND STREET, GLASGOW G1 1XQ, SCOTLAND. CONTACT: JIM McGRATH.

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Papers of staff and students in the **University of Strathclyde**. Some collections may be restricted; contact repository.

Records of the **University of Strathclyde** (1964 to date) and its antecedents, including Anderson's Institution, University and College (1796-1888), the Glasgow Mechanics Institution (1823-1888) and the Glasgow and West of Scotland Technical College, Royal Technical College and Royal College of Science and Technology (1889-1964). 1796 to present; ca. 160 lin. ft. of pre-1964 materials; ca. 4,500 lin. ft. of post-1964 materials.

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CORNELL UNIVERSITY. CARL A. KROCH LIBRARY. DIVISION OF RARE AND MANUSCRIPT COLLECTIONS. UNIVERSITY ARCHIVES. 2B CARL A. KROCH LIBRARY, ITHACA, NY 14853, USA. CONTACT: ELAINE ENGST.

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Papers of **Boyce D. (Boyce Dawkins) McDaniel, 1917-2002**. 1980-2002. 10.5 cubic ft.

"Even E. O. Lawrence would be surprised" talk by **Boyce D. (Boyce Dawkins) McDaniel, 1917-2002**. 1994. 1 sound cassette (43 min): analog, mono.

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HOOVER INSTITUTION ON WAR, REVOLUTION AND PEACE. ARCHIVES STANFORD UNIVERSITY, STANFORD, CA 94305, USA. CONTACT: ELENA DANIELSON.

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Miscellaneous papers of **Sidney D. (Sidney David) Drell, 1926-1966-2000**. 7 ms. boxes.

Additions to the papers of **Edward Teller, 1908- . 1946-2003**. 193 ms. boxes, card file, 2 oversize boxes.

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HUNTINGTON LIBRARY. 1151 OXFORD ROAD, SAN MARINO, CA 91108 USA. CONTACT: DAN LEWIS.

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Papers of **Horace Welcome Babcock, 1912-2003**. 1948-1978. 89 boxes (28,000 pieces). Open.

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IOWA STATE UNIVERSITY. ARCHIVES OF WOMEN IN SCIENCE AND ENGINEERING. 403 PARKS LIBRARY, AMES, IOWA 50011-2140, USA. CONTACT: TANYA ZANISH-BELCHER.

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Papers of **L. A. (Lee Anne) Willson, 1947- . Ca. 1970s-2000s**. 10 lin. ft. Additional material forthcoming.

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PRINCETON UNIVERSITY. DEPT. OF RARE BOOKS AND SPECIAL COLLECTIONS, ONE WASHINGTON ROAD, PRINCETON, NJ 08544, USA. CONTACT: DON SKEMER.

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Papers of **David T. Wilkinson, 1935- . 1957-2002**. 16 lin. ft. (16 boxes).

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SMITHSONIAN INSTITUTION. NATIONAL MUSEUM OF AMERICAN HISTORY (U.S.). ARCHIVES CENTER. MRC 601, 12TH STREET AND CONSTITUTION AVENUE, N. W., WASHINGTON, D. C. 20560, USA. CONTACT: JOHN FLECKNER.

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**ITT (International Telephone and Telegraph Corporation) Industrial Research Laboratories Electron Tube Research** Records. 1934-1983. 4 cu. ft. (4 boxes). Collection is unprocessed. Unrestricted research access on site by appointment. Unprotected photographs must be handled with gloves. Fees for commercial reproduction. Reproduction restricted due to copyright or trademark.

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SMITHSONIAN INSTITUTION ARCHIVES. A & I BUILDING, ROOM 2135, MRC 414, WASHINGTON, DC 20560, USA. CONTACT: EDIE HEDLIN.

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Reminiscences by **George V. Barton**. 1982-1983. Audiotapes: 4 reels. Transcript: 135 pp.

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UNIVERSITY OF CALIFORNIA, SAN DIEGO. MANDEVILLE SPECIAL COLLECTIONS LIBRARY. 9500 GILMAN DRIVE, LA JOLLA, CA 92093, USA. CONTACT: LINDA CLAASSEN.

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Papers of **Martin David Kamen (1913-2002)**. 1923-1992. 7 linear feet (14 archives boxes, 1 oversize folder).

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VASSAR COLLEGE. ARCHIVES AND SPECIAL COLLECTIONS. POUGHKEEPSIE, NY 12604, USA. CONTACT: RONALD PATKUS.

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Morris and Adele Bergreen's **Albert Einstein (1879-1955)** Collection. 1919-1988. Ca. 2 lin. ft. (11 boxes).

*By being aware of how other scientists were challenged, and failed or triumphed, we are better equipped to recognize by analogy the false clues, inconvenient facts, unstated assumptions, and odd wedge of sunlight in our own research.*

—Edward W. Cliver and Ruth P. Liebowitz

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