

History of Physics Newsletter

VOLUME II, NUMBER 3

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DIVISION NEWS

MEETINGS

The Division of History of Physics will sponsor sessions at the following APS general meetings in 1986:

-- Atlanta, GA, 27-30 January -- a session on the history of physics education.

-- Las Vegas, NV, 31 March-4 April -- a session on the history of applied physics.

-- Washington, DC, 28 April-1 May -- a session on the origin and development of Schroedinger's equation, and a session on the philosophy of physics.

Details will be announced in the APS Bulletin. For further information contact the chair of the Program Committee, Robert E. Schofield.

Joint Atlantic Seminar

The next meeting of the Joint Atlantic Seminar in the History of the Physical Sciences (co-sponsored by the History of Physics Division) will be held at Harvard University; the date is tentatively set for April 25-26, 1986. For further information write to Prof. Erwin Hiebert, History of Science Department, Harvard University, Cambridge, MA 02138.

Call for Nominations for 1986 Officers

The Nominating Committee for next year's election consists of John Rigden (chair), Max Dresden, Martin Harwit, and Kathryn Olesko. Nominations for Vice-Chairperson (to become Chairperson in the following year) and for two persons to serve 3-year terms on the Executive Committee should be sent by October 31 to John Rigden. A list of Division Members, eligible for nomination, is in the most recent APS membership directory.

ELECTION RESULTS

Martin Harwit has been elected Vice-Chairperson of the Division of History of Physics for 1985. He will serve as Chairperson in 1986. Harwit is Professor of Astronomy at Cornell University. He obtained his B.A. in Physics at Oberlin College, the M.A. in Physics at the University of Michigan, and the Ph.D. in Physics at MIT. He has been at Cornell since 1962, serving as Chairman of the Astronomy Department from 1971-76. At the Smithsonian Institution's National Air and Space Museum he has held the Chair in Space History. His research interests include observational astronomy, theoretical astrophysics, and the history of astronomy and astrophysics. His recent publications include Cosmic Discovery, a book that deals with the history of astronomical discovery, summarizes factors inducing discovery, and contrasts these to commonly held beliefs on discovery. In the past year he has been active in establishing a program in the History and Philosophy of Science and Technology at Cornell.

Albert Wattenberg has been elected to a 3-year term as Secretary-Treasurer. He is Professor of Physics at the University of Illinois, Urbana-Champaign. Wattenberg received his Ph. D. in Physics at the University of Chicago; he was group leader at the Metallurgical Lab., University of Chicago, 1942-46 and at Argonne National Lab. 1947-50. He was been a professor at Illinois since 1958. Wattenberg has been a member of the APS Council, 1976-80, and was Chairman of the Ad Hoc APS Council Committee for the Formation of the Division of History of Physics, 1979-80. He conducted experimental research in nuclear physics, 1942-55, and experimental research in elementary particle physics, 1955 to present. He is the co-author of more than 80 articles in Phys. Rev. and Phys. Rev. Letters. He received the Bronze Medal 1962 of the American Nuclear Society and the Nuclear Pioneer Award of the Society of Nuclear Medicine. His present historical project is "The first nuclear reactors as research tools 1942-46."

Wattenberg will become Editor of the History of Physics Newsletter starting with the next issue.

The History of Physics Newsletter (HPN) is published by the Division of History of Physics of the American Physical Society. It is distributed free to all members of the Division. Others may subscribe at \$10 per volume (\$5 additional for air mail). Each volume consists of 5 issues; we expect to publish two issues per year.

Editor for this issue: Stephen G. Brush, University of Maryland. Associate Editors: Gloria B. Lubkin, *Physics Today*, and Kathryn Olesko, Georgetown University. Assistant Editor: James Beichler.

Starting with the next issue, the editor will be Albert Wattenberg, Department of Physics, University of Illinois, 1110 W. Green St., Urbana, IL 61801 (217/353-4172).

ELECTION RESULTS (continued)

The Division also elected Gordon Baym and Allan A. Needell to 3-year terms on its Executive Committee.

Baym is Professor of Physics at the University of Illinois, Urbana-Champaign, where he has been a member of the faculty since 1963. His research interests have been in condensed matter physics, astrophysics, and nuclear physics. In recent years he has begun work in the history of modern physics, including the history of neutron stars, and the history of solid-state physics, where he is an active participant in the International Project on the History of Solid-State Physics, working on the history of the quantum theory of solids, and of collective phenomena. He is a Fellow of APS and the American Academy of Arts and Sciences, a member of the National Academy of Science, and a recent member of the Nominating Committee of the APS Division of History of Physics.

Needell is associate curator in the space science and exploration department of the Smithsonian Institution's National Air and Space Museum. He earned his B.A. in physics from Cornell and his M.A. and Ph. D. in history of science from Yale. From 1977 to 1981 Needell served as staff historian on a federally sponsored project of the Center for History of Physics, to evaluate the records management and archiving procedures of the U. S. Department of Energy's multipurpose research laboratories (including Brookhaven, Argonne, Oak Ridge, and Lawrence Berkeley Lab.) Since then he has been at the Air and Space Museum, where he is in charge of the museum's collection of geophysical satellites and planetary probes. Needell now leads the Space Science Section of the Museum's Space Science and Exploration Department. He has written on the history of the quantum concept and on the origins of Brookhaven National Laboratory; he is currently working on the National Science Foundation and the establishment of the National Radio Astronomy Observatory, and on the early involvement of physicists in the American space program.

Other members of the Executive Committee are: Chairperson, Robert E. Schofield; Past Chairperson, Arthur I. Miller; Divisional Councillor, Max Dresden; members with terms expiring April 1986, Allan Franklin and Gloria Lubkin; members with terms expiring April 1987, Paul Forman and M. Norton Wise; *ex officio*, Director of the Center for History of Physics, Spencer Weart.

Executive Committee Meeting

The Executive Committee of the Division held its annual meeting on 26 April 1985 in Crystal City, VA. The following business was transacted.

1. Report on results of election (see above).

2. Criteria for nominations of Division members to Fellowship in APS were discussed at some length. The Fellowships Committee appointed last year (S. G. Brush, chair; W. A. Fowler; M. J. Klein) presented the following recommendations for criteria:

"According to the APS Constitution, 'There shall be elected to Fellowship only such members who have contributed to the advancement of physics by independent, original research, or who have rendered some other special service to the cause of the sciences. The fulfillment of these qualifications shall normally be determined by an examination of the published works of the candidate.'

"By establishing this Division, the APS has accepted that work in history of physics contributes to the advancement of physics itself (cf. Art. IX, par. 1). Therefore we propose that the primary criterion for nomination to APS Fellowship from this Division be published research in the history of physics. As a secondary criterion, the 'other special service' could also consist of some kind of publication, such as a textbook or popularization which draws on historical material to promote education or public understanding of physics.

"The normal minimum qualification for Fellow should be equivalent to that for promotion to full professor in a history of science department in a research university. While criteria vary from one institution to another, we would ordinarily expect that the nominee has published two monographs or the equivalent in articles in refereed scholarly journals.

"In order to be eligible on the basis of 'other special services' we should require substantially more publications and make a judgment that their content is historically accurate even if it does not present original research.

"Election to office in the Division is not itself a sufficient condition for being nominated as a Fellow, but may be taken as an indication that the Division members endorse our Nominating Committee's favorable judgment of the person's research and/or service in history of physics."

The following amendment was added at the meeting:

"A person who is a member of the Executive Committee of the Division of History of Physics shall not be nominated for Fellowship in that year."

The criteria as amended were accepted unanimously by the Executive Committee. Implementation and procedures for nomination of Fellows were then discussed. The following motion was made and passed unanimously:

"The Fellowship Committee of the Division of History of Physics shall be appointed by the Chairperson of the Division; it shall consist of five people who are members of the Division and who are also Fellows of the APS. The recommendations of the DHP Fellowship Committee shall go directly to the APS Fellowship Committee."

[See below for members of Fellowship Committee for 1985-86.]

3. The Publications Committee (Roger Stuewer, chair; Laurie Brown; Stephen Brush), had explored possibilities for promoting the publication of books in the history of physics. There is an interest in a joint publishing arrangement between Tomash Publishers and the AIP to continue the series on the History of Modern Physics 1800-1950 edited by Gerald Holton and Katherine Sopka. [See HPN I: 5, 25, 103; II: 20] Rita Lerner, representing AIP, discussed the situation and said that a contract is already being drawn up with Tomash. She announced the forthcoming publication of a collection of historical articles reprinted from *Physics Today*; details will be given in HPN.

The question arose as to whether the AIP, with or without Tomash, could help in arranging for the publication or reprinting of inexpensive books on the history of physics for use in courses. Members of the Division interested in this matter should contact a member of the Publications Committee.

4. **Book Prize:** In February 1984 a committee consisting of Stephen Brush (chair), Gerald Holton, and Robert Schofield had prepared a report recommending the establishment of a book prize in the history of physics [see HPN II: 3]. Max Dresden, the Division's representative to the APS Council, reported that the Council has adopted new rules distinguishing between "prizes" and "awards." [See the APS Bulletin, pp. 834-5 (1985)] Prizes have to be \$5000 or more. The proposed history of physics prize would be less than this and therefore would be called an award. Awards and prizes must be supported by a fund adequate to give them at least five times (not necessarily in consecutive years). The APS Council has not yet approved our proposal; after they do we can start raising money for the award.

5. **Use of Division mailing lists by publishers, etc.:** It was moved that the membership list of the Division of History of Physics not be sold to publishers or advertisers. The motion was defeated. Further discussion brought out that a number of members of the Committee and probably of the Division prefer their names not be provided to those who would send them additional advertising mail, but others would like to receive announcements such as lists of new books in history of science. It was decided that this question should be referred to the APS Council. A formal motion was passed:

"We suggest that the APS request the AIP to provide a mechanism for APS members to restrict circulation of their names."

A coupon is provided on page 47 of this issue of HPN for Division members to indicate their desires in this matter.

6. **Report of Ad-Hoc Committee on Funding for Conferences in the History of Physics.** The Committee (Kathryn Olesko, chair; Robert Schofield; M. Norton Wise) presented its recommendations, as printed below. The possibility of increasing the amount of funds was discussed, but it did not appear feasible to provide more than a total of \$150 per year at the present time with the limited budget of the Division.

7. Robert Schofield reported that he had requested four sessions of invited papers to be sponsored by the Division in 1986. [See above.]

8. Stephen Brush submitted for comment a proposal to publish in the Newsletter a series of notes on "Famous Quotations, Anecdotes, and Myths in the History of Physics." Historians of science are often asked by scientists to identify or substantiate such quotes or stories. An example is the saying attributed to Eddington, "never trust an observational result unless it is supported by a theory" (see HPN I: 10, 30). Others are "hypotheses non fingo," the "ultraviolet catastrophe," "God does not play dice," "eppur si muove," "the physicists have known sin," origin of the word "quark," etc. Each note would give appropriate references to original sources. Comments and suggestions from readers of HPN are welcome.

Funding of History of Physics Conferences

The following recommendations, prepared by the Ad-Hoc Committee on Funding for Conferences in the History of Physics, were approved by the Executive Committee at its meeting on April 26, 1985:

"1. The Division should support in the amount of \$150, as already promised, the Joint Atlantic Seminar in the History of the Physical Sciences for 1985 and 1986.

"2. Early in 1986 the Division should make an announcement in the Newsletter, and perhaps in the Newsletters of other organizations such as the History of Science Society, that it will entertain requests for funding from formal or informal organizations who will be holding scholarly sessions on the history of physics at

their meetings. Multidisciplinary conferences (e.g., those that treat the sociology or philosophy of science as well as the history of science) and conferences that treat the history of other natural sciences will be eligible as long as a minimum of three papers or one session is devoted exclusively to the history of physics.

"The host institution of the JAS is not excluded from such competition after 1986, but the Division should make every effort to support conferences in other regions of the country.

"Applications for funding should specify how such funding will be used. The Division should express its preference that these funds be used to support graduate student participation through the award of stipends, honoraria, or travel expenses. The Division should request that appropriate citation of its support be made in the program of the chosen conference.

"3. In choosing the organization to be supported, the Division should give preference to those conferences or sessions that (a) will encourage and include the presentation of papers by graduate students; and (b) will encourage and promote high standards of historical scholarship.

"4. The amount of funding will remain at \$150 per year unless there is a change in the Division's reserve funds.

"5. An Ad-Hoc Committee should convene annually to review such proposals. [See below for membership of this committee.]

"6. Announcement of the support and of the papers presented should be made in the Division's Newsletter."

COMMITTEE APPOINTMENTS

The following have been appointed to Division Committees for 1985-86:

Nominating Committee -- see page 33

Fellowship Committee -- Martin Klein (chair), Laurie Brown, Stephen Brush, Max Dresden, William Fowler.

Publication Committee -- Roger Stuewer

Committee on Funding for Conferences in the History of Physics -- Larry Badash, Allan Franklin, Kathryn Olesko.

1985 Joint Atlantic Seminar

Report from Lorraine Daston (Princeton):

The 12th annual meeting of the Joint Atlantic Seminar for the History of the Physical Sciences was held on April 26-27, 1985, under the auspices of the Program in History of Science at Princeton University and the Division of History of Physics, American Physical Society. Following past custom, the Friday evening session was devoted to papers on an important new approach in the history of the physical sciences, and Saturday was given over to graduate student presentations.

Michael Mahoney (Princeton, History), Peter Galison (Stanford, Philosophy and Physics), and Sharon Traweck (MIT, Anthropology) spoke in the Friday evening session about "The evidence of things: Laboratories, instruments, and machines." Graduate students from the universities of Toronto, Harvard, Maryland, Princeton, and Montreal spoke on topics as diverse as 17th-century astronomy, 20th-century German chemistry in the interwar years, the reception of the Bourbaki by American mathematicians, and quantification in geology. In all, some 40 people attended.

CONFERENCES

Draper

A symposium to mark the centennial of the beginning of the Henry Draper Memorial, widely regarded as the cornerstone of modern astrophysics, will be held on October 23, 1985 at the University of Western Ontario. Papers will be presented by Dorrit Hoffleit (Yale) on the historical aspects of the Draper Memorial Project, and Nancy Houk (Michigan) on the project to re-classify the stars in the Draper Catalogue on the more up-to-date "M-K system." These papers will be chaired and commented on by Helen Hogg (Toronto) and Robert Garrison (Toronto), respectively. For further information, contact Howard Plotkin, Department of History of Medicine and Science, University of Western Ontario, London, Canada N6A 5C1.

History of Science Society

The annual meeting of the History of Science society will be held at Bloomington, Indiana, November 1-3, 1985. Among papers to be presented the following are of interest to historians of physics:

Bruce Hunt (Texas/Austin), "Heaviside the Telegrapher: Submarine cables and field theory in Victorian Britain"; Joe Burchfield (Northern Illinois), "Tyndall's Materialism"; Naam Kipnis (Bakken Library), "Thomas Young and the Discovery of the Principle of Interference of Light"; W. E. Laird (Rice), "Giuseppe Moletti and Renaissance Mechanics"; Andrew Pickering (Illinois/Urbana), "Pragmatism in particle physics"; Arthur I. Miller (Lowell & Harvard), "The fabrication of 'How I created the theory of relativity'"; Steven D. Sargent (Union College), "Jean Buridan and the Quies Media of reflected motion"; Winifred L. Wisan (Oneonta, NY), "Galileo's 'concetto immenso'"; Christopher B. Burch (Pittsburgh), "On the integrity of the metaphysics and natural philosophy of Rene Descartes."

In addition there will be a session on "Pierre Duhem: Physicist, Philosopher, Historian" with papers by Stanley L. Jaki (Seton Hall), Donald C. Miller (Lawrence Livermore Lab.), Niall Martin (London School of Economics), Roger Ariew and Peter Barker (Virginia Tech) and William A. Wallace (Catholic University); and a session on "Theory and Observation in Kepler's Natural Philosophy" with papers by Stephen Straker (British Columbia), Peter Machamer (Pittsburgh) and William H. Donahue (Santa Fe, NM).

For further information see the History of Science Society Newsletter, July 1985.

Microphysical Reality

A conference on microphysical reality and quantum formalism will be held at the University of Urbino, Italy, 25 September - 3 October 1985. Papers will present perspectives on the Einstein-Bohr debate 50 years after the EPR argument. Contact: Prof. F. Selleri, Dipartimento di Fisica, Università di Bari, Via Amendola 173, 70126 Bari, Italy.

Michelson-Morley Experiment

A conference to celebrate the centenary of the Michelson-Morley experiment is being planned for 1987. Anyone interested in this subject should contact Philip L. Taylor, Office of the Dean, Case Western Reserve University, Cleveland, OH 44106.

Social Studies

The Society for Social Studies of Science will hold its 10th annual meeting at Rensselaer Polytechnic Institute, Troy, NY, 24-27 October 1985. Papers of interest to historians of physics include:

Andrew Pickering (Illinois), "Constructing consensus: World views, institutional structures and policy making in recent high energy physics"; P. G. Abir-Am (Harvard), "Theoretical controversy and decision making in transdisciplinary areas: phasing out physico-chemical morphology in the 1930s"; C. S. Gillmor (Wesleyan), "The radiotelescope at Nancy"; Samuel Edgerton (Williams), "Imaging astronomical phenomena in outer space: modern science's debt to modern abstract art."

For information about registration contact Thomas F. Gieryn, Ballantine Hall room 744, Indiana University, Bloomington, IN 46405 (phone 812/335-2950 or 5125) before October 4.

Institute of Physics, History Group

The History of Physics Group of the (British) Institute of Physics will hold a meeting on "Reminiscences of senior physicists," 30 October 1985, and a joint meeting with the Education Group on "The Role of History in the Teaching of Physics," 15 November 1985. A joint meeting of the history groups of the Royal Astronomical Society, the Royal Meteorological Society and the Institute of Physics is being planned for Spring of 1986. A summer school will be held for physicists and others interested in carrying out projects in the history of physics at Exeter College, Oxford, from 2-4 July 1986. For information contact John Roche, Linacre College, Oxford, OX1 3JA, England.

Newton's Principia

A conference to commemorate the 300th anniversary of the publication of Isaac Newton's *Philosophia Naturalis Principia Mathematica* is being planned by the University of Maryland and the Smithsonian Institution. It will be held in Spring 1987 (probably late April) in College Park and Washington. In addition to invited papers, there will be one session of contributed research papers, selected from those submitted. For information contact Stephen Brush, IPST, University of Maryland, College Park, MD 20742.

Laboratories

A Symposium on "Laboratories: The Place of Experiment," to be held 17-19 September 1986, is being organized by the Royal Institution of Great Britain Centre for the History of Science and Technology (RICHST). Topics to be discussed include the importance of various kinds of laboratories to the production and dissemination of knowledge; how they are funded and staffed; how does the physical construction of the buildings affect the events that happen in them; how do research groups, brought together in the buildings, internally collaborate to produce a distinctive style. The Symposium will examine these and many other questions from a variety of disciplinary perspectives. Contributions will be welcomed from historians and sociologists dealing with problems relating to historical and contemporary laboratories. Contributions from scientists, engineers and architects who have been intimately concerned with the building of laboratories over the past 40 years or so will be especially welcomed.

Offers of papers, including a brief abstract, should be sent by 30 September 1985 to the organiser, Frank James, Laboratories Symposium, RICHST, The Royal Institution, 21 Albemarle St., London W1X 4BS, England, UK.

OBITUARIES

Goldman

Martin Goldman, author of a recent biography of James Clerk Maxwell (The Demon in the Aether, 1983) was killed in a train accident on 30 July 1984 at the age of 34. See obituary notice by N. Fisher in the British Society for the History of Science Newsletter, Jan. 1985, 16: 18.

Guerlac

by Kathryn Clesko

Henry Guerlac, one of the founders of the discipline of the history of science in the United States, died in Ithaca, NY on May 29, 1985. He was born in Ithaca on June 14, 1910.

Graduated from Cornell University with a bachelor's degree in chemistry in 1932 and a master's degree in biochemistry in 1933, Guerlac went on to study European history under William Langer at Harvard where he received his doctorate in 1941. Between 1946 and 1975 he was a member of the history department at Cornell University where he directed the Society for the Humanities from 1970 to 1977. He spent the years 1953 to 1955 at the Institute for Advanced Study in Princeton; in 1974 he was awarded the George Sarton Medal of the History of Science Society.

Guerlac's research interests were broad, but two scientists captured most of his attention: Lavoisier and Newton. His books include: Lavoisier, The Crucial Year (1961), which received the Pfizer Award of the History of Science Society; Antoine-Laurent Lavoisier, Chemist and Revolutionary (1975), a reprint of Guerlac's article on Lavoisier in the Dictionary of Scientific Biography; and most recently, Newton on the Continent (1981). Dividing scholars into two types -- "book men and article men" -- Guerlac numbered himself among the latter: "I work most happily in small form," he remarked. Conceiving the article form to be a forum to stimulate others to pursue the topic, Guerlac used articles to unite the activity of teaching and research. Most of his own articles were collected in his Essays and Papers in the History of Modern Science (1977). At the time of his death, Guerlac was completing a variorum edition of Newton's Opticks.

Guerlac's pedagogy was as strong as his scholarship; he claims many members of the discipline as his students. He worked to integrate history of science into the college curricula of the University of Wisconsin, where for a brief time he was chairman and solitary member of this country's first Department of the History of Science, and most notably at Cornell University, where he wrote Science in Western Civilization. A Syllabus (unpubl.). It was in and through teaching that Guerlac felt that most of the "spadework" of the discipline could be accomplished.

He also spent three years as the historian of the Radiation Laboratory at Massachusetts Institute of Technology where he wrote Radar in World War II (to be published by Tomash in the "History of Modern Physics" series).

He served as president of the International Academy of the History of Science, and of the History of Science Society. He was elected fellow of the Royal Society of Arts in London, and he received the French Legion of Honor from President Mitterrand.

Guerlac is survived by his wife, Rita, and three daughters.

Rosen

Edward Rosen, a historian of science known for his studies of Nicolaus Copernicus, died March 28, 1985 in New York, at age 78. Rosen was City University of New York Distinguished Professor Emeritus. A faculty member in the history department of City College for nearly 60 years, Rosen was also on the doctoral faculty in history at the City University Graduate Center.

Like the subject of his life-long research, Rosen's death came on the eve of publication of one of his most significant works. Copernicus did not live to see his last book in print; Rosen's third and last volume, of The Complete Works of Nicholas Copernicus will be published by the Polish Academy of Sciences within the next few months. (Vols. I and II were published in 1972 and 1978.)

Considered one of the world's greatest authorities on Copernicus, Rosen received the Nicholas Copernicus Medal from the Copernicus Society of America, a Pfizer Award from the History of Science Society, and a Gold Medal of Merit from the Polish People's Republic. A Festschrift in his honor was published in 1977 under the auspices of the Polish Academy of Sciences (Science and History: Studies in Honor of Edward Rosen).

Rosen was the author of more than 10 books and more than 300 articles and reviews. His first study of Copernicus, Three Copernican Treatises, was published in 1939 and reissued in 3 subsequent editions, and was translated into Italian. A concise work, Copernicus and the Scientific Revolution, appeared in 1984.

PERSONALIA

Barman

John Barman has been appointed Professor in the Department of History and Philosophy of Science of the University of Pittsburgh. Barman edited Foundations of Space-Time Theories (1977) and Teasing (1983) and is the author or co-author of several articles on the history of relativity theory.

Jacob

Margaret C. Jacob has been appointed University Professor of History at the New School for Social Research and Dean of its Eugene Lang College. Jacob is the author of The Newtonians and the English Revolution (1976) and several articles on the relation between Newtonian science, politics, and religion.

Lubkin

Gloria B. Lubkin, a member of the Executive Committee of the Division of History of Physics, has been appointed Editor of Physics Today. She has been on the staff of Physics Today since 1963. (See Physics Today, May 1985, p. 77.)

Thackray

Arnold Thackray has been appointed Dean of Graduate Studies and Research at the University of Maryland, College Park. Thackray is currently Professor in the Department of History and Sociology of Science at the University of Pennsylvania, Editor of Jais, and Director of the Center for History of Chemistry. He has published books and articles on Newtonian matter-theory and 18th century chemistry, Dalton's atomic theory, and the history of the British Association. At Maryland he will also be professor of history and a member of the Committee on History and Philosophy of Science.

Wise

M. Norton Wise, a member of the Executive Committee of the Division of History of Physics, has been awarded a fellowship by the American Council of Learned Societies for research on a scientific biography of Lord Kelvin.

REPORTS

Bohr Centennial

October 7, 1985 will be the centennial of the birth of Niels Bohr. An article on several events planned to celebrate this event is in the Newsletter of the AIP Center for History of Physics, May 1984. (See HPN II: 17 for sessions sponsored by the Division of History of Physics in April.)

The American Institute of Physics has issued a 30" x 20" poster and a 4" x 6" postcard featuring Bohr, for sale to individuals and institutions. (Institutions are encouraged to buy them in quantity for resale). The posters are priced at \$11.50 for one and \$5.50 for each additional poster ordered at the same time, including postage & handling; the postcards are sold in packets of 25 at \$15 for one and \$10 for each additional packet ordered at the same time. Order from Publication Sales Division, American Institute of Physics, 335 East 45th Street, New York, NY 10017.

EPR & Foundations of Modern Physics

A Symposium on the Foundations of Modern Physics: 50 Years of the Einstein-Podolsky-Rosen Gedankenexperiment was held at the University of Joensuu, Finland, 16-20 June 1985. The scientific programme of the Symposium consisted of 24 invited lectures, 33 contributed papers, a seminar on Wolfgang Pauli's philosophical ideas, and two panel discussions, one comparing the analyses of the EPR-problem within different formal approaches to quantum mechanics, the other on the implications of the EPR-argument for our conception of nature.

The proceedings of the Symposium will be published by the World Scientific Publishing Company, Singapore, in late 1985. For further information contact Pekka J. Lahti, Department of Physical Sciences, University of Turku, 20500 Turku 50, Finland.

Irish & British Science

A Symposium on Science and Institutions in Ireland and Britain, arranged jointly by the Royal Irish Academy and the British Society for the History of Science, was held in Dublin, 8-11 July 1985, as part of the celebration of the 200th anniversary of the foundation of the Academy. Papers presented included:

Bruce Hunt (Smithsonian Institution, Washington), "How my model was right" - G. E. FitzGerald and the reform of Maxwell's theory"

James A. O'Hara (University of Hamburg), "Heinrich Hertz's links with British and Irish scientists and institutions"

Thomas Hankins (University of Washington), "William Rowan Hamilton -- A portrait on paper"

Paul Hoch (University of Aston in Birmingham), and **Edward Yoxen** (University of Manchester), "Schrödinger in transition between Britain and Ireland"

Participants in the Symposium also visited Birr Castle, home of the Earls of Rosse, where the remains of the great 72" Rosse "Leviathan" telescope are preserved, together with other material relating to the scientific endeavours of the Parsons family, the most famous of whom is Charles Parsons, inventor of the steam turbine.

Mid-Atlantic Seminar

by Paul B. Israel

The Mid-Atlantic Graduate Seminar in the History of Science and Technology is an annual meeting run by and for

graduate students in these fields. The first meeting was held in 1981 at the University of Pennsylvania. Subsequent meetings have been at the University of Delaware, Princeton, and Rutgers with students from these schools and Johns Hopkins participating.

Five papers were presented at this year's meeting held at Rutgers University. During the morning session Frederik Nebeker presented a paper entitled "Elie de Beaumont and the Pentagonal Network of Mountain Systems." Nebeker discussed the origins of Elie de Beaumont's theory of mountain systems and the reasons why this scientific failure was, none the less, a success for Beaumont. The second paper was Andy Butrica's study of "Meteorology and Telegraphy: The French Case." Butrica noted that the state telegraph in France was used very early as a tool for the rapid gathering and disseminating of meteorological information thought important for economic reasons. The morning session closed with Eric Schatzberg's "Unity of Theory and Practice: Aeronautical Engineering Education at CalTech between the World Wars." Schatzberg argued that Caltech's success was the result of a harmonizing of industrial and academic concerns. The Institute provided a key service to industry with its state-of-the-art wind tunnel which, in turn, provided the resources for a cooperative research program which promoted both basic research and ties to industry that provided important practical experience and jobs for students.

The afternoon session opened with Bruce Hevley's discussion of "The transistor, the Microchip, and the Engineering Mind." Using the examples of the transistor and the microchip, Hevley argued that engineers and industrial scientists tend to look at new devices merely as one-to-one replacements for existing technologies. However, as these new devices are used they come to be studied on their own terms. The result is an increasing comprehension of the physics of new devices that allows them to be used for entirely new applications. The last paper was Kathy McKay's "Cutting the Grass: Attempts at Mechanical Asparagus Harvesting." This study of a failed attempt at mechanization suggests how the allocation of resources for innovation played a crucial role in altering the asparagus industry. Support for total mechanization generally came from the large growers best able to utilize such a technology and who mobilized support for public funding the research at state universities. McKay argued that this emphasis on mechanization prevented asparagus growers from dealing with other, primarily economic factors which, when combined with the failure of mechanization to provide economies of scale, caused asparagus to become a specialty crop with a much reduced market. The afternoon session ended with a brief tour of the Thomas A. Edison Papers by Assistant Editor Paul Israel, who also organized and chaired the meeting.

For further information about the Mid-Atlantic Seminar contact Paul B. Israel, Thomas A. Edison Papers, Rutgers University, New Brunswick, NJ 08903.

Smithsonian/Cambridge Aerospace Seminar

The Smithsonian Institution and Cambridge University sponsored a Seminar in Aerospace Studies from July 11-28, 1985. The first part, "The History of Air Power," was directed by Von Hardesty at the Smithsonian's National Air and Space Museum in Washington, DC; it included lectures by the Museum's staff and a visit to the Smithsonian's aircraft restoration facility at silver Hill, MD. The Seminar then moved to England for lectures on the role of air power during and after World War II from a British perspective.

The second part of the Seminar, "Cambridge and the History of Astronomy," included lectures on the history of English astronomy, with special attention given to radio astronomy at Cambridge; it featured a special program on the Space Telescope at the Air and Space Museum as well as visits to British museums and observatories.

The cost of the 1985 Seminar was \$2318 per participant. The Smithsonian plans to offer a similar program in 1986. For information contact Von Hardesty, Coordinator for University Programs, National Air and Space Museum, Smithsonian Institution, Washington, DC 20560.

Science in America

A "Forum for the History of Science in America" was formed in December 1984. A session will be held at the HSS meeting in Bloomington, 2 November 1985. For details see the newsletter, History of Science in America, News and Views (HPN II, p. 25).

Holton in China

Recently the president of the History of Science Society, Gerald Holton (Harvard University), visited China. After giving a series of lectures on history of science in Beijing, he arrived in Hangzhou. On May 9 Holton delivered a lecture on "Studies of Albert Einstein" in Hangzhou University. He first reviewed the background of relativity theory, and then analysed the character of Einstein's early researches. The audience was very interested in this lecture, and discussed several problems with Holton. The Chinese scholars are not only interested in the great scientist, Einstein himself, but also other topics such as the influence of Ernst Mach, Henri Poincare, and Sigmund Freud, and the history and current state of ether theory.

-- Jinguang Wang & Shenglan Li
Hangzhou University
Zhejiang Province, P. R. C.

Lasers

The 25th anniversary of the demonstration of the first laser was celebrated at the Fifth Conference on Lasers and Electro-Optics in Baltimore, May 21-24, 1985. Nobel laureates N. G. Basov, Nicolaas Bloembergen, Willis E. Lamb, A. M. Prokhorov, Arthur L. Schawlow and Charles H. Townes gave talks on the development of the laser. A special symposium featured talks by the inventors of specific types of lasers -- W. R. Bennett Jr. on the helium-neon laser, R. N. Hall on the semiconductor laser, C. Kumar N. Patel on the carbon dioxide laser, W. B. Bridges on the argon-ion laser, and F. P. Schiffer on the dye laser. In addition, an exhibit prepared by the Smithsonian Institution, of early laser devices, was on display throughout the conference. A detailed report is in Physics Today, May 1985, pp. 74-75.

JOBS

Note: see the History of Science Society Newsletter for other announcements.

Los Alamos

Los Alamos National Laboratory seeks a director for its science museum. This museum, with a staff of ten, is a repository for historically interesting scientific and technical apparatus from the site, used to interpret the work of the laboratory for a variety of audiences. There are opportunities for research and publication. Candidates should have a degree in the physical sciences and should be prepared to demonstrate administrative ability. The salary will be commensurate with qualifications, but is expected to be in the \$40,000 range. Contact: Judith M. Liersch, Los Alamos National Laboratory, Los Alamos, NM 87545 (phone 505/667-4355).

Scripps College

Scripps College, a humanities-oriented women's college in the Claremont Colleges cluster, invites nominations and applications for the Hartley Burr Alexander Chair in the Humanities which becomes available on July 1, 1986. We are seeking candidates at the senior Associate or the Full Professor level. Candidates should have achieved recognition as scholars and teachers in the humanistic disciplines, and should be able to foster discourse among the fields represented at Scripps College: Humanities, Arts, Natural Sciences, and Social Sciences. Nominations should be made before November 1, 1985. Applications, including vita and supporting materials, should be sent before November 15, 1985. All correspondence should be addressed to Professor Michael S. Roth, Chair, Hartley Burr Alexander Search Committee, Scripps College, Claremont, CA 91711.

Villanova

Villanova University has a tenure-track assistant professorship in the history of science and technology (European emphasis preferred) starting late August 1986. Ph. D. required by June 1, 1986. Salary: mid-20s. Will teach introductory survey courses in Western Civilization as well as upper-division and graduate courses in the history of science and technology. Send transcript, vitae, 3 letters of recommendation, and sample of any published work to Prof. Raymond Cummings, Dept. of History, Villanova University, Villanova, PA 19085, before 2 December 1985.

GRANTS AND FELLOWSHIPS

Note: See the History of Science Society Newsletter, July 1984, pp. 3-6, for information about several other grants and fellowships; also, previous issues of HPN, vol. I, pp. 7-8, 28, 69-71; Vol. II, p. 6, 19.

AIP-CHP

The American Institute of Physics' Center for History of Physics is continuing its program of small Grants-in-Aid for research in the history of 19th and 20th century physics and astronomy and their social interactions. Grants will be for a maximum of \$1000 each and can be used only to reimburse direct expenses connected with research. Preference will be given to those who need part of the funds for travel to use the resources of the Center's Niels Bohr Library in New York City, or to microfilm papers or conduct tape-recorded oral history interviews with a copy deposited in the Library, although other projects will also be considered. Applicants should either be working toward a graduate degree in the history of science, or show a record of publication in the field. To apply, send a vitae; a letter of about 2 pages describing your research project; and a brief budget showing the expenses for which support is requested. Send to Spencer Weart, Center for History of Physics, American Institute of Physics, 335 East 45 Street, New York, NY 10017. Deadline: December 1.

American Philosophical Society

The American Philosophical Society will support basic research in all fields of learning. Grants are intended to assist investigators by subverting living expenses (up to \$30 per day), necessary travel, microfilm and photocopies, and certain consumable supplies. Grants do not include salaries, institutional overhead, expenses of publications, usual or permanent equipment for the institution involved, predoctoral research or preparation of a doctoral dissertation, travel to meetings, or compilation of bibliographies. A Ph. D. or its equivalent is required. The maximum grant amount is \$3,500 (to full professors, \$2,500). The deadlines for applications are the first of February, April, June, October and December for written decision by the end of April, June, October, December, and February, respectively. Write to Committee on Research, American Philosophical Society, 104 South Fifth Street, Philadelphia, PA 19104, briefly outlining the project and giving academic status; 3 referee letters should also be sent to this address. Application forms will be sent to those eligible.

Austrian History

The Austrian Ministry for Science and Research will again grant a limited number of scholarships to U. S. graduate students for the academic years 1986-87 for research and study in Austrian history. These scholarships may not be used to supplement a stipend from another scholarship or fellowship. Doctoral candidates will receive 9 monthly installments of 5,500 schillings each, as well as a one-time 2,500 schilling travel subvention, health and accident insurance and free tuition. Applicants should be between 20 and 35 years of age and must have an excellent command of German. Recipients of the grant are expected to register at an Austrian institution of higher learning or affiliate with a research institute; with institutions in Vienna overcrowded, applicants are encouraged to look toward the provincial institutions. Candidates should send a letter of application, copies of their transcripts, at least two letters of recommendation, a detailed description of their intended research, and a resume in German to Prof. George Barany, History Dept., University of Denver, Denver, CO 80208. Deadline: 15 November 1985. The final selection will be made in February 1986. All materials, except for the confidential letters of recommendation, should be submitted in 7 copies.

NASA

The NASA History Office invites inquiries from historians interested in writing individual volumes for NASA's new series of historical publications. NASA may provide 18 months to 2 years of support for research and writing and associated expenses to qualified historians having well-developed proposals for book-length manuscripts. Appropriate items include, but are not limited to, historical treatments of a technological, cultural, and political synthesis of the Apollo program; case studies of technological innovation in the U. S. space program; NASA aeronautical research and development, 1960 to the present. The new series is intended to place NASA's programs in a broad historical context and to address academic as well as educated lay audiences. Qualifications include an earned doctorate in a relevant discipline and successful writing and publishing experience. Compensation is negotiable. Proposals, which will be accepted twice annually (by 1 January and 1 June), will be funded on the basis of individual merit and availability of funds. Contact: Sylvia D. Fries, Director, NASA History Office, Washington, DC 20546 (phone 202/453-2999).

The NASA History Office will sponsor a postdoctoral fellowship program in aerospace history, to be administered by the American Historical Association (AHA). The stipend will probably be about \$23,000 for 12 months with a moving and travel allowance. Fellows will work out of NASA Headquarters in Washington, on topics of their choice in space and aeronautical history. For further information contact AHA or Sylvia Fries (see above).

Cornell

The Society for the Humanities at Cornell University offers six postdoctoral fellowships for 1986-87 to scholars in humanistic disciplines working on such topics as the relations between humanistic and scientific inquiry, the study of science as a culturally located activity, and the effect of scientific and technological advances on central humanistic concepts. Deadline: 1 November 1985. Contact: Jonathan Culler, Director, Society for the Humanities, 27 East Avenue, Ithaca, NY 14853-1101.

NEH

Overview of Endowment Programs 1985-86 is now available from the National Endowment for the Humanities Public Affairs Office, Room 409, 1100 Pennsylvania Ave. NW, Washington, DC 20506. The Overview is a basic reference guide that introduces all NEH programs. Highlights of the publication include a year's worth of application deadline dates; an agency telephone directory; a list of all state humanities councils with phone numbers; instructions on how to apply, eligibility, and evaluation; and a subscription form to the bi-monthly journal, Humanities.

NSF

The Division of Social and Economic Sciences has changed its target dates for the submission of proposals. Proposals to the History and Philosophy of Science Program and other programs in the Division should reach NSF by August 15 for funds needed on or after December and by January 1 for funds needed on or after July.

The Presidential Young Investigator awards -- \$25,000 to \$100,000 per year (including matching funds) -- were initiated last year. The deadline was 1 July 1985 for 1986 awards. While most awards are in high-demand fields such as electrical engineering and computer science, about 50 awards are made in other fields including behavioral and social sciences (which includes history of science). Contact: Presidential Young Investigator Awards, National Science Foundation, Room 414, Washington, DC 20550 (phone 202/357-7536).

Royal Society of London

The Royal Society of London awarded grants for research in history of science for 1984-85 including the following:

G. N. Cantor, "Michael Faraday and the Sandemanian Church"

W. A. Gabbey, "Newton's contributions to theories of the lunar librations, and its relation to his celestial mechanics"

D. C. Gooding & F. A. J. L. James, "Handlist of the correspondence of Michael Faraday"

P. K. Hoch, "Social and intellectual factors in the transition of Schrödinger to Ireland"

Applications for next year's grants must be submitted by 31 October. (See Brit. Soc. Hist. Sci. Newsletter, Jan. 1985, 16: 26-27 for complete list of awards.)

Wilson Center

The Woodrow Wilson International Center for Scholars seeks outstanding project proposals representing diverse scholarly interests in the humanities and the social sciences from individuals throughout the world. The Center's residential fellowships are awarded in a variety of programs. Academic participants are limited to the postdoctoral level with publications. Deadline: October 1. Contact: The Wilson Center, Smithsonian Institution Building, Room 331, Washington, DC 20560 (phone 202/357-2841).

GRADUATE PROGRAMS & RESEARCH CENTERS

Editor's Note: We will publish in this section announcements of programs that have an emphasis and/or special resources in the history of physics. A complete list of programs may be found in "A Guide to Graduate Study and Research in the History of Science, Technology, and Medicine," pp. 19-70 in Guide to the History of Science published by the History of Science Society. (This book also contains the HSS Membership Directory, a Guide to Scholarly Journals and Societies, list of booksellers, etc.) Copies may be ordered for \$10 each postpaid from the Isis Publication Office, University of Pennsylvania, 215 South 34th Street/D6, Philadelphia, PA 19104.

Minnesota

The Program in History of Science and Technology at the University of Minnesota offers opportunities for advanced study and research, leading to the M. A. and Ph. D. degrees, in three broad areas: the history of physical science, the history of technology, and the history of biology.

In the history of the physical sciences, the faculty's interests span the period from the Scientific Revolution of the 16th and 17th centuries through the 20th century. Their specific research areas include the history of mechanics, optics, and astronomy through the 19th century, and relativity, quantum theory, and nuclear physics in the 20th century. The related fields of the history of mathematics, especially in the 19th and 20th centuries, and the philosophy of physics are also actively pursued (the latter in association with the Minnesota Center for the Philosophy of Science).

Faculty specializing in the history of physical science and technology include Edwin T. Layton Jr. (modern technology and its relations with science), Arthur L. Norberg (technology, information processing, astronomy), Alan E. Shapiro (optics & mechanics, 17th-19th centuries), and Roger H. Stuewer (modern physics, especially nuclear physics). Also Philip Kitcher, Director of the Minnesota Center for Philosophy of Science, includes the history and philosophy of mathematics among his research interests.

Graduate School Fellowships and Teaching Assistantships are available to graduate students in the programs; for a copy of the Graduate School Bulletin which includes information on financial aid, write to Service Bureau, Office of Admissions and Records, 110 Williamson Hall, 213 Pillsbury Drive S.E., Minneapolis, MN 55455.

The University of Minnesota is one of only eight depositories in the world -- and the only depository in the Midwest -- for the Archive for History of Quantum Physics. Among other research facilities directly associated with the program is the Charles Babbage Institute for the History of Information Processing. The Twin Cities and the University are at the center of one of the most important computer, electronics, and other high-technology manufacturing centers in the nation. This setting impinges upon and stimulates the University's Program in History of Science and Technology, especially through the Charles Babbage Institute and the Bakken Library of Electricity in Life, a private research center with excellent collections of historical electrical apparatus and an outstanding rare book and manuscript collection.

For further information and application materials, contact the Director of Graduate Studies, Program in History of Science and Technology, Prof. Edwin T. Layton, 125 Mechanical Engineering Bldg, University of Minnesota, Minneapolis, MN 55455.

BOOKSELLER

Twentieth Century Physics specializes in books and offprints of early modern physics and mathematics. Free catalogue available from TCP, Box 44, Big Flats, NY 14814 (phone 607/562-7564).

Visiting Lecturer

Richard S. Westfall, a well-known historian of physics, will be a Sigma Xi National Lecturer during the period July through December 1985 and spring 1987. He will be available to speak to any Sigma Xi group, insofar as other commitments permit, for an honorarium of \$150 plus expenses. Topics are: "The Role of the Scientific Revolution in European History," "Galileo and Patronage: Science Support in a Preprofessional Age," and "The Character of Newtonian Science." Invitations should be sent to Prof. Westfall at the Department of History and Philosophy of Science, Indiana University, Bloomington, IN 47401 (phone 812/335-3195 or 335-3622). [See American Scientist, Jan.-Feb. 1985, 73: 104-12 for a description of the Sigma Xi lecture program.]

BOOK SERIES

CERN History

Recent publications in the series "Studies in CERN History": Armin Hermann, Germany's part in the setting-up of CERN; Ulrike Mersits, High-energy physics from 1945 to 1952-53. Earlier titles are listed in HPN II: 8. For information write to Study Team for CERN History, c/o CERN, CH-1211 Genève 23, Switzerland. (Information from Lanfranco Belloni)

History of Mathematics and Physical Sciences

Recent titles in the series "Sources in the History of Mathematics and Physical Sciences," published by Springer-Verlag, are J. P. Hogendijk, Ibn Al-Haytham's Completion of the Conics and K. von Meyenn et al. (eds.), Wolfgang Pauli: Scientific Correspondence with Bohr, Einstein, Heisenberg, volume II: 1930-1932. From the same publisher there is a new book in the series "Studies in the History of Mathematics and Physical Sciences": N. M. Swerdlow & O. Neugebauer, Mathematical Astronomy in Copernicus's De Revolutionibus.

Other recent Springer-Verlag books of interest to historians of physics are: J. Mehra & H. Rechenberg, The Historical Development of Quantum Theory in 4 volumes, and W. Blum et al. (eds.), Werner Heisenberg: Collected Works/Gesammelte Werke, Series B, Scientific Review Papers, Talks and Books. (Series A, Original Scientific Papers, is forthcoming).

For information write to Springer-Verlag New York Inc., 175 Fifth Avenue, New York, NY 10010

History of Science - Birkhäuser

Birkhäuser's History of Science series includes the following books related to history of physics: Stanley Goldberg, Understanding Relativity: Impact and Origin of a Scientific Revolution; Elisabeth Heisenberg, Inner Exile: Recollections of a Life with Werner Heisenberg; Arthur I. Miller, Imagery in Scientific Thought: Creating 20th Century Physics; N. Metropolis, G.-C. Rota & David Sharp (eds.) Uncommon Sense: J. Robert Oppenheimer. Other books in the series deal with the history of mathematics and mathematicians. For information write to Birkhauser Boston, Inc., 380 Green Street, Cambridge, MA 02139.

History of Science - Longwood

The Longwood Publishing Group represents and distributes a total of 16 British and Irish publishers. Their "History of Science 1985" catalogue includes the following books on history of physical science: Geoffrey N. Cantor, Optics after Newton: Theories of Light in Britain and Ireland, 1704-1860; P. M. Harman (ed.), Wranglers and Physicists: Studies on Cambridge Mathematical Physics in the Nineteenth Century; G. K. Roberts & R. F. Bud, Science versus Practice: Chemistry in Victorian Britain; D. J. Schove & Alan Fletcher, Chronology of Eclipses and Comets, A. D. 1-1000. Address: 51 Washington St., Dover NH 03820.

Physics Today articles

The American Institute of Physics is reprinting collections of articles from *Physics Today* on various topics. One book in this series, just published, is devoted to the history of physics. Edited by Spencer Weart and Melba Phillips, it includes articles by C. S. Smith on the pre-history of solid-state physics, J. L. Heilbron on Franklin, E. Mendoza on thermodynamics and kinetic theory, J. D. Miller on Rowland, R. S. Shankland on Michelson, S. G. Brush on Poincaré, D. H. DeVorkin on the HR diagram, L. H. Hartmann on Bell Labs, P. P. Ewald on crystals; several articles on the social context of modern physics by L. Badash, R. Rosenberg, C. Weiner, S. Weart, E. U. Condon, M. Phillips, A. P. French, and V. Kistiakowsky; biographical pieces on Rutherford, Van Vleck, Urey, Kapitza, Oppenheimer, Maria Mayer, Loomis, and Morrison; personal accounts of their own work by Einstein, Goudsmit & Uhlenbeck, Livingston, McMillan, Frisch, Wheeler, and Fermi; and articles on particles and quanta by G. Thomson, M. J. Klein, J. L. Heilbron, E. U. Condon, F. Bloch, R. K. Gehrenbeck, C. Weiner, L. M. Brown, R. W. Schmitt and V. F. Weisskopf. Other volumes in the series cover astrophysics (already published) and optics (in preparation), and may also contain historical articles.

For information about the series contact Rita Lerner, American Institute of Physics, 335 East 45 Street, New York, NY 10017 (phone 212/661-9404).

Microform Science Collections

Microforms International Marketing Corporation and Pergamon Press offer microfiche or microfilm editions of the following collections: Robert Andrewws Millikan, Theodore von Karman, Michael Faraday, Oliver Heaviside, and several engineers; also *Annalen der Physik*, *Annales der Physique* and other journals. For information write to the Pergamon/MMIC office, Maxwell House, Fairview Park, Elmsford, NY 10523.

Wissenschaftsgeschichte from Leipzig

Two Leipzig publishers, BSB B. G. Teubner Verlagsgesellschaft and Akademische Verlagsgesellschaft Geest & Portig K.-G., have issued a joint catalog "Wissenschaftsgeschichte" which includes titles available in two major series. In the famous "Ostwalds Klassiker der exakten Wissenschaften" one can now obtain the following recent publications: Manfred von Ardenne, *Arbeiten zur Elektronik*; E. F. F. Chladni, *Ueber den kosmischen Ursprung der Meteorite und Feuerkugeln* (1794); Gerhard Harig, *Physik und Renaissance*; Heinrich Hertz, *Die Prinzipien der Mechanik*.

The series "Biographien hervorragender Naturwissenschaftler, Techniker und Mediziner" includes: Jerzy Dobrzycki, *Nicolaus Copernicus*; Dorothea Goetz, *Georg Christoph Lichtenberg*; Friedrich Hemeck, *Albert Einstein*; Dieter B. Hetrmann, *Karl Friedrich Zöllner*; Dieter Hofmann, *Erwin Schrödinger*; Horst Kant, *G. D. Fahrenheit -- R. A. F. Fahrenheit -- A. Celsius*; Alfons Kauffeldt, *Otto von Guericke*; Hans-Günther Körber, *Alfred Wegener*; Ernst Schmutzer & Wilhelm Schütz, *Galileo Galilei*; Wolfgang Schreiber & Hella Schreiber, *Thomas Alva Edison*; Wilhelm Schütz, *Michael Faraday* and *Michael W. Lomonosow*; Hans L. Sittauer, *James Watt*; Werner Stolz, *Otto Hahn -- Lisa Meitner*; Rüdiger Thiele, *Leonhard Euler*; Dieter Ullmann, *Ernst Florens Friedrich Chladni*; Wolfram Voigt & Ulrich Sucker, *Johann Wolfgang von Goethe als Naturwissenschaftler*; Karl Werner & Konrad Werner, *Wilhelm Weber*; Olgierd Wojczech, *Maria Skłodowska-Curie und ihre Familie*; Hans Wussing, *Isaac Newton* and *Carl Friedrich Gauss*.

Geest & Portig also publish the journal *NTM -- Schriftenreihe für Geschichte der Naturwissenschaften, Technik und Medizin*.

Orders and inquiries from "nonsocialist countries" may be sent to: BUCHEXPORT, Volkseigener Aussenhandelsbetrieb der DDR, DDR-7010 Leipzig, Leninstrasse 16 (East Germany) or to Leipzig Book Service, DDR-7010 Leipzig, Talstrasse 29 (East Germany).

JOURNALS AND SOCIETIES

(Supplement to the lists given in *HPN* I: 47-48, 53, II: 9, 25)

American Heritage of Invention and Technology

Senior Editor, Emma Cobb. Published by American Heritage Press, Inc. General Motors is the sole sponsor and advertiser. Distributed free of charge to selected people in the field of technology; paid subscriptions are also accepted, \$9 for one year (3 issues, about 64 pages each). Correspondence should be addressed to American Heritage of Invention and Technology, 10 Rockefeller Plaza, New York, NY 10020. Unsolicited materials should be accompanied by return postage.

The first issue (Summer 1985) includes "New light on Edison's Light" by Robert Friedel; "Reflected Glory: How they built Palomar" by Richard Rhodes; a report on the annual meeting of the Society for the History of Technology; other articles on steam engines, graphs & charts, *Popular Mechanics* magazine, the ball bearing, and an interview with Elting Morison.

Osiris

Volumes I and II of the new series are in press, under the editorship of Arnold Thackray. Manuscripts may be submitted to him at 215 South 34th Street/D6, Philadelphia, PA 19104. Subscription:

Volume I, on the theme "Historical writing on American Science," includes an article on the history of astronomy by Marc Rothenberg and an article on the history of physics by Albert Moyer. Volume II includes an article on "Kepler's Optics and the Neoplatonic Tradition" by David Lindberg.

EINSTEINIANA**More glials to think with?**

Results of their research "On the Brain of a Scientist: Albert Einstein" were recently published by Marian C. Diamond, Arnold B. Scheibel, and Greer M. Murphy, Jr., at the University of California, and Thomas Harvey of Weston, Missouri, in *Experimental Neurology*, 1985, 88: 198-204. They concluded that the number of glial cells in Einstein's brain, relative to the number of neurons, was significantly greater in a particular region ("area 39") on the left side than in a control group. Earlier research with rats had suggested that the number of glial cells can be increased by "environmental enrichment and other augmented neural inputs...." Thus Einstein's extra glials "might reflect the enhanced use of this tissue in the expression of his unusual conceptual powers." Area 39 was selected for study because lesions in this area are believed to impair imagery and the capability for complex thinking.

Too little time for taxes?

In his address on May 28, 1985, President Reagan proposed to simplify a tax code "so complex even Albert Einstein reportedly needed help on his 1040 form." But Otto Nathan, in a telephone interview broadcast on National Public Radio's program "All Things Considered" the next day, stated that Einstein paid an accountant to fill out his tax return not because he found it too complicated but because he didn't want to spend his time doing it himself.

QUERIES**Gray**

I would greatly appreciate hearing from anyone who has letters, reminiscences, anecdotes, photographs or any other information concerning Louis Harold Gray, FRS (1905-65) to aid in my collection of material with which to prepare his biography. --S. Wynchank, P O Box 70, Tygerberg 7505, South Africa.

SUMMARIES

Authors of books and articles on the history of physics are invited to send summaries for publication in this section. Maximum lengths: 75 words for articles, 150 words for books. (Longer summaries may be published of papers presented at Division symposia.) In addition, for articles please give author's mailing address and indicate whether reprints are available; for books published outside the U.S., indicate the U. S. distributor (if any) or complete mailing address of publisher, and give the price in U. S. dollars, including cost of mailing (if applicable). We can also publish summaries of papers presented at meetings if the author is willing to distribute preprints; otherwise, if copies are not available but the author is willing to correspond with others about the research, a summary may be submitted for the "Work in Progress" section. Publication will be expedited if each summary is typed, on a separate sheet, in the format of the examples below.

Summaries should be sent to Albert Wattenberg, Department of Physics, University of Illinois, 1110 W. Green St., Urbana, IL 61801.

NEWTON

GUERLAC, HENRY. Newton on the Continent. 169 pp. Ithaca: Cornell University Press, 1981.

"The bulk of the book is an original essay on the attitudes of early 18th century French savants... to Newton's optical doctrines. The residue consists of a note on the prehistory of a slogan borrowed from Charleton in Newton's early Quaestiones (1644); a review of the second and third volume of the Halls' Oldenburg Correspondence; and two texts on evidence of early acceptance of Newton's ideas in France before the fateful year 1738. In "The delayed acceptance of his theory of colour", however, Guerlac documents in considerable detail the successive attempts by Frenchmen to replicate the more decisive of Newton's optical experiments, and in so doing poses the problem of reception in a more rewarding fashion than hitherto. -- Review by Simon Schaffer in Brit. J. Hist. Sci., 1984, 17: 227-31.

GALILEO'S METHOD

WISAN, WINIFRED LOVELL. "On Argument Ex suppositione Falsa" Studies in History and Philosophy of Science, 1984, 15(3): 227-236.

It has recently been argued that Galileo had a method of arguing ex suppositione through which he could establish apodictically true conclusions. This paper examines the evidence offered in support of this interpretation and shows that there are serious flaws in this evidence. When Galileo speaks of an argument as ex suppositione, he means that it follows from a suppositione which is either false or not known to be true.

GALILEO'S
ROTATING EARTH

CHALMERS, ALAN, RICHARD NICHOLAS Galileo on the Dissipative Effect of a Rotating Earth. Studies in History and Philosophy of Science, 1983, 14: 315-40.

None of Galileo's arguments to explain why a rotating earth will not have dissipative effects are satisfactory but the underlying idea is sound. The arguments are relevant to an appraisal of his alleged views on inertia. There is nothing that can appropriately be referred to as a principle of inertia in Galileo's physics.

Author's address: A. Chalmers: Dept. of General Philosophy, University of Sydney, N.S.W. 2006, Australia.

GALILEO'S "MUNDI"

WISAN, WINIFRED LOVELL. "Galileo's De systemate mundi and the New Mechanics", in Atti del convegno internazionale di Studi Galileiani, a cura di P. Galluzzi, in Supplemento agli Annali dell'Istituto e Museo di Storia della Scienza, Anno 1983, 2: 41-48.

In 1610, Galileo claimed to have already written about the Copernican system and he spoke of a work called De systemate mundi. I argue that De systemate mundi was essentially the first two days of the later Dialogo sopra i due massimi sistemi del mondo, and that it evolved out of Galileo's Pisan writings on motion, when he found himself in a dilemma which forced him to abandon Aristotle's physics and cosmology.

PHYSICAL UNIVERSE

DURHAM, F.: R. PURRINGTON. Frame of the Universe. 1983, 242 pp., Columbia University Press, \$24.95.

A survey of the development of ideas about the physical universe from the earliest Western cultures through the Newtonian revolution to present day astrophysical descriptions. Intended for the general reader, the book takes considerable care with historical elements.

Author's address: Durham: Dept. of Physics, Tulane Univ. New Orleans, Louisiana 70118

EARLY MAGNETISM

ARIOTTI, P.E. Benedetto Castelli's Discourse on the Loadstone (1639-1640): the Origin of the Notion of Elementary Magnets Similarly Aligned. Annals of Science, 1981, 38: 125-140.

In 1639-1640 Benedetto Castelli (1577-1643) wrote a treatise on the loadstone which is quite unlike any of its contemporaries. In it are the origins of the notion of elementary magnets sharing a common alignment, the idea that all materials are magnetic in different ways, and the first intimation of the conception of magnetic domains. Castelli did not publish his treatise. Nevertheless his work was noted during his life-time, and may have exerted an influence on the development of magnetic theory in the 17th century. The treatise was published in 1883. Since then, however, it has either been neglected or not appreciated. It deserves being rescued from the neglect of more than three centuries.

Author's address: 1848, Zapo Street, Del Mar, California 92014.

HAMILTON THE PRODIGY

O'DONNELL, SEAN: William Rowan Hamilton, Portrait of a Prodigy. xvi + 224 pp. Dublin Boole Press, 51 Sandycove Road, 1983; \$25.00.

Biography and psychological portrait of the famed mathematician, exploring new material on the sources of his genius and development in creativity from early years. The origins of his most important contributions go deeper than previously realised.

EARLY EXPERIMENTALISM

VANPAEMEL G. Jan Frans Thijsbaert (1736-1825) En De School Voor Experimentele Fysika Te Leuven. Tsch. Gesch. Gnk. Natuurw. Wisk. Techn., 1984, 7(4): 72-82.

After the foundation of a School for Experimental Physics at Louvain University in 1755, the progress of experimental physics was still hindered by difficulties in the maintenance of the instruments, as well as by the inadequate knowledge of the professors. This situation came to an end when J.F. Thijsbaert was appointed director of the school in 1771. Through his contact with J.H. de Magellan, he purchased high-quality instruments from the best of London instrumentmakers. To his school he also added a Cabinet of Natural History and a scientific library. Finally, his work as director of the school has a profound influence on the scientific teaching of the Louvain Faculty of Arts.

Author's address: Vanden Bemptlaan 4, B-3030 Leuven, Belgie.

YOUNG ON WAVES

CANTOR, G.N. Was Thomas Young a wave theorist? American Journal of Physics, 1984, 52(4): 305-308.

Thomas Young is frequently portrayed as the reviver and main proponent of the wave theory of light in the early nineteenth century. This article shows that Young's attitude towards the wave theory vacillated considerably owing to the changing fortunes of his ether hypothesis and his law of interference.

Author's address: Philosophy Department, University of Leeds, Leeds LS2 9JT, England.

VOLTERRA

ISRAEL, GIORGIO. Vito Volterra: Un fisico matematico di fronte ai problemi della fisica del Novecento. Rivista di storia della scienza, 1984, 1: 39-72.

This paper describes Vito Volterra's attitudes to the fundamental problems of contemporary physics, particularly those raised by the theory of relativity and quantum mechanics, to identify one fundamental feature of Volterra's scientific paradigm. This feature is his intention to defend the basic tenets of classical determinism and to extend its application more broadly than 19th century mathematical physics. A detailed analysis is devoted to Volterra's lectures at Clark University in 1901, and the close ties he established between the calculus of variations and function of lines theory, and integral and integro-differential equation theories (which he himself developed). The paper concludes with an account of Volterra's attitude to Italian physics, based on a previously unpublished address he delivered to the Societa Italiana di Fisica in 1905. The full text is given in the appendix, together with other addresses relevant to the topics discussed in the paper.

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NATURE OF HEAT

SEBASTIANI, FABIO. La Fisica Dei Fenomeni Termici Nella Prima Meta Del Settecento: Le Teorie Sulla Natura Del Calore Da Hartsoeker A Lomonosov. Physis, 1984, 26: 29-127.

In this paper the most remarkable opinions about heat of scientists of the first half of the 18th century are surveyed. In sect. 3 and 4, after a short introduction (sect. 1) and a brief account of Descartes' subtle matter and of Newtonian aether (sect. 2), the Dutch fire is analysed in detail. In sect. 5 the position of Stahl and the flogiston theory are widely discussed. The ideas of Franklin, which deeply influence the heat theories, are summarized in sect. 6. Finally, in sect. 7 the heat conception of some members of Bernoulli's circle is studied.

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INFLUENCE ON ECONOMICS

HETHERINGTON, NORRIS. Isaac Newton's Influence on Adam Smith's Natural Laws in Economics. Journal of the History of Ideas, 1983, 44(3): 497-505.

Smith's efforts to discover the general laws of economics were directly inspired and shaped by the example of Newton's success in discovering the natural laws of motion. At the beginning of his history of astronomy Smith considered scientific theories fictions to sooth the imagination, but after contemplating Newton's work Smith was convinced that there are real connecting principles to be discovered. Important similarities of structure between the Wealth of Nations and the Principia are noted.

Sorry, out of reprints. Author's address: Office for History of Science and Technology, 470 Stephens Hall, University of California, Berkeley, CA 94720.

VELOCITY OF SOUND

ULLMANN, DIETER. Die ersten Messungen der Schallgeschwindigkeit in Luft und das Schallortungsverfahren von Jonas Meldercreutz. Centaurus, 1982, 26: 25-37.

After the description of the first measurements of the velocity of sound, the historical development from simple determinations of the distance between sound source and observer to a sound location method by the Swedish mathematician Meldercreutz (1741) is demonstrated.

Author's address: D. Ullmann, Akademie der Wissenschaften der DDR, Institut für Mechanik, Rudower Chaussee 5, DDR-1199 Berlin, German Democratic Republic.

SCIENTIFIC CONCEPTS

NERESSIAN, NANCY J. Aether/Or: The creation of scientific concepts. Studies in History and Philosophy of Science, 1984, 15: 175-212.

Examines the formation of the concept "electromagnetic field" in the works of Faraday, Maxwell, Lorentz, and Einstein; concludes that concept formation is commensurable but not simply cumulative.

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ATOMIC MODEL

HEILBRON, J.L. Rutherford-Bohr atom. American Journal of Physics, 1981, 49: 223-231.

Bohr used to introduce his attempts to explain clearly the principles of the quantum theory of the atom with an historical sketch, beginning invariably with the nuclear model proposed by Rutherford. That was sound pedagogy but bad history. The Rutherford-Bohr atom stands in the middle of a line of work initiated by J.H. Thomson and concluded by the invention of quantum mechanics. Thompson's program derived its inspiration from the peculiar emphasis on models characteristic of British physics in the 19th century. Rutherford's atom was a late product of the goals and conceptions of Victorian science. Bohr's modifications, although ultimately fatal to Thomson's program, initially gave further impetus to it. In the early 1920s the most promising approach to an adequate theory of the atom appeared to be the literal and detailed elaboration of the classical mechanics of multiply periodic orbits. The approach succeeded, demonstrating in an unexpected way the force of an argument often advanced by Thomson: because a mechanical model is richer in implications than the considerations for which it was advanced, it can suggest new directions of research that may lead to important discoveries.

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SCARAVELLI
ON KANT

MARCUCCI, SILVESTRO. Sui Fondamenti Dell'Esperienza <<Empirica>> in Kant*. Physis, 1984, 26: 5-28.

The Author takes some statements of Luigi Scaravelli on Kantian <<empirical>> starting points for discussing the <<grounds>> of such an experience and, above all, of <<judgement>>. Actually Kant founds Experience (in a general perspective) on this faculty, as it shows itself in its various forms and activities. Particularly the Author stresses the <<Determinant Judgement>>; from this point of view he considers Scaravelli's analysis of Kantian conception of regularity in physics and discusses his important statement that <<physics in toto>> - and therefore even contemporary physics - <<falls within domain of Kant's Critique of Judgement>>.

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KINETIC THEORY

WILSON, DAVID B. Kinetic atom. American Journal of Physics, 1981, 49: 217-222.

In the middle of the 19th century, physicists abandoned the idea of heat as a special kind of matter in favor of the idea that heat was a "mode of motion" of ordinary matter. From this "dynamical" view of heat, they proceeded to a more precise "kinetic" theory and, along with it, the idea of the kinetic atom. This paper will survey the research of men like Joule, Kelvin, Maxwell, Clausius, and Boltzmann, as it comments on the basic conceptual issues involved in this area of the history of physics.

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ENERGY

SIEGEL, DANIEL M. The Energy Concept: A Historical Overview. Materials and Society, 1983, 7: 411-24.

The history of the energy concept is surveyed from seventeenth-century roots to twentieth-century impacts: I. The partial conservation laws for vis viva and for heat. II. Conversion processes and correlation of forces. III. Conservation of energy. IV. The impact of the energy concept. V. The second law and thermodynamics. VI. The meaning and significance of the second law. VII. Twentieth-century impacts.

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EINSTEIN ON
HILBERT

MEDICUS, HEINRICH A. A comment on the relations between Einstein and Hilbert. American Journal of Physics, 1984, 52(3): 206-208.

A newly discovered letter written by Albert Einstein to a close friend, Heinrich Zangger, reveals Einstein's reaction to David Hilbert's work on the gravitational field equations in the theory of general relativity. Hilbert's work was done at the same time as Einstein's, and for a short while, Einstein felt that Hilbert had come close to plagiarizing.

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WEGENER

JACOBY, W.R. Modern concepts of Earth dynamics anticipated by Alfred Wegener in 1912. Geology, 1981, 9: 25-27.

In his first publication on continental drift, Alfred Wegener anticipated sea-floor spreading, the functional relationship between bathymetry and age or temperature below the sea floor, perhaps mantle convection, and some aspects of plate tectonics. Some of these insights, such as sea-floor spreading and bathymetry with age, did not appear in his later work; others, such as convection and plate tectonics, were taken up when new evidence became available. His intuition led him to these insights, and he had a very clear perception of the distinction between facts and speculation.

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THE EXPERIMENTAL
REPORT

BAZERMAN, C. Modern Evolution of the Experimental Report in Physics: Spectroscopic Articles in Physical Review, 1893-1980. Social Studies of Science, 1984: 163-96.

Recent studies of scientific texts need to be set against the history of the genre, which in part establishes the institutional framework within which any individual text is created. The definition of the appropriate form of communication is part of how a discipline constitutes itself, and is part of the achievement of that discipline. This paper examines the changing features of spectroscopic articles in Physical Review since its founding. Analyses of article length, use of references, sentence length and syntax, vocabulary, graphic features, organization and argument indicate that articles become increasingly theory-based and knowledge-embedded through time. Self-consciousness about the theoretical character of argument also increases. The changing character of communication within a scientific community also has implications for the social structure of that community.

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RUTHERFORD'S LAB

BADASH, LAWRENCE. Nuclear physics in Rutherford's laboratory before the discovery of the neutron. American Journal of Physics, 1983, 51: 884-89.

Work by Rutherford and his colleagues led to his nuclear model of the atom (1911), although it took a few years more for him to recognize the significance of this insight. With the understanding that radioactivity is a nuclear phenomenon, one may say that nuclear physics became the major pursuit in Rutherford's Manchester and Cambridge laboratories. The key to this problem was reported in his 1919 papers on transmutations produced by bombarding nitrogen with alpha particles. Soon, a number of other elements yielded to these projectiles of radioactive decay, but recognition that more energetic particles would be needed to disintegrate heavier elements led to the development of accelerating machines. The search for the neutron, cloud chamber photographs of disintegrations, and exploration of the properties of beta and gamma rays also figured greatly in Rutherford's attack on the nucleus.

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COMPTON SCATTERING

WILLIAMS, BRIAN G. Compton scattering and Heisenberg's microscope revisited. American Journal of Physics, 1984, 52: 425-30.

Compton scattering figures prominently in the introductory chapters of textbooks on quantum mechanics as providing evidence for the "particulate" nature of light. It also arises in discussions of "Heisenberg's microscope", in which it is shown that attempts to measure the position and the momentum of an electron simultaneously are governed by the uncertainty principle. However, recent developments in Compton scattering have not yet found their way into the textbooks. In this paper we review the history of the Compton effect and describe briefly some of the modern developments in x-ray and electron Compton scattering and their application to the study of electron momentum densities which we believe to have a pedagogical value. Finally, we return to Heisenberg's microscope, and show how it has now become a reality. A complete analysis for all scattering angles depends crucially on the different expressions for the resolution and the depth of focus of the microscope.

Author's address: Department of Physical Chemistry, University of Cambridge, Lensfield Road, Cambridge, CB2 1EP, United Kingdom.

THE PERIODIC SYSTEM

RUBY, LAWRENCE. Modern architects of the periodic system. American Journal of Physics, 1984, 52(1): 14-16.

Major discoveries, which have transformed The Periodic System of the Elements from the arrangement suggested by Mendeleev to the current configuration, are reviewed. In particular, the contributions of H.G.J. Moseley and G.T. Seaborg are described.

Author's address: Lawrence Berkeley Laboratory and Department of Nuclear Engineering, University of California, Berkeley, California 94720.

DeBROGLIE'S INTERPRETATION

LOCHAK, GEORGES. The Evolution of the Ideas of Louis de Broglie on the Interpretation of Wave Mechanics. Foundations of Physics, 1982, Vol. 12, No. 10, 931-53.

This paper is devoted to an analysis of the intellectual itinerary of Louis de Broglie, from the discovery of wave mechanics, until today. Essential attention is paid to the fact that this itinerary is far from being linear, since after a first attempt to develop his own view on wave mechanics through the theory of singular waves, Louis de Broglie abandoned it for twenty five years, under the influence of the Copenhagen School (even embracing the conceptions of the latter), until the beginning of the fifties, when he definitively came back to his primary theory. This evolution of the Louis de Broglie's views on wave mechanics is told here and explained through an analysis of the evolution of all of quantum mechanics and, more generally, the dominating conceptions of theoretical physics in our century.

Author's address: Fondation Louis de Broglie, 1, Rue Montgolfier, 75003 Paris, France.

ION-ATOM COLLISIONS

MERZBACHER, EUGEN. Energetic Ion-Atom Collisions: Early Beginnings and Recent Advances. Electronic and Atomic Collisions. Elsevier Science Publishers, 1984: 1-19.

From the discovery of canal rays and radioactivity to the invention of accelerators and the first application of the Born approximation, some developments which were seminal for the development of ion-atom collisions are described. Collision theory is shown to have played a key role in the evolution of the early quantum theory and of quantum mechanics and its probability interpretation.

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P.W. BRIDGMAN

WALTER, MARLA. P.W. Bridgman and the Privacy of Scientific Knowledge. Presented at the annual meeting of the History of Science Society, October 1983, at Norwalk, CT. (Summary from History of Science in America, News and Views)

The shortcomings of operationism, and by extension empiricism, as the validating philosophical ground for scientific knowledge are exhibited in the story of P.W. Bridgman's alienation from his principal interpreters, the logical positivists and the neo-behaviorists. At the same time, the degree to which a scientific philosophy is shaped to serve particular needs or intentions is highlighted by the appearance of three distinct versions of operationism, respectively.

Bridgman, the positivists, and the behaviorists shared a disdain for metaphysics and a trust in scientific method, which they all insisted found its authority in "experience", the meaning of which was notably troublesome to pin down. Only Bridgman was willing to follow up the anti-philosophical implications of his empiricism. Consequently, he was led to repudiate as being suspiciously metaphysical the idea that science is publicly held knowledge. Bridgman accused the positivists of artificial virtuosity in their arguments for the publicity of science. Among the behaviorists, he found his adversary in Skinner, whose advocacy of the priority of the social group over the individual offended Bridgman's libertarian values.

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PARITY AS "CRUCIAL" EXAMPLE

FRANKLIN, ALLAN, HOWARD SMOKLER. Justification of a "crucial" experiment: parity nonconservation. American Journal of Physics, 1981, 49: 109-112.

In a recent paper it was argued that the 1957 experiments on parity nonconservation were "crucial" experiments in the sense that they decided unambiguously and within a short period of time for the appropriate scientific community, between two or more competing theories or classes of theories, which were of some importance. In this paper we examine whether such a decision might be justified from a philosophical point of view. A brief history is given, the nature of the evidence evaluated, and various philosophical questions are addressed. Our conclusion is that these experiments are indeed crucial and that the decision can be justified.

Author's address: Allan Franklin, Department of Physics, University of Colorado, Boulder, Colorado 80309

USE OF THE
COMPUTER

ZABUSKY, NORMAN J. Computational Synergetics and Mathematical Innovation. Journal of Computational Physics, 1981, 43: 195-249.

It is demonstrated how the computer, used in a heuristic mode, has greatly augmented our understanding of the mathematics of nonlinear dynamical process. Examples are given of recent work in soliton mathematics (mainly), but also nonlinear iterative mappings and low-order nonlinear ordinary differential equation systems. The role of good graphics in enhancing the discovery and retention of new mathematical properties of equations is illustrated. Several examples are given of the present frontier of research in two space dimensional nonlinear evolutionary problems.

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SAKHAROV

SESSLER, ANDREW M., YVONNE HOWELL. Andrei Sakharov: A man of our times. American Journal of Physics, 1984, 52(5): 397-402.

Contents: Biographical Sketch; Contributions to Science; Contributions to Society.

Based upon a talk given at the American Physical Society Meeting in Baltimore, 18-21 April 1983 entitled, "Sakharov and Society" by Andrew M. Sessler. The occasion was the presentation by the Forum on Physics and Society of the 1982 Leo Szilard Award to Andrei Sakharov who was, of course, unable to attend. Dr. Sessler, former Director of the Lawrence Berkeley Laboratory, was Chairman, during 1982, of the American Physical Society Committee on the International Freedom of Scientists. Yvonne Howell is a freelance writer.

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NAVAL RADAR

ALLISON, D.K. New Eye for the Navy: The Origin of Radar at the Naval Research Laboratory. Washington: Naval Research Laboratory Report 8466, 1981, xi + 228 (Available from Government Printing Office, Stock no.008-047-00329-3, \$13.00).

This book analyzes the development of radar at the Naval Research Laboratory (NRL) as a case history of mission-oriented research and development. It examines the effect of political and institutional forces on the evolution of radar from idea to reality, and conversely, the implications that the effort had for shaping the role of NRL in the Navy. The book begins by explaining the background to the Laboratory and its creation as an outcome of World War I. It then traces the work on radar from its invention to the introduction of equipment into the Fleet and the concurrent growth of a Navy research and development laboratory.

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Mailing Lists

AIP, APS and the Division frequently receive requests for the use of their membership lists to mail advertisements, fund-raising messages, and various other kinds of announcements. The Executive Committee of the Division wants to give members a chance to decide whether their names should be made available for such purposes (see above, p. 35). Assuming that it is possible to flag individual names for omission when the computer generates mailing labels, please indicate your preference:

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- _____ 2. I am willing to have my name remain on mailing lists for whatever purposes are approved by AIUP/APS/Division, including commercial solicitations.
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HISTORY OF PHYSICS NEWSLETTER

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