APS NEWS

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10
Months toGo

Highest Numbers of Jobs Available at the APS March Meeting in Decade

by Edwin Goldin, Director AIP Career Services Division

After years of coaxing employers of physicists to attend physics society meetings, the Job Center at the APS March Meeting in Los Angeles set new records for job opportunities and potential fulfillment. A grand total of 364 job seekers were represented to 72 employers present who were looking to fill 190 jobs. Another 100 job announcements were posted at the Center for perusal by anyone attending the meeting. Both McKinsey, Inc., a leading global management consulting company, and Manpower Technical, the world's largest contract placement firm, were accepting resumes for an additional unspecified number of present and future positions.

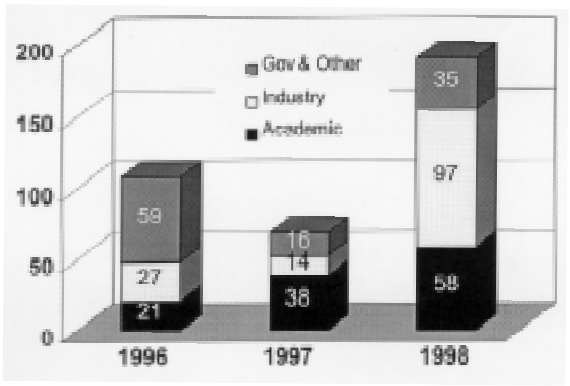
As a result, the Job Center directly arranged 276 interviews in its three days of operation. It is not surprising that word of job offers and ongoing interest, generated right on the spot, quickly filtered back over the transom. A Lawrence Livermore representative said that a hire was found for a job that they were trying to fill for a long time. A Xontech employer mentioned that she was bringing candidates back to the main office for further interviewing the same week. Both Wolfram Research and Raytheon representatives commented that they experienced many good candidates for a spectrum of jobs. (Wolfram has already made two offers.) Penn State employers remarked that they found good candidates for their position.

While these results are exciting and welcome to all involved, there are patterns among the job offerings that need to be made explicit since they point to be a changing landscape.

First of all, the increase in numbers of employers and jobs is met by a still significantly large number of physicist job seekers. The backlog of years of high numbers of PhD graduates and the increasing numbers of postdocs in recent years still leaves many physicists looking for their first "potentially permanent" job.

Next, the type of jobs is shifting strongly toward industrial sectors. More than half of all jobs posted were in private businesses. Offers from Federally Funded Research and Development Centers (FFRDCs) and other government areas remain low and appear to be dropping. Academic jobs appear to have doubled over the past two years but many of these are postdocs which are showing signs of being vacated, and even shunned, by recent PhDs seeking permanent work. [Editor's Note: For comparison, the overall employment breakdown for US APS members has been approximately: 1/2 Academic (including students and postdocs), 1/4 industry, and 1/4 government plus other for several decades.]

March Job Offer Sectors



Furthermore, twenty percent of the industrial jobs posted by employers at the physics Job Center were beyond the more usual areas of science and engineering. These nontraditional jobs fell into categories of biotechnology, computer software, financial services and publishing.

These are signs of migration from traditional work for physicists to a broader spectrum of career paths, while "potentially permanent" academic jobs remain tight (See page 5 *APS News*, February 1998). Physicists are expanding their expectations and becoming even more flexible in applying their skills, experience and education to employment and careers in the broad marketplace.

March jobs bring April hiring. It would seem that employers are seeking physicists in larger numbers for expanding ranges of jobs. Physics job seekers, to their credit, are responding to the call.

Inside...

DPP Science Day and Expo Targets High School Students, Teachers

The APS Division of Plasma Physics (DPP), one of the most active APS divisions in terms of educational and outreach activities for the general public, recently sponsored two events at George Washington University to target DC-area schoolchildren. A Science Teachers' Day in March served as a precursor to a highly successful Plasma Sciences Expo in April. The latter was co-sponsored by General Atomics, George Washington University, Howard University, Lawrence Livermore National Laboratory, MIT, the Princeton Plasma Physics Laboratory, and the Department of Energy.

Over 130 teachers attended the Science Teacher's Day on March 10 at George Washington University. APS Fellow, Congressman Vernon Ehlers, was the luncheon keynote speaker. The Science Expo held on April 2-3 drew 1800 junior high and high school aged students from the District of Columbia, Arlington and Fairfax, Virginia, and Montgomery and Prince George's Counties in Maryland. The exhibit was open to the general public on Thursday evening. Funds for the event were provided by the DOE, which underwrote the largest portion of the Science Expo, supplemented by a $4,000 grant from the DPP, according to Mark Haynes, General Atomics.

The Expo focused on interactive hands-on science education, engaging students at all levels, as well as parents, teachers and the general public. In addition to meeting professional plasma physicists, students were able to generate their own electricity, observe their own fluctuating body temperatures on a special monitor, manipulate a plasma with magnets, observe an electromagnetic wave demonstration, and learn how to confine plasmas magnetically in a fusion device through participation in a computer simulation.

Other companies, institutions and organizations participating in the Plasma Sciences Expo include Oak Ridge National Laboratory, University of California, San Diego, University of Wisconsin, Los Alamos National Laboratory, the Contemporary Physics Education Project, ITER, and the Euratom Association. Members of the DPP and APS headquarters staff also helped with the Expo.

Online Abstract Submission is Easy

by Danita Boonchaisri (APS Meetings Publication Coordinator), Jim Egan (APS Sr. Programmer Analyst), and Joanne Fincham (APS Webmaster)

Tired of that quirky electronic LaTeX template? Unsure whether your abstract will compile correctly? Afraid your mailer might mangle your masterpiece as it is transmitted through the ether? Thanks to our newly developed online abstract submission process, these worries are a thing of the past. Now, if you have access to a forms-capable browser, you can submit a perfectly formatted abstract online by answering a few questions.

The Meetings and Information Services Departments of the APS have been working together over the past year to implement a simpler method for submitting electronic abstracts. While it's true that nearly 99% of our abstracts are currently submitted electronically, it's also true that about 20% contain errors caused by mail programs or improper use of the template. Another 5% are sent to the wrong address. Online submissions will solve most of these problems and streamline the entire submission process. In addition to accepting abstracts, the on-line submission page also allows submitters to notify the APS of abstract withdrawals.

To submit through the web, an author needs to know two things:

1. The number and ordering of authors and collaborations;

2. What the abstract should say.

The web page guides you through the rest.

Okay, we lied. If your abstract includes Greek, mathematical, or special characters, you will still need to use LaTeX to format them, but the following URL contains a list of frequently used LaTeX symbols to assist you: [http://www.aps.org/meet/instruct.html] Some things haven't changed:

- We still provide log number assignments by e-mail.

- We still accept the abstract template by e-mail and on paper by regular mail. (Keep in mind that paper abstracts only receive a title and author listing in the *Bulletin* and on the web.)

- We still send out session assignment notices by e-mail once the online program is available for public viewing.

Try a test submission. Log onto **http://abstracts.aps.org** and select the meeting **TEST**. Follow the directions online to create your own practice abstract.

APS Mass Media Fellow Wins National Press Award


David Kestenbaum

One of the first APS Mass Media Fellows was honored at the annual meeting of the National Association of Science Writers with an award in recognition of his ability to clearly explain complex topics in science. David Kestenbaum, a former staff scientist at Fermilab who is currently a staff writer at *Science* magazine, received the Evert Clark Award, presented to journalists under the age of 30 who have produced outstanding work in non-technical print journalism.

Kestenbaum won the award on the basis of four articles he wrote as a freelancer prior to his Mass Media Fellowship with the APS. Two appeared in *New Scientist*, one on the physics of sand and granular materials and the other on atomic clocks. An article on the possible discovery of a leptoquark appeared in *New York Times*, and *R&D Magazine* published his investigation on why interest in cold fusion still persists.

Along with Jeffrey Chuang, a physics graduate student at MIT, Kestenbaum was selected as one of the first recipients of the APS Mass Media Fellowship. He chose to spend 10 weeks last summer at a radio station in Columbus, Ohio. "I had the time of my life," he says of the experience. "I have been in love with public radio since I was a kid, but until last summer I hadn't the faintest idea how to put a radio piece together." One of the pieces he produced was recently featured on National Public Radio's "All Things Considered," and he hopes to produce other spots for the station in the future. The APS fellowship proved instrumental in solidifying his desire to pursue a career in scientific journalism, and he joined the staff of *Science* late last year.

Chuang is currently a PhD candidate at MIT, working in quantum computation theory. He spent his fellowship at the *Dallas Morning News*, and wrote more than 20 articles including a film review and a story about a strange rotation of the Earth. His editor taught him how to explain complex ideas and keep the reader interested, and he also gained a new perspective on science and the importance of mixing specialization with breadth in science. Unlike Kestenbaum, however, the experience didn't change his career goals: he still plans on a career as a professor at a liberal arts college. "I'll write on the side when I have time," he says. "That's what I thought I wanted to do before the summer, and this has confirmed it."

The APS Mass Media Fellowship was established in 1996 to enable physicists to spend up to three months working in mass media. The program is operated in conjunction with the AAAS Mass Media Science and Engineering Fellowship Program, a successful program that has placed more than 350 fellows with news magazines, newspapers and TV networks in its 21-year existence.

APS News

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UNIT BRIEFS

Texas Section - Annual Spring Meeting

The APS Texas Section held its annual spring meeting at the Incarnate Word College in San Antonio, Texas, 19-21 March. Wei Kan Chu of the University of Houston opened the meeting with a Friday morning plenary lecture on the current status of high temperature superconductors, while NASA's Kamlesh Lulla spoke on space images of global changes on Earth at the Friday evening banquet. Saturday morning's program included an AAPT-sponsored plenary lecture on the latest results in the search for life on Mars. In addition to the regular program, the meeting featured a special student competition, awarding prizes for outstanding papers presented by undergraduate and graduate students.

New England Section - Annual Spring Meeting

The APS New England Section held its annual spring meeting 3-4 April at Clark University in Worcester, Massachusetts. Friday afternoon's events opened with a demonstration of "Rhapsody," Apple Computer's new operating system, as well as "Linux" and programs from Physics Academic Software. This was followed by a tutorial session on condensed matter physics, featuring talks on pattern formation, symmetry and chaos, and the physics of granular matter. Friday evening's banquet featured a keynote address by John Deutch of MIT, entitled, "Reflections on Government's Role in Research and Development." A tutorial session on magnetism and superconductivity followed an AAPT-sponsored session on science and mathematics teaching on Saturday morning. The AAPT also organized the Saturday afternoon sessions on teaching mechanics and thermal physics, and teaching electricity and magnetism.

New York State Section - Annual Spring Meeting

The APS New York State Section held its annual spring meeting 24-25 April, featuring 15 experts in the field of imaging to present and discuss the underlying physics that makes our modern information age possible. Friday morning included lectures on digital mirror imaging and stream-based media processing, followed in the afternoon by talks on silver halide photophysics; the physics of electrophotographic photoreceptors, xerographic development, and liquid toner electrophotography; and digital color image processing. Saturday morning's speakers addressed such topics as sensor design, bandwidth compression, image sequence processing, and Mars Pathfinder imaging. The symposium was hosted by Eastman Kodak's Imaging Research and Advanced Development, Xerox's Wilson Center for Research and Technology, and the University of Rochester's Center for Electronic Imaging Systems.

Division of Laser Science - Lectureship Program

The APS Division of Laser Science is currently accepting applications from host schools for the next round of awards for its Distinguished Traveling Lecturer program, intended to bring distinguished scientists to predominantly undergraduate colleges and universities for two-day visits, which may include lectures and informal meetings with faculty and students. Lecturers for the 1998-1999 academic year and their topics are Geraldine Richmond (University of Oregon), surface nonlinear optics; Jagdeep Shah (AT&T Bell Laboratories), quantum optics; Stephen Leone (University of Colorado), chemical physics; Philip Bucksbaum (University of Michigan) high-field laser physics; and Bill Phillips (NIST), atom cooling and trapping. Lee Casperson of Portland State University will be available for lectures in instabilities and chaos in lasers, waterfalls and other physical systems. Wolfgang Ketterle of the Massachusetts Institute of Technology will be available to speak on atom cooling and trapping, Bose-Einstein condensation, and atom lasers. And Carlos Stroud of the University of Rochester will be lecturing on electric wave packets in atoms, Schröedinger cat-like states, and fractional dynamic revivals. They join the continuing traveling lecturers, Bucksbaum, Richmond, and Shah. Detailed information is available on the DLS homepage: http://www.physics.wm.edu/~cooke/dls/dls.html. The deadline for spring 1999 applications is June 15, 1998.

Forum on Education - College High School Interaction Committee

A new committee of the APS Forum on Education has taken on the functions of the former College-High School Interaction Committee of the APS and the American Association of Physics Teachers. These include a new version of the "CHIC" newsletter, which is now on the web as The Physics Alliances Newsletter, accessible through the home page of the APS Department of Education and Outreach. It will feature interactive discussions of topics in physics education, and news about local alliances between high schools and colleges and universities. Peter Lindenfeld (Rutgers University) continues as editor.

Corrections ...

- The articles in *Now Appearing in RMP* on page 11 of the April 1998 issue of *APS News* appear in the **April 1998** *RMP* issue.
- Niels Bohr and Wilhelm Conrad Röentgen names' were misspelled in the April and March "A Century of Physics" columns respectively.

We apologize to them both for the errors.

Physicists To Be Honored at DAMOP '98

Three physicists will be honored for their work at the 1998 meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), to be held 27-30 May 1998 in Santa Fe, New Mexico.

1998 DAVISSON-GERMER PRIZE

The Davisson-Germer Prize was established in 1965 by AT&T Bell Laboratories. It is intended to recognize and encourage outstanding work in atomic physics or surface physics.

Sheldon Datz
Oak Ridge National Laboratory

Citation: "For his broad contributions that have provided new understanding of the dynamics of atomic interactions with ions, electrons and photons at energies ranging from a fraction of a milli-ev to many trillion-ev."

Datz earned his BS and MA in physical chemistry from Columbia University. He joined Oak Ridge National Laboratory in 1951, where he began work on the application of molecular beam techniques to the study of chemically reactive collisions. Datz received his PhD in physical chemistry from the University of Tennessee in 1960. Four years later, he initiated work on channeling energetic heavy ions of crystals and later on radiation from channeled relativistic positrons and electrons. In 1981, he initiated the first measurements of dielectronic recombination of multicharged ions. Recently, worked on atomic collisions at ultrarelativistic energies at CERN and, molecular ion dissociative recombination in ion storage rings.

1998 EARLE K. PLYLER PRIZE

The Earle K. Plyler Prize was established in 1976 by the George E. Crouch Foundation to recognize and encourage notable contributions to molecular spectroscopy.

Forrest Fleming Crim
University of Wisconsin

Citation: "For the application of novel and powerful spectroscopic and dynamics techniques to elegantly demonstrate the feasibility of bond-selective photodissociation of molecules, holding the promise of control of chemical reactions by light."

Crim received his PhD in physical chemistry from Cornell University in 1974 and immediately joined Western Electric Company's Engineering Research Center. After a brief stint as a postdoctoral staff member at Los Alamos National Laboratory, he joined the chemistry department at the University of Wisconsin-Madison in 1977, where he has remained ever since. His research in chemical dynamics uses lasers to study the fundamental details of chemical reactions by creating highly energized molecules and following them spectroscopically. Using this approach, his group has demonstrated vibrational sate control of the pathways in photodissociation and bimolecular reaction.

1998 WILL ALLIS PRIZE

Established in 1989 by contributions from AT&T, General Electric, GTE, IBM and Xerox, the Allis Prize is intended to recognize and encourage outstanding research into the microscopic or macroscopic behavior of ionized gases.

M. Raymond Flannery
Georgia Institute of Technology

Citation: "For advancing the understanding of recombination processes, in particular for developing a microscopic theory of three-body ionic recombination; and for his novel applications of classical and quantum mechanical methods to the dynamics of atomic, molecular and ionic systems."

Flannery received his PhD degree in theoretical physics from The Queen's University of Belfast in 1964, and held faculty positions at Queen's University, Harvard University and Harvard-Smithsonian Center for Astrophysics prior to joining the Georgia Institute of Technology in 1971, where he was appointed Regents' Professor in 1993. He is a Divisional Associate editor of *PRL*. His area of expertise is in the theory of recombination processes at thermal and ultra cold energies. Flannery has also contributed widely to the theory of heavy-particle collisions, electron-excited atom collisions, Rydberg collisions and ion-molecule reactions.

A century of physics

1915-1924: Physics Extends its Reach

by Hans Christian von Baeyer

For four years, from 1914 to 1918, World War I engulfed the world and overshadowed scientific pursuits. When it was over, and scientists could resume their research, they immediately began applying the conceptual tools perfected before the war to push the frontiers of physics both outward and inward. In the cosmic realm, general relativity provided the theoretical framework, and the giant telescopes built in the clear air of California the observational support, for the emergence of physical cosmology — the science of the structure and history of the universe. An essential preliminary step was a test of general relativity. In 1919, when the bending of starlight by the sun, as predicted by Einstein, was observed, he instantly became an international media star. The curvature of spacetime, while not fully comprehensible to most people, nevertheless seemed to be such a profound insight into the structure of the universe that it caught the imagination of a wide public. Since then, general relativity has been confirmed by numerous observations, and remains in place as the correct theory of gravity. But the study of cosmology itself would take surprising turns in the coming decades.


Louis De Broglie

In the atomic realm, confusion reigned. Despite heroic efforts by physicists throughout the world, Bohr's theory had only very limited success in accounting for the properties of the light and X rays emitted by atoms. Quantum theory seemed headed for failure — or a revolution. The vital clue was found more by guessing than by deduction. In 1923 the French physicist Louis De Broglie was writing his doctoral dissertation at the age of 31. Deeply impressed with Einstein's interpretation of light as both wave-like and particle-like, he wondered whether this strange wave-particle duality could apply to particles of matter as well. Specifically, he proposed that electrons too have wave-like characteristics, and even suggested a formula for their wavelength. Most of his colleagues ignored these wild and unsupported claims, but Einstein, who had a reliable intuition about physics, wrote: "I believe it is the first feeble ray of light on this worst of our physics enigmas." Einstein turned out to be right: De Broglie had discovered the secret of matter. But as De Broglie himself admitted in his thesis, unless experimental proof could be found, his theory would remain useless speculation.

Editor's Note: A CENTURY OF PHYSICS, a dramatic illustrated timeline wallchart of over a hundred entries on eleven large posters is intended for high schools and colleges. Each poster covers about a decade and is introduced by a thumbnail essay to provide a glimpse of the historical and scientific context of the time.

In June, APS News will feature the fourth introductory essay ***1925-1934: The Language of the Atom.***

zero gravity

Useful Research Phrases

"It has long been known" …I didn't look up the original reference.

"A definite trend is evident" …These data are practically meaningless.

"Of great theoretical and practical importance" …Interesting to me.

"While it has not been possible to provide definite answers to these questions" … An unsuccessful experiment but I still have to get it published.

"Three of the samples were chosen for detailed study" …The results of the others didn't make any sense.

"Typical results are shown" …The best results are shown.

"These results will be shown in a subsequent report" …I might get around to this sometime if I'm pushed.

"The most reliable results are those obtained by Jones" …He was my graduate assistant.

"It is believed that" …I think

"It is generally believed that" …A couple of other guys think so, too.

"It is clear that much additional work will be required before a complete understanding occurs" ... I don't understand it.

"Correct within an order of magnitude" …Wrong

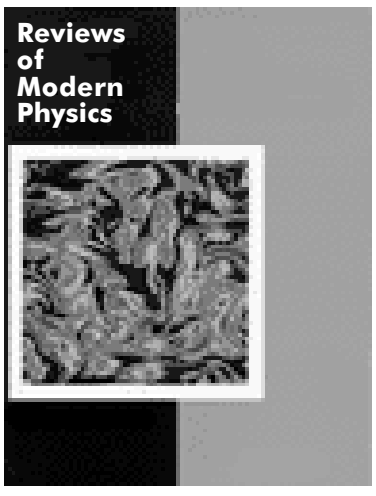
"It is hoped that this study will stimulate further investigations in this field" … This is a lousy paper, but so are all the others on this miserable topic.

"Thanks are due to Joe Blotz for assistance with the experiment and to George Frink for valuable assistance" …Blotz did the work and Frink explained to me what it meant.

"A careful analysis of obtainable data" …Three pages of notes were obliterated when I knocked over a glass of beer.

Special Centennial Issue of *Reviews of Modern Physics* Planned

The APS is compiling a special Centennial issue of *Reviews of Modern Physics (RMP)*, featuring approximately 50 all-new, commissioned articles by leading physicists in a broad range of fields. "The idea is to produce a record for physicists that attempts to describe what's happened in physics in the last century, what's going on now, and what we have to look forward to in the future," said Benjamin Bederson (New York University), former APS Editor-in-Chief, who is overseeing the project. The issue will appear in March 1999, in time for the APS Centennial Meeting in Atlanta, Georgia. A special, hardcover edition of the issue is also being considered.



The other members of the Editorial Board, each selected to represent a broad area of physics, are George Field (Harvard-Smithsonian Center for Astrophysics), Kurt Gottfried (Cornell University), Walter Kohn (University of California, Santa Barbara), Eugen Merzbacher (University of North Carolina, Chapel Hill), APS President Andrew Sessler (Lawrence Berkeley Laboratory), and Myriam Sarachik (CUNY-City College of New York).

APS VIEWS: 1997 Annual Report Highlights

1997 was an exciting year for physics and for the American Physical Society. Major progress was reported in many fields of physics and several key results, including the development of an atom laser, quantum teleportation, the understanding of gamma ray bursters, and the creation of matter from real photons, were highlighted in the major media. By the end of the year APS could announce that all of its journals were available online and use of electronic journals was increasing rapidly. In Ridge, the center for APS research publications, the staff rejoiced as ground was finally broken for the major building expansion that will end the very cramped conditions that have existed for a long time. Dr. Martin Blume and Dr. Thomas McIlrath joined the senior staff of the Society as Editor-in-Chief, and as Treasurer and Publisher respectively.

During 1997 the political climate for scientific research changed dramatically in the US. Although the year had begun with bleak prospects for research funding, it ended with strong bipartisan support for major increases. APS is proud to have played an important role in making this happen. At the beginning of the year, APS joined with several other scientific societies to formulate a joint strategy for interaction with both the Congress and the Administration. As the year progressed this group of societies working together grew rapidly to 50 and later expanded to well over 100. The large number of voters (~ 10 million) represented by these cooperating societies captured the attention of both Congress and the Administration, and the year ended with strong indications for greatly increased federal investment in science and technology.

During 1997 APS hosted two international meetings. The first was a meeting in which the Canadian Association of Physicists and the Mexican Physical Society joined APS for its April Meeting in Washington, DC. It was the third in a series of meetings that have previously been held in Mexico and then in Canada. The second international meeting was a planning one involving major and regional physical societies from around the world with the purpose of exploring common concerns. Meetings designed to inform and involve the Fellows of the Society were held in several cities across the nation.

As the year progressed, plans for the APS Centennial in 1999 took on more urgency. Several staff were added and major projects got underway. The Centennial Wall Chart neared completion; over 200 outstanding physics lecturers agreed to be APS Centennial Speakers for the academic year 1998-99; and plans for a major Nobel exhibit took shape.

The year ended with much optimism as the employment situation for physicists showed definite signs of improvement and the official membership count showed that APS membership had increased by several percent.

President, 1997

HIGHLIGHTS *of* APS OPERATIONS

RESEARCH PUBLICATIONS

• All of the APS research journals are now available online, free upon registration to members and institutions subscribing to the print versions of the journals. Special member subscriptions to the online versions of all journals cost just $25 and for the first time in years the number of member subscriptions rose.

• Ground was broken for the much-needed expansion of the APS Editorial Office in Ridge, NY.

• *Physical Review D-online* changed to an article-by-article, electronic-publication first mode in November 1997. At that time articles to be printed in the January 1998 issue were already published online.

• The first purely electronic APS journal, *Physical Review Special Topics - Accelerators and Beams*, started receiving submissions in March 1998. Robert Seimann will serve as its editor and it has an international editorial board. *Physical Review Focus*, an electronic service highlighting selected articles in *PRL* was also initiated.

• A significant component of the APS online offerings is the free and easily accessible availability of tables of contents, titles, authors, affiliations and abstracts. Searching, linking from references, and full text of articles are features available only to subscribers.

• Advance listings of papers accepted for publication in *PR* and *PRL* were enhanced by the addition of abstracts (for papers submitted electronically). An online index to *PR* and *PRL*, building gradually during the year as issues are published, and containing links to the articles in the online journals, was added.

• International submissions continued to grow and constituted 72% of all submissions, with western Europe amounting to 34% of all submissions.

SCIENTIFIC MEETINGS

• The 1997 March Meeting, held in Kansas City, was attended by 4,400 physicists from throughout the world. Sixteen APS units participated, contributing to the 450 paper and poster sessions presented.

• The 1997 Joint APS/AAPT Meeting/CAM97 was held in Washington, DC and was co-sponsored by the Canadian Association of Physicists (CAP) and the Sociedad Mexicana de Fisica (SMF). More than 1,866 physicists attended sessions planned by eighteen APS units. A reception in honor of CAP and SMF and commemorating the hundredth anniversary of the electron was held at the Smithsonian National Museum of American History.

• The APS Meetings Department continued to assist in the management of the annual meeting of the Division of Plasma Physics, and the annual meeting of the Division of Fluid Dynamics.

• Ninety-nine percent of invited and contributed abstracts for APS meetings are now submitted electronically. The APS continues to work toward a more efficient and user-friendly electronic abstract submission system.

• A new registration software module in support of APS-managed meetings was implemented to operate in conjunction with the membership database.

MEMBERSHIP OPERATIONS

Membership:

• In 1997, the APS switched to an anniversary billing schedule that allows new members to join and lapsed members to renew at any time during the year.

• The final FY98 APS member count was 40,767, up by 885 from the previous year.

The 1996 Membership Survey showed that seventy-nine percent of the members rate *Physics Today* as the highest membership benefit. Because of the importance of *Physics Today*, an AIP publication, to APS members, a task force was appointed, with Burton Richter as chair, to consider whether *Physics Today* serves APS members in an optimal way and, if not, to suggest ways in which it might be improved.

• A new benefit to APS Life members was approved by the APS Council. Effective July 1, 1998, all Life Members will have the option of: 1) free life membership in one dues-requiring unit; and 2) additional life memberships in such units at a one-time payment of 15 times the unit dues rate in effect at time of payment.

• A new unit, the Four Corners Section, was formed to serve APS members located in the Southwestern United States. The formation of an additional section for members living in the Northwest is in process.

APS News:

• *APS News* continues to be the primary means of informing the membership of activities within the APS as well as bringing to their attention general issues affecting physics, such as career issues and government affairs.

• An Educational Outreach insert, describing the extensive efforts by the APS was published in *APS News* in January 1998.

• The online version of *APS News* is enhanced over the paper version; it frequently contains longer versions than printed and is hyper-linked to auxiliary material.

Fellows' Meetings:

• In 1997 the Society initiated a series of meetings in New York, Washington, and San Francisco to which Fellows of the Society were invited to meet with senior officers and staff. These meetings invite greater participation of the Fellows in APS activities.

Career and Professional Development:

• A Task Force on Career and Professional Development advised the APS to charge a standing committee with a career and professional development mission.

• Steps were taken in 1997 to redirect the Committee on Applications in Physics to become the APS Committee on Career and Professional Development. The bylaw change should occur in early 1998.

• An electronic survey of APS Junior Members was conducted in late 1997 to assess the perceptions of the job market by young physicists just embarking on their careers. (See *APS News*, February 1998)

Prizes and Awards:

• The James C. McGroddy Prize for New Materials was endowed to recognize outstanding materials researchers.

• The Francis Pipkin Award was established to recognize achievements in precision measurements and fundamental constants.

• The Nicholas Metropolis Award for Outstanding Doctoral Thesis Work in Computational Physics was established.

• A Task Force on APS Prizes and Awards was charged with providing the guidance on a number of award issues.

Information Services:

• The APS web site was enhanced significantly. Members are now able to check the processing status of their membership renewal via the web.

• Online Meetings Programs were enhanced to allow authors to view their abstract in "published" format. The APS web site now has a search capability.

• Electronic balloting procedures were tried by several APS Units.

INTERNATIONAL AFFAIRS

• In October, 1997, APS hosted an international consultative meeting of physical societies from around the world in Washington, DC to discuss common interests in electronic publishing, science policy and funding, physics education and public education, and capacity building in developing countries.

• An advanced networking workshop was organized at the University of Accra at Legon in Ghana in collaboration with UNESCO, UNDP, the ITU and numerous other organizations.

• Ongoing international activities include the library outreach program, with emphasis on the former Soviet Union and China, and support for the US Liaison Committee to host the IUPAP General Assembly in 1999, one week before the Centennial celebrations in Atlanta.

• APS participated in a State Department meeting to explore ways of promoting freedom of travel for scientists.

• Plans were made to expand the matching membership program for colleagues in hard-currency-poor countries.

• Plans were begun with several Latin American countries to develop exchange programs for physicists.

PUBLIC AFFAIRS

Legislative initiatives undertaken by the Office of Public Affairs involve the grassroots network, PGNet, and direct lobbying on Capitol Hill by APS leaders, members and staff. During 1997, the APS pursued two major activities in the legislative arena: (1) Federal investment in science and technology, and (2) The Comprehensive Test Ban Treaty (CTBT).

• "The 7 Percent Solution" initiative to increase federal research investments by 7 percent in the FY 1998 budget, ultimately attracted the support of the leaders of 46 professional

1997 Annual Report Highlights

societies, who endorsed a "Joint Statement on Research" on behalf of more than one-million scientists, engineers and mathematicians.

• A coalition of professional societies developed a "Unified Statement on Research," calling for doubling the science and engineering research budgets over the next decade with 110 professional society leaders endorsements. As a result of this effort by the APS and the other Societies, bipartisan legislation, "The National Research Investment Act of 1998," that authorizes doubling of investment in civilian research during the next ten years was submitted. By the end of 1997, the Administration indicated that it would pursue this course and commissioned a report to replace the 1945 Vannevar Bush report, *Science*: *The Endless Frontier*, as a new vision for US science and technology in the 21st century.

• The Council issued a statement supporting CTBT, and the APS developed strategies to encourage Senate ratification of the treaty.

• Through the *APS News* column "Inside the Beltway" and timely electronic alerts, the Office of Public Affairs kept APS members informed about significant science policy issues on the federal agenda.

• The PGNet, the APS grass roots government alert network exceeded its goal of 2.5% of APS membership.

PUBLIC INFORMATION ACTIVITIES

The APS Office of Public Affairs responded to numerous inquiries from the media and from the public.

• Bob Park appeared on radio and television 42 times, which included live appearances on *Crossfire* and *The Lehrer News Hour*, and contributed to magazine articles, op-eds and speeches on science policy issues. Selected items were reprinted in *The Amateur Scientist*, *The Science Writer* (publication of the National Association of Science Writers) and *The Skeptical Inquirer*.

• APS continues to administer the Congressional Fellowship Program.

• In 1997, APS initiated sponsorship of two Mass Media Fellowships in conjunction with the AAAS.

CENTENNIAL

• Preparations are in full swing for the APS Centennial Celebration March 20-26, 1999, in Atlanta, Georgia.

• The APS Centennial provides the opportunity to celebrate the many great discoveries in physics of the last one hundred years and highlight work that points toward the next century.

• A series of special plenary sessions will include talks by world-renowned physicists.

• APS Divisions, Topical Groups and Forums will develop special Centennial Symposia.

• Additional Centennial Celebration projects include: A Century of Physics time-line wall-chart and website; a pictorial history of 20th Century physics in the form of a Coffee Table Book; a collection of ~200 APS Centennial Speakers for university and college colloquia in the academic year 1998-99 and a Photo Collection of Physicists on a CD-ROM.

• The Centennial Celebration presents an opportunity to make the general public more aware of the accomplishments of physics research and the benefits it brings to society. To do this, the APS engaged a firm, Edelman Public Relations Worldwide, to help develop an effective communications strategy.

EDUCATION & OUTREACH

• Over the past few years the APS has played an increasingly important role in improving science education, especially in elementary grades. See *Education Outreach*, special insert to *APS News*, January 1998.

• The largest APS program is the Teacher-Scientist Alliance Institute (TSAI), funded by the Campaign for Physics, that involves scientists bringing hands-on science teaching into elementary science classrooms. Many of school districts are implementing hands-on science programs and they credit the TSAI-sponsored Leadership Institutes. TSAI has active partnerships with communities in 22 states.

• The APS Corporate Sponsored Scholarships for Minority Undergraduate Students who Major in Physics, supports outstanding minority students who have committed themselves to the study of physics. In the academic year 1997-1998, 15 students out of 79 applicants received scholarships and 11 student applied for, and were granted renewals.

• The Committee on Minorities (COM) Site Visit Program involves a COM team visit to a physics department at the invitation of the chair. The team then prepares a confidential report on the climate for minorities.

• The Committee on the Status of Women in Physics (CSWP) sponsors invited sessions, receptions (joint with COM) and a breakfast at APS general and divisional meetings.

• The Travel Grants for Women Speakers program provided grants of $500 to 42 institutions that hosted women colloquium speakers in 1997. The CSWP also conducts a site visit program, which evaluates the environment for women students and faculty at physics departments.

• The Women in Physics (WIPHYS) listserver continued to foster lively discussions among its 750+ members.

• Teachers' Days were conducted with the cooperation and participation of APS' Units at the April meeting in Washington, DC; the DNP meeting in Canada, in October and the Plasma Physics meeting in Pittsburgh, in November of 1997.

DEVELOPMENT EFFORTS

• The Campaign for Physics, a $5 million capital campaign conducted jointly with the American Association of Physics Teachers, to launch or expand five key science education programs was successfully concluded. The Campaign attracted the support of industry, thirty-nine Nobel laureates, and many individuals.

• In addition to the Campaign, the Society's development efforts to date have included seeking annual contributions from members.

• Development Office activities in 1998 will focus on seeking support for key events and programs associated with the 1999 APS Centennial to educate and raise public awareness about the many contributions physics makes to our society.

FINANCES

• At the end of fiscal year 1997, the total assets of the American Physical Society had grown to a record $71.3M, up from $59.5M a year before [See financial statement below]. Of this amount $17M were balanced by liabilities; the remainder, $54.2M are the Net Assets of the Society.

• The Net Assets include: (temporarily) restricted assets - the monies intended for prizes and awards and for the programs of the Campaign for Physics and; unrestricted assets - funds that may be used for the other operations of the Society. This latter quantity is our Reserve Fund. The Reserve Fund is now 1.5 times the annual expenses. The growth in Net Assets is partially due to a $1.63M surplus in the operating budget and the remainder is due to very favorable performance of our investment portfolio.

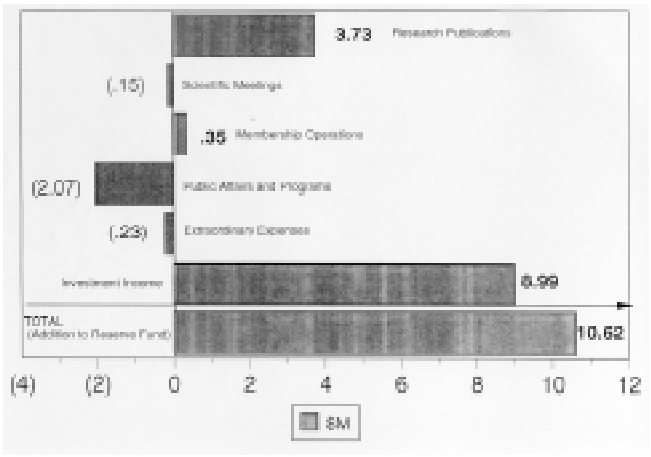
• In the coming years the Society faces major demands on its resources, including a desperately needed doubling of the size of the publishing facility at Ridge, N.Y.(construction was begun in January, 1998), and substantial expenditures on activities surrounding the Centennial celebration of the APS in 1999. In addition, we must anticipate a moderation of the extraordinary returns on investment funds.

• The Society is making a vigorous effort, in the light of a very real financial crisis in the academic library community, to keep journal price increases at a minimum and to avoid increasing member dues. Our strong financial position gives us confidence that we can simultaneously accomplish all these ambitious goals, but it will require continued discipline and efficiency in all the operations of the Society. Our excellent performance in the past has reflected the dedication and commitment of the excellent staff of the Society and we are confident that this will continue in the future.

The complete 1997 APS Annual Report *can be found in the online version of the May 1998* APS News *accessed through the APS Home Page [www.aps.org] or by requesting a copy from: Executive Officer, The American Physical Society, One Physics Ellipse, College Park, MD 20740.*

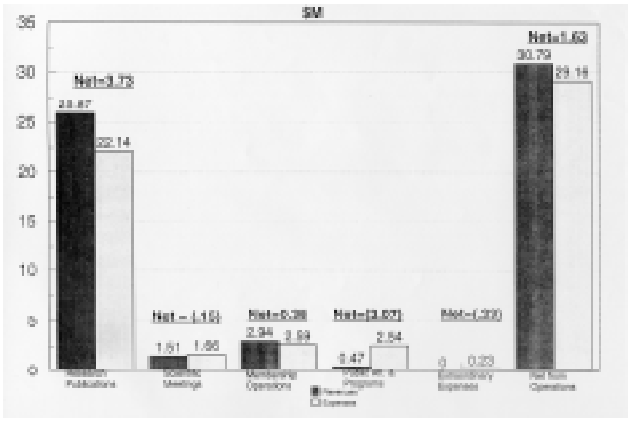
THE AMERICAN PHYSICAL SOCIETY
STATEMENT OF FINANCIAL POSITION (June 30, 1997)

		1997
Assets:		
Cash and cash equivalents		10,413,285
Investments, at fair value		56,687,637
Accounts receivable, net		741,670
Pledges receivable, net		575,140
Prepaid expenses and other assets		430,235
Land, building and equipment, net		2,427,436
	Total assets	71,275,403
Liabilities and net assets:		
Liabilities		
Accounts payable:		
American Institute of Physics		945,585
Other		1,062,071
Deferred revenues		
Publications		11,042,130
Membership dues		2,017,480
Grants and similar contracts		17,059
Liability for post-retirement medical benefits		1,950,260
	Total liabilities	17,034,585
Net Assets		
Unrestricted net assets		48,975,280
Temporarily restricted net assets		5,265,538
Total net assets		54,240,818
Total liabilities and net assets		71,275,403



Net Revenues (Expenses) Fiscal Year 1997

Net Revenues (Expenses) of Operations Fiscal Year 1997



INSIDE THE BELTWAY

Will Science Funding Go Up in a Puff of Smoke?

by Michael S. Lubell, APS Director of Public Affairs

You could have bet your last dollar on it and still have had a good night's sleep. When the White House hit on the idea of a tobacco tax to fund R&D and a spate of new social programs without breaking the budget caps established last year, you knew immediately that every politician worth reelecting would light up.

Here was a real winner: Hammer the merchants of death, save lives, win the hearts and minds of every nonsmoking voter, especially those with children, and offer everyone a year-end bonus. And what a bonus it would be, with estimates ranging from $65 to $100 billion over five years.

So it was very perplexing when Senate Majority Leader Trent Lott (R-MS), first out of the box, threw cold water on the idea of a tobacco tax settlement. But his lack of enthusiasm lasted less than a week, and in a 180-degree about face, he quickly promised that the issue would be thoroughly aired on the Senate floor.

Out of the Capitol woodwork came the proposals, and within a month, a tobacco bill became a virtual certainty, as members of Congress took turns twisting the dagger into the dying corpus of what had been one of the most potent lobbying machines the country has ever known.

But congressional enthusiasm for taxing tobacco did not extend to endorsing the President's proposals for using the anticipated new revenue. Seeking to differentiate themselves and gain a political advantage in a hotly-contested election year, Republicans quickly staked out their own ground. While Reaganites seized on tax cuts, neo-conservatives hyped debt reduction. But the leadership, ever mindful of the public opinion polls, suggested a different target — health care. That, you may recall, used to be a Democratic issue. No more!

In the Senate, Budget Committee Chairman Pete V. Domenici (R-NM) advised his colleagues last month that the tobacco money should be fenced off to keep Medicare solvent. And Senator Connie Mack (R-FL), ever mindful of the Sunshine State's large geriatric community, pledged his support for biomedical research.

In the House, Ways and Means Committee Chairman Bill Archer (R-TX) rolled out a package that would create new tax breaks for people who receive no health benefits from their employers, establish new tax incentives for small businesses to cover the health insurance costs of their employees and speed up the plan that will allow self-employed workers to claim a 100 percent deduction for the insurance costs. The Archer package would also provide several tax credits to stimulate biomedical research, including one that would allow pharmaceutical companies to take a credit for their clinical trial expenses at academic medical centers.

Don't bother looking for physics. It hasn't even made it onto the congressional tobacco radar screen. But the last chapter has not yet been written, because despite all the talk about how the cigarette taxes could be spent, legislators have agreed to separate the revenue bill from the spending bill.

Here's why. Astute GOP leaders know that the best way to rally support for a tobacco deal among tax-averse Republicans is to connect new taxes on a public health menace to improvements in health care and cures for disease. To talk about any other use for the revenue at the outset is guaranteed to lose votes. As unreliable as forecasts are, I'd place my money on a more flexible spending outcome.

The reason is simple. In this election year, Congress has already displayed a hearty appetite for asphalt and an unchecked thirst for water. Highway projects will devour about $200 billion over the next six years. And popular water projects, which go head-to-head with energy research in the Energy and Water Development Appropriations Bill, will suck up $1.3 billion more than the President has requested for Fiscal Year 1999, alone.

How all other discretionary spending will get shoe-horned into the narrow-width appropriations bills without the use of tobacco revenues is hard to see. But, for now, House and Senate budget formulators have both gone on record supporting serious increases for science and engineering research.

However, crunch time will eventually come, and once again scientists will have to get down into the muddy political trenches. Otherwise science funding will literally go up in a puff of smoke, as will any hope of permanent R&D tax credits and R&D assistance for small business.

One more cautionary note. Once Congress gets around to divvying up the tobacco spoils, expect them to do it with lightning speed. This is an election year, and every member wants to get home to campaign as soon and as often as possible.

CALL FOR NOMINATIONS FOR 1999 APS PRIZES AND AWARDS

The following prizes and awards will be bestowed by the Society in 1999. Members are invited to nominate candidates to the respective selection committees. Please refer to the front section of the APS Membership Directory for complete information regarding rules and eligibility requirements for individual prizes and awards or visit the Prizes and Awards page on the APS web site at http://www.aps.org.

PRIZES

HANS A. BETHE PRIZE

Purpose: To recognize outstanding work in theory, experiment or observation in the areas of astrophysics, nuclear physics, nuclear astrophysics, or closely related fields.

Send name of proposed candidate and supporting information before 1 July 1998 to: Virginia Trimble, Physics Dept, Univ of Calif., Irvine, Irvine, CA 92697-4575, Phone: (714) 824-6948, Fax: (714) 824-2174, Email: vtrimble@uci.edu.

HERBERT P. BROIDA PRIZE

Purpose: To recognize and enhance outstanding experimental advancements in the fields of atomic and molecular spectroscopy or chemical physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: John B Delos, Phys Dept, College of William & Mary, Williamsburg, VA 23185, Phone: (804) 253-4471, Email: jbdelo@facstaff.wm.ed

TOM W. BONNER PRIZE IN NUCLEAR PHYSICS

Purpose: To recognize and encourage outstanding experimental research in nuclear physics, including the development of a method, technique, or device that significantly contributes in a general way to nuclear physics research.

Send name of proposed candidate and supporting information before 1 July 1997 to: Peter Paul, Dept of Phys, SUNY-Stony Brook, Stony Brook NY 11794-3800, Phone: (516) 246-5079, Email:paul@nuclear.physics.sunysb.edu

OLIVER W. BUCKLEY CONDENSED MATTER PHYSICS PRIZE

Purpose: To recognize and encourage outstanding theoretical or experimental contributions to condensed matter physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: Raymond E Goldstein, Dept of Phys, Univ of Arizona, Tucson, AZ 85721, Phone: (609) 258-4407, Fax: (609) 258 6360, Email: gold@physics.arizona.edu

DAVISSON-GERMER PRIZE

Purpose: To recognize and encourage outstanding work in atomic physics or surface physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: Ellen D Williams, Dept of Phys, Univ of Maryland, College Park, MD 20742-4111, Phone: (301) 405-6156, Fax: (301) 314 9465, Email: williams@surface.umd.edu

DANNIE HEINEMAN PRIZE FOR MATHEMATICAL PHYSICS

Purpose: To recognize outstanding publications in the field of mathematical physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: Edward Ott, Dept of Phys & Astron, Univ of Maryland, College Park MD 20742, Phone: (301) 454-3180, Email: e_ott@umail.umd.edu

HIGH POLYMER PHYSICS PRIZE

Purpose: To recognize outstanding accomplishments and excellence of contributions in high polymer physics research.

Send name of proposed candidate and supporting information before 1 July 1998 to: Eric J Amis, 224 B210 Polymers Div, NIST, Rte 270 & Quince Orchard Rd, Gaithersburg, MD 20899, Phone: (301) 975-6681, Fax: (301) 926 8012, Email: eric.amis@nist.gov

IRVING LANGMUIR PRIZE

Purpose: To recognize and encourage outstanding interdisciplinary research in chemistry and physics, in the spirit of Irving Langmuir.

Send name of proposed candidate and supporting information before 1 July 1998 to: William Klemperer, Dept of Chem, Harvard Univ, Cambridge MA 02138, Phone: (617) 495-4094, Fax: (617) 495-1792

JULIUS EDGAR LILIENFELD PRIZE

Purpose: To recognize a most outstanding contribution to physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: Miles V Klein, Loomis Lab, UIUC, 1110 W Green St, Urbana, IL 61801, Phone: (217) 333-1744, Fax: (217) 244 2278, Email: Miles_klein@stcs.mrl.uiuc.edu

JAMES C. MCGRODDY PRIZE FOR NEW MATERIALS

Purpose: To recognize and encourage outstanding achievement in the science and application of new materials.

Send name of proposed candidate and supporting information before 1 July 1998 to: G. Slade Cargill, Dept of Materials Science, Lehigh University, Bethlehem, PA 18015-3195, Phone: (610) 758-4207, Fax: (610) 758-4244, Email: gsc3@lehigh.edu

LARS ONSAGER PRIZE

Purpose: To recognize outstanding research in theoretical statistical physics, including the quantum fluids.

Send name of proposed candidate and supporting information before 1 July 1998 to: Nigel David Goldenfeld, Loomis Lab of Phys, UIUC, 1110 W Green St, Urbana IL 61801-3080, Phone: (217) 333-8027, Fax: (217) 333 9819, Email: nigel@uiuc.edu

GEORGE E. PAKE PRIZE

Purpose: To recognize and encourage outstanding work by physicists combining original research accomplishments with leadership in the management of research or development in industry.

Send name of proposed candidate and supporting information before 1 July 1998 to: Cherry Ann Murray, 1D-334, Lucent Technologies, 7600 Mountain Ave, Murray Hill NJ 07974-0636, Phone: (908) 582-5849, Fax :(908) 582 4702, Email: camurray@bell-labs.com

W.K.H. PANOFSKY PRIZE

Purpose: To recognize and encourage outstanding achievements in experimental particle physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: Michael Zeller, Dept of Phys, Yale Univ, Box 208121, New Haven CT 06520-8121, Phone: (203) 432-3650, Fax: (203) 432- 6175, Email: Zeller@yalph2.physics.yale.edu

EARLE K. PLYLER PRIZE

Purpose: To recognize and encourage notable contributions to molecular spectroscopy.

Send name of proposed candidate and supporting information before 1 July 1998 to: Roger Ervin Miller, Dept of Chem, Univ of North Carolina, CB 3290, Chapel Hill NC 27599, Phone: (919) 966-5433.

PRIZE TO A FACULTY MEMBER FOR RESEARCH IN AN UNDERGRADUATE INSTITUTION

Purpose: To honor a physicist whose research in an undergraduate setting has achieved wide recognition and contributed significantly to physics and who has contributed substantially to the professional development of undergraduate physics students.

Send name of proposed candidates and supporting information by 1 July 1998 to: Richard J Furnstahl, Dept of Phys, Ohio State Univ, 174 W 18th Ave, Columbus OH 43210, Phone: (614) 292-4830, Fax: (614) 292-7557, Email: FURNSTAH@MPS.OHIO-STATE.EDU

I. I. RABI PRIZE

Purpose: To recognize and encourage outstanding research in Atomic, Molecular and Optical Physics

Send name of proposed candidate and supporting information before 1 July 1998 to: Stephen Rolf Lundeen, Dept of Phys, Colorado State Univ, Fort Collins, CO 80523, Phone: (970) 491-6647, Fax: (970) 491- 7947, Email: lundeen@lamar.colostate.edu

ANEESUR RAHMAN PRIZE

Purpose: To recognize and encourage outstanding achievement in computational physics research.

Send name of proposed candidate and supporting information before 1 July 1998 to: Gary D Doolen, B213, LANL, PO Box 1663, Los Alamos NM 87545, Phone: (505) 667-8994, Fax: (505) 665-3003, Email: gdd@lanl.gov

J.J. SAKURAI PRIZE FOR THEORETICAL PHYSICS

Purpose: To recognize and encourage outstanding achievement in particle theory by a young physicist.

Send name of proposed candidate and supporting information before 1 July 1998 to: Robert N Cahn, Rm 3115 Bldg 50A, Lawrence Berkeley Lab, Berkeley, CA 94720, Phone: (510) 486-4481, Fax: (510) 486- 6067, Email: rncahn@lbl.gov

ARTHUR L. SCHAWLOW PRIZE IN LASER SCIENCE

Purpose: To recognize outstanding contributions to basic research that uses lasers to advance our knowledge of the fundamental physical properties of materials and their interaction with light.

Send name of proposed candidate and supporting information before 1 July 1998 to: Mark G Raizen, Dept of Phys, Univ of Texas, Austin TX 78712, Phone: (512) 471-4753, Fax: (512) 471-9637, Email: raizen@physics.utexas.edu

ROBERT R. WILSON PRIZE

Purpose: To recognize and encourage outstanding achievement in the physics of particle accelerators.

Send name of proposed candidate and supporting information before 1 July 1998 to: Hermann A Grunder, 12-C, Jefferson Laboratory, 12000 Jefferson Ave, Newport News VA 23606, Phone: (804) 249-7552, Fax: (804) 249:7398, Email: Grunder@CEBAF

AWARDS

DAVID ADLER LECTURESHIP AWARD

Purpose: To recognize an outstanding contributor to the field of materials physics who is noted for the quality of his/her research, review articles, and lecturing.

Send name of proposed candidate and supporting information before 1 July 1998 to: James W Davenport, Dept of Appl Sci Bldg 179A, Brookhaven Natl Lab, Upton NY 11973, Phone (516) 344-3789, Email DAVEN@BNL.GOV

APKER AWARD

Purpose: To recognize outstanding achievement in physics by undergraduate students, thereby providing encouragement to young physicists who have demonstrated great potential for future scientific accomplishment.

Send name of proposed candidate and supporting information before 15 June 1998 to: Dr. Barrett Ripin, Administrator, Apker Award Selection Committee, The American Physical Society, One Physics Ellipse, College Park, MD 20740-3844, Phone: (301) 209-3233, Fax: (301) 209-0865,Email: ripin@aps.org.

EDWARD A. BOUCHET AWARD

Purpose: Formerly known as the Visiting Minority Lectureship, the award is intended to promote the participation of under-represented minorities in physics by publicizing the lecturer's work and career development to the physics community, especially to young minority physics students.

Send name of proposed candidate and supporting information before 1 July 1998 to: Carlos Jose Bustamante, Inst. of Molecular Biology, Univ. of Oregon, Eugene, OR 97403, Phone: (541)346-1537, Fax: (541)346-5891, Email: carlos@alice.uoregon.edu,

AWARD FOR OUTSTANDING DOCTORAL THESIS RESEARCH IN BEAM PHYSICS

Purpose: To recognize doctoral thesis research of outstanding quality and achievement in beam physics and engineering.

Send name of proposed candidate and supporting information before 1 July 1998 to: Robert H Siemann, MS 26 SLAC, Stanford Univ, PO Box 4349, Stanford CA 94309, Phone: (415) 926-3892, Fax: (415) 926-4999, Email: SIEMANN@SLAC.stanford.edu

JOHN H. DILLON MEDAL

Purpose: To recognize outstanding accomplishments by young polymer physicists.

Send name of proposed candidate and supporting information before 1 July 1998 to: Eric J Amis, 224 B210 Polymers Div, NIST, Rte 270 & Quince Orchard Rd, Gaithersburg, MD 20899, Phone: (301) 975-6681, Fax: (301) 926-8012, Email: eric.amis@nist.gov

JOSEPH A. BURTON FORUM AWARD

Purpose: To recognize outstanding contributions to the public understanding or resolution of issues involving the interface of physics and society.

Send name of proposed candidate and supporting information before 1 July 1998 to: Mark Sakitt, Directors Office Bldg 460, Brookhaven Natl Lab, PO Box 5000, Upton NY 11973-5000, Phone: (516) 344-3812, Fax: (516) 344-5884, Email: sakitt@bnl.gov

JOSEPH F. KEITHLEY AWARD

Purpose: To recognize physicists who have been instrumental in the development of measurement techniques or equipment that have impact on the physics community by providing better measurements.

Send name of proposed candidate and supporting information before 1 July 1998 to: Alan F Clark, B258 Metrology, NIST, Rte 270 & Quince Orchard Rd, Gaithersburg MD 20899, Phone: (301) 975-2139, Fax: (301) 926-3972, Email: CLARK@EEEL.NIST.GOV

MARIA GOEPPERT-MAYER AWARD

Purpose: To recognize and enhance outstanding achievement by a woman physicist in the early years of her career, and to provide opportunities for her to present these achievements to others through public lectures.

Send name of proposed candidate and supporting information before 1 July 1998 to: Michael S Turner, Dept of Astronomy & Astrophysics, Univ of Chicago, 5640 S. Ellis Ave, Chicago, IL 60637, Phone: (773) 702-7974, Fax: (773) 702-8210, email: mturner@oddjob.uchicago.edu.

DISSERTATION IN NUCLEAR PHYSICS AWARD

Purpose: To recognize a recent PhD in nuclear physics.

Send name of proposed candidate and supporting information before 1 July 1998 to: Stuart Freedman, Dept of Phys, UCB, Berkeley CA 94720, Phone: (510) 486-7850, Fax: (510) 486-7983, Email: sjfreedman@lbl.gov

SHOCK COMPRESSION AWARD

Purpose: To recognize contributions to understanding condensed matter and non-linear physics through shock compression.

Send name of proposed candidate and supporting information before 1 July 1998 to: Carter T White, Code 6179, Naval Research Laboratory, 4555 Overlook Ave. SW, Washington, DC 20375-5000, Phone: (202) 767-3270, Fax: (202) 404-8119, Email: white@alchemy.nrl.navy.mil

LEO SZILARD AWARD FOR PHYSICS IN THE PUBLIC INTEREST

Purpose: To recognize outstanding accomplishments by a physicist in promoting the use of physics for the benefit of society in such areas as the environment, arms control, and science policy.

Send name of proposed candidate and supporting information before 1 July 1998 to: Mark Sakitt, Directors Office Bldg 460, Brookhaven Natl Lab, PO Box 5000, Upton NY 11973-5000, Phone: (516) 344-3812, Fax: (516) 344-5884, Email: sakitt@bnl.gov

JOHN WHEATLEY AWARD

Purpose: To honor and recognize the dedication of physicists who have made contributions to the development of physics in countries of the third world.

Send name of proposed candidate and supporting information before 1 July 1998 to: Raymond L Orbach, Chancellor's Residence, 4171 Watkins Dr, Riverside, CA 92507, Phone: (909) 787-5201, Fax: (909) 787-5587, Email: rayo@admin.ucr.edu

FRANCIS M. PIPKIN AWARD

Purpose: To honor exceptional research accomplishments by a young scientist in the interdisciplinary area of precision measurement and fundamental constants and to encourage the wide dissemination of the results of that research.

Send name of proposed candidate and supporting information before 1 July 1998 to: Louis W Anderson, Dept of Phys, Univ of Wisconsin, 1150 University Ave, Madison WI 53706, Phone: (608) 262-8962, Fax: (608) 265-2334, Email: lwanders@factstaff.wisc.edu.

NICHOLAS METROPOLIS AWARD FOR OUTSTANDING DOCTORAL THESIS WORK IN COMPUTATIONAL PHYSICS

Purpose: The award is to recognize doctoral thesis research of outstanding quality and achievement in computational physics and to encourage effective written and oral presentation of research results.

Send name of proposed candidate and supporting information before 1 July 1998 to: David Landau, University of Georgia, Center for Simulation Physics, Athens, GA 30601, Phone: (706) 542-2908, Fax: (706) 542-2492, Email: dlandau@uga.edu.

Physical Review Focus

PR Focus, the fully electronic journal featuring physics highlights, is available FREE through the APS Home Page [www.aps.org] or directly at [publish.aps.org/FOCUS]. To receive one-paragraph introductions to *Focus* stories each week by e-mail send the following message to majordomo@aps.org: subscribe focus [Leave the subject line blank].

PhD 'Family-Tree' Contest

APS News is holding a special Centennial PhD or "equivalent" lineage contest, in which entrants are asked to trace their professional "family tree" — i.e., the production of doctoral level physicists by their thesis advisors — as far back as possible. Prizes will be awarded to those who can trace their PhD lineage back the farthest, who have the most "generations," most Nobel Laureates, and other categories to be determined by the selection panel. Winners will receive prizes, and the most impressive or interesting lineages will be published in a future issue of *APS News*. See page 3 of the March 1998 issue of *APS News* for more details.

Entries should be sent to: Editor, *APS News*, The American Physical Society, College Park, MD 20740 or via E-mail to: letters@aps.org.

Physicists do it with Uncertainty

Bumper Sticker & Tee-Shirt Slogan Contest

Got a catchy, physics-related slogan you've always wanted to see on a T-shirt, bumper sticker, or coffee mug? *APS News* challenges its readers for the best such slogans. For example, APS Associate Executive Officer, Barrie Ripin, who brought you the limerick contest a year ago, said he is certain that physicists can do bumper stickers "relatively well." Ooh! Submissions can be in the form of text and/or graphics. There will be a number of categories for winning, including most humorous, most clever, best graphic, best public image, loudest groan from the judges, etc.. Finalist and winning entries will appear in a future issue of *APS News*. The best will be used on T-shirts, bumper stickers, and other products that will be available for purchase at the APS Centennial Meeting in March 1999 in Atlanta Georgia. The deadline for entries is June 30, 1998. Submissions should be sent to: *APS News* Editor, The American Physical Society, One Physics Ellipse, College Park, MD 20740; Fax 301-209-0865, E-mail: TEESHIRT@aps.org

THE BACK PAGE

Physics and Feminism

By Priscilla Auchincloss

Or should we say, physics versus feminism? We have become used to the idea of trying to get more women to become physicists, but the idea of getting physics to become more feminist strikes most physicists as a kind of heresy. The sense of contradiction evoked by the juxtaposition of "physics" and "feminism" is so deeply embedded in the history of science as to have become an unquestioned part of its present culture. But to know anything about that side of science history, one needs to cross into the world of feminist studies.

First, what does feminist mean? Although in women's studies an array of distinct feminisms are recognized, a simple, first-order meaning of feminist is pro-woman, in the understanding that women historically have been devalued and denied equal footing with men. To be pro-woman is therefore to claim women's equal value, to articulate the ramifications of this principle, and to attempt to realize it, in one's life, through one's work, or in one's society. Fundamental in women's studies is the distinction between biological sex differences (female or male) and culturally-defined gender differences and ideals (femininity and masculinity), which vary widely over time and place. The devaluation of women usually has coincided with the devaluation of so-called feminine qualities, and part of the work of feminism has been to reclaim those qualities and reassess their value. But an even more important part of the work has been to see them as human qualities, and to appreciate, above all, the human process of associating gender with almost everything in our real and imaginal worlds, and assigning boundaries and relative importance based on those gender associations. Thus, male-associated qualities are regarded as distinct from, prior to, and more important than female-associated ones; the male sets the standard to which the female is compared.

Having defined feminist as pro-woman, we can ask, What's the big deal? Physics isn't anti-woman ... is it? At this point, it is necessary to remind ourselves of the slow progress of women in physics. We need to look at the two key strategies now being followed for increasing the proportion of women in physics, and the limits of those strategies. The first is to increase the number of women coming into and staying in physics at each stage along the education-career "pipeline." Included in this category are intervention programs targeting girls and women, as well as efforts by departments to recruit women as graduate students, post-docs, and faculty. The second strategy is cultivating gender equity awareness in physics departments. Included in this category are workshops targeting those who teach, advise, or make decisions about women in science, departmental self-review, and external assessments of the "climate" for women.

The inescapable difficulty is that intervention programs and gender equity activities fall outside the normal job description of a physicist. Both strategies become limited by the problem they are intended to address: women are outside of physics; extra programs (for women) must be mounted to bring them in; extra activities must be added (for physicists, mostly men); and gender equity is a "separate" issue, at best irrelevant to physics itself. Indeed, the degree to which these strategies are effective may depend on the degree to which they can be integrated into existing, familiar, and accepted forms of intellectual and professional activity.

Moreover, these strategies are limited because they do not directly affect our underlying, gender-associated distinctions, beliefs, and values. So, we need a strategy (1) that can be integrated into the central activities of the academy and (2) that can affect the underlying beliefs of scientists. This is where women's (i.e., feminist) studies and other types of social/cultural studies of science have something to offer.

By searching for gender-associated conventions in scientific thought and practice, women's studies of science have opened up new intellectual territory and provided the means for its exploration. To begin with, feminist history of science reveals a number of things.

1. There were women in the origins of science. We learn of brilliant women practicing science and teaching in 17th century universities; noble and upperclass women who engaged tutors or led discussions of natural philosophy; and ordinary women who learned a male relative's guild craft or practiced midwifery or medicinal cooking.

2. There were multiple obstacles to women entering science as it became increasingly professional. The list of obstacles begins with legal restrictions, Aristotelian and Biblical doctrine, and social or religious disapproval, which could take severe forms. The reason there were not more women in science is that the social barriers were multiple and multi-leveled, working psychologically as well as institutionally, for example.

3. Science itself colluded in the exclusion of women from science. During the Scientific Revolution, a time of social and intellectual upheaval, the ideas that kept women out of public centers of learning remained unchanged. Science, rather than challenging ancient ideas about women's inferiority to men, used the new methods of observation, measurement and experiment to justify women's unequal status. 18th century anatomists, for example, found evidence that women were unsuited to a life of the mind in the "fact" that men's skulls were heavier than women's.

In response to data showing that women's skulls were actually larger in proportion to overall body size than men's, the terms of the argument shifted: the large-skulled woman, it was said, resembles the child! Both physically and mentally she never achieves the full development of man.

4. Science is, culturally, the extension of an essentially religious tradition, a defining theme of which was the exclusion of women. David Noble has argued persuasively that science is the outcome of a 2000-year project of Christian clerical culture to create a "world without women." Science developed primarily in centers of learning, which were also centers of mainstream religious power — monasteries, cathedral schools, and clerically based universities. Women were segregated, subordinated, and regarded as sources of temptation and potential impurity. Even in the post-industrial era, which opened unprecedented opportunities for women, a professional elite emerged in science, erecting new barriers just as women were overcoming the old ones.

Recognizing that historically science has not been gender-neutral, philosophical studies have asked, Is science objective at all? Some feminist philosophers have found it necessary to redefine the concept of scientific objectivity.

Returning for a moment to history, we have Evelyn Fox Keller's work on the language, in which 16th and 17th century scientists described science. They conceived of science as "thinking like a man," circumscribing a practice of knowledge-making which neither women nor so-called "feminine" (subjective, emotional, irrational) qualities could taint. Their underlying belief was that the world can be known through direct observations, controlled experiments and careful measurements — passing into a rational, undistracted, "pure" mind. Objectivity was presented as a quality of mind, the ability to not let personal bias interfere with an individual's observation or reason.

In the context of the Church tradition, which sought to expell women's bodily presence, and the centuries-long controversy about the differences between women's and men's brains/minds/souls, the focus on the individual (man's) mental state as the determinant of proper scientific practice was "natural." Even today, the concept of objectivity as a quality of mind is acceptable; aided by non-human measuring devices and "spatial" problem-solving skill, the unbiased mind secures the objectivity of science.

Using the tools of feminist analysis, however, it is possible to look at science quite differently. Thomas Kuhn made this possible by describing how science is actually practiced, in a community whose members develop a common set of commitments.

The central event of science, rather than the individual's unmediated view of nature, is the community agreeing upon a framework — a paradigm — for articulating a coherent description of nature. The individual acts are necessary, but they are insufficient, even meaningless, without the group to provide criticism or approval, and the paradigm to allow integration of the various parts of the puzzle.

Helen Longino, a feminist philosopher of science, examines objectivity as a characteristic of a community's practice of science rather than of an individual's mind. But even communities can be biased, particularly through the background assumptions shared by its members. Therefore, the quality of objectivity is determined by the degree to which the community cultivates "effective criticism" of evidence, of methods, of reasoning, and especially of background assumptions. It is the responsibility of the community, Longino writes, "to ensure that alternative points of view are developed enough to be sources of criticism."

On the same theme, Donna Haraway, a feminist historian and scholar, says that the traditional concept of objectivity expresses our wish for a disembodied "god-eye" that sees everything from everywhere but is located nowhere. All "vision" (her metaphor for observation), and the knowledge it produces, is necessarily embodied in biological or technological "eyes" and situated in space, time, and cultural context. Science can never give us an unbiased, infallible representation of nature, only a collection of embodied, situated, culturally-biased interpretations of nature, some better than others for given purposes. Our understanding grows in accepting our dependence on other perspectives.

These feminist studies of science do not describe a different science — certainly not a "feminine science" — but they shift the emphasis so that we see the importance, even necessity, of diversity among scientists. Moreover, they improve on more traditional accounts of science by explaining both its achievements and its lapses. As part of a strategy for increasing the proportion of women in science, feminist studies raise issues of women and science as intellectual questions within the academy, rather than pushing them to the margins of institutional life. And feminist studies undoubtedly challenge our underlying assumptions about the making of men, women, and science.

Thus, feminist studies of science may hold a key to the success of efforts to attract and retain women in physics, to create gender equitable environments in physics departments, and to reform physics education. Bringing together physics and feminism — allowing physics to become more feminist — has potential to bring about positive change in the culture of physics and realize a truly diverse physics community.

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