

History of Physics Newsletter

Volume III, Number 1

February, 1987

DIVISION NEWS

ELECTION OF DIVISION OFFICERS

The Ballots are on the inside of the back page of this Newsletter. Members of the Division are urged to vote and to return their ballots promptly. The following positions are to be filled: Vice-Chairperson (to become Chairperson the following year), and two members of the Executive Committee (3 year term.)

AMENDMENT TO BY-LAWS

The proposed Amendment is to rectify an omission in the original By-Laws, and it is discussed on the inside of the back page of this newsletter. There are spaces on the election ballot to indicate your approval or rejection of the proposal. An amendment needs to receive the approval of no fewer than two thirds of the members voting before it is sent to the APS council for their approval.

APS 1987 MEETINGS

During the spring of 1987, the Division of History of Physics is sponsoring three sessions of invited papers.

New York, N.Y. "Superconductivity: A Thirtieth Anniversary Celebration"

Tuesday evening March 17th, 1987. The session is being organized by G. Baym and S. Weart.

Per F. Dahl, Brookhaven National Laboratory: James Dewar, Walther Nernst, Heike Kammerling Onnes, Events Leading to Superconductivity in 1911.

Gordon Baym, U. of Illinois, Urbana: Quantum Theories of Superconductivity, 1929-1933.

J. Robert Schrieffer, U.C. Santa Barbara: The Development of the Microscopic Theory of Superconductivity.

Philip W. Anderson, Bell Laboratories: It's Not Over 'Till the Fat Lady Sings.

Crystal City, VA "The History of Astrophysics in the 20th Century" Jointly sponsored with the Astrophysics Division. The session is being organized by M. Harwit.

Tuesday April 21st, 1987, 9:00 AM to 12:00 noon:
"Stellar Structure and the Origin of the Stellar System."

L. Badash, U.C. Santa Barbara: Radioactive Dating and the Age of the Earth.

K. Hufbauer, U.C. Irvine: Solutions to the Energy Problem Proposed Before 1938.

S. Chandrasekhar, Chicago: Stellar Structure and the Realization that Some Stars are Degenerate.

H. Bethe, Cornell: The Proton-Proton Reaction and the Carbon Cycle.

E. Salpeter, Cornell: The Triple-Alpha Process and Late Stages of Stellar Evolution.

R. Davis Jr., Pennsylvania: History of the Solar Neutrino Problem.

Wednesday April 22nd, 1987, 9:00 AM to 12:00 noon:
"Stellar Composition, Birth of the Universe, and Origin of the Elements."

D. De Vorkin, Smithsonian: Henry Norris Russell and the Chemical Makeup of the Stars.

R. Smith, Smithsonian and John Hopkins: The Growing Realization, 1917-30, that the Universe Expands,

R. Alpher, Union College, Schenectady: Cosmochemistry in the Early Universe.

R. Herman, U. of Texas, Austin: The Prediction of the Microwave Background Radiation.

W. Fowler, Caltech: Recollections of Early Work on the Synthesis of the Chemical Elements in Stars.

R. W. Wilson, Bell Labs.: Observational Discovery of the Microwave Background, and the Confirmation of the Exploding Universe Models.

Business Meeting of the Division

Wednesday April 22nd, immediately following the above session (on "Stellar Composition, Birth of the Universe, and Origin of the Elements") and in the same room, the Division of History of Physics will hold its annual business meeting. Among the topics that the membership should discuss are their ideas concerning **FUTURE MEETINGS OF THE DIVISION**. Please see the next page, give the matter some thought, and come to the business meeting of the Division.

(Note: From April 23rd to 25th, the University of Maryland and the Smithsonian Institution are sponsoring in the Washington area a Symposium on the 300th Anniversary of Newton's Principia. See page 9.)

The History of Physics Newsletter (HPN) is published by the Division of the 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: *Albert Wattenberg*, Department of Physics, University of Illinois, Urbana, IL 61801. Associate Editors: *Stephen G. Brush*, Dept. of History and Institute for Physical Science and Technology, University of Maryland, College Park, MD 20742, and *Robert D. Sard*, University of Illinois, Urbana, IL 61801.

FUTURE MEETINGS OF THE DIVISION

The officers of the Division are being asked to provide the APS with the Division's attitude concerning long term plans for APS meetings. Long term planning is required because reservations for larger meetings have to be made as far in advance as five years. There is a high probability that the April meeting in Washington will be discontinued or shifted in time. We hope that there will be a discussion of the matter at our annual business meeting. Also, you may provide comments to us in writing and enclose them in the envelope provided for your ballot.

The pattern of APS meetings established in the early 70's when the Divisions began to assume control of the technical programs was to have General APS meetings in the first half of the calendar year and separate Divisional meetings of some Divisions in the second half of the year. The Division of History of Physics has in the past always chosen to have its sessions at General APS meetings. One of the questions that can be raised is whether there is a strong desire and/or reason for us to have a separate Divisional meeting. The separate Divisional meetings are run and have to be managed by local and Divisional committees and must be financially self supporting.

There has been a considerable sorting out of the roles and constituencies of the General APS meetings mainly due to the growth of physics in certain areas with a concomitant growth in APS Divisions. The March General meeting has been chosen by the Division of Condensed Matter Physics (DCMP) for their principal meeting, and 80 percent of the contributed papers of all General meetings are presented there. The DCMP and several smaller Divisions have a strong desire to continue this very large meeting in March.

Discussions of future possible patterns of APS meetings include: 1) that there be six General meetings per year, spaced uniformly except for the summer; 2) that one of these be in Washington in January jointly with the

AAPT; 3) that each APS Division must contribute significantly in at least one General meeting per year; 4) that each of the General meetings must have the participation of at least two Divisions; 5) that the Divisional Councilors of the Divisions actively participating in each of the meetings will be members of the Program Committee for that meeting in which their Division participates.

The most important activity of the Division of History of Physics is in planning and running meetings. Therefore we should make our desires known. Please give the matter some thought and let the members of the Executive Committee know your thinking concerning future meetings of the Division.

APS and AIP NEWS

Registration at APS Meetings

The APS budget attempts to have publications pay for themselves and the meetings of the society pay for themselves. There had been a tradition of good faith rather than guards at the doors of sessions in regard to the payment of registration fees at meetings. Unfortunately a significant fraction of attendees at APS meetings have failed to register resulting in a considerable (estimated at \$150,000 per year) loss of funds needed to cover the costs of the meetings. The Council and Executive Committee of the APS have been considering a variety of ways of addressing the problem. **REGISTRATION BADGES WILL BE REQUIRED AT SESSIONS AND RECEPTIONS.** Statements explaining the policy and its implementation are appearing in the BULLETIN of the APS.

25th Anniversary of AIP Center for History of Physics

In July 1961, work began on the AIP's new Project on the Recent History of Physics in the United States. This event led to the founding of the Center for the History of Physics. The success of the Center has led a number of other scientific and engineering societies to form centers for the history of their professions.

In the late 1950s concern developed that material was being lost which was valuable for an historical understanding of physics. One group led by John A. Wheeler of Princeton formed a joint committee of the American Physical Society and the American Philosophical Society; that committee guided the Sources for the History of Quantum Physics Project, which also celebrates its twenty-fifth anniversary this year. Another effort was undertaken by Elmer Hutchisson, director of the AIP at that time. He set up a Committee on History and Philosophy of Physics

with Gerald Holton of Harvard as the chairperson. After reviewing the situation, the AIP committee stated categorically that unless immediate and drastic action were taken, the documentation for fully understanding the development of modern physics would be lost. By the end of 1960 a plan for nationwide involvement had been drafted. In July 1961, with funding from the National Science Foundation, the project commenced under the directorship of historian W. James King.

Twenty-five years ago there were no existing documentation programs in scientific disciplines to serve as a model, and some of the key principles developed have guided the Center ever since. One of these is that the Center should work in cooperation with other repositories, helping to place papers of physicists whenever possible at their home institutions. Other early efforts, such as oral history interviewing and soliciting of photographs, also continue to the present. When the program was initiated 25 years ago, its first targets were individual physicists working in the pre-World War II period, primarily in academia. More recently, because of the growth in importance of nonacademic laboratories, the Center has devoted efforts to assisting these laboratories in their archival programs and in creating appraisal guidelines.

In September 1962, the Niels Bohr Library was dedicated, and in July 1965, the Library and the Project on the Recent History of Physics in the United States were joined into the Center for History of Physics. The Center is a line division of the AIP. Following King, the directors have been Charles Wiener until 1974 and since then Spencer Weart. Joan Warnow was appointed Associate Director in 1974. Chairpersons of the AIP Advisory Committee for History of Physics succeeding Gerald Holton have been Martin J. Klein of Yale and Roger Stuewer of the University of Minnesota.

At the Center's Niels Bohr Library, efforts have been made to make available computerized catalogues in particular the *Guide to the Collection in the Niels Bohr Library* and the *International Catalog of Sources for History of Physics and Allied Sciences*. The *Guide* is to be published in 1987. It will include descriptions of each of the Library's collections of physicists' papers and institutional records and of more than 500 oral history interviews. In addition, information will be provided on the Library's holdings of manuscript biographies, institutional histories, historical photographs, and tape recordings.

The Center wishes to draw attention to the Library's collection of finding aids. Over the years the Center has developed cooperative ties with archivists in repositories

across the United States and other countries, helping physicists and their families to place correspondence and other papers in appropriate repositories. In return, archivists share the folder listings, indexes, and other finding aids they prepare for such collections. The Center's collection of finding aids has grown to 700. A computerized catalogue of the collection of finding aids has been prepared.

Center for History of Physics NEWSLETTER

The NEWSLETTER is a biannual publication of the Center. It reports activities of the Center and its Niels Bohr Library as well as other information on work in the history of physics and astronomy. A subscription to the NEWSLETTER is free and can be obtained by writing to: The Center for History of Physics, American Institute of Physics, 335 East 45th Street, New York, NY 10164-0324.

Donations (tax-deductible) are very much appreciated and should be made out to Friends of the AIP Center. At the present time there is a grant pending from the National Endowment for the Humanities which will match your gift with one dollar for each three given.

MEETINGS

Case Western Reserve - Michelson-Morley Centennial Symposium The symposium is scheduled for October 28-29, 1987. A wide range of topics on modern physics in America will be addressed by distinguished historians and physicists. The keynote address will be by Daniel Kevles. It is hoped that many physics graduate students will be able to attend. For information write to the Michelson-Morley Symposium, Physics Department, Case Western Reserve University, Cleveland, OH 44106.

1987 Joint Atlantic Seminar in the History of the Physical Sciences will be held at Boston University on April 10th & 11th, 1987. These seminars have been particularly useful to graduate students and other young scholars. This year, the theme of the seminar is "Science and Biography." The deadline for the receipt of abstracts is February 20, 1987. For further information write to M. Feingold, Department of History, Boston University, Boston, MA 02215.

The History of Science Society The 1987 annual meeting will be held in Raleigh, North Carolina from October 29th to November 1st, 1987 as a joint meeting with the Society for the History of Technology. Proposals for papers should be submitted (with a brief vita) no later than April 15, 1987. Inquiries and proposals should be addressed to the History of Science co-chairs, Michael M. Sokal, Department of Humanities, Worcester Polytechnic Institute,

Worcester, MA 01609; tel. (617) 793-5363; or John W. Servos, Department of History, Box 1783, Amherst College, Amherst, MA 01002; tel. (413) 542-2229.

The University of Maryland and the Smithsonian Institution - Newton's Principia 1687-1987 The two institutions have arranged a symposium to commemorate the 300th anniversary of Newton's Principia. It will be held at the University of Maryland, College Park and at the Smithsonian Institution, Washington D.C. from April 23-25, 1987.

Thursday, April 23

Morning session title: **Revolution**

The speakers are: *I. Bernard Cohen*, Harvard University and *Richard Westfall*, Indiana University.

Afternoon session title: **Achievements**

The speakers are: *Betty Jo Dobbs*, Northwestern University and *Simon Schaffer*, Cambridge University.

Friday, April 24

Morning session title: **Research Seminar**

The seminar will include seven contributed technical papers with an emphasis on the Principia and its impact on the 18th century.

Afternoon session title: **Cultural Impact**

The speakers are: *James McGuire*, University of Pittsburgh, *Barbara M. Stafford*, University of Chicago, and *Paul Theerman*, Museum of American History.

Saturday, April 25

Morning session title: **Modern Perspective**

The speakers are: *S. Chandrasekhar*, University of Chicago, *Frank Wilczek*, NSF Institute for Theoretical Physics, and *Dudley Shapere*, Wake Forest University.

For further information write to Stephen Brush, Institute for Physical Science and Technology, University of Maryland, College Park, MD 20742.

University of Maryland - Workshop on Lorentz Transformations and Space-Time Geometry This workshop scheduled for May 27-30, 1987 will be held in preparation for the International Symposium on Space-Time Symmetries to be held May 25-28, 1988 in commemoration of the 50th anniversary of Eugene Wigner's fundamental paper on the Inhomogeneous Lorentz Group. For more information contact Y. S. Kim, Department of Physics and Astronomy, University of Maryland, College Park, Maryland 20742.

University of Rochester - Newton Symposium The symposium took place October 20-24, 1986. The talks were about Newton. The speakers included: J. E. McGuire, Alan Shapiro, I. Bernard Cohen, E. McMullin, Richard S. Westfall, and others. For further information about the topics and the program, write to Prof. Hugh M. Van Horn, Department of Physics and Astronomy, The University of Rochester, River Campus Station, Rochester, NY 14627.

University of Turku, Finland - Symposium on the Foundations of Modern Physics The sub-title of the conference is 50 Years of the Einstein-Podolsky-Rosen Gedankenexperiment. The conference took place June 16-20, 1985 in Joensuu, Finland. A booklet of abstracts of papers presented has been compiled by Kalevi Kokko and has been published by the Department of Physical Sciences, University of Turku 50, Finland. Talks of probable interests to historians were given by M. Jammer, F. Rohrlich, D. Aerts, O. Piccioni, C. P. Enz, and others.

GRANTS AND FELLOWSHIPS

AIP Center for History of Physics

The Friends of the AIP Center for the History of Physics are using income from their Endowment fund for a program of grants-in-aid. Grants will be for a maximum of \$1000 each and can be used only to reimburse direct expenses incurred by historians doing research. The most frequent use of the grants-in-aid has been for travel to visit the Center's Niels Bohr Library in New York City, along with support toward the high living expenses during the stay there. Also common has been support for travel to conduct oral history interviews.

The application process is simple. The applicant need only send the Center a letter of not more than two pages describing the project and including a brief budget, plus a curriculum vitae and bibliography. For more information write to Spencer Weart, Center for History of Physics, American Institute of Physics, 335 East 45th Street, New York, NY 10017.

Charles Babbage Institute

The Charles Babbage Institute was founded in 1978 with the goal of conducting and promoting historical research in the technical and the socio-economic aspects of information processing. Located on the University of Minnesota campus, the Institute maintains an archival center, serves as a clearing house for historical information, and sponsors other scholarly activities. In an effort to increase

the number of qualified scholars in the field, the Institute is sponsoring a Predoctoral Fellowship and a Professional Internship.

Predoctoral Fellowship: The Charles Babbage Institute is accepting applications for a Graduate Fellowship to be awarded for the 1987-88 academic year to a graduate student whose dissertation will address some aspect of the history of computers and information processing. There are no restrictions on the venue of the fellowship. It may be held at the home academic institution, the Babbage Institute, or any other location where there are appropriate research facilities. The stipend will be \$6,000 plus an amount up to \$2,500 for tuition, fees, travel, and other approved research expenses. Interested applicants should contact the Charles Babbage Institute, University of Minnesota, 103 Walter Library, 117 Pleasant Street S.E., Minneapolis, MN 55455. Telephone: (612) 624 5050.

Professional Internship: The application deadline for this year was January 15, 1987.

NEH Grants and Fellowships

The National Endowment for the Humanities has a basic reference guide to its many programs, "*Overview of Endowment Programs*" which can be obtained from the National Endowment for the Humanities Public Affairs Office, Room 409, 1100 Pennsylvania, N.W., Washington, DC 20506.

Humanities Projects in Media: In August, the NEH invited applications for the Humanities Media Program for television and radio biographies on the lives of historically significant Americans. As for all media programs, NEH grants are available for planning, scripting, or production and may cover single programs or series in a variety of documentary and dramatic formats. Collaboration between scholars and media artists and professionals is essential. For more information contact NEH, Division of General Programs, Humanities Project in Media, Room 420, 1100 Pennsylvania Ave. N.W., Washington, DC 20506. The deadline for receipt of applications for this program is March 20, 1987.

NEH Fellowships for Teachers and Scholars:

"Fellowships for University Teachers" provide support to undertake full-time independent study and research for members of faculty of Ph.D.-granting departments at universities. Individuals are the eligible applicants.

"Fellowships for College Teachers and Independent Scholars" provide support to undertake full-time independent

study and research for independent scholars and writers and for teachers in two-year, four-year, and five-year colleges and universities who are in departments that do not grant the Ph.D.

For both of the above fellowships the deadline for receipt of applications is June 1, 1987; for more information, write or call (the Fellowship named above), Room 316, National Endowment for the Humanities, 1100 Pennsylvania Ave., N.W., Washington, DC 20506 Telephone:(202) 786-0466.

NSF Young Investigator Awards

Since 1984, the NSF has annually conducted a competition for Presidential Young Investigator Awards. In previous years, the deadline for nominations was July 1st. Those eligible should have appointments to tenure-track positions after July 1, 1986 and have received their doctoral degrees after 1982. The program is aimed at encouraging young scientists to enter academic careers. Awardees will receive a basic sum of \$25,000 per year from NSF. For further information write to Presidential Young Investigators Award, National Science Foundation, Room 414, Washington, DC 20550.

Rockefeller Archive Center Grant

Grants of not more than \$1500 will be made to applicants of any discipline who are engaged in projects that require substantial use of the collection at the Rockefeller Archive Center. The purpose is to foster research in the records of The Rockefeller Foundation, The Rockefeller University, and other collections in the Rockefeller Archive Center. The size of individual grants will be dependent upon the travel, temporary lodging, and research expenses of the applicant. Darwin H. Stapleton, Associate Professor and Director of the Program in the History of Science and Technology, Case Western Reserve University, has been appointed Director of the Center effective August 15, 1986.

The Center became a functioning special member of the Research Libraries Information Network in March 1986. All of the Center's open collections have been entered. Inquiries are invited from interested scholars who may benefit from access to an RLIN terminal. (For information on RLIN, see Announcements and Reports on page 9.)

Grant applications for research during a given year must be made before December 31st of the previous year. Inquiries about the program and requests for application forms should be addressed to: Director, Rockefeller Archive Center, Pocantico Hills, North Tarryton, New York 10591-1598.

SEMINARS FOR TEACHERS

Chautauqua Short Courses

Chautauqua Short Courses are an annual series of forums in which scholars at the frontiers of various sciences meet intensively for several days with undergraduate college teachers of science. The series is held at nine colleges and universities throughout the United States and at other locations. There is an attempt to rotate courses among different regions of the country. The primary goal is to enable teachers in the sciences to keep their undergraduate teaching current and relevant. Typically the course director meets with approximately 25 college teachers for three successive days of full-time activity.

The Director of the Chautauqua Field Centers is Dr. George K. Miner, Department of Physics, University of Dayton, Dayton, OH 45469-0001. This year they are offering 46 forums. Two courses which may be of interest to readers of this HPN are listed below. To register and obtain further information for both of these courses, call the SUSB Chautauqua Field Center (State University of New York at Stony Brook) Lester G. Paldy, Center for Science, Mathematics, and Technology Education, Stony Brook, NY 11794-3733. Tel: (516) 632-7075.

Prof. Max Dresden - SUNY at Stony Brook
 Course Title: *Personalities of 20th Century Physics: Their Interactions and Struggles*
 Dates: March 23-25, 1987. Fee: \$150.

The course is about the handful of outstanding individuals that contributed to the creation of the quantum theory and the theory of relativity. This course is about scientists and science; it is not and does not treat science, and no specific technical knowledge is required.

Prof. Ruth S. Cowan - SUNY at Stony Brook
 Course Title: *Women, Science, and Technology*
 Dates: March 31 thru April 2, 1987 Fee: \$150.

This course is for college teachers of: history, social and natural sciences, mathematics, and engineering. There are no prerequisites. The course will be concerned with a number of aspects of the relation between women, science, and technology. One aspect the course will explore is how a clearer understanding of history might lead to policies that would encourage a greater participation by women in science and technology.

NEH Summer Seminars for College Teachers:

Prof. Arthur I. Fine - Northwestern University
 Course Title: *The Legacy of Realism: New Approaches to Understanding Science*
 Dates: June 22 to August 14, 1987

For detailed information write to Arthur I. Fine, Department of Philosophy, Northwestern University, Evanston, IL 60201

Prof. George Saliba - Columbia University
 Course Title: *Islam and the Scientific Tradition*
 Dates: June 15 to August 7, 1987
 For detailed information write to George Saliba, Department of Middle East Languages and Cultures, c/o Summer Session Office, 419 Lewisohn Hall, Columbia University, New York, NY 10027.

The Summer Seminars for College Teachers Program, offered by the National Endowment for the Humanities, provides teachers of undergraduates with an opportunity for advanced study or research in their own fields or in fields related to their interests. Twelve teachers are selected to participate in each of the seminars, and they will work together in areas of mutual interests under the direction of the distinguished director. The seminars are designed especially for the NEH College Teachers Program and are not intended to be identical to courses normally offered by graduate departments, nor will graduate credit be given for them. Those selected will receive a stipend of \$3,500 to help cover expenses. The deadline for receipt of applications is the first week in March.

To receive announcements about the Program for College Teachers in future years write to National Endowment for the Humanities, Division of Fellowships and Seminars, 1100 Pennsylvania Ave. N.W., Washington, DC 20506.

PUBLISHERS & BOOKS

In this category we are trying to limit announcements to books that are recently published or about to be published, and whose contents directly relate to the History of: Physics, Physicists, Laboratories, and Associated Institutions.

American Institute of Physics

Hans A. Bethe, R. F. Bacher, and M. Stanley Livingston - Basic Bethe; Seminal Articles on Nuclear Physics, 1936-1937 This is a reprint of the three articles from the Reviews of Modern Physics that were the "Bible for Nuclear Physicists" for more than a decade. Write to American Institute of Physics Marketing Service, 335 East 45th St., New York, NY 10017.

Buchverlag der Morgen

Editor: *Friedrich Herneck - Einstein und sein Weltbild. Aufsätze und Vorträge* This is a collection of articles and lectures first written or delivered from 1955 to 1975. Berlin.

Cambridge University Press

Editors: *Laurie M. Brown* and *Lillian Hoddeson* - **The Birth of Particle Physics** (Now in paperback) First person accounts or research essays by thirty-five distinguished scientists and historians. Most of the papers were presented in May 1980 at the International Symposium on the History of Particle Physics in the 1930s and 1940s. *P. C. W. Davies* and *J. Brown* - **The Ghost in the Atom** A Discussion of the Mysteries of Quantum Physics. The book is based on a BBC radio documentary and includes interviews with: Alain Aspect, John Bell, John Wheeler, Rudolph Peierls, David Deutsch, John Taylor, David Bohm, and Basil Hiley. *Allan Franklin* - **The Neglect of Experiment** The book uses experiments on parity and CP invariance to address the questions: What role have real experiments played or should they play in physics, and how do we come to believe rationally in experimental results? *A. Heerding* - **The History of N. V. Phillips' Gloeilampenfabrieken. Volume I: The Origin of the Dutch Incandescent Lamp Industry.** (translated by *Derek S. Jordan*) *Gerald Holton* - **The Advancement of Science, and Its Burdens** The Jefferson Lecture and Other Essays. Holton continues his analysis of how modern science works and what its influences are on our world. *Yuval Neeman* and *Yoram Kirsch* - **The Particle Hunters** This is for a general audience. It begins with Thomson and Rutherford and goes to the recent discoveries of the intermediate vector bosons that are the carriers of the weak force. *Sir Harrie Massey* and *M. O. Robins* - **History of British Space Science** They cover the beginning and subsequent development of the British space science program in which they played a major role. For more information write to Cambridge University Press, 32 East 57th St., New York, NY 10022.

Macmillan Publishing Co.

Robert P. Crease and *Charles C. Mann* - **The Second Creation** Makers of the Revolution in Twentieth-Century Physics. Although the book was written for the general public, it is technical, as well as anecdotal. One theme is the history of unification. Write to Macmillan Publishing Co. 866 Third Ave., New York, NY 10022

North-Holland Physics Publishing

Editors: *J. De Boer*, *E. Dahl*, and *O. Ulfbeck* - **The Lesson of Quantum Theory: Proceedings of the Niels Bohr Centenary Symposium, Copenhagen, Denmark, October 3-7, 1985.** The book is divided into three parts. Part two, containing the main theme of this volume, is divided into three sections. Section one, entitled **The Lesson of Quantum Theory**, explores the theory which for Bohr went way beyond physics. Section two relates the progress in neighboring disciplines. The last section is devoted to Bohr himself, his personality, his activities and his world of thought. The contributors are outstanding

scientist and include Nobel laureates.

Palm Publications

Editor: *Nancy J. Nersessian* and Associate Editor: *H. Floris Cohen* - **Selected Works of H. A. Lorentz** The Palm Press has announced plans for the publication of a new five volume edition of Lorentz's major books and papers on electromagnetism between 1875 and 1916. They will appear in their original language with the exception of those in Dutch, which will be translated into English. Quite a few of these papers and books have never before appeared in English - and/or have been omitted from the earlier **Collected Works**. The Volumes will be published between 1986 and 1989. Volume V is the first to appear and contains: **The Theory of Electrons** (1906 lectures) and 2 lectures from **Lectures on Theoretical Physics "Aether theories and aether models"** (1901). A paperback version of this series will be made available to individuals. For further information including tables of contents, write to Palm Publications, P.O.Box 209, 2910 AE Nieuwerkerk a/d IJssel, The Netherlands.

Pergamon Press

Editor: *D. ter Haar* translators: *K. P. Neat* and *J. B. Sykes* - **The Collected Papers of P. L. Kapitza** Volume 4. This volume contains papers by Kapitza which appeared after the earlier three volumes of his **Collected Papers** were published. (There is a volume of his more popular papers which were collected in **Experiment, Theory, Practice**, published previously by Reidel.) Write to Pergamon Press, Maxwell House Fairview Park, Elmsford, NY 10523.

Plenum Publishing Corp.

Barry Parker - **Einstein's Dream: The Search for a Unified Theory of the Universe** It is non-mathematical. It covers the scientists and their ideas on unification of relativity and quantum theory. It includes the present theories of the structure and formation of the universe. Write to Plenum Publishing Corp., 233 Spring Street, New York, NY 10013.

Tata Institute of Fundamental Research

Editors: *B. V. Sreekantan*, *Virendra Singh*, and *B. M. Udgaonkar* - **Homi Jehangir Bhabha, Collected Scientific Papers** For more information write to Dr. B. V. Sreekantan, Tata Institute of Fundamental Research, Homi Bhabha Road, Bombay 400 005, India.

University of California Press

J. L. Heilbron - **The Dilemmas of an Upright Man: Max Planck as Spokesman for German Science.** For more information write to University of California Press, Berkeley, CA 94720.

University of Chicago Press

Arthur Fine - **The Shaky Game: Einstein, Realism, and the Quantum Theory** Fine uses Einstein's published and unpublished writings to analyze Einstein's objections to quantum theory. *Christa Jungnickel* and *Russell McCormack* - **Intellectual Mastery of Nature Theoretical Physics from Ohm to Einstein** Both volumes are now available. Volume I: The Torch of Mathematics 1800-1870. Volume II: The Now Mighty Theoretical Physics 1870-1925. In volume II the comprehensive history of German physics is continued thru the late nineteenth century into the period associated with Planck, Einstein, and Heisenberg. For more information write to the University of Chicago Press, 5801 S. Ellis Ave. Chicago, IL 60637, or call S. Leary at (312) 962-7898. The U. of Chicago Press offers a discount at its booths at the APS and HSS meetings.

Verlag Peter Lang

Editor: *Wilfried Schröder* - **Historical Events and People in Geosciences Selected Papers from the symposia of the Interdivisional commission on history of IAGA during the IUGG General Assembly, held in Hamburg, 1983.** For further information, write to Verlag Peter Lang AG, Postfach 277, CH-3000 Bern 15 Switzerland.

RECENT & FUTURE ARTICLES

American Journal of Physics

"Ancient Heliocentrists, Ptolemy, and the Equant" by Dennis Rawlins and Helene Perry (February 1987) Pliny's data for Venus are shown to be inconsistent with geocentricity, and a heliocentric period-relation is found to be the basis of Ptolemy's previously unexplained and astonishingly accurate tables of the mean motion of Mars, the very orbit that produced the equant.

"Carnot's Function: Origins of the Thermodynamic Concept of Temperature" by William H. Cropper (February 1987) The centerpiece in the story is the temperature function discovered by Carnot and developed by others gradually over 30 years. In Thomson's final resolution, Carnot's function simply determined the thermodynamic temperature scale.

"The Cavendish Experiment as Cavendish Knew It" by B. E. Clotfelter (March 1987) Cavendish did not interpret his experiment as a measurement of G, the gravitational constant. He thought that he had measured the mean density of the earth, and he was only one of many experimenters making such measurements by many methods.

HSPS - Historical Studies in the Physical and Biological Sciences

Articles related to physics in Volume 17, Part 1 include: "The Empiricists Temper Regnant: Theoretical Physics in the United States 1920-1950" by S.S. Schweber; "The Origin of the Displacement Current" by D. Siegel; "Measurement, Work, and Industry in Lord Kelvin's Britain" by M. Norton Wise and Crosbie Smith; "Reviews of 5 books concerning Nuclear Physics under Rutherford at Cambridge" by Robert W. Seidel.

Journal of Applied Physics

The September 15th, 1986 issue (vol.60, No.6) is devoted to the papers presented at the **Symposium in Honor of Clarence Zener**. The articles include: "Impact of Clarence Zener upon Metallurgy" by M. Hillert; "Zener-Stroh crack, Zener-Holloman parameter, and other topics" by Weertman; "Internal Friction in Solids" by C.A. Wert; "Zener's Contribution to Solid-State Electronics and Magnetism" by W.J. Carr.

Living Physics

Bogdan C. Maglic has announced a new journal with a goal of presenting the human aspects of the scientific process. For more information write to Living Physics, 20 Nassau St. Princeton, NJ 08524. The first issue is scheduled to appear in March 1987 and includes: "From S-Matrix to Quarks" by Murray Gell-Mann.

Physics Today

"How Yukawa Arrived at the Meson Theory of Nuclear Forces" by Laurie M. Brown (December 1986) Material from the Yukawa archives are used to trace the thoughts that led Yukawa to his immensely fruitful suggestion.

Revista Mexicana de Fisica

"On the History of the Statistical Theories of Turbulence" by G. Battimelli (Supplemento 32 No.S1 (1986)) Mainly it is on the interwar period and the shift from the semiempirical theories to the statistical theory of G. I. Taylor in 1935.

ANNOUNCEMENTS & REPORTS

Obituary: Banesh Hoffman On August 5, 1986, Dr. Banish Hoffman died. He was a physicist, mathematician, and author who was a colleague and biographer of Albert Einstein. His books included: "The Strange Story of the Quantum" (1947) and "Albert Einstein, Creator and Rebel" (1972).

Boletín de APFA La Asociación de Profesores de Física de la Argentina is issuing a bulletin (in Spanish) five or six times a year. They are interested in notices of conferences,

meetings, and publications such as books and reviews, especially if they are of value to the teaching of physics. The Association also publishes a review journal for articles on research in the teaching of physics, "La Revista de la Enseñanza de la Física." Correspondence should be sent to Boletín de APFA, Prof. Vicente C. Capuano or Prof. Estela Nieto, Facultad de Matemática Astronomía y Física, Valparaíso y Rogelio Martínez, Ciudad Universitaria - UNC, 5000 Córdoba, Argentina.

HSS Book Prize for the History of Women in Science The History of Science Society has just announced the establishment of a new prize for a book on the History of Women in Science. The prize of \$500 will be awarded for the first time at the annual meeting of the Society in October 1987. Books by single authors published in the last four years are eligible for nomination. Suggestions by members of HSS can be sent to the chair of the 1987 History of Women in Science Prize Committee, Helena Pycior, Department of History, University of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, WI 53201.

Iowa State University Center for Historical Studies of Technology and Science The University has created the Center to complement the university's doctoral program in the history of technology and science. The Center activities include soliciting historical records from businesses, associations, and individuals as well as raising grant funds to support the preservation, organization, and study of these collections. For further information, contact Alan I. Marcus, Director, Center for Historical Studies of Technology and Science, 635 Roos Hall, Iowa State University, Ames, Iowa 50011.

Knowledge and Society: Studies in the Sociology of Science, Past and Present The annual series has recently moved to the University of Illinois at Urbana-Champaign, with Lowell Hargens, Robert Alun Jones, and Andrew Pickering as editors. The editors intend to interpret the title of the series broadly, and they invite contributions from historians, philosophers, sociologists, and others working in the area of science studies. For more information contact the editors at the Department of Sociology, University of Illinois, Urbana, IL 61801.

Hamburg History of Science Institute C. Hünemörder has edited a pamphlet-size report on the history of The Institute for the History of the Natural Sciences, Mathematics, and Technology of the University of Hamburg (1960-1985). The 43 pages of text and the 133 pages of appendices contain much bibliographic and summary information on the research carried out there during those years. The history of physics research was very much connected with the names of: H. Schimank (who had been teaching the history of physics for 40 years before the foundation of the institute), F. Krafft (the physics of classi-

cal antiquity), H. Kangro ("Pre-history of the Planck Radiation Law"), and A. Kleinert (18th and 20th century physics, most recently Anton Lampa, and Phillip Lenard and Johannes Stark). Information about the availability of the report can be obtained from C. Hünemörder, Selbstverlag Universitaet Hamburg, Edmund-Siemers-Allee 1, 2000 Hamburg 13, West Germany.

Research Libraries Information Network The Research Libraries Information Network, RLIN, of the Research Libraries Group based at Stanford is the online system of choice for many archives and manuscript repositories including the Rockeller Archive Center, the American Philosophical Society, and the Henry E. Huntington Library. The AIP Center for the History of Physics is currently negotiating with RLIN for ways to share their International Catalog.

RLIN is an automated information retrieval system supporting the programs and requirements of a nationwide network of research libraries. The combination of databases and computer systems are frequently updated. Some of the things available to an RLIN user include:

- a bibliographic data base with well over sixteen million records, representing libraries holdings and acquisitions;
- an integrated acquisitions and cataloguing system;
- a system for searching Library of Congress names and subject headings and The New York General Library Authority File;
- an Interlibrary Loan System; and
- ESTC - an Eighteenth-century Short Title Catalog data base.

The Research Libraries Group, RLG, was set up in the early 1970's. More than thirty universities, libraries, and societies are the owner members including: Columbia, Cornell, John Hopkins, NYU, Princeton, Stanford, SUNY, Univ. of California, and Yale. There are also associate members and special members. Searching access to RLIN is available to libraries and institutions who are not members, and to individuals. A one time fee covering the cost of relevant self instructional publications is charged for opening a search-only account. Charges for searching are made by connect hours to the computer. The most convenient and economical access to RLIN for independent researchers is through terminals at the reference desks and service points of participating libraries where skilled personnel can assist you in making decisions. One can use a personal computer with a modem. Further information should be obtained from Library Operations Division, The Research Libraries Group Inc., Jordan Quadrangle, Stanford, CA 94305. Telephone (415) 328-0920. Users manuals and brochures are available which describe various aspects of RLIN; a list of their publications can be obtained from The Research Libraries Group, Inc., Attn. Publications Clerk, Jordan Quadrangle, Stanford, CA 94305

SUMMARIES

Authors of books and articles on the history of physics are invited to send summaries for publication in this section. Maximum length: 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 the publisher. We can also publish summaries of papers presented at meetings if the author is willing to distribute preprints. Publication will be expedited if each summary is typed, on a separate sheet, in the format of the summaries below. Summaries should be sent to Albert Wattenberg, Department of Physics, University of Illinois, 1110 W. Green Street, Urbana, IL 61801.

GENESIS OF CERN

✓ Belloni, Lanfranco. *Sulla Genesi del CERN* Storia Contemporanea, agosto 1986, XVII, n. 4:53-101.

Explores the Italian side of CERN prehistory from the first debates among Rome physicists around 1950 to ratification of CERN treaties by Italian Parliament and Senate (1954-55).

Author's address: Istituto di Fisica Generale Applicata, Università Degli Studi di Milano, Via Celoria 16, 20133 Milano, Italy.

THE MAGNETRON

✓ Brittain, James F. *The Magnetron and the Beginnings of the Microwave Age*. Physics Today, July 1985, 38, No. 7:60-67.

A device of little promise, originally developed in 1916 as an alternative to grid control in vacuum tubes, became in 1940 the key to the successful development of radar by the Allied forces during the Second World War.

Author's address: Department of History of Science and Technology, Georgia Institute of Technology.

WOMEN IN PHYSICS

✓ Brush, Stephen G. *Women in Physical Science: From Drudges to Discoverers*. Physics Teacher, 1985, 23: 11-19.

To show that women have made major discoveries in science, textbooks should give proper credit when they present these discoveries - especially when discoveries of comparable importance are credited when made by men. In addition to Marie Curie the following (and probably others) deserve recognition in physical science books: Irene Joliot-Curie, Maria Goeppert Mayer, Dorothy Hodgkin, Emmy Noether, Cecilia Payne-Gaposchkin, Kathleen Lonsdale, Inge Lehmann, Lise Meitner, and Chien-Shiung Wu. Summaries and references for their work are given.

Author's address: IPST, University of Maryland, College Park, MD 20742.

HUYGENS AND GRAVITY

✓ Elena, Alberto. *Huygens y el Cartesiano* (A Propósito de la Noción de Gravedad). Lluç (Spanish Society for the History of Science), 1983, 5:5-16.

Although Huygens is usually listed among the "Cartesians," a careful survey of his work gives clear proof of outstanding divergences with regard to his master. In relation to the problem of gravity, for instance, Huygens was forced to remodel the vortex theory by engaging himself in a deep reexamination of Cartesian matter theory. In addition Huygens' epistemological attitude became increasingly critical as contrasted with Descartes' optimism and he finally embraced a more probabilistic standpoint.

Author's address: Dpto. Lógica, Facultad de Filosofía, Universidad Autónoma, 28034 Madrid, Spain.

KEPLER'S FORCES

✓ Elena, Alberto. *On the Different Kinds of Attractive Forces in Kepler*. Archives Internationales d'Histoire des Sciences, 1983, 33:22-29.

Contrary to the usual assumptions, not all sidereal forces in Kepler's work are of a magnetic nature. At the beginning of the seventeenth-century magnetism was a suitable device in order to explain actions at a distance, but we also find in Kepler a non-magnetic force of gravity and a very peculiar *species motrix* of the sun which carries the planets along their orbits. Evidence is presented throughout this paper about this important distinction.

Author's address: Dpto. Lógica, Facultad de Filosofía, Universidad Autónoma, 28034 Madrid, Spain.

THE ROYAL SOCIETY IN 17th CENTURY

✓ Elena, Alberto. *Física y Filosofía en el Siglo XVII: la Royal Society de Londres y el Programa Baconiano*. Contextos, 1983, 1: 105-125.

Official histories of the Royal Society (and mainly that by Sprat) emphasized the Baconian nature of the enterprise, keeping out of sight all the other influences and particularly the foreign ones. The claim made in this paper is that the early fellows of the Royal Society served themselves of Baconian philosophy of science as a protecting shield and there was not a real engagement in most cases. Author's address: Dpto. Lógica, Facultad de Filosofía, Universidad Autónoma, 28034 Madrid, Spain.

LEIBNIZ, MACH, EINSTEIN

✓ Epstein, Ari W. *Leibniz, Mach, and Einstein: Similarities between the Earliest and the Latest Attacks on Newtonian Absolutism*. Synthesis, Summer 1984, 7, No. 1:29-37.

"In 1883, ... Ernst Mach published a book entitled *The Science of Mechanics*. This work had a profound influence upon the early work of Albert Einstein and helped to form the philosophical foundations of relativity theory. I hope to show in this paper that Mach's philosophical objections to Newtonianism, which were a major factor in the demise of the Newtonian world-view, are similar in many respects to objections which had been stated almost 170 years earlier, when Newtonianism first began to be the dominant system, by G. W. von Leibniz." Author's address not given. *Synthesis* is published at the History of Science Department, Science Center 235, Harvard University, Cambridge, MA 02138.

VAVILOV -

CERENKOV RADIATION

✓ Frank, I. M. *A Conceptual History of the Vavilov-Cerenkov Radiation*. Soviet Physics Uspekhi, 1984 27: 385-395. Translated from Uspekhi Fizicheskikh Nauk, 1984, 143:111-27.

The evolution of ideas on the nature of the Vavilov-Cerenkov radiation is discussed. The period between Vavilov's

ideas, advanced in 1934, and the formulation of a quantitative theory of the phenomenon in 1937 is surveyed.

Author's address: Joint Institute for Nuclear Research, Dubna (Moscow region), U.S.S.R.

ASTRONOMICAL DISCOVERIES

Harwit, Martin. *Cosmic Discovery: The Search, Scope and Heritage of Astronomy*. MIT Press, 1984 paperback.

Cosmic Discovery is an attempt to collect information that might be needed to answer questions on the promise of a particular science. It restricts itself to astronomy and asks, How was it that we first came to discover the major phenomena we now observe in the universe? Who were the individuals responsible for the discoveries? How had they prepared for their careers? What methods led to their successes? In a different vein, the book also asks, What is the scope of future astronomical discovery? How much remains to be done? Finally we can take all the information we can gather and ask, Are the lessons we can learn from earlier searches going to help us plan future enterprises more effectively? Is an imposed national plan likely to be more successful than the striving of individual, motivated scientists?

HERSCHEL TO HERTZSPRUNG

Herrmann, Dieter B. *The History of Astronomy from Herschel to Hertzsprung*. x + 220 pp. Translated from the German edition (1973) and revised by Kevin Krisciunas. New York: Cambridge University Press, 1984.

This broad-brush review of the origins of modern astronomy presents the contributions of 19th and early 20th-century German astronomers from a point of view intimately associated with Eastern bloc political philosophy. Herrmann treats all aspects of modern astronomy, as practiced both in Europe and America, from this point of view, but provides more than sufficient objective historical narrative to make the book of great value, if read in perspective... The book covers a wide range of topics, including the modern transition from a static to a dynamic and evolutionary cosmology; the growth of astrophysical observing techniques... the subsequent increase of astrophysical data... and the application of

modern physics to the study of stellar systems, stellar structure, and stellar evolution. - Review by David H. DeVorkin, *Science*, 1985, 227: 1220-1.

WOMEN SCIENTISTS

Hershenberg, Caroline L. *Women Scientists from Antiquity to the Present: An Index*. 200 + xl pp. Locust Hill Press, West Cornwall, CT 06796 (1986).

Could you, if asked, identify several prominent women physicists who lived before the time of Marie Curie? Most physicists could not. Even among scientists, there is a widespread impression that there were virtually no women actively engaged in science - in particular physics - before relatively recent times. In fact, we now have evidence that there have been women working professionally in the physical sciences at least as early as 1200 B.C. This new book contains basic data and references to further biographical information for about 150 women scientists of antiquity and about 200 medieval women scientists among the more than 2500 entries. An 18 page introductory essay provides historical context with vignettes of the lives and scientific contributions of a sampling of early women scientists. A bibliography of 130 entries is included. Author's address: Energy and Environmental Systems Division, Argonne National Laboratory, Argonne, Illinois 60439-4815.

RAYLEIGH SCATTERING

Hey, J. D. *From Leonardo to the Graser: Light Scattering in Historical Perspective. Part IV. The Fourth Baron Rayleigh*. Suid-Afrikaanse Tydskrif vir Wetenskap, October 1985, 81: 601-613.

The life and experimental research of Robert John Strutt, fourth Baron Rayleigh, are reviewed with particular reference to his contributions to the field of light scattering by atoms and molecules. A critical discussion is given of his work on the depolarization of light by anisotropic molecules, in relation to the studies of Cabannes, Gans, and Raman and Ramanathan on this subject.

Author's address: Department of Physics, University of Cape Town, Rondebosch 7700, South Africa.

TEXTBOOK

Holton, Gerald. *Introduction to Concepts and Theories in Physical Science*. (Second edition, revised and with new material by

Stephen G. Brush). New printing with corrections, xix + 589 pp., Princeton, NJ: Princeton University Press, 1985.

A paperback edition of the first modern textbook in the physical sciences to make full use of the history and philosophy of science, addressed to both the general and the science-oriented students. Has also been used, since its first (1952) edition, as supplementary text in courses ranging from engineering to philosophy. Extensive bibliography and problems (to which instructors can obtain worked-out solutions). Contents follow historical development, from origins of heliocentric theory to the Bohr atom, quantum mechanics, and a detailed chapter on relativity. Author's address: Department of Physics, Jefferson Physical Laboratory, Harvard University, Cambridge, MA 02138.

EAST AND WEST

Irvine, John and Martin, Ben R. *Basic Research in the East and West: A Comparison of the Scientific Performance of High Energy Physics Accelerators*. *Social Studies of Science*, 1985, 15: 293-341.

This paper presents the results of a study comparing the past scientific performance of high energy physics accelerators in the Eastern bloc with that of their main Western counterparts. Output evaluation indicators are used. After carefully examining the extent to which the output indicators used may be biased against science in the Eastern bloc, various conclusions are drawn about the relative contributions to science made by these accelerators. Where significant differences in performance are apparent, an attempt is made to identify the main factors responsible.

Author's address: Science Policy Research Unit, Mantell Building, University of Sussex, Falmer, Brighton, BN1 9RF, England.

HYDROGEN FINE STRUCTURE BEFORE DIRAC

Kragh, Helge. *The Fine Structure of Hydrogen and the Gross Structure of the Physics Community, 1916-26*. *HSPS*, 1985, 15: 67-125.

The Sommerfeld-Paschen work on hydrogen's fine structure was accepted by mainstream physicists as a triumph of both quantum theory and relativity. However, the success story was questioned by

conservative German physicists who opposed Einstein's theory. The paper gives a survey of the scientific controversy concerning the fine structure as well as an analysis of the social dimension of the controversy, involving "reactionaries" and "progressives." The development is followed up to spin quantum mechanics, including a section on Nazi physics. Author's address: Magnolievangen 41, 3450 Allerød, Denmark.

FRENCH PHYSICISTS

✓ **Pestre, Dominique.** *Physique et Physiciens en France, 1919-1940.* Editions des Archives Contemporaines, Paris, 1984. xvi + 365 pp. Paper, 295F. Histoire des Sciences et des Techniques. Reviewed by Mary Jo Nye in *Science*, 1985, 227: 628.

In this book Dominique Pestre has made a major contribution to the history of French science and 20th-century physics. He provides a thorough survey of the physics community in France between the two world wars, a description amply documented with graphs, tables, notes, and index (the last a rarity in French books). Pestre identifies major groups of physics teachers and researchers, both in Parisian institutions and in provincial universities. He describes textbooks and methods of instruction, laboratories and research, drawing comparisons with what was taught and published by physicists elsewhere in Europe and in America.

TECHNOLOGY

✓ **Pinch, Trevor.** *Recent Trends in the History of Technology.* British Society for History of Science Newsletter, January 1985, 16: 19-21.

Report on an international workshop at the University of Technology, Twente, The Netherlands, July 1984. Author's address: University of York, United Kingdom.

ITALIAN SCIENCE IN THE 1920's AND 1930's

✓ **Russo, Arturo.** *Science and Industry in Italy Between the Two World Wars.* HSPS, 1986, 16, 2:281-320.

In the period between the two World Wars there was a significant acceleration in the process of industrialization in Italy, fostered by the social and economic conditions created in the country by the fascist regime. At the same time the government established a new institutional

structure for science, stimulated by the post-war consciousness of the social and economic value of science: the reform of the university, the creation of the Consiglio Nazionale delle Ricerche, and the start of E. Fermi's research program in nuclear physics are the most important aspects of this recasting of the Italian scientific structures. The aim of this paper is to analyze the relationship between these two facets of the history of Italy in the 1920's and the 1930's, and the role of fascism in realizing and characterizing this relationship.

Author's address: Istituto di Fisica, Via Archirafi 36, 91023 Palermo, Italy.

VON KÁRMÁN

✓ **Sears, W. R.** *Von Kármán: Fluid Dynamics and Other Things.* Physics Today, January 1986, 39: 34-39.

The author of this anecdotal sketch, adapted from an APS lecture, was associated with Theodore von Kármán (1881-1963) from 1934. He describes the colorful Hungarian-born professor's career and personality, and explains his outlook toward engineering and applied mathematics. By virtue of his recognized original contributions, principally in mechanics, his native interest in people, and his personal charm and wit, von Kármán had a profound impact on engineering and engineering education.

GEOMETRICAL FIELD THEORY

✓ **Visgin, V. P.** *Einstein, Hilbert, Weyl: Genesis des Programms der einheitlichen geometrischen Feldtheorien.* NTM, Schriftenreihe für Geschichte der Naturwissenschaften Technik und Medizin, 1984, 21, No. 2: 23-33.

In der vorliegenden Arbeit werden die ersten Modelle einheitlicher Feldtheorien betrachtet, die den Kern des Programms der einheitlichen Feldtheorie bilden. Vor allem wird die Theorie von Weyl aus dem Jahre 1918 untersucht. Es werde die verschiedenen Faktoren dargestellt, welche das Entstehen dieser Theorie bedingten: die Göttinger Tradition der mathematischen Physik, mathematische und physikalische Ausgangspunkte, Kontakte mit Einstein und philosophische Interessen von Weyl. Abschliessend werden das Stadium der endgültigen Formulierung des Programms der einheitlichen geometrischen Feldtheorie (1921) und ihr weiteren Schicksal erörtert. Translated from Russian by

V. Wünsch and R. Robies.

Author's address: Institute for History of Science and Technology of the Academy of Sciences of the U.S.S.R., Moscow K-12, Staropanskiy per. 1/5, U.S.S.R.

SOURCES OF GALILEO

✓ **Wallace, William A.** *Galileo and His Sources: The Heritage of the Collegio Romano in Galileo's Science.* xiv + 371 pp. Princeton: Princeton University Press, 1984.

The sources of two of Galileo's Latin manuscripts, one on scientific methodology and the other on the heavens and the elements, are here identified as lecture notes of Jesuit professors teaching in Rome while Galileo was at Pisa. The two manuscripts are similar to a third in which Galileo wrote drafts of early treatises on motion. The importance of all three derives from elements of continuity they reveal between Renaissance Aristotelianism and early modern science. Galileo continued to use the terminology of these Latin notebooks, while modifying it as his scientific career progressed, to develop a mathematical physics that was distinctively his own and serves as the model for much of modern science. Author's address: School of Philosophy, The Catholic University of America, Washington, D.C. 20064.

CHINESE OPTICS

✓ **Wang, J. and Hong, Z.** *Chinese Optics.* Hunan Education Pub., May 1986 (in Chinese).

This is the first academic work specialized in researches on the history of Chinese optics in China. It covers a long period from ancient times of the inscriptions on bones or tortoise shells of the Shang Dynasty (c. 16th - 11th century B.C.) to the Ming (1368-1661) and Qing (Ching) Dynasty (1616-1911). The book looks at the process of the development of China's optics and brilliant achievements, including the monumental works, penetrating theories, excellent experiments and exquisite instruments of optics in the history of China. It should be of special interest to researchers and professionals working in history of science and all those who are looking for references on Chinese optics.

Author's address: Prof. Jinguang Wang, Department of Physics, Hangzhou University, Hangzhou, Zhejiang Province, People's Republic of China.

MISINFORMATION ABOUT ROEMER'S WORK

✓ Wroblewski, Andrzej. *De Mora Luminis: A Spectacle in Two Acts with a Prologue and an Epilogue*. American Journal of Physics, 1985, 53: 620-630.

Roemer's work on the velocity of light has been incorrectly described in many physics texts and books dealing with the history of science. The evolution of the misinformation is discussed and documented in this paper, which uses this example to call attention to how negligently many authors of physics texts deal with the history of physics.

Author's address: Institute of Experimental Physics, University of Warsaw, Hoza 69, 00-681 Warsaw, Poland.

W. YOURGRAU

✓ Van der Merwe, A., ed. *Old and New Questions in Physics, Cosmology, Philosophy, and Theoretical Biology*. xv + 920 pp. New York: Plenum Press, 1983.

A collection of essays in honor of Wolfgang Yourgrau (1908-1979). Includes a memoir of Yourgrau by the editor, with a list of publications, and short articles on topics in the history of physics by Alfred Kastler (indistinguishability of microparticles), Arne Naess (Einstein and Spinoza), and James F. Woodward (O. F. Mossotti and M. Faraday on the unification of electricity and gravity).

KAPITZA AND THE KREMLIN

✓ Badash, Lawrence. *Kapitza, Rutherford and the Kremlin*. xi + 129 pp. New Haven: Yale University Press, 1985.

Peter Kapitza, the eminent Soviet physicist, spent thirteen years of his early career in Britain as a valued colleague of Ernest Rutherford. In 1934, he made a summer visit back to the Soviet Union, only to be told that he could not return to England and that he must head a laboratory in Moscow that would be constructed for him. Rutherford tried several approaches to secure Kapitza's release but did not succeed. Kapitza finally decided to resume his scientific life in the USSR, and he created a renowned institute there and performed work that brought him the Nobel Prize in 1978.

This book tells the dramatic story of Kapitza's ordeal, quoting extensively

from letters Kapitza wrote in 1934 and 1935 to his wife, still in England. Around them Badash weaves a historical account of Kapitza's years at the Cavendish Laboratory in Cambridge and his detention in the Soviet Union.

Author's address: Department of History, University of California, Santa Barbara, CA 93106.

GERMAN PHYSICS INSTITUTES

✓ Cahan, David. *The Institutional Revolution in German Physics, 1865-1914*. HSPS, 1985, 15, No. 2:1-65.

This paper presents a systematic investigation of physics institutes in German universities between 1865 and 1914. Extensive empirical data on the establishment of new buildings, their growth per decade, per state, and per construction costs are presented. An analysis of the causes of this unprecedented institutional growth is presented in terms of the needs of German physicists, the economy, the State, and students of the natural sciences. Reprints are (unfortunately) no longer available.

Author's address: Department of History, 610 Oldfather Hall, University of Nebraska, Lincoln, NE 68588-0327.

EHRENFEST

✓ Klein, Martin J. *Paul Ehrenfest. Volume 1: The Making of a Theoretical Physicist*. xvi + 330 pp. Amsterdam, Oxford, New York, Tokyo: North-Holland Personal Library, Third Edition, 1985.

This is a reprint in paperback of a work published originally in 1970. It covers the life and work of Paul Ehrenfest up to about 1920, describing his childhood in a Jewish family in Vienna, his student years at Vienna and Göttingen, his five years in Russia before the Great War, and his early years as successor to H. A. Lorentz in Leiden. Ehrenfest's work on statistical mechanics and the early quantum theory are discussed in detail against the background of the physics of the time. When it first appeared the book was described by H.B.G. Casimir in *Physics Today* as "a fascinating biography and an important contribution to the history of modern physics" and by Jeremy Bernstein in *The New Yorker* as "a superb historical document."

Author's address: Yale University, History of Science, P.O. Box 2036 Yale Station, New Haven, CT 06520-2036.

OPPENHEIMER

✓ Metropolis, N., Rota, G. and Sharp, D. J. *Robert Oppenheimer's Uncommon Sense*. Boston: Birkhäuser, 1984.

This collection of essays and speeches, only a few of which have been previously published, presents an extraordinary thinker and scientist as well as a compassionate human being. No issue is too small or too large if it is in some way connected to the emergence of a weapon as terrible and powerful as the atom bomb. Oppenheimer discusses the shift in scientific awareness and its impact on education, the question of openness in a society forced to keep secrets, the conflict between individual concerns and public and political necessity, the future of science and its effect on future politics - in short, the common and uncommon sense we find in our modern day reality.

Author's address: T-DO B210, Los Alamos National Laboratory, Los Alamos, NM 87545.

PREWAR JAPANESE PARTICLE PHYSICS

✓ Spradley, Joseph L. *Particle Physics in Prewar Japan*. American Scientist, 1985, 7:563-569.

Japanese contributions to modern physics in the first half of the twentieth century are reviewed as an example of the rapid assimilation of western science by a non-western country. Particular attention is given to the work of Yukawa and his associates relating to the prediction of the meson in 1935.

Author's address: Department of Physics, Wheaton College, Wheaton, Illinois 60187.

RUTHERFORD'S MODEL OF THE NUCLEUS

✓ Stuewer, Roger H. *Rutherford's Satellite Model of the Nucleus*. Historical Studies in the Physical Sciences, 1986, 16:321-352.

As an interpretation of his discovery of artificial disintegration in 1919, Rutherford proposed a satellite model of the nucleus that guided his and Chadwick's researches throughout most of the 1920s. This article examines the origin, fruitfulness, and reasons for the demise of this model.

Author's address: School of Physics and Astronomy, 116 Church Street SE, University of Minnesota, Minneapolis, MN 55455.

1987 DIVISIONAL ELECTION

We need to elect a vice-chairperson, who will become chairperson next year, and two members of the executive committee to serve for three years. Also be sure to vote on the proposed Amendment to the By-Laws.

Nominees for Vice-Chairperson

Lawrence Badash

Lawrence Badash, born in 1934, is Professor of History of Science at the University of California, Santa Barbara. He received his B.S. from Rensselaer Polytechnic Institute in 1956, and his Ph.D. in history of science from Yale University in 1964. After a year at Yale as an instructor, and a year at Cambridge University as a NATO Post-doctoral Fellow, he joined the University of California. Except for another year of research at Cambridge (1969-70), and sabbatical research in England, France, and New Zealand, he has been in Santa Barbara since 1966. Badash is a fellow of the AAAS (1984), a Guggenheim Fellow (1984-85), co-founder of the West Coast History of Science Society (1971), Council Member of the History of Science Society (1975-78), co-founder of the Santa Barbara Arms Control Study Group (1980), director of the University of California's Summer Seminar on Global Security and Arms Control (1983 and 1986), and head of UCSB's Program in History of Science and Technology. His teaching and research interests are focused on 20th-century physics and the history of the nuclear arms race, and he has had a hand in projects on Rutherford's career and the nuclear winter phenomenon. Among his publications are: "Rutherford and Boltwood, Letters on Radioactivity" (1969); "Radioactivity in America: Growth and Decay of a Science" (1979); (editor with Joseph Hirschfelder and Herbert Broida) "Reminiscences of Los Alamos, 1943-1945" (1980), and "Kapitza, Rutherford, and the Kremlin" (1985).

Kathryn Olesko

Kathryn Olesko is Assistant Professor in the Department of History of Georgetown University. She received her BA in physics and mathematics from Cornell University in 1973 and her Ph.D. in history of science from Cornell University in 1980. She was awarded National Science Foundation and National Endowment for the Humanities Fellowships in 1984-1985. Her recent publications include: "Physics as a Calling - Discipline and Profession, and the Königsberg Seminars for Physics" (forthcoming Cornell University Press); "Science as Labor: On Investigations, Institutes, and Dialogues." in ("The Investigative Enterprise," editors: William Coleman and Frederick L. Holmes) (forthcoming University of California Press). Also articles on Secondary School education in Germany. Her research interests have focused on the history of physics education. She serves as liaison for the Joint Atlantic Seminar in the Physical Sciences. She chairs the committee on Education and is a Council member of the History of Science Society.

Nominees for Executive Committee

John P. Blewett

John Blewett was born on April 12, 1910 in Toronto, Canada. He received his Ph.D. in physics from Princeton University in 1936. During the 1936-37 year, he studied at Cambridge University in England under a Fellowship granted by the Royal Society of Canada after which he accepted a position at the General Electric Company Research Laboratory. In 1945 while at General Electric using a betatron, he was the first scientist to observe synchrotron radiation. From 1947 through 1960, he served as scientist and then senior scientist at Brookhaven National Laboratory where he played a leading role designing the Cosmotron (the world's first multi-billion volt accelerator) and the 33 GeV Alternating Gradient Synchrotron. From 1960 to 1972, he served as the deputy chairman of the Brookhaven Accelerator Department and was appointed as Special Assistant to the Director for Energy in 1972. From 1975 to 1978, he returned to work on the design of Brookhaven's National Synchrotron Light Source.

In 1970, he founded the journal "Particle Accelerators," and he served as its editor for eight years. He has written, with M.S. Livingston, a text on Particle Accelerators. His research interests have included: x-ray crystal analysis, mass spectrometry, nuclear physics, microwaves, and the design of high-energy electron and proton accelerators. He is a Fellow of the New York Academy of Science, the APS, and the IEEE.

Erwin N. Hiebert

Erwin N. Hiebert has been Professor of the History of Physics at Harvard University since 1970 and Chairperson of the Department from 1977-1984. He received his Ph.D. from the University of Wisconsin at Madison in 1954 and taught there from 1957 to 1970. Other appointments include: Fulbright Lecturer at Göttingen 1954-55, Institute for Advanced Study, Princeton 1961-62 and 1968-69, President of the Division of the History of Science of the International Union of the History and Philosophy of Science 1982-1986, Fellow of Churchill College, Cambridge since 1984. Major areas of publication, teaching, and research: history and philosophy of the physical sciences since 1800 with emphasis on thermodynamics, physical chemistry, nuclear science, science and Marxism, and science and religion. Spring quarter 1987: Hill professor (visiting) at the University of Minnesota; lectures on scientists as philosophers of science.

Emilio G. Segrè

Emilio G. Segrè is Emeritus Professor of Physics at the University of California, Berkeley and Professor of Nuclear Physics at the University of Rome. He was born in Tivoli, Italy on February 1, 1905 and received his Ph.D. degree from Rome in 1928. Professor Segrè began his professional career as an Assistant and then Associate Professor of Physics at the University of Rome (1930-35). He then served as Professor and Laboratory Director at the University of Palermo (1935-38) and as Research

(continuation of Emilio G. Segrè)

Associate at E. O. Lawrence's Radiation Laboratory in Berkeley (1938-43). In 1943 Segrè became a physicist and group leader at Los Alamos, where he stayed till 1946. Since then he has remained on the faculty of the University of California. He is a member of the National Academy of Sciences. In 1969, he shared the Nobel Prize with Owen Chamberlain. His research interests have included studies of slow neutrons, of the chemical elements technetium, astatine, and plutonium, and of the antiproton. His contributions to the History of Science include a biography entitled "Enrico Fermi: Physicist," chairmanship of the history committee for publication of the works of Enrico Fermi, and his books: "From X-rays to Quarks - Modern Physicists and their Discoveries" and "From Falling Bodies to Radiowaves - Classical Physicists."

Daniel F. Siegel

Daniel F. Siegel is Associate Professor of the History of Science and Integrated Liberal Studies at the University of Wisconsin, Madison. His Ph.D. is in Physics (University of California, Berkeley, 1968); he also holds an M. Phil. in History of Science (Yale University, 1970). His publications in experimental physics deal with observations in a hydrogen bubble chamber of final states containing strange baryons (lambdas) plus two pions or three pions produced by a beam of (negative) K-mesons. Representative publications in the history of physics include "Balfour Stewart and Gustav Robert Kirchoff: Two Independent Approaches to 'Kirchoff's Radiation Law'" (1976, awarded the Henry Schuman Prize of the History of Science Society); "Classical-Electromagnetic and Relativistic Approaches to the Problem of the Non-Integral Atomic Masses" (1978); "Thomson, Maxwell, and the Universal Ether in Victorian Physics" (1981), and "The Origin of the Displacement Current" (1986). He is currently completing a book dealing with Maxwell's electromagnetic theory. He is focusing especially on the role

of mechanical reasoning and mechanical models in the origin of Maxwell's major innovations in electromagnetic theory, including the displacement current and the electromagnetic theory of light. He has served as chairperson of his department and on various committees of the History of Science Society.

AMENDMENT TO THE BY-LAWS

At the time that the By-Laws of the Division were approved, clause V.7 was omitted; it contains the duties and responsibilities of the Divisional Councillor. At its meeting in Washington DC on May 1st, 1986, the Executive Committee of the Division voted to submit to the membership for its approval the following Amendment to the By-Laws:

"V.7 The Divisional Councillor shall serve as liaison between the Council of the Society and the Executive Committee of the Division. The Divisional Councillor shall report to the Executive Committee at the earliest possible time regarding Council actions that affect the status and operation of the Division."

This proposed Amendment to the By-Laws was published in the previous issue of the History of Physics Newsletter, and it was read at the annual business meeting of the Division. No objections have been raised to the proposed Amendment.

Please be sure to vote on the 1987 Ballot below and indicate your approval or rejection of the proposed Amendment to the By-Laws. An amendment requires the approval of not fewer than two thirds of the members voting. If the membership approves the amendment, it will be sent to the Council of the APS for its approval.

1987 BALLOT

Amendment to By-Laws

APPROVE ABOVE AMENDMENT V.7

REJECT ABOVE AMENDMENT V.7

The Division needs to elect a Vice-Chairperson (one-year term, who becomes Chairperson the following year) and TWO members of the Executive Committee (three-year terms). The ballot must be returned by March 23, 1987 to the Secretary-Treasurer of the Division, A. Wattenberg/APS Div. Hist. Phys., Physics Department, University of Illinois, 1110 W. Green St., Urbana, Illinois 61801.

Vice-Chairperson - Vote for ONE

LAWRENCE BADASH

KATHRYN OLESKO

Executive Committee - Vote for TWO

JOHN P. BLEWETT

EMILIO E. SEGRE

DANIEL F. SIEGEL

PLEASE CUT ALONG DOTTED LINE

HISTORY OF PHYSICS NEWSLETTER

Volume III, Number 1 -- February 1987

Contents

DIVISION NEWS:

Announcements of Elections & By-Laws Amendment	1
Spring 1987 Meetings of the Division	1
Future Meetings of the Division?	2

APS & AIP NEWS:

APS Registration	2
25th Anniversary of Center for History of Physics	2-3

MEETINGS

3-4

GRANTS & FELLOWSHIPS:

AIP; Charles Babbage; NEH; NSF; Rockefeller	4-5
---	-----

SEMINARS FOR TEACHERS:

Chataqua; NEH	6
---------------	---

PUBLISHERS OF BOOKS

6-8

RECENT AND FUTURE ARTICLES

8

ANNOUNCEMENTS & REPORTS

8-9

SUMMARIES

10-13

DIVISIONAL ELECTION & AMENDMENT TO BY-LAWS:

Nominees	14
Nominees; Amendment; Ballot	15

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