



*In Michael Frayn's new play Copenhagen, now playing in New York and elsewhere, Werner Heisenberg, Niels Bohr, and Bohr's wife Margrethe repeatedly revisit their wartime meeting, interacting unpredictably like atomic electrons, uncertain about their past and their responsibilities. Photo copyright Joan Marcus.*

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### **“Copenhagen” Play Portrays Bohr and Heisenberg**

*by Finn Aaserud, Director, Niels Bohr Archive, Copenhagen*

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It is not often that a play comes along that is based on solid research in the history of science. It is even rarer that such a play becomes a considerable public success, while at the same time receiving high acclaim from historians of science and scientists alike. Michael Frayn's play “Copenhagen,” based on the uncertainties surrounding the 1941 meeting between physicists Niels Bohr and Werner Heisenberg in German-occupied Copenhagen, is such a play. It has already played for nearly two years in London, has been extremely well received in several other European cities, and recently opened in New York City.

The play has been published as a book in England and is forthcoming in the US. The book includes a “Postscript” in which Frayn explains why he wrote the play along with a competent discussion of some of the main historical issues involved. The Postscript shows that Frayn is not satisfied with showing the play, he also encourages discussion of it.

In this spirit, the Niels Bohr Archive (NBA) in Copenhagen was able to organize, on 19 November 1999, a public seminar entitled “‘Copenhagen’ and Beyond: The Interconnections between Drama, Science, and History.” Whereas Frayn took up the issue from the point of view of the dramatist, historian of science Robert

*(continued on page 2)*

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### **New Online Catalogs for Niels Bohr Library Available**

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The Niels Bohr Library has significantly improved access to information of use to science historians and educators. At the very end of 1999, new online catalogs for the Niels Bohr Library's book collection and the International Catalog of Sources for History of Physics and Allied Fields (ICOS) were introduced. Researchers can search the catalogs by directing their Web browsers to <http://www.aip.org/nblcat/> for the book collection or <http://www.aip.org/icos/> for the ICOS, or by linking from the AIP Center for History of Physics home page at <http://www.aip.org/history/>.

Previous users of our catalogs will appreciate the additional searching options now available. Most significantly, it is now possible to perform keyword searches. These searches can be performed on the entire record or can be limited to the author, title, subject and (for the ICOS) name of the repository that owns the materials. It is also now possible to perform complex keyword searches using boolean operators (AND, OR, NOT). Additionally, as in the previous online catalogs, researchers can perform browse (or alphabetical) searches on author, title, subject, and repository name.

The Web catalogs are one component of a larger software package called an integrated library system, or ILS. Library staff carefully reviewed several systems and finally selected Epixtech (formerly Ameritech) Horizon. The Horizon system allows library staff to perform work more efficiently; all tasks such as cataloging are done in one database. This means there are less opportunities for error, and information about new materials appears in the online catalogs sooner. Also, the new Web server is much more stable than the previous one. The old server tended to crash intermittently, while the new server has performed flawlessly to this point. Please feel free to contact the Niels Bohr Library staff (e-mail [nbl@aip.org](mailto:nbl@aip.org)) with any questions or comments about the new online catalogs.

*E=nhp*

*This year celebrates a century of quantum theory. Symposiums will be held in Tacoma (Washington), Berlin and Madrid. See further details under the meeting announcements starting on page 9.*

*("Copenhagen" Play Portrays Bohr and Heisenberg, continued from page 1)*

Marc Friedman (who himself has written a televised drama drawing on his historical research) introduced the historian's perspective. The director of the Danish production, Peter Langdal, talked about the special challenges involved in setting up the play in Bohr's home town. The physicist's viewpoint was taken care of by Nobel laureate Ben Mottelson. Further information about the seminar is being entered on the NBA's new Web site, <http://www.nbi.dk/nba/>. The event was by far the best-attended in the NBA's irregular series of history of science seminars.

In the same spirit, the opening of "Copenhagen" in New York City precipitated a day-long series of workshops on March 27 organized by The American Physical Society and co-sponsored by the Friends of the AIP Center for History of Physics. Frayn shared the discussion with prominent physicists such as Hans Bethe and John Wheeler, who are old enough to have discussed the fateful 1941 meeting with Bohr or Heisenberg a few years after it took place. The workshops attracted an overflow audience and a surprising amount of media attention. It is important that historians of science continue to draw on Frayn's play in order to explore not just the specific historical question, but also how history of science can inform dramatic work,

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## Niels Bohr Archive Expands In New Quarters

*by Finn Aaserud, Director*

During the last year, important developments have taken place at the Niels Bohr Archive (NBA) in Copenhagen. After nearly ten years, we have moved back to our original location in Niels Bohr's old villa at the Niels Bohr Institute (NBI). The NBA now occupies the whole top floor, plus an adjacent library room on the top floor of the refurbished building previously housing the NBI's high-voltage laboratory. A substantial effort has been put into furnishing the new library, as well as moving, unpacking and putting our book collections on shelves. Apart from setting up computer terminals for our researchers, as well as some minor installations to be paid from the remainder of the generous grant provided by the Villum Kann Rasmussen Foundation, the library is now ready for users. The NBI has also provided a large basement room to house all the NBA's fireproof safes containing the various archival material.

Beginning in January 1999, the Danish Research Ministry has agreed to increase its annual support, so that only a small part of the expense (along with additional projects) has to be sought from private foundations. The increase was supplied on the understanding that the NBA organizes activities promoting natural science for gymnasium (high-school) students. In the fall of 1999, the NBA was either the host or cohost of a number of lectures to this effect and also took part in a well-attended NBI arrangement at the annual "Kulturnatten" (Culture Night) in Copenhagen.

The NBA has received support from the Danish National Lottery, as well as from the AIP Center for History of Physics and a private foundation, for the organization, conservation, and registration of

and, most challenging of all, how and when drama can be used as an alternative vehicle for presenting history of science to scholars and the general public alike.



*Henning Moritzen as Niels Bohr (left) and Søren Pilmark as Werner Heisenberg in Michael Frayn's play København (Copenhagen) staged in the city of Copenhagen itself, at the Betty Nansen Theatre. Photographer: Mike Kollöffel.*

the papers of Aage Bohr and Allan Mackintosh. This work is expected to be completed during 2001. Meanwhile, Volume 10 of the Niels Bohr Collected Works was published in January 1999. Entitled *Complementarity Beyond Physics (1928–1962)*, it was edited by David Favrholt, professor of philosophy at the University of Odense, and published by Elsevier Science in Amsterdam. After the death of Hanna Kobylinski, widow of Niels Bohr's close collaborator Stefan Rozental, the NBA was given a substantial part of Rozental's rich book collection, which includes a number of classics in the history of modern physics.

The effort to make the NBA's photograph collection available on the World Wide Web approaches completion. Substantial work has also been done on the conversion of the NBA library catalog to the NBI's new on-line cataloging system. Both the photograph collection and library information will be part of the NBA's new Web site, which will include updated information on all the NBA's collections and activities, at the URL <http://www.nbi.dk/nba/>. The NBA continues to be visited by researchers from all over the world. With our new library and Web site we expect a further increase in our service functions for researchers. For further information contact Dr. Finn Aaserud, Niels Bohr Institute, Blegdamsvej 17, DK-2100 Copenhagen Ø, Denmark; e-mail: [aaserud@nbi.dk](mailto:aaserud@nbi.dk).

*Many of the ideas we cherish as novel have origins that predate us by embarrassingly long times.*

*—Rudolf Raff*

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## Decade-long AIP Study of Collaborations Completed

by Joan Warnow-Blewett

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The AIP Study of Multi-Institutional Collaborations that was launched in 1989 comes to completion this spring. Initiated by the AIP Center because of the increasing importance of large-scale research projects and the many unknowns and complexities of documenting them, the AIP Study was the first systematic examination of the organizational structures and functions of multi-institutional collaborations. Readers of this Newsletter may recall that we covered research projects involving three or more institutions in physics and related fields: high-energy physics (Phase I), space science and geophysics (Phase II), and ground-based astronomy, heavy-ion and nuclear physics, materials science, and medical physics (Phase III). Throughout the study our field work consisted—on the one hand—of structured interviews with scientists who participated in collaborations selected to serve as our case studies, and—on the other hand—of site visits to numerous archival and records management programs. The interviews provided data on organizational patterns, records creation and use, and the likely locations of valuable documentation. The archival site visits to academia, federal science agencies, the National Archives, and elsewhere provided data on existing records policies and practices and the likelihood of collaborations being documented under current conditions. Reports were issued at the end of each phase of the study and are available from the AIP Center (with summary reports also available on our Web site at <http://www.aip.org/history/pubslst.htm>.)

Since our last account of the AIP Study (see the Spring 1999 issue of this Newsletter), the final reports on Phase III work have been fully revised and are now available. The reports include historical and archival findings, sociological analysis, records appraisal guidelines, and project recommendations directed to academic archives, the National Archives, federal science agencies and other institutions.

Other major efforts of the past year have been aimed at the development of final reports covering the decade-long study. We drafted comparative historical and archival findings and appraisal guidelines, developed a typology of collaborations, analyzed our surveys of practices in academic and corporate archives, held meetings, and revised project recommendations. Draft reports were critiqued through a mailing to archivists. The final report, *The AIP Study of Multi-Institutional Collaborations*, will be ready for distribution in late spring. The publication will consist of a summary report (highlights of findings and project recommendations) and a main report in which readers will find a rich harvest of the decade-long study.

The last assignments of project staff are to write articles for newsletters and journals that will bring the study and its findings to the attention of archivists, historians, and—perhaps, most importantly—to physicists and a broader audience of scientists. A book summarizing and discussing key conclusions is in preparation by project consultants Ivan Chompalov, Joel Genuth, and Wesley Shrum, supported by a new grant to AIP from the National Science Foundation.

Meanwhile, the AIP Center will begin to implement the knowledge gained through its study of multi-institutional collaborations. The formal effort will be on two levels. We will work with scientists (discipline by discipline) to identify a selection of significant collaborations and then try to locate the valuable records and save them at appropriate repositories. Equally important will be efforts to improve the documentation of collaborations more generally by finding opportunities to support academic archival programs and upgrade records programs at federal science agencies.

The long-term AIP Study of Multi-Institutional Collaborations has been funded by the American Institute of Physics, the Andrew W. Mellon Foundation, the National Science Foundation, the National Historical Public Records Commission, and the Department of Energy. We are most grateful for their steadfast and generous support. I served as project director, Spencer R. Weart as associate project director, and Joel Genuth as project historian. For further information, contact the Center or e-mail Joan Warnow-Blewett, [jblewett@aip.org](mailto:jblewett@aip.org).



*A Working Group meeting of the AIP Study of Multi-Institutional Collaborations, 9/23/99. Project staff brought together distinguished scientist-administrators from various physics-related disciplines to discuss the differences and similarities among types of collaborations and to review the problems facing documentation of the histories of these important but transient institutions. Photo, clockwise from bottom left: John Watson, Robert Williams, Joseph Alexander, Marie Allen, Clay Redding, Ivan Chompalov, Goetz Oertel, Spencer Weart, Joan Blewett, John Krige, Joel Genuth, Stanley Wojcicki, Ulrich Strom. NOT SHOWN: Wesley Shrum, Joe Anderson. Naomi Oreskes and Peter Gallison participated in the afternoon session by conference call.*

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## Einstein as the Person of the Century (or Not?)

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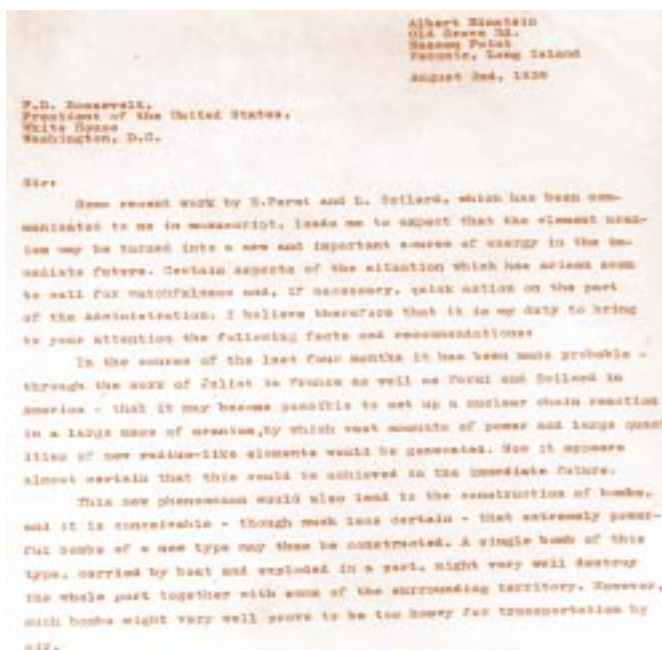
When Time magazine named Albert Einstein as the Person of the Century at the end of 1999, the choice drew welcome attention to the role of physicists in our times. According to the newsmagazine's editors, the century coming to its end "will be remembered foremost for its science and technology," and Einstein "serves as a symbol of all the scientists—such as Heisenberg, Bohr, Richard Feynman, and Stephen Hawking...who built upon his work..." Other fields of human creativity, even other sciences despite their great achievements, got only a brief nod from Time in the century of the radio, the atomic bomb and the Internet.

Several columnists criticized the choice. David Broder wrote that it "sent a clear message: Science, not statesmanship, was the hallmark of the era just ended." But to Broder, "the saga of the 20th century is one of enfranchisement and empowerment," characterized by female suffrage, civil rights and the like. Charles Krauthammer similarly declared that not Einstein but Winston Churchill deserved the accolade. "If Einstein hadn't lived, the ideas he produced might have been delayed." But take away Churchill's stand in 1940, and fascism might well have triumphed. No, "the originality of the 20th century surely lay in politics." E.J. Dionne Jr. agreed. While giving "Three cheers for Einstein and his brethren," Dionne insisted that "the most important achievement of the century... is the triumph of a certain view of politics and a certain set of principles..."

It is not surprising that political columnists stressed the importance of politics. In fact the Time editors had taken that into account, stating clearly that they found it hard to choose among scientific achievements, the triumph of democracy over totalitarianism, and the battle for civil rights as the hallmark of the century. (Indeed, those could be taken as the grand themes of the entire millennium that now comes to its close.) Einstein was chosen, said Time, not only because of his science but because he was himself an outspoken refugee from fascism, a "humanitarian," and a "political idealist." As columnist William Saletan of Slate.com explained it, "The ideal POC [Person of the Century] represents all the big themes... Einstein wins the triathlon because in addition to acing the science test, he prodded Roosevelt to build the bomb (10 points for defeating totalitarianism), fled Germany and immigrated to the United States (five more points for defeating totalitarianism and five for liberation and justice), and preached pacifism and praised Gandhi (10 more points for liberation and justice)."

*Taken as a story of human achievement and human blindness, the discoveries in the sciences are among the great epics, and they should be available in our tradition.*

—J. Robert Oppenheimer



*The first page of the epochal letter drafted by Leo Szilard and signed by Albert Einstein, warning Roosevelt that atomic weapons might be built. Photo courtesy of the Franklin D. Roosevelt Library. This photo is also available on our online newsletter at [www.aip.org/history/web-news.htm](http://www.aip.org/history/web-news.htm).*

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## History of Science in the Franklin D. Roosevelt Library

by Raymond Teichman

The Franklin D. Roosevelt Library in Hyde Park, NY houses a small but significant body of materials relating to twentieth century science. The most important are files on diplomatic concerns about sharing information on the development of the atomic bomb and records relating to official government science policy.

President Franklin D. Roosevelt's papers include the famous August 1939 letter from Albert Einstein which prompted him to initiate actions that resulted in the Manhattan Project and the production of the first atomic weapons in July 1945. The Einstein letter is part of the Alexander Sachs file in the President's Secretary's File. The President's papers also contain files on the National Bureau of Standards, National Academy of Sciences, National Defense Research Committee, and Office of Scientific Research and Development. Other collections with important science-related materials are the papers of Harry L. Hopkins, FDR's principal wartime advisor, with correspondence relating to the atomic bomb, and the papers of Alexander Sachs, with files on the Atomic Energy Commission and Atomic Energy.

The Franklin D. Roosevelt Library is one of ten presidential libraries administered by the National Archives and Records Administration, an independent agency of the United States Government. It is located on Route 9 in Hyde Park, New York, approximately 80 miles north of New York City. For more information, please contact the library at (914) 229-8114 or visit its Web site at <http://www.fdrlibrary.marist.edu>.

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## New Quarters for the University of Minnesota Archives

By Penelope Krosch

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The University of Minnesota Archives was established in 1928 by the first University President, William Watts Folwell, a historian. From a modest collection of faculty publications, University Archives now holds 16,000 feet of papers consisting of over a thousand collections. University publications and over a million photographs and audio-visual items enrich the collection. As the University approaches its sesquicentennial in 2001, the archivists will be challenged both by research into the past of the University and by planning for the preservation of a growing number of records stored only in electronic formats.



A.O.C. Nier with his mass spectrometer, taken in 1964 at the time he gave it to the Smithsonian. Photo courtesy of University Archives, University of Minnesota.

The University is Minnesota's research and land grant institution and the contents of the archives are correspondingly diverse, ranging from records of the agriculture experiment stations to its Department of Surgery during the era when it was a leader in open heart surgery and organ transplants. Faculty collections and a small number of alumni collections are equally diverse. Scientists including physicists are well represented among faculty collections in the archives. Chemists Isaac Kolthoff and Lee I. Smith were involved in synthetic rubber research during World War II. Aeronautical engineer Jean Piccard and his wife Jeannette were famous for their work on high altitude balloons. Astronomer Willem Luyten is noted for his research on faint blue stars. Of the early members of the Physics Department, Anthony Zeleny's papers are as much used for his anti-smoking crusade as well as for his research in electricity in the 1920s. Among the more contemporary collections of note are the papers of Alfred O.C. Nier, father of the mass spectrometer. An excellent video of Nier's career covers his research from his work on the Manhattan Project to his contributions to the space program. Also preserved are papers of his colleagues Edward Ney and Phyllis Freier, who both did research in cosmic physics. Early records of the School of Physics (1942-1960) are available as well as

several sets of technical reports and other research reports. It is hoped that the papers of Otto Schmitt will also be placed in the archives when they are available.

University Archives and eight other archives and special collections units moved into new quarters in early 2000. The Elmer L. Andersen Library is located on the University of Minnesota's West Bank Campus. The new building offers conference facilities, a large exhibit space on the first floor for local and traveling exhibits, and three large reading rooms. The building should be open to the public in March of this year.

The most intriguing part of Andersen Library are the two storage caverns which open on the banks of the Mississippi River. The caverns were mined into the riverbank's sandstone strata and reinforced to prevent collapse. The storage facilities were constructed as a free-standing building inside the caverns. Each cavern is 600 feet long. One cavern is reserved for book storage and the other for archives and manuscript collections. The archives cavern is divided in two parts. One is a high bay with sixteen tiers of shelving, for which a forklift is available for searching. The other part is divided in two horizontally to allow for unaided access to the collections. The construction plan allowed for access to a future third cavern when needed.

For further information please send e-mail to: [uar@uar.email.umn.edu](mailto:uar@uar.email.umn.edu) or telephone 612-624-0562. Mail inquiries should be sent to University of Minnesota Archives, 218 Elmer L. Andersen Library, 222 21st Ave. So., Minneapolis, MN 55455.

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## German Geophysical Society Preserves History of the Geosciences

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The German Geophysical Society includes a very active History Commission, founded in 1982, and the Society has been publishing the journal *Mitteilungen des Arbeitskreises (Communications of the Commission)* since then. *Mitteilungen* is a discussion forum for the history and philosophy of science and especially the geosciences and related disciplines. The commission also collects old instruments, biographical notes, scientific correspondence and other items of historical interest. The lives of leading German seismologists and geophysicists are also being documented, along with histories of institutes, scientific programs and international collaborations.

The History Commission organizes special sessions at the annual meetings of the German Geophysical Society. The sessions are open for general historical topics, but from time to time special historical topics are discussed. For example, the spring 2000 meeting in Munich will have as its topic, "History and Philosophy of Geosciences and Related Disciplines." The History Commission is open to all interested scientists who become members of the German Geophysical Society. To apply for membership, or to obtain a subscription or individual copy of *Mitteilungen*, contact Wilfried Schröder, Hechelstrasse 8, D-28777, Bremen, Germany.

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## Natural Philosophy and Early Physics in the American Philosophical Society Library

by Robert Cox

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As the zealots of the new millennium launch headlong into the future, others cling to the past. The manuscript collections of the American Philosophical Society Library, for one, cling to a small, but growing array of materials for those atavists who insist on the relevance of the past, documenting the development of physics from the late 17<sup>th</sup> through the early 19<sup>th</sup> centuries. As noted in previous issues of the AIP History Newsletter, the APS houses a number of collections of correspondence or diaries for the study of the physical sciences as they painstakingly metamorphosed from natural philosophy into physics and allied disciplines. There are also a number of manuscript treatises on the subject, for example two European works once owned by Benjamin Franklin: a set of extracts from Benoit de Maillet's *Nouveau Système du Monde* (915 pp.), and C.L.B. Wavran's *Essai de physique* (397pp.), both from the mid-18<sup>th</sup> century.

Three works with strong American connections have been recently acquired or properly identified. Perhaps the most exciting of these is a copy of Charles Morton's *System of Physicks* (also known as the *Compendium Physicae*). The son of a Cornish minister, Morton cast his lot with the Puritan radicals during the English Revolution. At Wadham College, Oxford, his associates included Robert Boyle, William Petty, and Christopher Wren, and although Morton was decidedly a peripheral figure in their

circle, he nevertheless imbibed heavily of the fashionable quaffs of empiricism and rationalism while studying for his bachelor's (1649) and master's degrees (1652). During the 1670s and 1680s, he shed the mantle of obscurity for the robes of Puritan controversy, rising to prominence as head of an elite academy at Newington Green. Established as an educational alternative for those excluded from Oxford and Cambridge due to their refusal to swear conformity to the Church of England, the Academy at Newington Green was a paragon of progressive education. For his students, including Samuel Wesley and Daniel Defoe, Morton sought to put into practice the principles he had learned at Oxford—Aristotelianism, the application of scientific logic and rigor, and a staunch piety. Befitting his social and religious views, he taught in the vernacular, preparing brief, but systematic manuscript expositions of each subject which his students were expected to copy out longhand while attempting to master the material. His *System of Physicks* is the best known of his several systems. For his students' benefit, Morton ended each chapter with memorable (in fact, mnemonic) rhyming couplets by way of summary. Typical of his poetic style: "In subterraneous caverns winds doe frolick / when Mother Earth is troubled with the Cholick."

Unloved by the Royal government for his dissent, Morton attracted more positive notice in Puritan-friendly Massachusetts Bay, and in 1685, he agreed to emigrate. Morton's shadow fell over the Harvard College curriculum, and his *System of Physicks* became the standard work in natural philosophy used at Harvard (and later Yale) well into the 1720s. Morton's *System* became one of the most important vehicles for disseminating the new empirical science of the 17<sup>th</sup> century in America. Acquired as an unidentified work in the 1950s and identified in 1998, the APS copy of Morton's *System* is one of the most complete copies extant.

John Questebrune's *A Short Introduction to Natural Philosophy, 1718-1720*, written 35 years later, inevitably bears resemblance to Morton. Questebrune studied at the University College, Dublin, before accepting a position as domestic chaplain to the 6th Earl of Gallway. His system, also intended as a comprehensive view of physical bodies and the forces affecting them, is embellished with even more elaborate pen and ink and watercolor illustrations than Morton's, and it may have been used for private instruction within the Earl's home and circle. Like Morton, Questebrune includes study of the earth and human body within the scope of "physics." While the Questebrune manuscript was written in Kilkenny, Ireland, it has a distinctly American veneer: by 1784 it had been acquired by the well-known Philadelphia botanist, William Hamilton (d.1824), known as a flaming Loyalist during the American Revolution.

The third work is also the product of student labor, but reflects a period in which natural philosophy had become considerably more specialized. It is a volume of notes kept by John Austin Stevens (1795-1874) while a student at Yale in 1812. That year, Stevens attended twenty lectures given by Jeremiah Day (1773-1867), Professor of Mathematics and Natural Philosophy from 1803 until 1817, and later President of the University. For Day, philosophy subtended "knowledge of the nature and reason of



A wind rose from the chapter "Of Aiery Meteors"—then considered a part of "physicks"—in Charles Morton's manuscript in the American Philosophical Society Library. See the web version of our newsletter for an enlarged version at <http://www.aip.org/history/web-news.htm>. Photo courtesy of the American Philosophical Society.



*Seventeenth century discussion of the optics of the rainbow, from Morton's System of Physicks. See the web version of our newsletter for an enlarged version at <http://www.aip.org/history/web-news.htm>. Photo courtesy of the American Philosophical Society.*

things,” but by the time Stevens entered Yale, natural philosophy (as distinct from moral philosophy, which Day later taught) had rid itself of the animal body. The primary significance of this volume of notes may lie as much in documenting scientific education at Yale at a time when that university was at the forefront in introducing science into the college curriculum.

For more information, contact Robert S. Cox, Manuscripts Librarian, American Philosophical Society, 105 S. Fifth St., Philadelphia, PA 19106 (215) 440-3409, [rscox@amphilsoc.org](mailto:rscox@amphilsoc.org).

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## **New Start for the Joint Atlantic Seminar in the History of the Physical Sciences**

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After being dormant for nearly a decade, the Joint Atlantic Seminar in the History of the Physical Sciences has resumed with a meeting September 17-19, 1999. The meeting opened with a reception at the American Institute of Physics in College Park, Maryland, followed by two days of talks and discussion at The George Washington University in Washington, D.C.

As with the earlier Joint Atlantic Seminars in the History of Physics (and the like-named Joint Atlantic Seminars in History of Biology), the conference’s purpose was to gather graduate students and postdoctoral fellows from across the East Coast and to provide a forum for them to present their work to an intimate audience of their peers and a few senior colleagues. At this year’s conference, participants considered existing trends in scholarship in the history of the physical sciences and explored new directions in the field during the last decade.

Delivering the opening remarks, Stephen Brush from the University of Maryland discussed the range of current historiography in the field. On Saturday, eight papers were presented by up-and-coming scholars in the field, including David Kaiser, Elizabeth Paris, and Jimena Canales of Harvard University, Christopher Smeenk, Christopher Martin, and Gualtiero Piccinini from the University of Pittsburgh, Voula Saridakis of Virginia Tech, and Patrick McCray of The George Washington University. The papers covered a wide range of topics, including a philosophical analysis of a specific scientific theory, biographies spanning three centuries and several different approaches, and institutional histories of recent large projects. The presentations and discussion echoed Brush’s assertion that the points of contrast between the various historiographical approaches have become less distinct.

On Sunday, Paul Forman of the Smithsonian’s National Museum of American History gave a provocative commentary on the papers. He noted a preponderance of studies of unsuccessful endeavors and a prevailing narrative strategy focusing on biography, thus sparking discussion of broader issues facing historians. Finally, Kathryn Olesko of Georgetown University and Michael Sokal of the National Science Foundation discussed issues of professional development. Olesko described the pre-tenure years, including the process of applying for jobs. And Sokal described both the variety of NSF grants available and tips on successfully obtaining these awards.

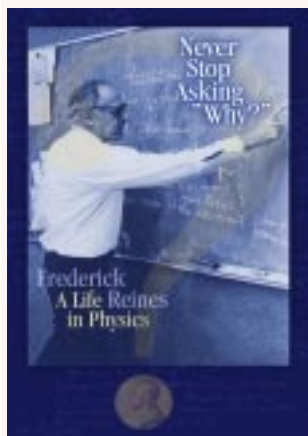
The meeting’s organizers, Alexei Kojevnikov, Anne Fitzpatrick, Elizabeth Paris, and Steven Weiss gratefully acknowledge the following institutions for their generous support: the Dibner Institute for History of Science; the Friends of the Center for History of Physics, American Institute of Physics; and the Center for History of Recent Science and the Vice President for Academic Affairs, both of The George Washington University.

The 2000 Joint Atlantic Seminar in the History of the Physical Sciences will take place next fall at the University of Pittsburgh. Further information can be found on page 10. Questions regarding this meeting should be directed to [gupst1@pitt.edu](mailto:gupst1@pitt.edu).



*Historians of physics atop the J.F. Kennedy Center for the Performing Arts, Washington, D.C., Sept. 19, 1999. Photo taken by Amy Crumpton.*

## Processing of Frederick Reines Papers Celebrated with Exhibit



*Fred at the blackboard: UC Irvine's poster for the exhibit "Never Stop Asking 'Why?'"*

A year ago the AIP History Center awarded a \$10,000 matching grant to the University of California–Irvine to process the papers of Nobel laureate Frederick Reines. The cataloging record and finding aid for the collection are now available online at <http://www.lib.uci.edu/rrsc/speccoll.html>. UCI Archivist William Landis reports that the support “enabled the UCI Libraries to process and make accessible to researchers an important collection in a very short amount of time... The exhibit based on the Frederick Reines Papers [January–May 2000] that was funded in part by the AIP grant is among the most successful and well-received of any the UCI Libraries has ever mounted. As a testament to the importance of these papers and the timeliness of AIP’s grant to UCI, we have already been contacted by a researcher with a research interest in Reines... an historian of science from the Physics Department at the University of Vermont will be spending a week with us in mid-April, working mainly on the early neutrino experiments materials in the Reines Papers.”

For additional information, contact William Landis, Manuscripts Librarian, Dept. of Special Collection, UCI Libraries, Irvine, CA 92623-9557 (949) 824-3113, [blandis@uci.edu](mailto:blandis@uci.edu).

*These Photos are a part of the exhibit Niver Stop Asking "Why" - Frederick Reines, A Life in Physics, at the University of California, Irvine, Main and Science Libraries, January - May 2000*



*The "Project Poltergeist" neutrino detection team at the Hanford reactor site, 1953.*



*Fred Reines inspecting neutrino detection equipment at the East Rand Mine in South Africa, ca. 1965.*



## Other News of Interest

■ **Important News for NSF Grantseekers:** sometime in the second half of the year 2000, the National Science Foundation will begin to require (with some minor exceptions) that all proposals prepared for NSF consideration must be submitted via FastLane, NSF’s Web-based document handling system. All researchers and others planning to submit proposals to NSF’s Societal Dimensions of Engineering, Science & Technology Program (SDEST), and Science & Technology Studies Program (STS) should take steps to comply with this requirement by making contact with their institution’s Sponsored Programs Offices well in advance of these programs’ Summer 2000 target date of **8/1/2000**.

After much negotiation, it appears that SDEST and STS will be granted the authority to issue waivers of this requirement for proposals submitted by independent scholars. Such potential

applicants should keep in close touch with these programs as the target date approaches to determine precise mechanisms for the granting of such waivers. But once this requirement goes into effect, it is highly unlikely that such waivers could be granted to researchers affiliated with just about any U.S. institution. For further information about FastLane and this requirement, please consult the FastLane Website, <http://www.fastlane.nsf.gov>; or Gail Williams of NSF’s Division of Information Services ([gwilliam@nsf.gov](mailto:gwilliam@nsf.gov)); or Philip Johnson, SBE Computer Specialist ([pxjohnso@nsf.gov](mailto:pxjohnso@nsf.gov)). For information about the programs themselves, please contact the SDEST Program Director (Rachelle Hollander; [rholland@nsf.gov](mailto:rholland@nsf.gov)), or the STS Program Director (through July 2000, Michael Sokal; [msokal@nsf.gov](mailto:msokal@nsf.gov)).

■ **New NSF Funding Opportunities in Science & Technology Studies:** As the National Science Foundation continues to channel much support for research and training through new cross-disciplinary initiatives—as opposed to traditional

disciplinary-based programs, such as the Science & Technology Studies Program (STS)—scholars in all fields have learned that these special initiatives often provide unusually rich opportunities. Two recently-announced special competitions seem of great potential interest to those practicing history, philosophy, and social studies of science and technology. The first, “Enhancing Infrastructure for the Social and Behavioral Sciences,” was recently announced through a formal Program Announcement issued by the NSF Directorate for Social, Behavioral, and Economic Sciences (which houses the NSF STS Program). This competition embodies a revision of a competition last held late in 1998 and offers support for a wide range of activities, including those that will “collect data from surveys, experiments, or administrative records; case or historical records; or objects of investigation (archaeological items, for example) [in a form] that will support broad-based investigations into the most important scientific questions facing social and behavioral science in the next decade.” Much further information about this competition appears in the formal Program Announcement, most readily available at <http://www.nsf.gov/sbe/ses/infra/start.htm>. Proposals must be submitted to NSF by **August 4, 2000**. The second, a solicitation for proposals addressing issues relating to the development of an “Information Technology Workforce,” was announced recently through a “Dear Colleague Letter” issued by the NSF Directorate for Computer and Information Science and Engineering. Among other topics, this competition especially seeks proposals that revolve around three basic themes—(1) Environment and Culture; (2) IT Educational Continuum; and (3) IT Workplace—and that address research questions related to the under-representation of women and minorities in the IT workforce. Multi-disciplinary collaborations among researchers in all fields are encouraged, and proposals must be submitted to NSF by **June 22, 2000**. The “Dear Colleague Letter” is most readily available at <http://www.nsf.gov/cgi-bin/getpub?nsf0077>. Each of these Web sites provides the names and e-mail addresses of those overseeing these competitions, from whom additional information may be requested. Potential applicants may also contact the NSF STS Program Officer (through July 2000, Michael Sokal; [msokal@nsf.gov](mailto:msokal@nsf.gov)).

■ **“One Hundred Years of the American Astronomical Society”** was published as the **AAS Centennial Supplement** to *The Astrophysical Journal*, December 1999. Organized by Helmut A. Abt, this centennial volume collects 53 of the most significant articles published in the *ApJ* and *The Astronomical Journal*. Each article is accompanied by a commentary that provides the scientific and historical context essential to understanding the original impact of the paper. For a listing of the contents see <http://www.journals.uchicago.edu/ApJ/centennial.pdf>.

■ **University of Melbourne launches Australian Science and Technology Heritage Centre**, offering Web-based access to the nation’s dispersed heritage information sources. The new Centre is designed to serve as a model 21st-century heritage information exchange, giving scholars and the wider community a “road map”

to information held in archives, museums, and other collections in Australia and overseas. Based at the University of Melbourne, the Centre publishes science and technology education resources on the Web, provides computer software tools for the heritage industry, researches and develops heritage materials, and teaches Australian science heritage studies. For more information, please contact Gavan McCarthy, Director, Australian Science and Technology Heritage Centre, The University of Melbourne, 203 Bouverie Street, Carlton VIC 3053, e-mail [gavan@ustehc.unimelb.edu.au](mailto:gavan@ustehc.unimelb.edu.au), Phone: +61-3-9344-9287 Fax: +61-3-9349-4630, or visit the Web site at <http://www.asap.unimelb.edu.au/>.

■ **The XXIst International Congress of History of Science** Web page is now available, and can be accessed to consult the First Circular (available also in French and Spanish) as well as the necessary registration forms for the Congress. The address is <http://www.smhct.org>. The Congress office team is presently working at full capacity with a system of communication that includes Fax, Internet and telephones. Additionally, the site will offer information about the **Mexican Society for the History of Science** and *QUIPU*, the Latin American Journal of History of Science and Technology (including index of the volumes published since 1984). If needed, you may request printed material from Professor Juan José Saldaña, Chairman of the Organizing Committee of the XXIst International Congress of History of Science, Apartado Postal 21-873, 04000, Mexico D.F., Fax: (525) 519 98 10, E-mail: [xxiichs@servidor.unam.mx](mailto:xxiichs@servidor.unam.mx)

### MEETINGS

■ **Symposium on the hundredth anniversary of Joliot’s Birthday, “Actualité de Frédéric Joliot-Curie”**, organized by the **Curie and Joliot-Curie Society**, will be at the Collège de France in Paris **October 9-10, 2000**. The symposium will address all facets of Joliot’s activities: his scientific achievements, the organization of research, the development of atomic energy, and the history of Joliot’s social and political commitments. Information and Registration: [dykstra@ipno.in2p3.fr](mailto:dykstra@ipno.in2p3.fr) (F. Dykstra, Institut de physique nucléaire, 91406 Orsay Cedex, France).

■ **A symposium on One Hundred Years of the Quantum: From Max Planck to Entanglement** will be held **October 29-30, 2000** at the University of Puget Sound, Tacoma, Washington. In the Fall of 1900, Max Planck found an explanation for the spectrum of black body radiation and, in doing so, invoked a new physical constant—the quantum of action. “One Hundred Years of the Quantum” will bring together physicists, historians and philosophers of science. Three sessions are being organized, devoted to (1) historical perspectives on Planck’s work and the early development of quantum mechanics, (2) twentieth-century debates about the interpretation of quantum mechanics, and (3) new topics in quantum physics, including quantum optics and quantum computing. Deadline for registration: **September 1, 2000**. For details contact Professor Alan Thorndike, Department of Physics, University of Puget Sound, Tacoma, WA 98416, phone: (253) 879-3817, or see the Web site at <http://www.ups.edu/physics/maxplanck>.

■ A symposium on **100 Years of Quantum Theory—History, Physics and Philosophy** will be held at the Universidad Complutense Madrid, Madrid, Spain, **22-25 November 2000**. The commemoration of this first centenary of Quantum Theory offers an excellent opportunity for physicists, historians of physics, philosophers of physics and epistemologists to meet together once again. This international meeting aims to contribute to a better understanding of contemporary quantum physics, with its many philosophical problems. Methodologies of physics and historians of physics are called to play an important role in the solution of these matters. Topics will include: History of Quantum Physics, Philosophy and Methodology of Physics, Epistemology, Sociology of Physics, Quantum Mechanics, Atomic Physics, Nuclear Physics, Elementary Particles, Quantum Gravitation, etc. Further information about the congress can be found at <http://fs-morente.filos.ucm.es/centenario/index.htm>

■ A symposium on **The Foundations of Quantum Physics** before 1935 will be held in Berlin, Germany, **December 14-16, 2000**. The **Division of the History of Physics of the German Physical Society**, the **Max Planck Institute for the History of Science**, the **Commission on the History of Modern Physics of the IUHPS Division of the History of Science**, and the **Interdivisional Group on History of Physics of the European Physical Society** will sponsor a three-day symposium to commemorate the centenary of the foundation of quantum theory by Max Planck in 1900. The symposium will place particular emphasis on the experimental foundation of quantum physics and will take place in conjunction with other symposia of the German Physical Society celebrating Planck's discovery. The symposium will include topics such as the interplay of experiment, observation and theory in quantum physics; key instruments in the development of quantum physics; 19th-century experimental and theoretical roots of quantum theory; cross-disciplinary perspectives on quantum physics; and collaborative research in the emergence of quantum physics. The language of the symposium will be English. The symposium will consist of both invited and contributed papers. For contributed papers, a short abstract (maximum one page) should be sent before **June 30, 2000**, to the secretary of the Program Committee, Dieter Hoffmann, Max-Planck-Institut für Wissenschaftsgeschichte, Wilhelmstrasse 44, D-10117 Berlin, Germany, e-mail: [dh@mpiwg-berlin.mpg.de](mailto:dh@mpiwg-berlin.mpg.de). Further information may be obtained from Dieter Hoffmann at the address above.

■ **JASHOPS 2000, Joint Atlantic Seminar in the History of the Physical Sciences, September 22-24, 2000**, Pittsburgh, PA. "**Interactions Between the History and the Philosophy of Science**". Throughout the twentieth century historians of science have engaged the philosophy of science in various ways. While some historians keep philosophy at an arm's distance, according to others there can be fruitful interactions. The purpose of the seminar is to reflect on the current relationship between the two disciplines as well as on the possibility for further interaction. Submitted papers should be concrete historical investigations on any topic in the history of physics, astronomy, chemistry, biophysics or geosciences.

Presentations will be limited to twenty minutes with an additional twenty minutes reserved for discussion. In keeping with the purpose of the seminar, participants will be expected to discuss what, in light of their work, historians have to teach or learn from the philosophy of science. These informal discussions are the meeting's emphasis. All are invited to submit papers, though preference will be given to students and recent Ph.D.'s. Abstracts of 500-1000 words are due **May 28, 2000**. If accepted for the program, completed papers must be sent by **August 8, 2000** to ensure availability for distribution prior to the meeting. Abstracts and papers can be submitted via mail to (or e-mail to [jashops+pitt.edu](mailto:jashops+pitt.edu)): JASHOPS 2000, Dept. of History and Philosophy of Science, 1017 Cathedral of Learning, University of Pittsburgh, Pittsburgh, PA 15260.

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## Recent Publications of Interest

*Compiled by Martha Keyes*

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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 (<http://www.aip.org/history/>). You can specify to search the entire AIP site or the History Center only.

**American Heritage of Invention & Technology**, vol. **13**, no. 1 (Summer 1997) includes Joyce E. Bedi, "The Man Who Stopped Time" [Harold Edgerton], 34-41. Vol. **14**, no. 4 (Spring 1999) includes I. Bernard Cohen, "Father of the Computer Age" [Howard Aiken], 56-63. Vol. **15**, no. 1 (Summer 1999) features T. A. Heppenheimer, "How the Soviets Didn't Beat Us to the Moon," 10-18. Vol. **15**, no. 3 (Winter 2000) includes Jeff Hecht, "How We Became Wired—With Glass," 44-53.

**American Scientist**, vol. **88**, no. 1 (January-February 2000) includes R. E. Taylor, "Fifty Years of Radiocarbon Dating," 60-67. Vol. **88**, no. 2 (March-April 2000) includes Erica G. Klarreich, "Foams and Honeycombs," 152-161.

**Astronomy**, vol. **27**, no. 10 (October 1999) features James Glanz, "Accelerating the Cosmos," 44-51. Vol. **27**, no. 11 (November 1999) features Key Davidson, "Carl Sagan's Coming of Age," 40-45. Vol. **28**, no. 1 (January 2000) includes Marcia Bartusiak, "Underground Astronomer" [Raymond Davis], 64-67. Vol. **28**, no. 3 (March 2000) includes James Trefil, "Reaching for the Sun," 70-74.

**Astronomy & Geophysics**, vol. **40**, no. 1 (February 1999) includes John L. Hunt, "The Handlers of Time," 23-27. Vol. **40**, no. 4 (August 1999) features Holly Henry, "Eclipse Madness, 1927," 17-19. Vol. **40**, no. 5 (October 1999) features Magda Vargha and Zoltán Kolláth, "The First Century of Konkoly

Observatory,” 17-20.

**British Journal for the History of Science**, vol. **32**, part 4 (December 1999) features Richard J. Noakes, “Telegraphy is an Occult Art: Cromwell Fleetwood Varley and the Diffusion of Electricity to the Other World,” 421-459; and Andrew Hull, “War of Words: The Public Science of the British Scientific Community and the Origins of the Department of Scientific and Industrial Research, 1914-16,” 461-481.

**Centaurus**, vol. **41**, no. 1-2 (1999) is a special issue focusing on the development of new energy systems in the later half of the 20<sup>th</sup> century. Articles include E. V. D. Vleuten, “Constructing Centralized Electricity Supply in Denmark and the Netherlands: An Actor Group Perspective,” 3-36; J. A. C. Lagaij, “Different Visions of Power. The Introduction of Nuclear Power in the Netherlands 1955-1970,” 37-63; H. Nielsen, K. Nielsen, F. Petersen and H. Siggaard, “Risø and the Attempts to Introduce Nuclear Power into Denmark,” 64-92; M. Heymann, “A Fight of Systems? Wind Power and Electric Power Systems in Denmark, Germany, and the USA,” 112-136; G. P. J. Verbong, “Wind Power in the Netherlands, 1970-1995,” 137-160; and K. H. Nielsen, “Interpreting Wind Power vs. the Electronic Power System: A Danish Case-Study,” 161-177. Vol. **41**, no. 4 (1999) includes J. Berger, “Grenzgeänge zwischen Physik und Chemie: Thermodynamik und Chemische Kinetik – Kein Happy-End im 19. Jahrhundert,” 253-279.

**Cern Courier**, vol. **39**, no. 7 (September 1999) includes “K for KLOE and Z for Zweig,” 32-33. Vol. **39**, no. 10 (December 1999) features [PS Staff, CERN] “40 Years of CERN’s Proton Synchrotron,” 15-18; and “Silver Celebration for Swiss Pions,” 27-28. Vol. **40**, no. 1 (January/February 2000) features Frank Close, “The Electron Century,” 15-17.

**Earth Sciences History**, vol. **17**, no. 2 (1998) features Peter H. Schultz, “Shooting the Moon: Understanding the History of Lunar Impact Theories,” 92-110; Mott T. Greene, “Alfred Wegener and the Origin of Lunar Craters,” 111-138; Joanne Bourgeois and Steven Koppes, “Robert S. Dietz and the Recognition of Impact Structures on Earth,” 139-156; Steven D’Hondt, “Theories of Terrestrial Mass Extinction by Extraterrestrial Objects,” 157-173; H. S. Torrens, “‘No Impact’: René Gallant (1906-1985) and his Book of 1964 *Bombarded Earth (An Essay on the Geological and Biological Effects of Huge Meteorite Impacts)*,” 174-189; and William Glen, “A Manifold Current Upeaval in Science,” 190-209.

**Historical Records of Australian Science**, vol. **12**, no. 2 (1999) includes Wayne Orchiston, “Amateur-Professional Collaboration in Australian Science: The Earliest Astronomical Groups and Societies,” 163-182. Vol. **12**, no. 3 (1999) features John Jenkin, “Henry Herman Leopold Adolph Brose: Vagaries of an Extraordinary Australian Scientist,” 287-312.

**IEEE Annals of the History of Computing**, vol. **21**, no. 3 (July-September 1999) features Sergei P. Prokhorov, “Computers in

Russia: Science, Education, and Industry,” 4-15. Vol. **21**, no. 4 (October-December 1999) includes Saul I. Gass, “Project Mercury’s Man-in-Space Real-Time Computer System,” 37-48; James R. Harris, “The Earliest Solid-State Digital Computers,” 49-54; Louis C. Brown, “Flyable TRADIC,” 55-61; and Friedrich W. Kistermann, “Leo Wenzel Pollak (1888-1964),” 62-68. Vol. **22**, no. 1 (January-March 2000) includes John A. N. Lee, “Howard Aiken’s Third Machine: The Harvard Mark III Calculator or Aiken-Dahlgren Electronic Calculator,” 62-81.

**Journal for the History of Astronomy**, vol. **30**, no. 101 (November 1999) includes Richard A. Jarrell, “J. S. Plaskett and the Modern Large Reflecting Telescope,” 359-390. Vol. **31**, no. 102 (February 2000) features Michael Feast, “Stellar Populations and the Distance Scale: The Baade–Thackeray Correspondence,” 29-36.

**Journal of Astronomical History and Heritage**, vol. **2**, no. 2 (December 1999) features Virginia Trimble, “A Century of Drivers of Astronomical Progress,” 81-86; and Heino Eelsalu, “The Rise and Fall of Small Astronomical Observatories: A Case Study Dorpat/Tartu Observatory,” 111-123.

**Mercury**, vol. **28**, no. 1 (January/February 1999) includes Don Nicholson and Scott W. Teare, “Life on the Mountain: An Astronomical Family Scrapbook of Mount Wilson Observatory,” 22-27. Vol. **28**, no. 4 (July/August 1999) features Brenda Culbertson, “Refurbishing a Dream” [Telescopes], 11-15. Vol. **28**, no. 6 (November/December 1999) features Virginia Trimble, “99 Things about the Last 100 Years of Astronomy,” 16-23.

**Minerva**, vol. **37**, no. 3 (Autumn 1999) features Roy MacLeod, “Secrets among Friends: The Research Information Service and the ‘Special Relationship’ in Allied Scientific Information and Intelligence, 1916-1918,” 201-233; and Christopher P. Twomey, “The McNamara Line and the Turning Point for Civilian Scientist-Advisers in American Defense Policy, 1966-1968,” 235-258.

**Notes and Records of the Royal Society of London**, vol. **53**, no. 3 (September 1999) features Maria Yamalidou, “John Tyndall, the Rhetorician of Molecularity. Part Two. Questions Put to Nature,” 319-331; Brebis Bleaney, “A Century of Physics in Oxford,” 333-343; and Robert S. Anderson, “Patrick Blackett in India: Military Consultant and Scientific Intervenor, 1947-72. Part Two,” 345-360.

**Physics in Perspective**, vol. **1**, no. 3 (October 1999) features G. Holton, “R. A. Millikan’s Struggle with the Meaning of Planck’s Constant,” 231-237; M. Eckert, “Mathematics, Experiments, and Theoretical Physics: The Early Days of the Sommerfeld School,” 238-252; J. Goodstein, “A Conversation with Hans Bethe,” 253-281; K. Hentschel, “The Culture of Visual Representations in Spectroscopic Education and Laboratory Instruction,” 282-327; and M. L. Goldberger, “Enrico Fermi (1901-1954): The Complete Physicist,” 328-336. Vol. **1**, no. 4 (December 1999) includes J. F. Mulligan, “Heinrich Hertz and Philipp Lenard: Two Distinguished Physicists, Two Disparate

Men,” 345-366; L. Gerward, “Paul Villard and his Discovery of Gamma Rays,” 367-383; and B. Friedrich, “The KLMN of X-Ray Spectroscopy: Dolejšek’s Discovery of the N Series,” 384-389.

**Physics Today**, vol. **52**, no. 10 (October 1999) features Engelbert L. Schucking, “Jordan, Pauli, Politics, Brecht, and a Variable Gravitational Constant,” 26-31. Vol. **53**, no. 2 (February 2000) features Allan Franklin, “The Road to the Neutrino,” 22-28.

**Physics World**, vol. **12**, no. 11 (November 1999) features John S. Rigden, “Isidor Isaac Rabi: Walking the Path of God,” 27-31; and Dianne Stilwell, “Frederick Guthrie: A Man of Action,” 33-35.

**La Recherche**, no. **323** (September 1999) features Edouard Bard, “La Datation au Carbone 14 fait peau neuve,” 52-56. No. **326** (December 1999) is a special issue on Einstein’s brain. Articles include Sandra F. Witelson, Debra L. Kigar, and Thomas Harvey, “L’exceptionnel cerveau d’Einstein,” 31-35; Nicolas Chevassus-au-Louis, “Plus de quarante ans dans un carton,” 37-39; and Olivier Robain, “Une inquiétante malformation,” 39-41. Other articles in this issue include Dominique Pestre, “Entre tour d’ivoire et Silicon Valley,” 54-58; and Nicolas Witkowski, “J. -B. Biot: un homme, une météorite,” 60-61.

**Reviews of Modern Physics**, vol. **71**, no. 5 (October 1999) features J. G. Dash, “History of the Search for Continuous Melting,” 1737-1743. Vol. **72**, no. 1 (January 2000) features Lochlainn O’Raifeartaigh and Norbert Straumann, “Gauge Theory: Historical Origins and Some Modern Developments,” 1-23.

**Scientific American**, vol. **280**, no. 1 (January 1999) includes Lawrence M. Krauss, “Cosmological Antigravity,” 52-59. Vol. **280**, no. 5 (May 1999) includes Eugene Eric Kim and Betty Alexandra Toole, “Ada and the First Computer,” 76-81.

**Sky & Telescope**, vol. **98**, no. 5 (November 1999) includes Thomas R. Williams, “Telescopes, Marriages, and Mars: The Life of John E. Mellish,” 84-88. Vol. **98**, no. 6 (December 1999) features James Ulvestad and Miller Goss, “Radio Astronomy’s Resolution Machine: The Very Long Baseline Array,” 36-46. Vol. **99**, no. 1 (January 2000) features André Heck, “Where the Astronomers Are: A Stagnant Century,” 32-35; and Virginia Trimble, “Looking Backward: Themes of 20<sup>th</sup> Century Astronomy,” 50-57.

**Studies in History and Philosophy of Modern Physics**, vol. **30B**, no. 3 (September 1999) features Olivier Darrigol, “Baconian Bees in the Electromagnetic Fields: Experimenter-Theorists in Nineteenth-Century Electrodynamics,” 307-345; and Orly R. Shenker, “Maxwell’s Demon and Baron Munchausen: Free Will as a *Perpetuum Mobile*,” 347-372. Vol. **30B**, no. 4 (December 1999) features J. Lacki, H. Rugg, and V. L. Telegdi, “The Road to Stueckelberg’s Covariant Perturbation Theory as Illustrated by Successive Treatments of Compton Scattering,” 457-518; and Xiang Chen, “Instrumental Unification: Optical Apparatus in the Unification of Dispersion and Selective Absorption,” 519-542.

**Studies in History and Philosophy of Science**, vol. **30A**, no. 1 (March 1999) includes Stephen G. Brush, “Dynamics of Theory Change in Chemistry: Part 1. The Benzene Problem, 1865-1945,” 21-79. Vol. **30A**, no. 2 (June 1999) includes Stephen G. Brush, “Dynamics of Theory Change in Chemistry: Part 2. Benzene and Molecular Orbitals, 1945-1980,” 263-302.

**VIET: Voprosy Istorii Estestvoznaniia i Tekhniki [Problems in the History of Science and Technology]**, Moscow, no. 1 (1999) includes Yu. I. Soloviev, “Akademik S. I. Vavilov: drama russkogo intelligenta” [Academician S. I. Vavilov: The Drama of a Russian Intellectual], 132-156. No. 4 includes v.k. Novik, “Akademik Frants Epinus (1724-1802: biograficheskaia khronika” [Academician Franz Aepinus (1724-1802): A Biographical Chronicle], 4-35; Yu. N. Ranyuk, “L. D. Landau i L. M. Piatigorskii” [L. D. Landau and L. M. Piatigorskii], 79-91; and V. V. Vorobiev, “Lev Landau i ‘antsovetskaia zabastovka fizikov’,” [Lev Landau and the ‘Physicists’ Anti-Soviet Strike’], 92-101.

**Others—Physics and Geophysics:** Samuel Derman, “Albert Einstein’s Personal Papers: A Physics Teaching Resource,” **Physics Education**, vol. **35**, no. 1 (January 2000): 69-74; Paul and Josette Fournier, “Hasard ou mémoire dans la découverte de la radioactivité?,” **Revue d’histoire des sciences**, vol. **52**, no. 1 (January-March 1999): 51-79; M. Galliot, “Les Débuts de la Climatologie en Haute-Vienne,” **La Météorologie**, vol. **8**, no. 26 (June 1999): 35-43; G. E. Gorelik, A. B. Kozhevnikov, “Chto spaslo fiziku ot lysenkovaniia? Dialog” [What saved physics from a pogrom a la Lysenko? A Dialogue], **Priroda** no. 5 (1999): 95-104; Wick C. Haxton and Barry R. Holstein, “Neutrino Physics,” **American Journal of Physics**, vol. **68**, no. 1 (January 2000): 15-32; Fritz Krafft, “Das Reisen ist des Chemikers Lust—auf den Spuren Robert Bunsens. Zu Robert Wilhelm Bunsens 100. Todestag,” **Berichte zur Wissenschaftsgeschichte**, vol. **22**, no. 4 (December 1999): 217-238; Robert Kunin, “Six Decades of Ion Exchange Technology,” **Chemical Heritage**, vol. **17**, no. 2 (Summer 1999): 8-9, 36-41; Derek Lovejoy, “Objectivity, Causality and Ideology in Modern Physics,” **Science & Society**, vol. **63**, no. 4 (Winter 1999-2000): 433-458; E. Michaud, “Meteorologist’s Profile—Charles Meldrum,” **Weather**, vol. **55**, no. 1 (January 2000): 15-17; T. N. Narasimhan, “Fourier’s Heat Conduction Equation: History, Influence, and Connections,” **Reviews of Geophysics**, vol. **37**, no. 1 (February 1999): 151-172; Russell Olwell, “Physical Isolation and Marginalization in Physics: David Bohm’s Cold War Exile,” **Isis**, vol. **90**, no. 4 (December 1999): 738-756; Joseph Poindexter, “One Amazing Century of Science,” **Discover**, vol. **21**, no. 1 (January 2000): 51-62; and V. P. Vizgin, “Yadernyi shchit v ‘tridtsatiletnei voine’ fizikov s nevezhestvennoi kritikoi sovremennykh fizicheskikh teorii” [The “Nuclear shield” in Russian physicists’ Thirty Years’ War against incompetent criticism of modern physical theories], **Uspekhi Fizicheskikh Nauk**, vol. **169** (1999): 1363-1389.

**Others—Astronomy and Space Sciences:** B. Donn, “Adventures in the Unknown: A Path of Astronomical Research and Discovery,” **Planetary and Space Science**, vol. **47**, no. 8/9

(August/September 1999): 1163-1170; Daniel Kennefick, "Star Crushing: Theoretical Practice and the Theoreticians' Regress," **Social Studies of Science**, vol. **30**, no. 1 (February 2000): 5-40; John Krige, "Crossing the Interface from R&D to Operational Use: The Case of the European Meteorological Satellite," **Technology and Culture**, vol. **41**, no. 1 (January 2000): 27-50; David P. Stern, "Remembering Robert Goddard's Vision 100 Years Later," **EOS**, vol. **80**, no. 38 (September 21, 1999): 441; and Virginia Trimble, "Can't You Keep Einstein's Equations out of My Observatory? – Part II," **Beamline**, vol. **29**, no. 1 (Spring 1999): 21-25.

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## Documentation Preserved

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This is our regular survey of archives and other repositories giving information on materials of interest to historians and others. Many of these are new deposits and not yet processed, but we also include collections that were accessioned years ago, but not previously reported here. Some have restricted access. Please contact the repository for further information.

Items published in this Newsletter since 1994 are posted on our Web site, where you can search the full text of all of them (along with our book and journal bibliographies, exhibit materials, etc.) by clicking on the "Search" icon on our Home page (<http://www.aip.org/history/>). You can specify whether to search the entire AIP site or the History Center only.

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Papers of **Clara Elland Clinkscale**. Student in math and physics; Faculty of Arts; BA 1912 (silver and gold medallist). Married S. A. Morrison; died 23 July 1983 in her 98th year. Papers include course notes and textbooks from when she was a student in the Faculty of Arts at University College (BA 1912); problem sets, experiments and exam papers from the years she taught in the Department of Physics during World War II. 1827-1973. 0.30 lin. meters (5 boxes).

Records of the **David Dunlap Observatory**. Documents consist of correspondence files of the Director of the David Dunlap Observatory arranged by authors and subjects (1932-1970) and subject files (1950-1964). 1921-1970. 0.72 lin. meters (6 boxes).

Papers of **James Loudon**. Includes records documenting James Loudon's career as professor and president of the University of Toronto. Arranged in 15 series: I Office of the President, Administrative files; II General correspondence; III & IV Correspondence files; V Office of the President. Applications, Recommendation and Appointments; VI Scholarships; VII Addresses; VIII Lecture notes, papers and manuscripts; IX Orders-in-council/Govt. legislation; X Personal correspondence; XI Appointment books; XII Diplomas; XIII Miscellaneous; XIV File index; XV Artifacts. 1885-1916. 3.66 lin. meters (22 boxes).

Papers of the **McLennan family**. Physicists. Papers acquired in two fonds. The first includes offprints of articles by Sir John Cunningham McLennan (1867-1935), Professor of Physics; Henry John Cunningham Ireton, as graduate student in physics; and John Francis Todd Young, then a demonstrator and research assistant in physics. 1881-1923. 0.06 meters. The second record group contains a manuscript by Arthur V. White, entitled "The McLennan laboratory: its initiation and purpose" (1936); copy of the Medical Research Council's (UK) "Report on radium beam therapy research, 1934-37," with explanatory notes by Janet McLennan and copies of correspondence bound in. 1923-1938. 0.07 meters.

Papers of **Paul Derek, 1929-**. Professor, Dept. of Physics, University of Toronto. Personal papers contain correspondence, minutes and conference materials of Science for Peace; lecture notes, teaching materials for courses in physics; notes and manuscripts of talks and addresses. 1974-1987. 0.50 lin. meters (1 box). Contact institution for restrictions.

Papers of **George David Scott**. Personal papers include manuscript articles, research notes, correspondence and lectures documenting the career of Scott in the Physics Department at University of Toronto. 1960-1984. 0.4 lin. meters (1 box).

Records of the **University of Toronto. Dept. of Astronomy** comprise three fonds. The first includes files of the Director relating to activities on two committees of the National Research Council: Algonquin Radio Observatory Long Range Planning Committee (1968) and Dr. Currie's Committee "Astronomy and the Universities" (1966). Also correspondence with the Faculty of Arts Dean's Office (1966-1972). 1966-1972. 0.7 lin. meters (1 box). The next group contains files of the Director (Donald MacRae) relating to the events celebrating the 500th anniversary of the birth of Copernicus 1972-1974. 0.7 lin. meters (1 box). The last record group includes a video copy of the "Dedication of the Helen Sawyer Hogg Telescope" and accompanying scrapbook. 1992. 0.7 lin. meters (2 items).

The papers of **Harry Lambert Welsh, 1910-**. Physicist (molecular spectroscopy). PhD 1936. Professor of Physics and Chairman of the Physics Department at the University of Toronto. Personal papers acquired in two fonds. The first includes administrative files, correspondence and articles relating to his activities as head of the Department of Physics and various university committees, conference files, research files, subject files, including his research in molecular spectroscopy, articles with manuscripts and notes. 1935-1985. 3.6 lin. metres (9 boxes). The second accession contains addresses, correspondence, and certificates relating to awards and degrees; administrative files of the Department of Physics; and articles. 1930-1978. 0.73 lin. meters.

The Wilson Family papers of **John Tuzo Wilson, 1908-1993**. Physicist (geology). Papers include the administrative files of John Tuzo Wilson's tenure in the Department of Physics, Erindale, and the Ontario Science Centre; conference proceedings relating

to continental drift and plate tectonics; speeches and papers regarding science education; diaries, maps and photographs of geological fieldwork; minutes, certificates, lecture notes, notes, addresses, family photographs; correspondence of John Armistead Wilson and Henrietta Loetitia Tuzo. 1897-1985. 25 meters (77 boxes).

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CHURCHILL COLLEGE. ARCHIVES CENTRE. CAMBRIDGE CD3 OD5, ENGLAND, UK (CONTACT: ARCHIVIST)

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Papers of **Sir John McGregor Hill, 1921-**. Received PhD in nuclear physics at the Cavendish Laboratory, Cambridge. In 1950 Hill joined the Dept. of Atomic Energy, and was appointed to the Main Board of the UK Atomic Energy Authority (as the Dept. of Atomic Energy had been renamed) in 1964 and Chairman of the UKAEA in 1967, a position he held until 1981. In 1971, Hill became Chairman of British Nuclear Fuels Ltd, and in 1975 became Chairman of the Radiochemical Center Ltd (later Amersham International plc). He retired as Chairman of BNFL in 1983 and Amersham International plc in 1988. Biographical material is slight. Personal papers include biographical profiles and press cuttings, and papers relating to Hill's appointment and retirement from UKAEA. Documentation of Hill's publications, lectures and speeches forms the main body of the collection. The bulk of the material consists of articles, speeches and lectures given during the period 1965-1983. There are a few later speeches and lectures, 1987-1994, and a set of Hill's publications. The principal component of Hill's correspondence is chronological, covering the period 1980-1983; carbon copies of Hill's correspondence to ministers in the Department of Energy and to others in various organizations and institutions in Britain and abroad. During this period Hill was President of the Institute of Energy, Chairman of the BNFL and Chairman of Amersham International plc. 1946-1994.

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INSTITUTION OF ELECTRICAL ENGINEERS. ARCHIVES DEPT. SAVOY PLACE, LONDON WC 2R OBL, ENGLAND, UK (CONTACT: ARCHIVIST)

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Papers of **Hans Gerhard Lubszynski, 1910-1997**. Papers span the dates 1934-1986.

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ROYAL HOLLOWAY COLLEGE LIBRARY, UNIVERSITY OF LONDON, EGHAM HILL, EGHAM, SURREY, ENGLAND, UK (CONTACT: LIBRARIAN)

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Papers and correspondence of **Samuel Tolansky, 1907-1973**. Physicist (surface structure, interferometry). Educated at Durham University, he began research in Berlin and at Imperial College London before being appointed as Lecturer, later Reader, at Manchester University. He was Professor of Physics, Royal Holloway College, London University, 1947-1973, where his research concentrated on interferometry, diamond physics, and lunar dust. He wrote, lectured, and broadcast prolifically, and undertook much examining work at London University and many other universities in Britain and overseas.

Papers of **William Wilson, 1875-**. Physicist; died in 1965. Personal papers ca. 1902-1957.

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ARCHIV DER BERLIN-BRANDENBURGISCHE AKADEMIE DER WISSENSCHAFTEN. JÄGERSTRASSE 22/23, 10117 BERLIN, GERMANY (CONTACT: WOLFGANG KNOBLOCH)

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Papers of **Achilles Papapetrou, 1907-1997**. Expert on relativity theory. He began his international scientific career in 1946 in the research group headed by Erwin Schrödinger at the Dublin Institute for Advanced Studies and finished it as director of the laboratory of theoretical physics at the Henri Poincaré Institute in Paris. The manuscript collection includes several meters of manuscripts from the time of Papapetrou's activities in Berlin and Paris. It includes scientific correspondence with E. Schrödinger, E. Finlay Freundlich, L. Infeld, L. de Broglie, P.A.M. Dirac, and M. Born. Other papers document his activities as researcher, lector, reviewer, participant at scientific meetings, member of the Berlin Academy of Sciences, member of Research Institutes at the Berlin Academy as well as at CNRS in Paris. Sixteen notebooks with scientific data and calculations, various manuscripts and over 100 reprints of his publications and those by some other authors. Closed until processed.

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MAX-PLANCK-GESELLSCHAFT ZUR FÖRDERUNG DER WISSENSCHAFTEN. ARCHIV ZUR GESCHICHTE DER MAX-PLANCK-GESELLSCHAFT. BOLTZMANNSTRASSE 14, BERLIN 33 DAHLEM, GERMANY (CONTACT: MARION KAZEMI)

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Papers of **Max Planck, 1858-1947**. Physicist Nobel prize in Physics (1918). Involved with the Kaiser-Wilhelm Society: Senator (1916-1937); Second "Schriftführer" (1925-1930); President (1930-1937); Honorary Senator (1937), President (1945-1946); afterwards Honorary President. Contains manuscripts, mostly letters to and from Planck, or related to his work. Among correspondents: Ludwig Boltzmann, Robert Bunsen, Paul Ehrenfest, Friedrich Glum, Hans Hartmann, Heinrich Kayser, Gustav Kirchhoff, Max von Laue, Hendrik Antoon Lorentz, Friedrich Paschen, Planck's son Hermann and wife Marga Planck, Carl Runge, Max Schirmer, Hildegard Seidel, Arnold Sommerfeld, Emil Warburg, Wilhelm Wien, publishing house Vieweg & Sohn (1930-1994). Additional collection (1759-1975) consists of offprints related to the history of quantum theory and compiled by Hans Kangro. 1759-1994 (bulk 1830-1994). 4.5 lin. meters; additional collection of offprints 2.3 lin. meters.

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NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY. LIBRARY. TRONDHEIM, NORWAY (CONTACT: LIBRARIAN)

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Papers of **Lars Onsager, 1903-1976**. Chemist and university professor, Yale University, 1933-1972. Nobel Prize for chemistry in 1968. Papers include biographical materials, correspondence, writings, manuscripts, lectures, research materials for articles and lectures, teaching materials related to Yale University and the University of Miami, citations for awards. Also includes photos, diplomas, obituaries etc. Research topics include: dielectrics, electrolytes, irreversible processes, thermal diffusion, Ising model, metals and semiconductors, liquid helium, surface tension, origin of life, mathematics, colloids. Parts of the collection have been microfilmed by Yale University and are available at

Yale University, Sterling Memorial Library. 9 meters (53 boxes and 2 oversize folders).

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RUSSIAN ACADEMY OF SCIENCES. MOSCOW BRANCH. ARCHIVE. UL. NOVOCHEREMUSHKINSKAIA, 34, MOSCOW 117218, RUSSIA (CONTACT: ELENA CURAPOVA)

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Papers of **Vasilii Vladimirovich Shuleikin**, 1895-1979. Geophysicist and founder of Russian school of physical oceanography. Graduated in 1917 from the Moscow Higher School of Technology. Worked at the Institute of Physics and Biophysics (1920-1931), Black Sea Hydrological Station (1929-1948), Institute of Theoretical Geophysics (Morskoi gidrofizicheskii institut an SSSR) (1938-1941), Moscow State University (1943-1964, professor since 1947), Institute of Physical Oceanography (1948-1979, director in 1948-1957). Corresponding (1929) and full (1946) member of the USSR Academy of Sciences. Stalin prize 1942. Researches in geophysics, in particular physics of the water of seas and oceans. Personal papers in the Archive of the Russian Academy of Sciences in Moscow, including: 1) Scientific papers (1920s-1978), manuscripts, reports, travel logs of the expeditions on oceanographic ships "Sedov" (1957, 1959), "Mikhail Lomonosov" (1961), "Akademik Vernadsky" (1969). 2) Biographical documents (1910s-1979), diploma, newspaper clips, obituaries, photographs, photographs from scientific expeditions. 3) Administrative activities (1928-1979), patents, reports, correspondence with international oceanographic institutions and societies. 4) Personal correspondence (1924-1979), among correspondents A.P. Aleksandrov, L.M. Brekhovskikh, S. F. Oldenberg, S. G. Gorshkov (Navy admiral), F. Nansen. 1910-1979. 84 folders.

*The history of science is science itself; the history of an individual, the individual.*

—Goethe

Papers of **Sergei Arkadevich Vekshinskii**, 1896-1974. Applied physicist, specialist in physics instruments and electrovacuum technology. Personal papers include laboratory notebooks, manuscripts of unpublished and published reports, patents, scientific correspondence, paintings. Also includes personal papers of his wife. 1911-1986. 244 folders.

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UNIVERSITY OF EDINBURGH. UNIVERSITY LIBRARY. GEORGE SQUARE, EDINBURGH EH8 9LJ, SCOTLAND, UK (CONTACT: ARNOTT WILSON)

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The use of **mosaic arrays in infrared astronomy**. Compiled and deposited by sociologist David Edge. Several teams of infrared astronomers are currently building cameras incorporating mosaic detector arrays. These arrays, which combine the output of several hundred individual sensors, emerged from military research and development, and are now available on the open market. But, despite this identical technical output, the teams' cameras will differ significantly. The aim of this project was to investigate the reasons for these differences and their subsequent effects. The way in which the teams organize their

work was the focus of analysis; plus the teams' differing locations (in observatories or universities), and the extent in which their designs were influenced not only by "scientific goals" but also by their perceptions of other important "reference groups" (e.g. other users or committees considering the design of later facilities). 1985-1990. 61 interviews on 61 audio-cassette tapes, 2 transcribed.

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UNIVERSITAT AUTONOMA DE BARCELONA. CENTRE D'ESTUDIS D'HISTORIA DE LES CIENCIES EDIFICI CE, 08193 BELLATERRA, BARCELONA, SPAIN (CONTACT: XAVIER ROQUÉ OR GISELA TAMARA MATEOS GONZALEZ)

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Papers of **Esteban Terradas**, 1883-1950. Prominent Catalan physicist and engineer. Terradas played a key role in the creation of a modern physics community in Spain during the first decades of the 20th century. He held doctorates in both physics and mathematics and also received two degrees in engineering. As a university professor in Barcelona and Madrid, he introduced students to relativity and quantum physics at a time when it was not common practice. He was also the driving force behind Einstein's visit to Spain in 1923. Includes Terradas correspondence, manuscripts, notebooks, photographs, and plans (he worked as a consultant for telephone and railway companies).

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KUNGL. TEKNISKA HÖGSKOLAN. UF JURIDIK, 100 44 STOCKHOLM, SWEDEN (CONTACT: KARIN STERKY)

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Papers of Hannes Alfvén, 1908-1995. Professor in the Department of Electrical and Computer Engineering, University of California, San Diego (theoretical magnetohydrodynamics). The collection includes correspondence with scientists from around the world; manuscripts with comments, especially from his early scientific research; books Alfvén wrote by himself and in collaboration with others; articles, reports, abstracts, research papers; notebooks and photographs from his extensive travels; a wide range of documents showing his interest and concern for atomic power, nuclear weapons, peace movement (Pugwash), sources of energy, overpopulation and world famine; press clippings, Nobel prize diploma and medallion, honorary doctorate, etc.; material concerning his collaborations and colleagues especially in Sweden and USA; private papers such as photos and diaries/journals. Ca. 1931-1992. 40 lin. meters documents, 20 lin. meters books and 100 objects.

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ALABAMA SPACE AND ROCKET CENTER ARCHIVES, 1 TRANQUILITY BASE, HUNTSVILLE, AL 35807, USA (CONTACT: ARCHIVIST)

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Papers of **Wernher Von Braun**, 1912-1977. German aerospace engineer; emigrated to the United States in 1945; served as director and administrator of U. S. space programs and projects. Collection covers every aspect of the history and development of rocketry for the 1920s-1970s. It includes 1000 manuscripts of reports, articles and books; his Ph.D. dissertation; 30,000 pages of personal and professional correspondence, abstracted and translated from German to English; 1200 speeches and addresses; 50 personal and 100 professional scrapbooks and photo albums;



1999 Wolf Prize in Physics recipient Raymond Davis (center) with John Galvin (left) and Bruce Cleveland (right) in 1977. Credit: AIP Emilio Segrè Visual Archives, gift of Dr. Davis.



Raymond Davis (right) and Gerhardt Friedlander (left) in the pump room of the Homestake Detector, 1967. Credit: AIP Emilio Segrè Visual Archives, gift of Dr. Davis.

1000 pages relating the work of Von Braun and his team at Fort Bliss, 1945-1950. 1920s-1970s. 500,000 items.

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CARNEGIE INSTITUTION OF WASHINGTON, 1530 P. ST., WASHINGTON, DC 20005-1910, USA (CONTACT: JOHN STROM)

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Papers of **Philip Hauge Abelson, 1913-**. Abelson spent most of his career at Carnegie, moving from asst. physicist (1939) to director of the Geophysical Lab to president (1971-1978). Collection includes papers, reports, lectures, meeting notes, annual reports of the Geophysical Lab, biographies, and correspondence. 1937-1979.

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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-**. Distinguished solar and stellar astronomer, was also the fourth director of Mount Wilson and Palomar Observatories. He received a B.S. in physics in 1934 from the California Institute of Technology, and a Ph.D. in 1938 from University of California at Berkeley. The papers in this collection are, for the most part, those of Babcock's when he was director of the Mount Wilson and Palomar Observatories from 1964 to 1978, and do not include his personal and scientific papers. As director, he led the Observatories through many important changes including the establishment of the observatories in Chile. Forms part of Carnegie Observatories Collection. 1948-1978. 89 boxes (28,000 pieces). The papers are restricted until after Babcock's death but may be consulted with his permission.

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IOWA STATE UNIVERSITY. LIBRARY. DEPARTMENT OF SPECIAL COLLECTIONS. AMES, IA 50011, USA (CONTACT: TANYA ZANISH-BELCHER)

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Papers of **John V. Atanasoff, 1903-1995**. Received B.S. in electrical engineering from University of Florida (1925), an M.S. in mathematics from Iowa State University (1926) and a Ph.D. in physics from the University of Wisconsin (1930). He returned

to Iowa State University in 1930 and taught both physics and mathematics. In 1942 he left Iowa State to join the Naval Ordnance Laboratory, but remained a professor in absentia until 1945. He left government work in 1952 to establish a consulting firm, Ordnance Engineering Corp., which he sold to Aerojet General in 1957, and became vice president of Aerojet General. In the course of his career, he obtained 32 patents for a wide variety of inventions, including several in the field of acoustics. Collection includes teaching materials, articles, journals, newsletters, correspondence, Aerojet general files, and Naval Ordnance Laboratory files. Closed until processed.

Papers of **Velmer A. Fassel**. Internationally known for developing an analytical process, inductively coupled plasma-atomic emission spectroscopy (ICP-AES), used for chemical analysis in almost every research laboratory in the world; former deputy director of the Ames Laboratory. Fassel's numerous achievements include the Fisher Award, the Chemical Instruction Award, the Spectrochemical Analysis Award, the Chemical Instrumentation Award, the Iowa Award from the American Chemical Society and the Governor's Science Medal. Collection includes research data, course notes, and professional correspondence. Closed until processed.

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LIBRARY OF CONGRESS. MANUSCRIPT DIVISION. JAMES MADISON MEMORIAL BUILDING, FIRST STREET AND INDEPENDENCE AVENUE, S. E., WASHINGTON, DC 20540, USA (CONTACT: LEONARD BRUNO)

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Papers of **Glenn Theodore Seaborg, 1912-1999**. Nuclear chemist, college president, and educator. Nobel prize in chemistry (1951). Professor of chemistry at University of California, Berkeley (1971-); associate director Lawrence Berkeley Laboratory (1972-). Papers include correspondence, reports, journals, diaries, pocket notebooks, telephone logs, and appointment books. Academic and administrative subject files, including extensive materials from his tenure as Chancellor, document his later years at Berkeley. Other subject files concern the history of

the Chicago Metallurgical Laboratory, Seaborg's travels, memberships, organizational committees and offices, as well as invitations. Numerous production materials for his books, scientific papers, other articles, and speeches are supplemented by bound volumes of printed publications. Other categories include files on Seaborg's students; financial records; scrapbooks and clippings documenting his life and work; photographs, including slides used in teaching and lecturing; and motion pictures, videotapes, and audiotapes, many of them featuring Seaborg and his activities. 1866-1999. Ca. 400,000 items.

Papers of **Charles H. Townes**. Physicist at the University of California, Berkeley. Nobel prize for physics in 1964. Papers include correspondence, subject files, and other papers relating chiefly to Townes' career as a physicist at Bell Telephone Laboratories, Murray Hill, NJ; Columbia University; Massachusetts Institute of Technology; and University of California, Berkeley. Includes material concerning his invention of the maser in the 1950s and his work as a member of the President's Science Advisory Committee and with the U. S. Department of Defense during the John F. Kennedy presidential administration. Also includes lectures, notebooks, printed material, photographs, and other papers. 1948-1996. Unprocessed. Ca. 60,000 items.

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

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Records of the **Princeton University. Dept. of Astronomy**. Records include observations of the transit of Venus, including record books and photographs; comet observations; observatory record books, equipment lists, notebooks, glass plate negatives of Asteroid "Princetonia," theses in practical astronomy and astronomy, date books. Correspondence includes Henry N. Russell, Lyman Spitzer and John Q. Stewart. 1882-1979. Unprocessed.

Records of the **Princeton University. Dept. of Physics**. Collection includes records from the department chairman and assistant to the chairman. Also included are department records, minutes, examination papers and technical reports. 1909-1957. Unprocessed.

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STANFORD LINEAR ACCELERATOR CENTER. ARCHIVES. P.O. BOX 4349 MS 82, STANFORD, CA 94309, USA (CONTACT: JEAN DEKEN)

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Papers of **Burton Richter, 1931-**. Physicist. Stanford University Paul Pigott Professor of Physical Sciences and Director, Stanford Linear Accelerator Center (SLAC); received his doctorate from the Massachusetts Institute of Technology in 1956, and has been employed by Stanford University from that time to the present as Research Associate (1960-1963); Associate Professor, SLAC (1963-1967); Professor, SLAC (1967); Technical Director, SLAC (1982-1984); and Director, SLAC (1984-present). Nobel prize in 1976 for co-discovery of the J/Psi particle. Papers include personal and professional correspondence relating to all positions held at Stanford, background

and technical information on projects, including Stanford "Project M," SPEAR (Stanford Positron Electron Accelerating Ring), SLED (SLAC Energy Doubler), PEP (Positron Electron Project), PEP-II, BaBar and NLC (Next Linear Collider). 1958-1999. Processing underway. 73 cu. ft.

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UNIVERSITY OF CALIFORNIA, SAN DIEGO. ARCHIVES OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY. UNIVERSITY OF CALIFORNIA, SAN DIEGO MAIL CODE C-075-C, LA JOLLA, CA 92093-0175, USA (CONTACT: DEBORAH DAY)

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Papers of **Robert S. Dietz, 1914-1995**. Geologist. B.S., M.S. and Ph.D degrees in geology from the University of Illinois. Most of his doctoral work was done at the Scripps Institution of Oceanography. Papers include correspondence, biographies, bibliographies, awards, degrees, maps, manuscripts, memoranda, photographs, publications, notebooks, reprints, newspaper clippings and other material documenting Dietz's career. The Subject Series include material on creationism, continental drift, geomorphology, Meteor Crater, Sudbury Basin (Ontario, Canada), meteoric impacts, plate tectonics, TRIESTE, and Trou San Fond Submarine Canyon in Ivory Coast. The files include a few file folders on Project Mohole and two file folders on Dietz's teacher Francis P. Shepard. The collection includes a Bible, which was heavily annotated in connection with Dietz's interest in creationism. The files also include information on Soviet oceanography. 1905-1994. 11.6 lin. ft.

Papers of **Douglas L. Inman, 1920-**. The addition includes ONR progress reports dated 1952 to 1978 and subject files, including files on the artificial Scripps Island, Academic Senate and administrative committees. 1952-1986 (bulk 1952-1986). 2.5 lin. ft.

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UNIVERSITY OF CALIFORNIA, SAN DIEGO. MANDEVILLE LIBRARY SPECIAL COLLECTIONS. 9500 GILMAN DRIVE, LA JOLLA, CA 92093, USA (CONTACT: LYNDA CLAASEN)

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Papers of **William Bell Thompson, 1922-1995**. Professor of physics at UCSD, educated at the University of British Columbia (B.A. and M.A.) and the University of Toronto (Ph.D.). From 1950 to 1965, Thompson had a series of appointments in England at the Theoretical Physics Division at Harwell, the United Kingdom Atomic Energy Authority, Culham Laboratory, and Oxford University where he was appointed Chair of Theoretical Plasma Physics. In 1965, Thompson was invited to join the Physics Dept. at UCSD. He remained at UCSD until his retirement in 1990, having served as the chair of the Physics Dept. from 1969 to 1972. Papers primarily document William Thompson's tenure as a professor of physics at UCSD from 1965 to 1990. The collection includes correspondence, research files, grant proposals and applications, course outlines and notes, and subject files. Major correspondents include Gustaf Arrhenius, Leopold Infeld, Homero Jimenez Dominguez, and Philip J. Morrison, one of Thompson's graduate students. In addition to correspondence, the collection also contains other materials about Leopold Infeld, Thompson's mentor who was persecuted by the Canadian



Above left: Hendrik Kramers. Right: Hendrik Kramers in Denmark with his daughter Susan sitting on his shoulders. Photos courtesy of AIP Emilio Segrè Visual Archives.

These are three of about fifteen photos of Hendrik Kramers and associates generously donated by Professor Paul H.E. Meijer, who originally obtained the photos from Martien Kramers, Kramers' youngest daughter.

Hendrik Kramers with J. Robert Oppenheimer.

government because of his leftist politics. 1963-1995. 11.5 lin. ft. (25 archives boxes and 2 oversize file folders).

UNIVERSITY OF WISCONSIN--MADISON. UNIVERSITY ARCHIVES. 728 STATE ST., B134 MEMORIAL LIBRARY, MADISON, WI 53706, USA (CONTACT: CATHY JACOB)

Papers of **Henry Herman Barschall, 1915-** Physicist (nuclear physics). Staff member, Los Alamos Scientific Laboratory, 1943-1946, 1951-1952; on physics faculty of University of Wisconsin at Madison from 1946; associate division leader, Lawrence Livermore Laboratory, 1971-1973. 1960's-1970's. Unprocessed. 6 cu. ft.

Papers of **Ragnar Rollefson, 1906-1998**. Graduate of University of Wisconsin (B.A. 1926; Ph.D. 1930). Member of the University of Wisconsin Physics faculty from 1930-1942, 1952-1956, 1957-1976. He worked on radar at MIT from 1942-1945. He was the chief scientist at the Boston field station of the Naval Research Lab in 1946; Associate Director for Project Charles at MIT's Lincoln Lab from 1951-1952; and chief scientist of the U. S. Army, Washington, D.C. He was acting director of the Midwest Universities Research Association (MURA) from 1957-1960. Two accessions of unprocessed papers; the first covers the years 1940-1976. 2 cu. ft. The second group of papers covers the 1930s-1980s. 1 cu. ft.

Records of the **University of Wisconsin—Madison**. Physical Sciences Laboratory. The former Midwestern Universities Research Association (MURA) became the Physical Sciences Laboratory of University of Wisconsin (PSL) in 1967. The lab maintains working relationships with the UW Computing Center, the Engineering Experiment Stations, the Instrumentation Systems,

*The history of science alone can keep the physicist from the mad ambitions of dogmatism as well as the despair of Pyrrhonian skepticism.*  
—Pierre Duhem

the University-Industry Research Program and other specialized organizations of the University. Collection includes chronological correspondence. 1976-1989. 9.5 cu. ft.

UNIVERSITY OF WYOMING. AMERICAN HERITAGE CENTER. INTERNATIONAL ARCHIVE OF ECONOMIC GEOLOGY. P.O. BOX 3934, LARAMIE, WY 82071, USA (CONTACT: MICHAEL DEVINE OR CAROL BOWERS)

Papers of **Carl Leopold Kober, 1913-** Physicist and company executive. His work included research and development in the fields of radar, air defense, space exploration, and remote sensing instrumentation for geophysical exploration. Collection contains mainly speeches along with biographical material and photographs dealing with remote sensing instrumentation for geophysical exploration. 1938-1993. 1.15 cu. ft. (3 boxes).

Papers of **Martin A. Pomerantz, 1916-** Personal papers containing research files, reports, VHS tapes, and 35 mm slides. Unprocessed. 70 cu. ft.

Papers of **Edwin Roedder, 1919-** The papers include scientific correspondence, project evaluations and related materials. Unprocessed. 7 cubic ft.

WASHINGTON UNIVERSITY. LIBRARIES. UNIVERSITY ARCHIVES. CAMPUS BOX 1061, ONE BROOKINGS DRIVE, ST. LOUIS, MO 63130-4899, USA (CONTACT: CAROLE PRIETTO)

Papers of **Dan I. Bolef, 1921-** Advisory physicist at Westinghouse Research Laboratories from 1953 to 1963. Bolef joined Washington University in 1963 as professor of physics, becoming professor emeritus in 1983. Papers include course notebooks from Bolef's graduate studies, and research related papers from his work at Westinghouse. Of note are research materials relating to masers. Laboratory manuals and other teaching materials, professional correspondence, grant proposals, and other papers relating to Bolef's time in the Physics Department at Washington University are also part of the collection. In

addition, there is a large group of materials relating to arms, nuclear energy, Vietnam, the draft, civil rights, and other issues covering the 1960s through the early 1980s. 1946-1980s. Recent addition unprocessed. 78 boxes.

Papers of **Edwin P. James**. Professor of Physics, Washington University. Personal papers from throughout his professional career include correspondence, lecture notes, dissertation research material, presentations, etc. Ca. 1950-1995. 59 boxes. Records of the Washington University (St. Louis, MO). Office of Chancellor. Generated during the administration of Arthur Holly Compton (1892-1962). Compton, a Nobel laureate in physics (1927), was Chairman of the Department of Physics (1920-1923), and Chancellor (1945-1953) during his tenure at Washington University. Contents include subject files, correspondence with academic departments and professional schools. 1945-1953. 40 boxes. Contact the University Archives at least 48 hours in advance. Access restricted.

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WOODS HOLE OCEANOGRAPHIC INSTITUTION. ARCHIVES. MAIL STOP 8, WOODS HOLE, MA 02543-1539, USA (CONTACT: MARGOT BROWN GARRETT)

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Papers of **Nicholas Paul Fofonoff, 1929-**. Physical oceanographer and chairman of the Department of Physical Oceanography at WHOI (1967-1971 and 1981-1985). His research involved theoretical studies in physical oceanography, and he became a leader in the development of mooring technology and reliable current measuring systems. He also played an important role in the planning and implementation of the seminal MODE (Mid-ocean Dynamics Experiment) program, its successor POLYMODE (Joint US-USSR Mid-Ocean Dynamics Experiment), and eventually of the World Ocean Circulation Experiment, for which he acted as director of the International Project Office from 1991-1993. With Lynn Lewis, he took the lead in the development and introduction of the now standard Practical Salinity Scale. He was Professor of the Practice of Physical Oceanography (1968-1985); Associate of the Center for Earth and Planetary Physics (1971-1986); and Distinguished Research Associate (1985-1991) at Harvard. The collection consists of correspondence, chronological files, proposals, data, and documents his activities and involvement with numerous programs and projects. 10 record cartons.

Papers of **John Brackett Hersey, 1913-1992**. Geophysicist at WHOI. Hersey's research included solid earth geophysics, underwater acoustics, physical oceanography, sound scattering by marine animals and marine geology. Helped pioneer the development and use of towed instruments at sea, and received patents for methods of the study and applications in marine seismology and underwater acoustics, notably the Continuous Seismic Profiler (CSP) for measurement of layered sediment beneath the ocean floor. Papers consist of correspondence (1940s to 1970s); photographs of echo sounding seismic operations (1950s-1960s); MIT

1965 summer session materials; cruise journals (1960s), data and reports; his drafts, daily logs, notebooks, proposals, and patent information; trip reports as deputy assistant oceanographer (1970s); lectures and committee minutes; and audograph-soundwriter recordings (1949-1950) of scientific observations at sea, including sound transmissions, reverberation studies, fish noises, and oral discussions and reports. The materials reflect his work and contributions as a geophysicist at the Institution; his involvement and collaboration with other scientists and with the U. S. Navy; his tenure as the first department chairman of Geology & Geophysics, and some of his activities as deputy assistant oceanographer at the Office of Naval Research in Washington, DC. His papers also detail his involvement in numerous projects while at WHOI, including the Thresher search, AMSOC (American Miscellaneous Society) committee, Project Mohole, the Mantle Project, and the International Indian Ocean Program. Ca. 1940s-1970s. 12 record cartons.

Papers of **Raymond Braislin Montgomery, 1910-1988**. Marine meteorologist and physical oceanographer whose broad research interests centered on the equatorial currents, the variation of sea level and methods for the objective characterization of the structure of air and water masses. He was one of the first to use isentropic analysis, and with colleagues demonstrated how information about the general circulation of the ocean could be distilled from hydrographic station data. He served on the scientific staff at WHOI during the 1940s and 1950s and retained close connections to the Institution until his death. He also served as editor of the "Journal of Atmospheric Science" (formerly "Journal of Meteorology") in the mid-1940s, and on several editorial boards. The collection contains correspondence, manuscripts, lectures and class notes and data. 1928-1988. 13 record cartons.



*This photo was taken on the stairs of the Physics Department of Moscow State University in 1961. It shows two honorary guests, Niels Bohr (left) and Lev Landau (right), along with three student activists: A. Sarvazian, the author of the physics department's logo, I.S. Alekseev, who would later become a prominent historian and philosopher of science, and Yu.I. Gaponov, recently an organizer of conferences on the history of Soviet atomic project.*

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Spencer R. Weart, *Director*; R. Joseph Anderson, *Assistant Director & Head, Niels Bohr Library*; Joan Warnow Blewett, *Archivist Emeritus*; Michele Blakeslee, *Associate Librarian*; Rachel Carter, *Senior Secretary*; Joel Genuth, *Project Historian*; Sara Schechner, *Visiting Scholar*; Katherine A. Hayes, *Assistant Archivist*; Clay Redding, *Assistant Archivist*; Barbara Allen, *Library Assistant*; Nancy Honeyford, *Library Assistant*; Sandra Johnson, *Assistant Archivist*; Alexei Kojevnikov, *Postdoctoral Historian*; Holly Russo, *Web/Publications*; Jack Scott, *Photo Librarian*.

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