

APS NEWS

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Congressional Members Respond to Joint Society Statement

Numerous Congressional representatives have endorsed the Joint Society Statement calling for an across-the-board increase of 7% in research funding, released in early March by leading scientific, mathematical and engineering societies, including the APS (see *APS News*, April 1997). Senator Phil Gramm (R-TX), Senator Joseph Lieberman (D-CT) and Representative George Brown (D-CA) all expressed their support of the statement, and Gramm and Brown both have proposed bills calling for increased investment in basic research.

The joint statement, signed by the presidents of more than 20 major organizations representing more than one million engineers, mathematicians and scientists, urged Congress and the Presi-

dent to renew America's historical commitment to scientific research and education. It was drafted in response to the decline in research funding for four straight years. President Clinton's FY 98 budget request for science again falls behind inflation and behind the overall increase of the budget.

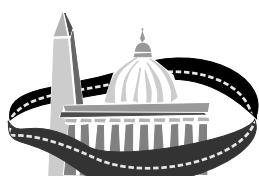
Gramm urged scientists to contact their own senators on behalf of his bill, entitled the National Research Investment Act (S.124), which aims at doubling the federal investment in basic research in 10 years — a commitment he deems critically important to the nation's future. "If we do not restore the high priority once afforded science and technology in the federal budget and increase federal investment in research, it will be

impossible to maintain the United States' position as the technological leader of the world," he said, pointing out that Japan and Germany have spent a larger share of their GDP on research and development than the U.S.

Brown also praised scientists for speaking out and announced his intention to introduce legislation calling for an increase of 5% per year in non-defense R&D, lest continued under-investment in science lead to a less prosperous future. "Economists estimate that as much as half of our Nation's economic growth in the last hundred years is due to technological innovations," he said. "Just as we have a generational obligation to balance the budget and not make the next generation pay for our consumption, we also have an obligation to continue to invest in those programs that will leave

the next generation in a position to enjoy a robust, growing economy."

Lieberman also said that the nation's current prosperity, intellectual leadership in science and medicine, and the growth of entire new industries are directly linked to federal investments made 30 years ago. He praised Gramm's bill, but said it should encompass applied research, and called for an end to partisan conflicts, in order to best identify areas in need of federal support. "I believe it is a mistake to separate research into two warring camps," he said. "Rather, the research enterprise represents a broad spectrum of human activity with basic and applied science at either end, but not in opposition. Every component along the spectrum produces returns: economic, social and intellectual gains for the society as a whole."



INSIDE THE BELTWAY

Paralytic Federalitis

by Michael S. Lubell, APS Director of Public Affairs

Science finally made it onto the Washington radar screen, only to find the airport all but shut down. Congress has been in a monumental funk since it convened almost four months ago. And at the other end of Pennsylvania Avenue, where the Lincoln Bedroom has remained largely vacant for the first time in two years, a bunker mentality seems to prevail. These days only Wendy's is offering up any beef, and inside the Beltway, Hale-Bopp has a monopoly on the vision thing.

Call it "paralytic federalitis": it has its genesis in deviant fundraising practices and deep fiscal phobias, and it has spread through Washington like a contagious disease, affecting leaders in both political parties in the process.

House Speaker Newt Gingrich, who was hit with a stern reprimand and a \$300,000 penalty by the House Ethics Committee in January, has all but vanished from the congressional scene, leading some vocal critics in his own party to call for his resignation. But so far the House Republican leadership has presented a united front in his defense, and no one with serious credentials has stepped forward to replace him.

President Clinton, who has made a career of rebounding from certain defeat, is facing the prospects of yet another resurrection, one that may make the physical therapy for his torn tendon seem like a trivial matter. It is not yet clear whether the Administration broke any laws in its zeal to raise money for the 1996 campaign, but the fallout from the accusations and the perceptions of improprieties have tied up the White House in political knots since the inauguration.

Even Vice President Al Gore and Senate Majority Leader Trent Lott have seen the luster of their squeaky clean images sullied somewhat. The Vice President,

(Continued on page 2)

IN THIS ISSUE

Congressional Members Respond to Joint Society Statement	1
INSIDE THE BELTWAY	1
International News	1
New Staff Brings Expertise to APS Meetings, Education, Outreach	2
White House Taps Panel of Experts on Energy R&D	2
IN BRIEF	3
Physicists to be Honored at PAC'97	3
APS Reaffirms 1981 Statement on Creationism	3
1996 Annual Report	4
Letters	6
Announcements	7
The Back Page	8
APS Meeting News	Insert

INTERNATIONAL NEWS



CIFS Rallies to Aid of Cuban Scientists Denied U.S. Visas

In March, the APS Committee on the International Freedom of Scientists (CIFS) embarked on a letter-writing campaign on behalf of several Cuban scientists denied visas to attend scientific conferences in the U.S. Letters were sent to the U.S. Interest Section in Havana and to State Department officials, and APS President D. Allan Bromley (Yale University) issued a personal appeal to Secretary of State Madeleine Albright advocating for the free circulation of scientists.

According to Mr. Andrew Simkin, a consular section officer at the U.S. Interest Section, located in the Swiss Embassy in Havana, the scientists were denied visas in accordance with the 1985 Immigration and Nationality Act specifying that employees of the Cuban government and Cuban Communist Party members should not be granted visas to enter the U.S. without permission of the Department of State.

According to Irving Lerch, APS director of international scientific affairs, the scientists in question are a group of five quantum chemists from the University of Havana, led by Luis Alberto Montero Cabrera, seeking admission to the U.S. to visit Clark Atlanta University in Atlanta, Georgia, and the University of Florida before attending the Sanibel Island Symposium on Quantum Chemistry, during which they are scheduled to give a presentation on their research. Carlo Trallero-Giner of the University of Havana has also been denied an entrance visa. He is an expert on semiconductor nanostructure systems who is seeking to collaborate on joint theoretical research with Jo-

seph Birman, a professor at the City College of New York.

Lerch believes the blanket refusals were based on the fact that all university professors and researchers are essentially employees of the Cuban government. However, these same strict standards are not applied to Chinese scientists applying for similar visas, which would essentially forbid scientific exchanges with that country. The denials "constitute a debilitating intrusion into the free and open exchange on which the U.S. and international scientific communities are absolutely dependent," he said. "If our important research universities and major scientific conferences are to be closed to international collaboration and discourse, we will suffer inestimable damage to our credibility and, ultimately, to our domestic scientific enterprise."

In his letter to Albright, Bromley noted that the U.S. has always adhered to the International Council of Scientific Unions statutes guaranteeing free circulation of scientists, an organization that can, and in the past, has made it impossible for international scientific meetings to be scheduled in countries that violated its statutes. Hence, "The visa denials are not only disappointing to meeting organizers and applicants alike, but also are detrimental to American science," Bromley wrote. "The credibility of the U.S. as host to important international meetings would be seriously damaged... Free exchange of information is essential to the health and vitality of our domestic and international scientific enterprise."

New Staff Brings Expertise to APS Meetings, Education, Outreach

The APS has added three new key staff members to further support its meetings, education and outreach programs. Kevin Aylesworth, former APS general councillor and Congressional Fellow, joined the Society in November as an assistant to the APS Director of Education and Outreach, Ramon Lopez. Donna Baudrau replaced Michael Scanlan as APS meetings manager in March. And Sherrie Preische has been hired as an assistant to the executive officer, presently focusing on organizing the upcoming APS Centenary and various other projects.

Aylesworth received his PhD in physics from the University of Nebraska in 1989, specializing in the magnetic and structural properties of magnetic thin films and multilayers. He spent two years as a postdoctoral associate at the Naval Research Laboratory and then worked as a technical assistant/paralegal for an attorney in Cambridge, Massachusetts, worked as an independent consultant, and was an APS Congressional Fellow. He was the recipient of the 1996 APS Forum Award for founding the Young Scientists Network in May 1990, which had a membership of over 3,000. He was elected to the APS Council in 1993 after a successful write-in campaign placed him on the ballot.

A certified meeting professional who has managed conventions, meetings and exhibit shows for almost 19 years, Baudrau comes to the APS from the American Society for Parenteral and Enteral Nutrition, where she was director of conventions and exhibits. Prior to that she was a conference coordinator for



Donna Baudrau



Kevin Aylesworth



Sherrie Preische

the American Health Planning Association in Washington, DC. "I'm looking forward to making a contribution to the APS, ensuring

that its meetings and exhibits run like a Swiss watch, and that we are doing our best to serve the members and meeting attendees," she said.

Preische received her B.A. in physics from Randolph-Macon Woman's College in Lynchburg, Virginia, and her PhD from Princeton University in 1995, with a doctoral thesis in plasma physics. She spent the following year and a half at the Tore Supra tokamak in Cadarache, France, on a postdoctoral fellowship from the French Foreign Ministry, where she continued her research on ECE measurements during rf experiments on the tokamak. She is an elected member of the APS Division of Plasma Physics Executive Board, and was a co-organizer of the first Open House associated with the annual DPP meeting, in 1994.

INSIDE THE BELTWAY

(Continued on page 7)

for whom the title "Mr. Straight Arrow" used to be regarded as an understatement, has been preoccupied defending the use of his office telephone for political fundraising, a practice that former White House counsel Abner Mikva warned was illegal.

And Mr. Lott, for whom charm, comity and respect are guiding principles, had his perfectly coifed feathers ruffled a bit in mid-March when Republicans rebelled against a deal he had brokered within the GOP conference to keep the Senate investigations of campaign fundraising focused on the White House. When the proposed legislation hit the Senate floor, Joseph I. Lieberman (D-CT) offered an amendment to broaden the investigating committee's mandate. And much to the pleasure of committee chairman Fred Thompson (R-TN) and the dismay of Mr. Lott, the Senate ultimately voted 99 to 0 to accept the Lieberman amendment.

While Congress stewed over investigations, budget issues languished. When President Clinton submitted his

requests on February 6, he asserted that his plan would result in budgetary balance in 2002. Rather than risk the kind of confrontation with the White House that had resulted in a shutdown of the government in 1995, the Republicans decided to use the President's budget as a starting point for negotiations, rather than produce their own plan.

Thus, although GOP criticism was immediate, the rhetoric was muted, and preliminary discussions with the White House took place several weeks later. But plans for further talks were put on hold when the Congressional Budget Office declared the President's spending plan \$69 billion out of balance in 2002. Mr. Clinton, the Republicans said, should resubmit a truly balanced budget.

Sensing a possible stalemate and remembering how the GOP had been damaged politically in 1995, Speaker Gingrich, then proposed that both sides forego discussions of tax cuts until they had arrived at a consensus on spending. Immediately, House Republicans screamed "Sellout" leading Gingrich to reverse course

promptly. However, former Senator Sam Nunn, a conservative Democrat from Georgia who is widely respected on both sides of the aisle, had these words of caution for the Speaker's critics. Reflecting on the GOP strategy that had misfired two years ago when tax and budget cuts became linked, he said, "What the Republicans offered then was a soft slow pitch over the plate, and the Democrats demagogued it right out of the park."

Whether or not a budget deal can be struck, Congress will soon have to get on with the business of passing appropriations bills for the coming year. And right now the science signals are fairly good. For openers, the President's budget, instead of cutting or freezing science spending, as first promised, would generally provide small increases. The policy shift, according to Presidential Science Advisor Jack Gibbons, was largely due to the political activity of the science community. (Physicists take note!)

On the Hill, the voices of scientists have also been heard. Phil Gramm (R-

TX) and several Senate colleagues submitted legislation that would double the research budget in 10 years. And George Brown (D-CA), former chairman of the House Science Committee, released a balanced budget plan that would increase research spending at a rate of five percent per year.

Reinforcing the science message, the presidents of societies representing more than a million engineers, mathematicians and scientists signed a joint statement in March advocating increases for research in the range of seven percent. The unprecedented show of unity seemed to have an immediate effect. House Science Committee Chairman James Sensenbrenner (R-WI), who only weeks earlier had said that a freeze was inevitable, agreed to support increases in the range of three percent.

But the story is far from over. Appropriators will still have the final word. Before then, of course, scientists will have one more chance to make their case.

White House Taps Panel of Experts on Energy R&D

Dr. John H. Gibbons, Assistant to the President for Science and Technology, announced in March the formation of a panel of distinguished, independent experts to review the Nation's energy research and development (R&D) program. The panel, created under the auspices of the President's Committee of Advisors on Science and Technology (PCAST), will provide recommendations on how to ensure the United States' energy R&D program addresses the economic, environmental and national security needs of the nation for the next century. The panel will be chaired by John P. Holdren, the Teresa and John Heinz Professor of Environmental Policy and Director of the Program on Science, Technology and Public Policy at the John F. Kennedy School of Government, Harvard University. Holdren, a member of PCAST, previously chaired 1995 PCAST studies on the U.S. fusion energy program and protection of nuclear-warhead materials. Holdren received the 1995 APS Forum Award.

Working with the White House Office of Science and Technology Policy and the U.S. Department of Energy, the panel will review current and projected U.S. energy R&D programs and will make recommendations on federal support for energy research and development, incentives for private-

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sector investments in energy research and development and U.S. commitments to international cooperation in energy research and development. Issues covered by the panel will include R&D on energy and end-use efficiency, renewables, advanced fossil-fuel technologies, nuclear fission and nuclear fusion. The panel will report its findings to the President by October 1997.

The other members of the panel, of whom are longstanding APS members, are Diana MacArthur, Dynamac Corporation; Charles Vest, MIT; Virginia Weldon, Monsanto; Lillian Shiao-Yen Wu, IBM; John Young, Hewlett-Packard; John Ahearne, Duke University; Richard Balzhiser, Electric Power Research Institute; Robert Frosch, Harvard University; Joan Bok, New England Electric System; William Fulkerson, Oak Ridge National Laboratory; Robert Conn, University of California, San Diego; Hal Harvey, The Energy Foundation; William L. Fisher, University of Texas, Austin; Thomas L. Fisher, Northern Illinois Gas Company; Larry Papay, Bechtel Corporation; Dan Lashof, Natural Resources Defense Council; Laura D'Andrea Tyson, University of California, Berkeley; Don Paul, Chevron Corporation; Robert Williams, Princeton University; and Maxine Savitz, Allied Signal Ceramic Components.

Physicists to be Honored at PAC'97

Two physicists will be honored for their work in particle and beam physics at the 1997 Particle Accelerator Conference (PAC'97), to be held 12-16 May 1997 in Vancouver, BC. Andrew Sessler of Lawrence Berkeley National Laboratory will receive the 1997 Robert R. Wilson Prize, and Linda Klamp Spentzouris, a research associate at Fermi National Laboratory, will receive the 1997 award for Outstanding Doctoral Thesis Research in Beam Physics.

1997 ROBERT R. WILSON PRIZE

Established in 1986, the Wilson Prize is intended to recognize and encourage outstanding achievement in the physics of particle accelerators.

Andrew Sessler
Lawrence Berkeley National Laboratory

Citation: "For a broad range of theoretical and conceptual advances in particle beam dynamics, leading to important accelerator performance improvements; for contributions in the areas of synchrotron rings, including negative mass instability and resistive wall instability, and free electron lasers; for the two-beam accelerator concept; for helping shape the very language of beam physics; and for inspiring and guiding several generations of accelerator scientists and serving as a statesman of science."

Currently the APS President-Elect, Sessler received his PhD from Columbia University in 1953. In 1961, he joined the Lawrence Berkeley National Laboratory, where he was instrumental in initiating an Energy and Environment program. He served LBNL's director from 1973 to 1980, and is presently a Distinguished Senior Staff Scientist in the Accelerator Fusion Research Division. A past chair of the Federation of American Scientists, Sessler has been active in human rights matters, being one of the co-founders of the Sakharov, Orlov and Shcharansky (SOS) Society, and was the first recipient of the APS Nicholson Medal for Humanitarian Service in 1994.

OUTSTANDING DOCTORAL THESIS RESEARCH IN BEAM PHYSICS

Established in 1990 by the Division of Physics of Beams, this award is supported by the Universities Research Association. It is intended to recognize doctoral thesis research of outstanding quality and achievement in beam physics and engineering.

Linda Klamp Spentzouris
Northwestern University

Citation: "For her pioneering measurement of nonlinear coherent phenomena in high-energy hadron beams, building upon the rich theoretical development in plasma physics over the last several decades. Her findings include the identification of three-wave interactions in beams, and a related phenomenon, echoes, which provides a means to detect extremely weak diffusive processes at work in the beam. Her work serves as a starting point for the understanding of saturation and turbulent states in high-energy synchrotrons."

Spentzouris received her BA in physics from Colorado College in 1979. During the intervening years between her undergraduate degree and entering graduate school, she worked in the operations group of the Accelerator Division at Fermilab. She received her PhD in physics from Northwestern University in 1996. The subject of her dissertation was coherent nonlinear longitudinal phenomena in unbunched synchrotron beams. These phenomena include the weakly nonlinear three-wave coupling process of parametric coupling and beam echoes, as well as moderately nonlinear wave-particle interactions. She has recently been hired as a research associate by Fermilab, to work on a high-intensity photoelectron source now under construction. The source will be used as a prototype injector for the Tesla Test Facility. Experiments at Fermilab are planned which will use this source as a driver for a plasma-wakefield advanced accelerator.

IN BRIEF

- The APS Ohio Section is holding its annual spring meeting 2-3 May at Bowling Green State University in Bowling Green, Ohio. The invited talks during the plenary session focus on nonlinear optics and ultrafast phenomena. On Friday afternoon, Duncan Steel (University of Michigan, Ann Arbor) speaks on quantum optics of semiconductor heterostructures, particularly recent results demonstrating the fully resonance coherent nonlinear optical response of a single quantum dot, using various spectroscopic methodologies. He is followed by Nasser Peyghambarian (University of Arizona) who summarized his recent program in developing polymeric laser diodes and highly efficient photorefractive polymers, with improved performance of four orders of magnitude than previously achieved. On Saturday morning, Alex Kaplan (Johns Hopkins University) speaks on the physics of high-intensity, sub-cycle sub-femtosecond pulses, in particular novel field-ionization patterns that can be induced by them. He is followed by a talk on the physics, electro-optics and nonlinear optics of laser-induced photoconductivity and photorefractive responses of nematic liquid crystals by Iam-Choon Khoo (Pennsylvania State University).
- The APS New York State Section held its 76th topical symposium 11-12 April at Colgate University in Hamilton, New York. Focusing on lasers in science, the program featured 12 invited lectures on recent developments in novel lasers and a rich variety of scientific studies based on lasers. Friday morning's session covered new laser sources, such as x-ray free electron lasers, high power fiber lasers for communications systems, and the current status of blue-green and violet-UV semiconductor laser diodes. On Friday afternoon, the discussion turned to such laser-originating topics as quantum effects in laser cooling, nanofabrication and anti-viral testing, and subatomic microscopy and micromanipulation. The use of lasers in other areas of science was featured at Saturday morning's session, covering such topics as lasers in surface science, laser vision correction, laser chemistry, and the Laser Interferometer Gravitational-Wave Observatory (LIGO).
- The APS New England Section also held its spring meeting 11-12 April at the University of Maine in Orono, organized jointly with the New England zones of the American Association of Physics Teachers and the Society of Physics Students. Friday afternoon's plenary session provided an overview of the area of tribology. While most physics courses treat friction simplistically, in a way that often does not correspond to reality, recent advances in theoretical and experimental methods have led to renewed interest in the fundamental aspects of friction. Friday evening's banquet featured a keynote address by Edward Tenner on the perils of technological security. Tenner is the author of the book "Why Things Bite Back: Technology and the Revenge of Unintended Consequences." Saturday morning featured a special plenary address by Lillian McDermott of the University of Washington on bridging the gap between teaching and learning, followed by talks on recruiting and retention of minority physics graduate students, and on recent developments in the large scale structure of the universe.
- In March, the APS Texas Section held its annual Joint Spring Meeting with the American Association of Physics Teachers and Zone 13 of the Society of Physics Students and the University of St. Thomas in Houston, Texas. In addition to sessions on nuclear and particle physics and atomic and molecular physics, the conference also featured two sessions on surface physics. Topics in Friday morning's session included scattering and recoil imaging spectroscopy, ion beam synthesis of silicon nitride, and computer simulations of coupled piano strings. Saturday morning's session focused on modern techniques for looking at surfaces, including magnetic resonance force microscopy, cross-section tunneling electron microscopy, spin polarized electron spectroscopy, and secondary ion mass spectroscopy. The keynote speaker at Friday evening's banquet was John Hubisz.
- 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 1996-1997 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. Detailed information is available on the DLS homepage: <http://www.physics.wm.edu/~cooke/dls/dls.html>. The deadline for spring 1998 applications is June 15, 1997.
- According to a report published in the *New York Times* (4 March 1997), the names of elements 104 through 109 have finally been accepted by nuclear scientists and certified by the International Union of Pure and Applied Chemistry. The delay over the names was caused partly by rival claims to priority; the pertinent experiments rendered mere handfuls of atoms. Physics and chemistry students worldwide will now have to memorize the following additions to the Periodic Table: Rutherfordium (abbreviated Rf, element 104), Dubnium (Db, 105), Seaborgium (Sg, 106), Bohrium (Bh, 107), Hassium (Hs, 108), and Meitnerium (Mt, 109).

APS Reaffirms 1981 Statement on Creationism

Concerned with recent attempts to have the biblical story of creation taught in public schools as science, the APS Executive Board voted unanimously at its February meeting to reaffirm the position adopted by the Society in November 1981. The statement strongly opposes the teaching of "creationism" in science class, maintaining that "attempts to present scientific inquiry and religious beliefs in the same context can only lead to misunderstandings of both." The full text of the statement is below.

The Council of the American Physical Society opposes proposals to require "equal time" for presentation in public school science classes of the biblical story of creation and the scientific theory of evolution. The issues raised by such proposals, while mainly focused on evolution, have important implications for the entire spectrum of scientific inquiry, including geology, physics, and astronomy. In contrast to "Creationism," the systematic application of

scientific principles has lead to a current picture of life, of the nature of our planet, and of the universe which, while incomplete, is constantly being tested and refined by observation and analysis.

This ability to construct critical experiments, whose results can require rejection of a theory, is fundamental to the scientific method. While our society must constantly guard against oversimplified or dogmatic descriptions of science in the education process, we must also resist attempts to interfere with the presentation of properly developed scientific principles in established guidelines for classroom instruction or in the development of scientific textbooks. We therefore strongly oppose any requirement for parallel treatment of scientific and non-scientific discussions in science classes. Scientific inquiry and religious beliefs are two distinct elements of the human experience. Attempts to present them in the same context can only lead to misunderstandings of both.

1996 Annual Report

1996 was an exciting year for physics and the American Physical Society. Major new developments were reported in all fields of physics and several, including advances in quantum computation, the creation of metallic hydrogen, sending atoms down hollow fibers, and evidence that quarks are point-like down to 10^{-19} m, were highlighted in the major media. APS passed its third anniversary of the move of APS headquarters to the American Center for Physics in College Park, Maryland, where the close proximity of other scientific and professional societies has proved to be the advantage that was originally anticipated. In addition, the pleasant working conditions of the ACP building have helped APS to attract an exceptionally talented staff. Plans for a major addition to the APS Editorial Offices in Ridge, New York, were completed. This will allow all the excellent editorial and support staff on Long Island to come together under one roof.

The APS made major progress in its electronic publishing efforts throughout 1996, offering *Physical Review Letters*, and *Physical Review C, D and B-Rapids* online, and laying the ground work for all APS journals to be online by the end of 1997. The adoption of an electronic abstract submission procedure for all APS meetings allowed the programs for all APS meetings, general, topical, and regional, to be available and searchable on the web long before the meetings themselves.

This year APS expanded its public service and outreach programs in many directions. APS's first capital fundraising efforts, carried out jointly with the American Association of Physics Teachers and called the *Campaign for Physics*, had an excellent year and is quickly approaching its goal of \$5 million. The funds raised in this way allowed APS to expand greatly its programs to involve research scientists in improving pre-college science education.

The APS intensified its effort to involve scientists in grassroots efforts to promote physics to the public and support for science in general, and physics in particular, to legislators and government leaders. In addition, we have been working with other societies to develop a coordinated approach in seeking increased federal funding for science and technology.

Looking toward the future, the very successful searches for two new operating officers may have been the most important events of the year. Harry Lustig, APS treasurer for 11 years, retired in November. In addition to initiating and leading many new APS programs, he managed APS finances with such distinction that the Society faces the future with an unusually firm foundation. He was replaced by Tom McIlrath, an atomic and optical physicist from the University of Maryland who brings a broad base of experience both in physics and in administration. At the end of the year, Ben Bederson retired as APS editor-in-chief after a five-year term in office. He shepherded the journals through a period of rapid growth and change and laid most the groundwork for the development of the new online journals. He has been replaced by Martin Blume, a condensed matter theorist, who recently stepped down as deputy director of Brookhaven National Laboratory and whose management skills and enthusiasm are well known throughout the physics community.

J. Robert Schrieffer
President, 1996

HIGHLIGHTS OF APS OPERATIONS

Research Publications

APS Journals: 1996 was a relatively quiet year for APS journals, excepting the increasing impact of electronic publishing. The journals experienced a year of stability, with modest and manageable growth, and with a healthy financial return of revenue over expenses. The Council mandates to limit growth, trim operating expenses, reduce subscription rate increases to libraries, and phase down page charges have all been adhered to. Many of these favorable trends can be attributed to the significant slowing down of submission increases, from an almost constant 8 or 9 percent per year in recent years to about 4 percent in 1996. The number of international submissions continues to rise dramatically, representing more than $\frac{1}{3}$ of all submissions. For the first time, in 1996 submissions from western Europe exceeded those from the US.

Library subscriptions continued their 30-year decline at the rate of about 3 percent. So far our collective wisdom has been unable to make a dent in this unyielding statistic.

Electronic Publishing: This was a year of intense activity in electronic publishing for the APS. A critical change in production strategy occurred in April when APS successfully moved all *Physical Review* production into electronic production using the Xyvision composition system at AIP. A serendipitous byproduct of the Xyvision process was that all articles are now easily convertible to pdf files and, for the first time, APS became capable of delivering all of its journals electronically. *Physical Review D* and *B Rapids* were offered online through the efforts of APS Journal Information Systems staff, with *PRD* having the added advantages of external links to the xxx eprint server at Los Alamos and the library at SLAC. In July 1996, *Physical Review C online* was launched via a newly developed AIP service. This service has now grown into the AIP's *Online Journal Publishing Service*. All remaining APS journals are scheduled to be delivered online via the AIP service by summer 1997.

APS developed an eprint server that went online in July. In addition to providing electronic access to preprints in all fields of physics, this has allowed authors to submit papers to APS journal directly via the web. Significant progress was also made on the development of a web-based online archive for APS journals. Working in collaboration with Los Alamos and the Naval Research Laboratory, APS hopes by the end of next year to have all its articles dating back to 1985 available through hot links from current journals.

1996 also saw the first receipt of an external grant in electronic publishing.

NIST is supplying the APS with \$150,000 per year for two years to work closely with them and with AAS to help in the development of authoring tools and other important services for NIST scientists.

Editorial Changes: There were two major changes in editorial leadership in 1996. After nearly 22 years as editor of *Reviews of Modern Physics*, David Pines stepped down and was replaced in January by George Bertsch, a nuclear physicist resident at University of Washington in Seattle. As a result the *RMP* editorial office moved to the University of Washington campus, along with its long-term assistant editor Karie Friedman, who continues to serve very effectively as the full-time overseer of the journal. Lowell Brown retired as editor of *Physical Review D* at the end of 1995, and was replaced by Erick Weinberg, a particle theorist at Columbia University. In addition, an in-depth review of *Physical Review C*, completed in 1995, was considered by the Publication Oversight Committee in 1996, resulting in a renewal of Sam Austin as editor for another five year term.

Membership Operations

Membership: In 1996 the headquarters staff switched to a new electronic database to track membership and member journal subscriptions. The new system should aid staff in serving members more effectively and efficiently and provides greater flexibility in tracking and reporting membership trends. New members will now be able to join at any time of the year. Anniversary billing is expected to improve first-year renewal rates and should help reverse the slight downward trend in total membership of the past few years. The Committee on Membership approved a one-year waiver of membership and unit dues for unemployed members, and the free first-year offer to graduate students was offered to undergraduates as well.

This year the APS established an extensive home page on the Internet. Comprehensive information about meetings, individual units, membership, education and outreach programs, honors and awards, *What's New*, etc., is available to members and non-members. Certain areas such as the Membership Directory and issues of *APS News* are restricted to APS members. The directory is searchable by name and is updated daily.

The Society has become increasingly concerned about the significant portion of non-academic physicists who have not been well served by APS. To learn more about this community and its needs and to encourage these physicists to take part in APS activities, the Forum on Industrial and Applied Physics was formed and quickly became the most popular forum, with over 5,000 members. Other new units include the Topical Group on Gravitation, the Topical Group on Magnetism and Its Applications, and the Topical Group on Statistical and Nonlinear Physics. In addition, the Laser Science Topical Group grew large enough to become a division.

Career and Professional Development: The APS closely monitors the career and employment situations for physicists through member surveys and statistical surveys conducted by the AIP. Due to several factors, the number of permanent physics positions in such traditional areas as teaching and basic research has lagged behind the supply of physicists over the past several years. The Society has continued its efforts to inform members, and particularly student members, about diverse employment options open to physicists. Career information is available through *APS News* articles, brochures, and career workshops and employment services at APS meetings. *CareerPlus*, a special insert to the March issue of *APS News*, was produced to bring much of this information to members and students.

Many APS units, such as the Forum on Education, the Forum on Physics and Society, the new Forum on Industrial and Applied Physics, and several technical units have ongoing activities in the area of careers. An APS Task Force on Career and Professional Development was appointed in 1996 to advise the Society on how it can most effectively coordinate its activities and use its resources to deal with the near-term problems, as well as to develop a long-term strategy.

APS News: A regular column, *Inside the Beltway*, was introduced to highlight current government actions that affect science, as well as Society public and governmental education activity. The *Caught in the Web* column lists new postings on the rapidly expanding APS web pages. Issues with special insert pullout sections were introduced on career issues (*CareerPlus*) and APS electronic publication activity (*APS Online* and *Guide to Electronic Abstract Submission*). *APS News* was also made available to members through the APS website in html and pdf formats.

New Prizes and Awards: Several APS awards and lectureships were endowed in 1996. The Hans A. Bethe Prize, a new annual \$7500 award for outstanding work in areas of nuclear physics and astrophysics, was initiated and endowed through the joint efforts of the Divisions of Nuclear Physics and Astrophysics. Keithley Instruments endowed the Joseph F. Keithley Award, a new annual \$5000 award to recognize contributions to instrumentation and measurement techniques. The former Forum Award was endowed by Jean Dickey Apker and renamed the Joseph Burton Forum Award in honor of Joseph Burton, a past treasurer of the APS. Elsevier Science endowed the existing Dillon Medal for an outstanding young high polymer researcher, and finally, the APS Henry Primakoff Lectureship, intended to bring eminent speakers to an APS meeting, was established and endowed in Primakoff's memory.

Information Services: The headquarters Information Services Department was challenged during 1996 by the Society's ever-growing electronic information needs. The most significant project of the year was the replacement of our seven-year-old custom written membership system with a new package based on state-of-the-art database technology. This transition meant many long hours and much frustration for staff and, even occasionally, our members. However, APS has now started to reap some of the benefits of the new technology.

1996 Annual Report

Significant effort went into enhancing the APS World Wide Web site. Members can now update their mailing address, e-mail address, or add a home page URL to their online directory listing. The capability to securely accept credit card transactions was implemented on our web site. Access to APS web information was improved for overseas members through the establishment of a mirror web server at the European Physical Society.

Enhancements were also made in support of planning for the Society's various meetings. The electronic abstract submission process was improved and now allows researchers to view abstracts in their publication format prior to final submission to APS.

Scientific Meetings

The 1996 March Meeting in St. Louis was a great success, with more than 4,600 registrants. Thirteen units participated in more than 450 sessions. The 1996 Joint APS/AAPT Meeting was held outside of Washington, DC for the first time in many years. Indianapolis turned out to be an excellent location. The sessions were well attended and the 14 APS units, the AAPT, and most of the 1300 participants were enthusiastic about the outcome.

For the last several years, the APS Meetings Department has helped the Division of Plasma Physics manage its annual meeting. From time to time, other divisions have also asked for this assistance and APS staff would like to extend this service more widely. It is, however, difficult for APS to match low costs that the divisions are used to incurring through the use of volunteer labor.

The computerization of abstract submission and the electronic production and distribution of the APS bulletins (BAPS) for meetings made major progress in 1996. Over 90 percent of the abstracts were submitted electronically.

Development Efforts

The Campaign for Physics: In addition to the establishment of funds for the awarding of APS prizes and awards and annual member voluntary contributions which have been solicited via member invoices, APS development efforts have centered around a \$5 million campaign to support science education programs of the APS and the American Association for Physics Teachers. The Campaign, called the *Campaign for Physics*, has raised \$3.9 million to date.

This Campaign benefits from outstanding corporate leadership and financial support. The Campaign's executive committee is led by William Hewlett (Co-Founder of Hewlett-Packard Company), assisted by eight other chief executives who serve as vice chairs, a 39 member Campaign Council of Nobel laureates led by Nicolaas Bloembergen, and the Individual Gifts Campaign Committee, led by John Armstrong.

Education and Outreach

Teacher/Scientist Alliance Institute (TSAI): Funded by the Campaign for Physics, the TSAI program involves scientists in the systemic reform of elementary science education. In 1996, TSAI became a major force in the country-wide effort to introduce well-tested, hands-on science activities into elementary science programs. Program components include an annual one-week workshop held in Washington, DC to develop leadership teams of scientists at targeted sites around the country and local one-day workshops for scientists who want to support hands-on science in their schools. In addition, the TSAI organized its first regional Leadership Institute for 13 New England school district teams of scientists and educators. Many of these districts are currently implementing the K-6 science reform plans developed during the Institute.

APS Minority Scholarships Program for Undergraduate Physics Majors: As one of the five initiatives of the Campaign for Physics, this APS program continued to support 21 outstanding minority undergraduate physics students in 1996. The program provides a monetary grant to the student as well as a mentor to advise on career choices, course selections, research experiences and general information on physics. In addition, a small monetary grant to the host physics department is made available for special activities.

Other Education and Outreach Programs included High School Teachers Days conducted with the cooperation and participation of APS units at the March and April meetings, as well as some divisional meetings. The Committee on Minorities (COM) and Committee on the Status of Women in Physics (CSWP) both

continued to provide Colloquium Speakers lists. The COM list contains the names of more than 60 minority physicists while the CSWP list contains the names of over 300 women physicists. Both committees also offer travel grants for speakers.

The CSWP/COM Roster of Women and Minorities in Physics assists institutions in finding qualified women and minority candidates for job openings. In 1996, 23 paid database searches were conducted.

The Education and Outreach Department continues to expand its online services and resources. The Women in Physics (WIPHYS) list server fosters lively discussions among its 750+ members.

APS Industrial Summer Intern Program: During 1996, 14 students were hired by industrial and applied research laboratories through this program. Due to a tremendous response from members of the new Forum on Industrial and Applied Physics, the program will be expanded to over 30 companies and labs for the summer of 1997.

International Affairs

In 1996 the APS International Affairs programs addressed a number of objectives which included establishing bi- and multi-lateral relations with the international physics community, promoting telecommunications access in the international academic/research community, and developing and monitoring response to the crisis in physics in the former Soviet Union (fSU).

The Society continues to offer a Matching Membership program, which offers APS memberships at significantly reduced dues to encourage participation in APS activities and programs by colleagues in currency-poor countries. Over 200 physicists enrolled in the program this year. Access to the APS journals is offered to institutes and universities through the Library Outreach Program. In 1996, 50 participating libraries in Russia, Ukraine, and the Baltics were joined by a dozen new subscribers in China.

In 1996 the APS participated in planning and organizing a number of international workshops and symposia. These included Advanced Networking Training Workshops for network managers, system administrators, and programmers held in Kiev, Ukraine and St. Petersburg, Russia and the University of Accra in Legon, Ghana, and an ICSU Press - UNESCO conference on electronic publishing in science in Paris. In addition, the APS continues to serve on the Physics Action Council to provide the UNESCO Director General and his staff with connections to the international physics community.

Public Affairs and Information

Public Affairs Activities: Legislative initiatives undertaken by the Office of Public Affairs include the grassroots Physics and Government Network (PGNet) as well as direct lobbying on Capitol Hill. Legislative activities that were targeted during 1996 include: preserving the helium reserves and preserving and increasing funding for the National Science Foundation; energy research in the Department of Energy; plasma science and nuclear physics. With strong recruiting efforts, the PGNet membership increased to 957 active members. APS members equipped with information packets prepared by the Public Affairs Office made visits to more than 200 elected representatives to seek support for science.

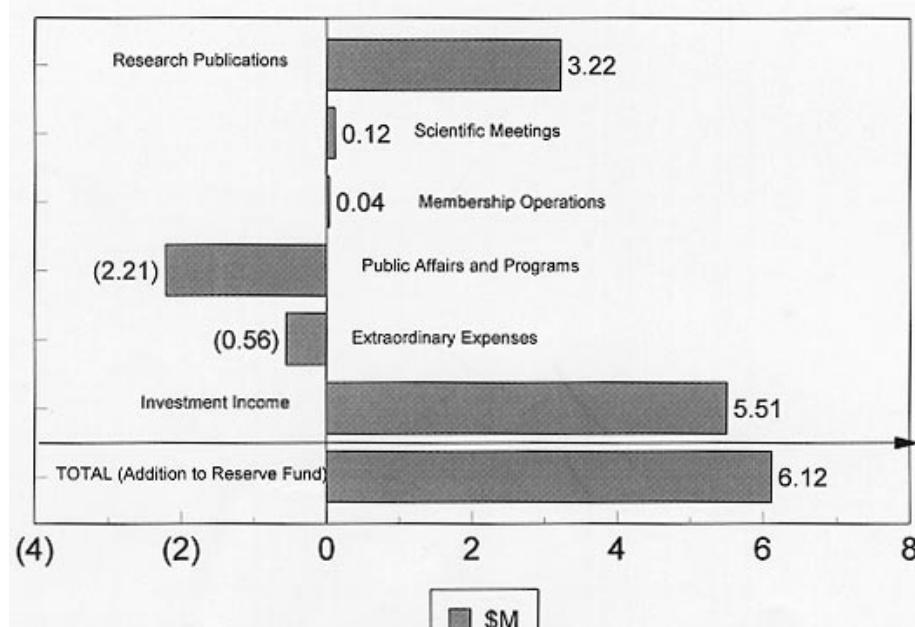
In 1996 the Office provided assistance in drafting two Council statements (one on the DOE Office of Energy Research and one on the budget for fusion energy science) and presidential letters covering such issues as copyright protection, strategic helium reserve and alternative medicine. Written congressional testimony on the NAS report *Allocating Federal Funds for Science and Technology* requested by the House Science Committee was submitted by J. Robert Schrieffer and D. Allan Bromley and received extensive coverage in the science press.

Public Information Activities: The Office of Public Information responds to numerous media and public inquiries ranging from simple scientific questions and requests for names of people to contact, to hour-long background discussions.

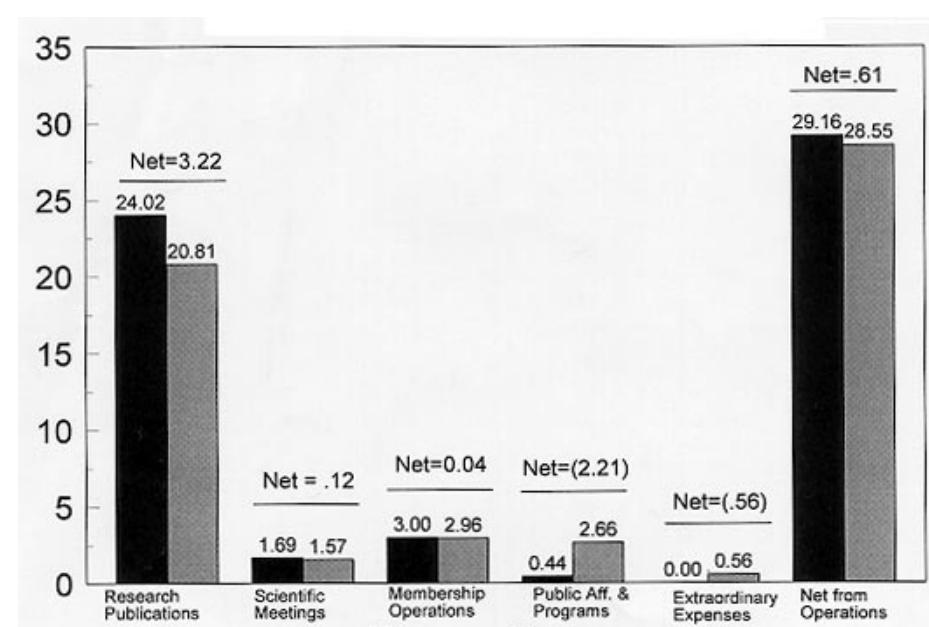
In addition, it administers the Congressional Fellows and the Media Fellows Programs. Each year a new APS Congressional Fellow is selected to work

(Continued on next page)

**Net Revenues (expenses)
Fiscal Year 1996**



**Net Revenues (expenses) of Operations
Fiscal Year 1996**



as legislative assistant in a congressional office advising the legislator on broad science policy issues. This year APS initiated the Media Fellows Program as a joint program with American Association for the Advancement of Science.

Bob Park continues to produce *What's New* on a regular basis. The total readership is now estimated to be well over 25,000. It is distributed directly to more than 7,000 e-mail addresses and is copied on numerous networks and bulletin boards, including the APS home page.

FINANCES

Fiscal Year July 1, 1995 - June 30, 1996

At the end of fiscal year 1996, the total assets of the American Physical Society had grown to a record \$59.5 M, up from \$52.8 M a year before [See Statements of Financial Position below]. Of this amount \$16.2 M were balanced by liabilities; the remainder, \$43.3 M are the Net Assets of the Society. The assets have reached an unprecedented level.

The Net Assets fall into two categories: (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 has been traditionally referred to within the APS as our Reserve Fund.

The APS is now in an enviable financial position. Its Reserve Fund has met and exceeded its goal of being equal to one year's operating expenses. Reasonable returns from investments (which can and undoubtedly will be lower than the overheated profits of recent years), together with modest success in fundraising, can meet the deficits of our public affairs and outreach programs provided their growth is kept under control. What this means is that the APS journal surplus will no longer be required to bear the full burden of keeping the science and other Society programs going. [See charts below.]

STATEMENTS of FINANCIAL POSITION June 30, 1996 and 1995

	1996	1995
Assets		
Cash and cash equivalents	\$ 7,727,436	\$ 7,670,220
Investments, at fair value	47,823,939	40,592,233
Accounts receivable, net of allowance for doubtful accounts of \$350,000 and \$248,000	843,735	963,335
Pledges receivable, net of allowance for doubtful pledges of \$7,000 and \$27,000	689,318	378,693
Prepaid expenses and other assets	236,754	746,769
Land, building and equipment, net	2,153,981	2,411,459
Total assets	\$59,475,163	\$52,762,709
Liabilities and net assets:		
Liabilities		
Accounts payable:		
American Institute of Physics	\$ 1,103,198	\$ 2,249,907
Other	820,486	1,063,032
Deferred revenues:		
Publications	10,335,139	9,693,023
Membership dues and contributions	2,151,539	2,464,669
Grants and similar contracts	11,010	8,459
Liability for post-retirement medical benefits	1,752,972	1,566,786
Total liabilities	16,174,344	17,045,876
Commitments and contingency		
Net Assets		
Unrestricted net assets	38,356,800	32,235,724
Temporarily restricted net assets	4,944,019	3,481,109
Total net assets	43,300,819	35,716,833
Total liabilities and net assets	\$59,475,163	\$52,762,709

LETTERS

Let's Fund Both Science and Entitlements

It is useful to have an update on the state of government support for physics research. However, Michael S. Lubell ("Will a Thaw Follow the Hard Freeze?" March 1997) devotes only a few paragraphs to that subject. His major purpose in the article is to advocate cutting "entitlements," particularly Social Security, Medicare and Medicaid. He poses a false choice - cut entitlements or cut science research.

There are several reasons to read that article with skepticism. For one thing, as he points out, half of the government's discretionary budget is devoted to defense programs. Bloated Cold War defense spending has outlived its reason for existence by many years.

There are many such expenditures that could be cut for the good of the country and for peace in the world, as well as to foster science and vital civilian programs. Instead of focusing on this, Lubell reproduces the conservative doctrine on balancing budgets and reducing entitlements. He accepts, without question that the entitlements are a growing part of the budget and must be reined in, without asking why this situation has come to be.

Lubell Replies...

Gary Goldstein raises some interesting and provocative points about the need for a balanced budget and the trade-off between growth of entitlements and cuts to the discretionary civilian programs. He suggests that balancing the federal budget is not good economic policy, since it inhibits long-term capital investment. He is correct, in my view. Indeed, if the federal budget were divided into operating and capital parts—which unfortunately it is not—the operating part currently would be in balance. But the political reality is that both parties have agreed to do their level best to balance the integrated federal budget. Case in point: The "Balanced Budget Amendment," which raised serious separation

Lubell calls for the adoption of the highly partisan Boskin committee report's conclusion that the Consumer Price Index is inflated and must be adjusted downward. This report is a transparent attempt to redefine the standard of living downward for most Americans.

Underlying all of Lubell's discussion is the supposition that the federal budget must be put in balance. While this makes good sloganeering, we physicists should know better. Without deficit spending, future programs, visionary or prosaic, will never be possible to support. All of recent history shows the US economy thriving while the government functions with an unbalanced budget. There is no evidence that a balanced budget produces positive effects on the economy as a whole, nor on the standard of living for the average citizen.

We physicists are trained in analytical reasoning. We must not accept the false choice, proposed by Lubell, between support for scientific research or support for the nation's elderly, poor and helpless.

Gary R. Goldstein
Tufts University

of powers issues, for the second consecutive year missed a two-thirds majority in the Senate by only one vote.

Goldstein also suggests that the federal government should spend less money on the military and impose price controls on the delivery of medical services. Whatever the merits of these proposals, they are simply not politically viable at this time. And so far as the Boskin report is concerned, while there is some debate over the numbers, an overwhelming majority of economists who have spoken out believe that the CPI is not a good measure of Cost of Living Adjustments (COLAs) for Social Security. Although President Clinton has backed away from the idea of a bipartisan COLA commission, the

proposal still has some breath left on Capitol Hill. The reason is simple. Social Security is going to be in trouble in less than thirty years simply due to demographics. Either taxes will have to go up or benefits will have to be cut. Again, the political reality is that right now nobody will consider raising taxes.

On the Influx of Foreign Students

Allan Bromley's remarks on the "influx of foreign students" (February 1997 *APS News*) reminded me of Will Rogers' comment in the early 1930s: "It's not what President Hoover doesn't know that bothers me, it's what he does know that ain't so!" Bromley states that "... last summer the INS substantially tightened the restrictions on admission of foreign scholars and students." (He apparently meant Congress passed the Illegal Immigration Reform and Immigrant Responsibility Act of 1996.) After consulting the law and checking with an attorney specializing in immigration, I find that Bromley is entirely mistaken. It is essentially "business as usual" for the influx of foreign students and scholars; ditto for skills-based importation of scientists and engineers.

As for his other point on the brain drain "not going to be allowed to continue" by "...their home countries," he is also wrong. Many foreign countries have surpluses of scientists and engineers and will continue to send them abroad to relieve their own domestic surpluses and to earn U.S. dollars from expat remittances. The only noticeable drop is students from Taiwan, not because of a government clamp down, but rather improved economic and political conditions at home.

Bromley also posited the reason that half U.S. science and engineering doctorates go to foreigners is that "... our problem has not been too many foreign students, but too few American students." Of course this is a "chicken and egg" argument. Back in 1991, John M. Deutch of MIT in a *Science* (Vol. 253, p. 492) editorial, broached the idea

So, for the foreseeable future science will be squeezed if the entitlement budget continues to grow. It will take a lot of Gary Goldsteins to change the political landscape. Of course, that doesn't mean they shouldn't try.

Michael S. Lubell

of a reduction in the proportion of foreign students to about 20% (excluding those from Canada and Mexico) to encourage recruitment of U.S. young people, especially minorities and women into scientific careers. In other words, U.S. students would be attracted to these careers by a tighter labor market. This is much in the style of Brian Schwartz's use of the "X" word (xenophobia) in his "The Back Page" piece (February 1997 *APS News*) under the rubric of Myth #4 (concerning "..large numbers foreign graduate students").

Bromley attributes the illusory reductions "...in part because of pressure from Americans who didn't want the increased competition." Interestingly enough, both Bromley and Schwartz are tenured professors and hence exempt from labor market economics. Were tenure abolished or greatly modified they would surely more keenly appreciate the situation of many APS members when U.S. university administrators began importing highly qualified and less expensive foreign nationals.

The current oversupply of PhDs is clearly related to immigration policy, which is itself a legitimate, though often uncomfortable, topic for debate. Currently universities gear the size of PhD programs to their "needs" to attract lucrative federal research grants (not to the PhD job market). Foreign students supply half the labor. What is wrong with this? It ignores the fact that the U.S. taxpayer largely bears the direct and hidden costs, while the majority of U.S. citizen PhDs—both native born and immigrants receive little benefit.

William E. Murray, Jr.

Letters (continued)

The Last Word on the End of Science

I find that all too often controversies are centered around words rather than their meanings. J.B. Gunn and John Horgan ("Letters," *APS News*, March 1997) have some real disagreements, but they exaggerate their differences by refusing to acknowledge that there may be more than one way to define *truth*. Gunn defines it as an absolute certainty and therefore denies that science achieves it. Horgan uses a

more practical definition that allows truth to include a modicum of doubt and tries to equate Gunn's view with the "postmodernist" notion that truth is only a matter of opinion. Arguments such as theirs would be far more interesting if each participant made a greater attempt to discern what the other was saying rather than pick at his choice of words.

John Fletcher

Now Appearing in RMP...

Reviews of Modern Physics is a quarterly journal featuring review articles and colloquia on a wide range of topics in physics. Titles and brief descriptions of the articles in the April 1997 issue are provided below.

A dying universe: long-term fate & evolution of astrophysical objects

J. Adams and G. Laughlin discuss how the universe will evolve after the end of conventional stellar evolution. Unusual dynamics will continue on a greatly slowed-down time scale, possibly up to a time of 10100 years.

Reconstructing the inflaton potential—an overview

J. Lidsey, A. Liddle, E. Kolb, J. Copeland, T. Barreiro, and M. Abney review the inflaton theory of the early universe, emphasizing the effects of fluctuations that may be passed down to observable inhomogeneities in the present universe.

Nuclear reaction rates in a plasma

L. Brown and R. Sawyer develop the quantum statistical formalism for the theory of nuclear reaction rates in a plasma and illustrate it with calculations of the leading corrections to reactions under stellar conditions.

Improving the resolution of ground-based telescopes

M. Roggeman, B. Welsh, and R. Fugate discuss the resolution limitations due to atmospheric turbulence, and how these are overcome. Techniques include passive methods that process the speckled images, and active methods that correct the telescope optics in real time.

Nonlinear wave collapse and strong turbulence

P. Robinson discusses wave collapse, a phenomenon that can exist in three-dimensional nonlinear media, and its consequent strong turbulence, which has been observed in many plasma environments ranging from laboratory to astrophysical scales.

Superconductivity in fullerenes

O. Gunnarsson reviews the theoretical and experimental work on superconductivity of alkali-doped C₆₀. Special attention is given to analysis of the possible mechanisms for the superconductivity.

The microscopic magnetization: concept and application

Magnetization in condensed matter is both a microscopic and macroscopic concept. L. Hirst bridges these points of view, relating the magnetization to neutron-scattering observables.

RMP Colloquium:

Spin-exchange optical pumping of noble-gas nuclei

New technologies have been made possible by the availability of liter quantities of spin-polarized noble gases. T. Walker and W. Happer discuss the many physical processes that go into producing these gases.

If you would like to subscribe to *RMP*, please add it to your invoice or contact:

The American Physical Society
Attn: Membership Department
One Physics Ellipse
College Park MD 20740-3844
Phone: (301) 209-3280
Email: membership@aps.org

Domestic, \$45 Foreign Surface, \$55 Optional Air Freight, \$70



CAUGHT IN THE WEB

Notable additions to the APS Web Server. The APS Web Server can be found at <http://www.aps.org>

APS News Online latest edition

- Limerick contest results
- Online limerick submittal form

APS Committees and Governance

- Joint Statement on Scientific Research
- 1997 APS Operating & Bylaws Committees
- CIFS: Online Petitions posted for Chinese Scientists and Alexandr Nikitin
- CSWP: Added Women in Science and Engineering Web Sites to the CSWP page
- CSWP: Contributions of 20th Century

Women to Physics and Women in Science & Engineering Web Sites

Units

- Division of Astrophysics Newsletter
- New Eng. Sect. Spring 1997 Newsletter
- FHP: Birthday of the Electron

Meetings

- Virtual Pressroom for the 1997 March and April Meetings
- PAC'97 Meeting
- Ohio Section Spring Meeting
- Non-APS Meeting Calendar updates

NOMINATIONS FOR 1998 APS PRIZES AND AWARDS

Members are invited to nominate candidates to the respective selection committees. A brief description of each prize and award is given below, along with the addresses of the selection committee chairs to whom nominations should be sent. Please refer to the APS Membership Directory, pages xxiii-xxxix, or the APS Home Page [<http://aps.org>] under the Prize and Award button, for complete information regarding rules and eligibility requirements for individual prizes and awards.

1998 FLUID DYNAMICS PRIZE

Sponsored by the Division of Fluid Dynamics and the AIP Journal *Physics of Fluids*.

Purpose: To recognize and encourage outstanding achievement in fluid dynamics research.

Nature: The prize consists of \$5,000, a certificate citing the contributions made by the recipient, and a travel allowance to the meeting at which the prize is bestowed.

Send name of proposed candidate and supporting information before 1 September 1996 to: James Martin Wallace, Dept of Mech Engr, University of Maryland, College Park, MD 20742; phone: (301) 405-5271; fax: (301) 314-9477; email: wallace@eng.umd.edu.

1998 OTTO LAPORTE AWARD

Sponsored by the friends of Otto LaPorte and the APS Division of Fluid Dynamics.

Purpose: To recognize outstanding research accomplishments pertaining to the physics of fluids.

Nature: The award consists of \$2,000 and a certificate citing the contributions made by the recipient.

Send name of proposed candidate and supporting information before 1 September 1996 to: Frederick K Browand, Dept of Aerospace Engr, USC, Los Angeles, CA 90089-1191; phone: (213) 740-5359; fax: (213) 740-7774.

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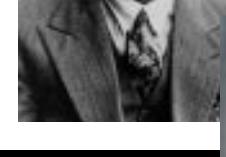


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For more information on the Center, contact us at chp@aip.org or <http://www.aip.org/history/>



1998 APS Prize and Award Nominations

The following are impending deadlines of APS Prizes and Awards. For complete information regarding the description of each prize, previous recipients and the chair of prize selection committees, please see the Prize, Awards and Fellowship Page of the APS home page [<http://www.aps.org>]; consult the front of the APS Membership Directory, email your request to honors@aps.org, or call (301) 209-3268.

Prize	Nomination Deadline	
David Adler Lectureship Award	07/01/97	Frank Isackson Prize
Will Allis Prize	07/01/97	Joseph F. Keithley Award
Apker Award	07/01/97	Otto Laporte Award
Hans A. Bethe Prize	07/01/97	Lilienfeld Prize
Dissertation in Beam Physics	07/01/97	Maria Goepert-Mayer Award
DAMOP Dissertation Award	11/18/97	Dissert. in Nuclear Physics Award
Biological Physics Prize	07/01/97	Onsager Prize
Tom W. Bonner Prize	07/01/97	George E. Pake Prize
Edward A. Bouchet Award	07/01/97	W. K. H. Panofsky Prize
Oliver E. Buckley Prize	07/01/97	Aneesur Rahman Prize
Davisson-Germer Prize	07/01/97	Prize for Research in an Undergraduate Institute
John H. Dillon Medal	07/01/97	Earl K. Plyler Prize
Fluid Dynamics Prize	09/02/97	J. J. Sakurai
Joseph A. Burton Forum Award	07/01/97	Arthur Schawlow Prize
Dannie Heineman Prize	07/01/97	Leo Szilard Award
High Polymer Prize	07/01/97	Robert R. Wilson Prize

THE BACK PAGE

Science & Technology Challenges Before the 105th Congress

by Senator Pete Domenici

The 105th Session of Congress has some very major challenges as it seeks to set priorities in a time of significant budget constraints. I am a strong supporter of the nation's science and technology programs, but we face a fiscal environment in which it will be increasingly difficult to protect those programs. The scientific community must work especially closely with the Congress and the Administration to help craft the federal budget for 1998 and the years beyond.

Science and technology programs must compete with hundreds of other federal programs for a shrinking level of discretionary dollars left in the federal budget after we pay our obligations to entitlement programs and interest on our debt. During the Kennedy administration, more than two-thirds of the budget was available for discretionary spending. But this year, only 34 percent of the budget is available for all discretionary programs, including everything from defense to the nondefense components of the Department of Energy (DOE), to housing, environment, job training, education, and to many more programs.

In 1997, 51 percent of the budget will go toward entitlement programs, including Medicare, Medicaid, Social Security, and other mandated programs. Interest on the national debt takes 15 percent of the budget, which leaves us with that last 34 percent. Because defense requires almost half of the discretionary funds, we are left with about 17 percent to fund all the non-defense programs, including the nondefense science programs.

As you hear debates on the role that entitlement programs play in shaping the country's destiny, remember those figures above. Without changes in the rate of growth of entitlement programs, our problem with limited discretionary resources will only be dramatically compounded in the future. Some projections show entitlement programs consuming all the federal revenues by 2012. Concern over entitlements has led to a consensus between Congress and the Administration to seek a balanced budget by 2002, although the paths laid out to this goal by these two architects differ in important aspects.

The balanced budget is essential for the nation, and essential for the health of science in this nation. Even if we succeed in reaching a balanced budget in 2002, continued vigilance will be required to keep a deficit from ballooning again beyond 2003.

A balanced budget will help create an environment where innovation and scientific progress can flourish. Without it, the ability to fund science programs within a shrinking pool of discretionary dollars will become increasingly difficult. Your friends in Congress need your help to talk with your colleagues about the dangers of continued growth in entitlements. The nation needs a broader consensus on the importance of corralling entitlements.

As part of my Budget Committee responsibilities, I'm also trying to move

to a two-year budget cycle. Better understanding of budget expectations can help many parts of our federal system plan more effectively, particularly the science community. Certainly the time scale for most truly innovative research is far longer than one year. I'm hopeful that doubling the planning horizon will help increase the progress made with the available funds. Researchers will save time from annual budget requests and Congress will have time to focus on key national challenges besides the budget, including oversight of the programs it funds. There will be real benefits to all from a biennial budget cycle.

Despite all the budget challenges, I'm proud the Congress has treated science very well. From fiscal years 1996 to 1997, the AAAS calculated an increase in basic research of 2.7 percent to \$14.8 billion. The National Institutes of Health (NIH) provided the largest component of federal support for basic research, with \$6.9 billion (up 6.4 percent). The National Science Foundation was up 2.5 percent, and DOE rose 2.3 percent.

The Department of Energy's laboratories face tremendous challenges, perhaps none as substantially as the national security laboratories at Los Alamos, Livermore, and Sandia. As the nation has moved beyond nuclear testing, those laboratories have the awesome challenge of maintaining whatever stockpile the country needs, with unquestioned safety, security, and reliability — without the ability to test. Some have likened the challenge as akin to storing a modern airliner for a few decades, then traveling on it with little notice. The labs must explore whole new areas of science to thoroughly understand how the passing years impact the stockpiled weapons. Of course, at the same time the labs and facilities are supporting extensive dismantlement to dramatically reduce the size of the stockpile. But as the number of weapons in the stockpile becomes smaller, the performance of those remaining becomes even more important.

The DOE weapons labs are engaged in a new program, Science-Based Stockpile Stewardship, to accomplish this new and challenging mission. It may well be one of the greatest challenges for these labs.

Even with the expertise resident within the labs, they will need significant help from the scientific community, from universities, other labs, and from industry. Alliances with these other providers of science and technology will be even more important in the future than in the past and opportunities for these alliances need to be sought out and nurtured.

One excellent example of such alliances involves the Department's program on the Accelerated Strategic Computing Initiative (ASCI), with the goal to provide vastly improved simulation capabilities to the weapons labs, a sort of "numerical test site," by 2003-4. To reach their goal of 100 Tflop speeds, tremendous advances in the

state-of-the-art are needed. Existing alliances already involve Intel, IBM, and Cray/Silicon Graphics with the laboratories. Academic partners are also being sought, and significant resources are being dedicated to these partnerships. The ASCI program is the type of major national alliance that will not only enable the laboratories to meet the challenges of their mission, but also, through the alliances with industry and universities, enable whole new computing paradigms to be explored and utilized across the country.

Another excellent example of a national alliance, with truly global impact, is the DOE's Initiatives for Proliferation Prevention. This program couples institutes in the former Soviet Union to ten of the U.S. national laboratories, and meets key national goals for non-proliferation of weapons of mass destruction. The program conducts projects in cooperation with a coalition of 75 U.S. corporations and a number of universities. It involves weapons scientists in the Newly Independent States in peaceful commercial activities, and helps to stem a "brain drain" of weapons-trained scientists away from their parent institutes and potentially to countries ready to exploit their knowledge. The program already engages about 2,700 former weapons scientists of the former Soviet Union in more than 250 projects. About 50 of the projects involve cost sharing with U.S. industry.

Over the last few years, several studies like the Galvin Commission study on Alternative Futures for the national labs, have evaluated aspects of the national laboratory system. The report of the Galvin Commission noted several concerns, including many surrounding the mode in which the Department of Energy has managed the national labs. There was great concern expressed about micro-management of the labs, and excessive bureaucracy and over-regulation. There has been an abundance of rhetoric in Congress as well with concerns about the DOE. There have been some who have advocated dissolving the Department.

In this session of Congress, Senator Rod Grams of Minnesota introduced the Department of Energy Abolishment Act of 1997 (S.236), I do not support this bill as it is written. It would move the national security labs, Los Alamos, Sandia, and Livermore to the Defense Department. I do not concur that we should change the civilian control over nuclear weapon technology that has been our nation's credo for the past five decades. It would transfer some of the other labs to the NSF. I do not want to destroy the synergies that exist among several of the components of the present Department, and I do not want to see the NSF moved away from its currently unbiased peer review into an environment where their judgment could be questioned through having vested interests in some providers of technology.

However, my statements should not be taken as an endorsement of the present DOE and its operations. Secre-



tary Federico Peña will have a significant challenge to move the Department further toward the recommendations of the Galvin commission, with significantly less micro-management and over-regulation. In addition, the synergies among various DOE offices are far from optimum. But I propose that Secretary Peña be given the opportunity to make these improvements before serious consideration of the drastic step of dismantling the Department. If any dismantlement were to be considered, I would provide alternatives for consideration.

I recently co-sponsored with Senators Frist, Lieberman, and Rockefeller a bipartisan Senate Science and Technology Caucus Roundtable discussion. During the Roundtable, we interacted with a group of ten prominent speakers representing different perspectives on the national science and technology enterprise. I was struck by the strong consensus on the national critical importance of science and technology and the enabling roles that the federal government plays in the overall health of that enterprise. Speakers emphasized the importance to the nation of maintaining the level of excellence we currently have in our university research system and its key educational role. In a time of constrained budgets, many spoke to the importance of partnerships that include all components of the national science and technology enterprise, to best leverage the investments made in each toward larger end goals. Ideas generated from that Roundtable will be evaluated over the next few months.

In closing, let me reiterate my concern over the impact of entitlement programs on the federal budget. All concerned citizens need to carefully evaluate the path that unbounded entitlements will chart for our nation. Your views on entitlements need to reach your elected representatives so that this 105th Congress can move effectively ahead in the best interests of our nation.

Senator Pete Domenici is serving his 5th term as senator from New Mexico. He is Chairman of the Senate Budget Committee and Chairman of the Senate Energy and Water Development Appropriations Subcommittee.