

APS NEWS

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Captains of Industry Join 39 Nobel Laureates To Lead Campaign

The Campaign for Physics, the \$5 million science education initiative of The APS and the American Association of Physics Teachers, which was announced in fall 1995, has attracted major company CEOs and 39 Nobel laureates to its leadership ranks. Led by honorary chair William Hewlett, Co-founder of Hewlett-Packard Company, the Campaign's Executive Committee includes eight industry leaders whose focus is to solicit other key corporate prospects for the Campaign.

Working alongside Mr. Hewlett are seven vice chairs including Paul Allaire, Xerox Corporation; Robert Allen, AT&T; Norman Augustine, Lockheed Martin Corporation; Robert Galvin, Motorola, Inc.; Gordon Moore, Intel Corporation; Lewis Platt, Hewlett-Packard Company; and George Soros, Soros Fund Management and Soros Foundation Network. The Campaign Executive Committee members have pledged volunteer involvement as well as pacesetting financial support to the Campaign. This group of CEOs, their corporations

and family foundations have pledged an impressive \$3 million to The Campaign for Physics.

These CEOs couple their leadership efforts with those of 39 Nobel laureates who have indicated their personal interest in helping assure the Campaign's success. These Nobel laureates serve on a Campaign Council which is led by Professor Nicolaas Bloembergen of Harvard University. Professor Bloembergen also chairs the Campaign's Administrative Group, the advisory committee for the initiative.

To date, the Campaign has already generated \$3.6 million in pledges on its \$5 million goal. This total includes two gifts of \$500,000 or more, four gifts of \$250,000 and four gifts of \$100,000. So, The Campaign for Physics gets off to a strong start thanks to the collective efforts of its Campaign Executive Committee, 39 Nobel laureates and numerous other individual leaders who are working hard to assure its ultimate success.

Top Recruiters Honored in Membership Campaign

Two APS members were honored for their efforts at recruiting new members for the APS Member-Get-a-Member campaign instituted last year. Cosmin Deciu of Bucharest, Romania and Gonzalo Gutierrez of Santiago, Chile, will each receive a top recruiter incentive of \$300 toward APS renewals and subscriptions. Deciu was chosen randomly to receive the grand prize of \$500 toward travel to an upcoming APS meeting. Both men recruited five members each.

According to APS Membership Supervisor, Trish Lettieri, a total of 244 APS members participated in the campaign, 38 of whom brought in two or more new members; 300 new members were recruited in the six-month campaign.

Deciu is a graduate student in physics at the University of Bucharest in Romania. He has been an APS member since 1994. Interestingly, Mr. Deciu recruited his sixth member after the campaign was officially over. He said that his professor was "a little bit upset" at not being recruited earlier. Deciu says he plans to use the grand prize to attend the Minneapolis DPF Meeting in August.

Gutierrez is a graduate student in solid state physics at the Pontificia Universidad Catolica de Chile, having received an undergraduate degree in physics from the Universidad de Chile in 1985. He was involved with the pro-democracy movement against the Pinochet regime, working in environmental studies and other social projects before resuming his studies in 1991. He is presently on a four-month visit to the Concurrent Computing Laboratory of Materials Simulation at Louisiana State University.

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Nicolaas Bloembergen
Chair, Campaign
Administrative Group

Norman Augustine,
President,
Lockheed Martin

Robert E. Allen,
Chairman & CEO,
AT&T

Two of the first CEO's to join the Campaigns Executive Committee

BAPS goes On-Line

Major changes are in store for those members who subscribe to the *Bulletin of the APS (BAPS)* in order to get a copy of their meeting program in advance. Beginning this summer, with the new dues cycle, a paper copy of *BAPS* will no longer be mailed to subscribers prior to the meeting. These changes are reflective of the advent of the APS Home Page (<http://aps.org>) and the APS system of electronic submission of abstracts. Prior to the meeting, it will be available on the Home Page, or via ftp (a titles only version). The paper version of *BAPS*, representing the final program, will be available on site, as part of registration.

When you get your new dues invoice, please be aware that subscribers to *BAPS* may not receive their paper copy in advance of the meeting dates.

According to APS Meetings Manager Michael Scanlan, the success of the system of electronic abstract submission has made this possible. More than 86 percent of the abstracts received for the March and Joint May meetings of the Society were submitted electronically. Electronically submitted abstracts can be viewed in their entirety on the APS Home Page.

One implication of note for those members not using the electronic system is that the text of paper abstracts will no longer appear in either the paper version of *BAPS* or the electronic version

(*eBAPS*). The title and the author list will be the only published material from abstracts submitted on paper.

There are many advantages to this new system. First of all, the *eBAPS* meeting program will be available sooner than the paper version ever was or could be. This will make planning travel to meetings easier, since *eBAPS* will be available as much as two and a half months prior to a meeting. (In the Gutenberg universe, this time period was generally only four to five weeks.) Secondly, program committee will have more flexibility, should they desire it, in altering their program prior to the meeting, since the printing schedule will be postponed until closer to the meeting. Lastly, the electronic system individually notifies submitters who submitted electronically of the receipt of their abstract, and then again when the presentation has been scheduled during the meeting.

The new system should also help to contain the costs associated with the printing of meeting programs, enabling APS to hold the cost of *BAPS* page charges at their current level. This helps offset the increased price of paper (up 50 percent over last year), and the maintenance of the electronic system.

Please check out the meeting programs already on the Home Page. Said Scanlan, "Input from our membership about this new system is vital."

April 24 is National Physics Day

The National Science Foundation (NSF) has designated Wednesday, April 24, as the second annual National Physics Day, to be celebrated as part of National Science and Technology Week.

Physics departments around the country, as well as all chapters of the Society of Physics Students, are being encouraged to become involved in local activities. Possibilities include hosting open houses for local high school physics students and/or teachers; contacting a local school and volunteering to visit; arranging physics demonstrations at

local shopping malls; coordinating free public lectures; working with other science departments for campus-wide science events; and other events designed to engage the public's interest.

"I hope many of you will take advantage of this special occasion to visit a local school or organization and share your enthusiasm for physics with others," said Judy Franz, APS executive officer. Those interested in further ideas and assistance may contact Ed Neuenschwander, AIP, at (301) 209-3010; email: den@aip.org.

Pilot Programs Seek To Enhance Job Opportunities

Two complementary programs aimed at enhancing future employment opportunities for Ph.D. physicists are being launched this year. Funded by the National Science Foundation and led by Brian Schwartz, senior assistant to the APS executive officer and professor of physics (Brooklyn College), the programs specifically seek to promote changes in and supplements to the graduate physics programs across the country.

The first project is a local pilot program to be implemented at the City University of New York, consisting of three parts: numerous supplementary mini-courses designed to enhance and widen the employment opportunities for Ph.D. students; a regular seminar series open to students and faculty on traditional and non-traditional careers; and a semester long workshop on job and career seeking skills for graduate students in the CUNY Ph.D. program.

The first workshop is being offered this spring semester, and covers topics such as skills assessment, resume writing, interview techniques, networking, the unlisted job markets, and non-traditional careers, especially in the newer technologies, small companies, and the business world. Special guest lecturers have been invited to describe their use of science in their careers and to discuss the employment prospects for Ph.D. scientists in such fields as finance, banking, media technologies, government infrastructure, and management consulting. This fall, a series of certificate style courses (appearing on the students transcript) aimed at Ph.D. candidates will be given in collaboration with the SUNY Baruch School of Business, covering such areas as communication skills, the business and economic aspects of high technology, and computer and multimedia skills.

The second project supported by NSF is a national outreach program involving direct interaction between Schwartz — aided by other physicists and professionals active in career guidance — and the faculty and students at universities in various regions of the nation. The grant has funds to support visits by Schwartz who can be scheduled to give a colloquium on enhancing careers for Ph.D. physicists. During his visit he will work with students and faculty to identify and develop a series of actions and programs to maximize the physics department's use of local resources including university career

guidance offices and materials; courses in other departments, such as economics, computer science, and business; and identifying contacts with scientists from local physics-based and physics-related industries. A career seminar series and strategies for supplementing the scope of courses for Ph.D. physics students will also be encouraged.

“The pilot program at CUNY will explore, test, and evaluate the best strategies to enhance and enlarge the employment opportunities for Ph.D. candidates at a specific university, while

at the same time a national effort will be undertaken to develop a program to disseminate and implement the most promising career-enhancing strategies to local physics departments, faculty and students,” said Schwartz, a former associate executive secretary of the APS, who was also one of the first “establishment” physicists to speak out on issues of employment problems for Ph.D.s.

Further information on the program can be obtained by writing Brian Schwartz, APS, One Physics Ellipse, College Park, MD 20470 or email schwartz@aps.org.

“Meta” Researcher Champions New Funding Sources for Independent Science

Researchers in every field of science have felt the pinch in recent years, as federal funding for research continues to erode in the wake of Congressional budget cuts. Along with the loss of expensive large-scale projects like the Superconducting Super Collider, a host of small, independent researchers have found themselves increasingly squeezed out by more popular, mainstream scientific theories with greater political clout. It was to fill this niche that Tom Van Flandern, an astronomer at the University of Maryland, founded Meta Research, Inc., in 1991, with the support of a handful of colleagues.

Meta Research is a scientific non-profit corporation that supports and encourages research or observations in connection with astronomical theories that are in accord with observations and experiment, add insight or understanding, and make testable predictions, but that are not otherwise supported solely because they lie outside the mainstream of astronomical theories. It publishes a

quarterly bulletin for members and subscribers and organizes expeditions to observe total eclipses of the sun. Upcoming expeditions are planned for the Galapagos Islands in February 1998, and for Europe in August 1999.

Van Flandern has become something of a champion for theories outside the mainstream, despite conventional beginnings. After receiving a B.S. in mathematics with a minor in physics, he went on to earn his Ph.D. in astronomy from Yale University in 1969, specializing in celestial mechanics under the prominent dynamicist Dirk Brower. In addition to astrophysics and dynamics, his research also encompasses work in gravitation and relativity. He spent his early career as a staff scientist at the U.S. Naval Observatory in Washington, DC, publishing papers in respected journals and attending scientific meetings.

His disenchantment with the mainstream of science began in the late 1970s, when he was asked to review a paper postulating that the asteroid belt between Mars and Jupiter had originated from an exploded planet, rather than a planet that had never formed, as more mainstream theories hypothesized. To his surprise, Van Flandern concluded that considerable evidence existed in support of this radically different theory. He went on to use the model to predict that the asteroids would have satellites — something that would be impossible under prevailing theoretical models.

Van Flandern's prediction was largely scoffed at by colleagues when he presented it to the International Astronomical Union in 1991. However, when the Galileo Spacecraft visited the asteroid belt in April 1993, it did indeed find a large satellite of about one-and-a-half kilometers orbiting the 30-kilometer asteroid Ida. “When you predict something that everybody says can't be and yet it still turns out to be correct, you can be pretty sure you're on the right track,” he says of his success.

Increasingly frustrated with the unwillingness of his colleagues to consider new ideas, Van Flandern finally left the Observatory in 1983, working as a computer consultant while researching his book, *Dark Matter, Missing Planets and New Comets*, published in 1991 by North Atlantic Books. He has been affiliated with the University of Maryland's Department of Physics and Astronomy as a research associate since 1992, and is pres-

ently working on improving the accuracy of the Global Positioning System.

When asked why he and his colleagues ultimately decide to found Meta Research as an alternative to federal funding, Van Flandern responded, “It used to be the case that every individual, university or government organization that was interested funded its own research. Through the 1960s and especially the 1970s, funding for scientific research, and particularly in my field of astronomy, gradually began to be channeled through grants from NASA or the National Science Foundation. Everybody has become dependent on government funding for research. It was argued initially that this was a good thing, because it ended a great deal of redundancy and waste. But when research budgets tightened in the mid-1980s and cutbacks became necessary, the first projects to go were those that were alternatives to mainstream ideas. However, every once in a while in science, as we know, one of those mainstream models gets overthrown. The possibility of that had effectively been eliminated. So Meta Research was our solution to the problem of how to fund research outside that lies the mainstream of science.

How does Van Flandern differentiate between genuinely valid alternative ideas and what might be called pseudo-science or from misguided zealots? He says “by strict adherence to the principles of the scientific method. These include the following: (1) it must give new insight and understanding, (2) it cannot be contradicted by any known observation or experiment, and (3) it must make successful new predictions that are most unlikely to be true unless the model making them is true. Things that have a 50/50 chance of being right anyway don't count for much. Our seven-member board follows these principles when reviewing proposals for funding. There is some value in looking at these alternative ideas, because even though 99 percent of them are wrong, you always learn something from the exercise of critiquing them and trying to show exactly why they are wrong. Most importantly, when you find that one percent that has merit, it will take you in a more useful, valuable direction leading to new insights more important than anything you could do in the mainstream at the frontiers of the field.”

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Physicists To Be Honored at 1996 APS/AAPT Joint Meeting

Twelve APS prizes and awards will be presented during a special ceremonial session at the Society's general meeting in Indianapolis, Indiana, 2-5 May 1996, held in conjunction with the American Association of Physics Teachers. Citations and biographical information for each recipient follows.

PRIZES

1996 JULIUS E. LILIENFELD PRIZE

The Lilienfeld Prize was established in 1988 under the terms of a bequest of Beatrice Lilienfeld in memory of her husband, Julius Edgar Lilienfeld. It is intended to recognize outstanding contributions to physics by an individual who has also demonstrated exceptional skills in lecturing to diverse audiences. The prize includes expenses for three lectures to be given by the recipient at an APS general meeting, a research university, and a predominantly undergraduate institution.

Kip S. Thorne

California Institute of Technology

Citation: "For contributing significantly to the theoretical understanding of such topics as black holes, gravitational radiation and quantum nondemolition measurements; for advocating tirelessly the development of gravitational radiation detectors; and for conveying lucidly the excitement of these topics to professional and lay audiences alike."

Thorne received his Ph.D. from Princeton University in 1965. After two years of postdoctoral study, he returned to Caltech as an associate professor, becoming professor of theoretical physics in 1970. He became the William R. Kenan Jr., Professor in 1981 and the Feynman Professor of Theoretical Physics in 1991. Thorne's research has focused on gravitation physics and astrophysics, with emphasis on black holes and gravitational waves. He was co-founder of the LIGO Project (the Laser Interferometer Gravitational Wave Observatory), and he and his research group are now working on theoretical aspects of LIGO.

1996 TOM W. BONNER PRIZE

The Tom W. Bonner Prize was established in 1964 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.

John Dirk Walecka

CEBAF/College of William and Mary

Citation: "For his pre-eminent theoretical guidance and inspirational leadership in exploiting electromagnetic and weak probes of the nucleus and for his fundamental contributions to the understanding of the nucleus as a relativistic quantum many-body system."

Walecka received his Ph.D. degree from the Massachusetts Institute of Technology in 1958. He spent two years at CERN and Stanford on an NSF Postdoctoral Fellowship, and in 1960, joined the Stanford Physics Faculty, turning emeritus in 1987. In 1986, Walecka became Scientific Director of CEBAF and served in that capacity until 1992, when he became Governor's Distinguished CEBAF Professor of Physics at the College of William & Mary and Senior Fellow at CEBAF. He is currently chair of the APS Division of Nuclear Physics, and of the Physics Department at William & Mary.

1996 W.K.H. PANOFSKY PRIZE

Established in 1985 by the friends of W.K.H. Panofsky and the Division of Particles and Fields, this prize is awarded annually in recognition of outstanding achievements in experimental particle physics.

Gail G. Hanson

Indiana University

Roy Frederick Schwitters

University of Texas, Austin

Gail Hanson Citation: "Gail Hanson and Roy Schwitters are honored for their separate contributions which together provided the first clear evidence that hadronic final states in $e+e-$ annihilation, which are largely composed of spin 0 and spin 1 par-

ticles, originate from the fragmentation of spin 1/2 quarks. Gail Hanson observed hadron jets and determined the jet axis by developing and applying the sphericity analysis to the hadrons in $e+e-$ events. She showed that events become more jet-like with increasing energy, contrary to what one expects from a simple phase space production mechanism. Using the beam polarization, she showed that the observed azimuthal distribution of the jet axis was that expected from the production of spin 1/2 quarks that fragment into hadrons."

Hanson received her Ph.D. from MIT in 1972 and joined the Stanford Linear Accelerator Center as a research associate, eventually becoming a permanent member of the research staff. She left SLAC in 1989 to become a professor of physics at Indiana University. A fellow of both the APS and AAPT, she has served on numerous advisory committees, including the HEPAP Subpanel on High Energy Physics over the next decade.

Roy Schwitters Citation: "Gail Hanson and Roy Schwitters are honored for their separate contributions which together provided the first clear evidence that hadronic final states in $e+e-$ annihilation, which are largely composed of spin 0 and spin 1 particles, originate from the fragmentation of spin 1/2 quarks. Roy Schwitters used muon pair production to measure the polarization of the beams in the electron-positron storage ring SPEAR. He showed that the azimuthal distribution of high momentum hadrons in hadronic final states was the same as that observed for muon pairs, consistent with the origin of these hadrons from the fragmentation of spin 1/2 quarks."

Schwitters is currently the S.W. Richardson Foundation Regental Professor of Physics at the University of Texas at Austin, where he teaches and conducts research in experimental high energy physics. Schwitters has been involved with research in high energy physics and related developments in particle detectors and accelerators for over twenty years. From its founding in 1989 until canceled by Congress in 1993, he was director of the Superconducting Super Collider (SSC) Laboratory in Dallas, Texas. He joined Stanford in 1971 as a research associate after receiving his Ph.D. degree in physics from the Massachusetts Institute of Technology, eventually becoming an associate professor at the Stanford Linear Accelerator Center. From 1979 until assuming the directorship of the SSC, he was a professor of physics at Harvard University.

1996 ANESUR RAHMAN PRIZE

Established in 1992 with support from IBM and Argonne National Laboratory, the prize is intended to recognize and encourage outstanding achievement in computational physics research.

Steven G. Louie

University of California, Berkeley

Citation: "For innovative applications of quantum theory and computational physics to predict the properties of condensed matter systems, especially the excitation spectra of semiconductors and insulators."

Louie is a professor of physics at the University of California at Berkeley and faculty senior scientist at the Lawrence Berkeley National Laboratory. He received his Ph.D. degree in physics in 1976 from the University of California at Berkeley. After working at the IBM Watson Research Center, AT&T Bell Laboratories, and the University of Pennsylvania, he joined the UC Berkeley faculty in 1980. His research interests have been on the electronic and structural properties of crystals, surfaces, interfaces, clusters, and materials under pressure, and on quasiparticle excitations in solids and electron correlations effects in bulk and reduced dimensional systems.

1996 J.J. SAKURAI PRIZE

Established in 1984 by contributions from the friends of J.J. Sakurai, this prize is awarded annually in recognition of outstanding achievements in particle theory.

William Allan Bardeen

Fermi National Laboratory

Citation: "For fundamental insights into the structure and meaning of the axial anomaly and for contributions to the understanding of perturbative quantum chromodynamics."

Bardeen earned his Ph.D. in physics from the University of Minnesota in 1968. Following research appointments at SUNY at Stony Brook and the Institute for Advanced Study at Princeton, he was an assistant and associate professor in the Physics Department at Stanford University. In 1975, Bardeen joined the staff of Fermi National Accelerator Laboratory where he has served as head of the Theoretical Physics Department. During 1993-1994, he was head of Theoretical Physics at the SSC Laboratory before its termination. He has held visiting appointments at physics institutes around the world including CERN, the Max Planck Institute for Physics and Astrophysics in Munich, Germany, and the Institute for Advanced Study in Princeton.

1996 ROBERT R. WILSON PRIZE

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

Albert Josef Hofmann

CERN

Citation: "For his numerous experimental techniques developed to elucidate collective phenomena in accelerators and storage rings; in particular, the experimental determination of beam impedances and methods for controlling the instabilities that limit beam intensities. His theoretical insights and experimental innovations have led directly to higher intensities in many circular accelerators and storage rings for both particle physics and synchrotron radiation production. As a superb teacher and mentor, he has been unflinchingly generous in conveying his knowledge and insight to others, especially younger physicists and engineers."

Born in Switzerland, Hoffman studied physics at the ETH (Swiss Federal Institute of Technology) and obtained his diploma in 1957. Following this he taught at the ETH and continued research leading to the development of a new magnetic spectrometer. He received his Dr. Nat. Sci. in 1964. From 1966 to 1973 he worked as a research fellow at the Cambridge Electron Accelerator on an electron-positron colliding beam facility and physics experiment. When the Cambridge Electron Accelerator closed, he worked at CERN in Geneva on beam dynamics problems of the hadron collider ISR, and on the design of the Large Electron Positron ring (LEP.) In 1983 he accepted a professorship in applied research at Stanford University. In 1987, Hoffman returned to CERN for the LEP commissioning and currently works on accelerator issues of this research machine.

1996 PRIZE FOR RESEARCH IN AN UNDERGRADUATE INSTITUTION

Established in 1984 by a grant from the Research Corporation, this prize is intended 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.

David Peak

Union College

Citation: "For his research contributions in condensed matter physics, including defect production and atomic mixing in ion-irradiated metals, and diffusion controlled nucleation, and for his role in engaging undergraduate students in the research process through projects leading to publications and conference presentations."

Peak is the Frank and Marie Louise Bailey Professor of Physics at Union College in Schenectady, New York, currently on leave as a visiting professor of physics at Utah State University. Peak received his Ph.D. from SUNY Albany in 1969. He was an instructor of Physics at SUNY-Albany from 1971 to 1975, when he joined the faculty of Union College. He has held research appointments at Princeton University, Argonne National Laboratory, and NASA Goddard

(continued on page 5)

Announcing 1996 APS Congressional Visits

**ARE YOU ABOUT TO BE DOWN-SIZED?
ISN'T IT TIME YOU TALKED TO YOUR REPRESENTATIVE
AND SENATORS ABOUT THE SCIENCE BUDGET?**

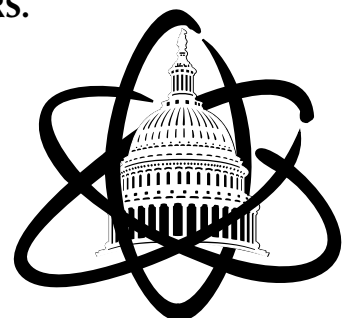
The APS Washington Office has helped over 600 APS members meet with their representative and senators. Let us help you.

In April, Members of Congress will be in their local districts. The APS Washington Office will assist APS members set up home district meetings.

**THE APS WASHINGTON OFFICE PROVIDES: REVIEWS OF
KEY POLICY ISSUES; SCIENCE BUDGET BREAKDOWNS
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OPINION

APS VIEWS

Perambulating on the Information Superhighway

by Irving A. Lerch, Director, International Scientific Affairs

Thirty-two years ago, I landed at Orly Airport outside Paris aboard a military air transport piston-engine plane after a flight somewhat longer than that endured by Lindbergh three decades earlier. Today, I visit Paris almost daily thanks to the Internet. In fact most of us define our sense of community by the ever expanding filigree of electronic connections which binds us.

But physicists are a minority presence on the Internet. Here are some interesting statistics from the former Executive Director of the Internet Society, A.M. Rutkowski: of the more than 132,000 registered domain addresses in the US, about 120,000 are for industry (.com), fewer than 2,000 are for universities (.edu), over 6,000 cover the non-profits and other organizations (.org) and less than 400 are home to all government agencies and labs (.gov). The Internet is by and large a commercial enterprise.

This may come as a shock to those of us who grew up believing that first the ARPAnet (1969) and finally the Internet were our private playground. And if we're not careful, the bigger and rougher kids will kick us off the slides and seesaws. Here are some more statistics from Vint Cerf, famous Internet Guru and former President of the Internet Society: in the years between 1983 and 1995, the number of host computers internationally increased from 200 to 5 million with 7 million hosts registered as of the end of last year. Fully 100 countries connect more than 23 million users and we can now send e-mail to 154 countries over 60,000 networks (half of which are in the US). In fact, if the number of users continues to increase at current rates, by the year 2001 there may be almost as many users of the Internet as there are human beings on the planet!

As change fluxes and percolates around us, we have increasingly come to rely on this jumble of networks to transact our professional business (notice that the phone doesn't ring as often as several years ago?), lay plans to publish our journals electronically, prepare remote-control experiments and distributed international collaborations, publish and revise abstracts and pre-prints in cyberspace—all the while assuming that access will remain universally cheap, reliable and stable.

We are heading for trouble. In Russia, Mozambique, China, Poland and a smattering of other countries, governments and postal-telegraph-telephone (PTT) authorities are using the commercialization of the networks to finance infrastructure and operations. Those who can pay will play. This puts the academic and research communities at an obvious disadvantage.

At its meeting in January of last year, the UNESCO Physics Action Council Working Group on Telecommunications Networks for Science (WG2) recommended that the Director General issue an appeal to governments to provide subsidized access for the academic and research communities in all countries. It is a theme which was repeated at WG2/APS workshops held in Tokyo in September, 1995, St. Petersburg, Russia, February 5 and 6 of this year, and in Paris on February 19, as part of an ICSU/UNESCO Expert Conference on Electronic Publishing in Science.

In Russia unlike the US, early attempts to develop Internet connectivity fell to a commercial organization, RELCOM, which did not differentiate among users. To provide some academic and research access, the government provided funds to a consortium of clients, RELARN, which was made up of many of those who founded and direct RELCOM. The obvious conflict infuriated international organizations which had sought to help the country's non-commercial communities achieve access, such as the Soros International Science Foundation, Open Society Fund and the United Nations Development Fund. As of now, an uneasy accommodation has been reached between these and many other parties. This is only ameliorated by bilateral arrangements providing access for some institutions such as Moscow's Institute for Theoretical and Experimental Physics and several others (St. Petersburg and Novosibirsk chief among the non-Moscow sites).

In China; restrictive telecommunications laws, fragmented and competing authorities, bilateral agreements and an imbalance in the geographical communications infrastructure, have all conspired to restrict access. Initial connection to the Internet arose as a 1993 bilateral agreement between SLAC and the Beijing Institute for High-Energy Physics. A single 64 KB satellite link was shared with some other institutes and universities via dial-up access. By the time of the signing of a memorandum of understanding between the Chinese and American Physical Societies in October, 1994, access had been improved by shortening the IHEP-SLAC link to IHEP-KEK in Japan. In addition, the State Education Commission instituted an ambitious program to connect universities (CERNet) and the Chinese Academy organized CASnet. A central communications facility, funded in part by the World Bank, was given authority to coordinate these programs but the entire Chinese effort was burdened by intergovernmental competition and an unrealistic policy favoring commercial access and priorities. Thus, many users who can only make connection via telephone and other commercial services, must pay almost punitive fees for every byte transmitted and received.

In Mozambique, until recently national law forbade non-government providers from connecting clients. It is still not clear whether private ownership of modems is permissible!

Closer to home in the U.S., no one can reliably portend what will happen as the current traffic increases from 1,000 billion bytes per month to one million times this level by the turn of the century. Who will pay for this increased capacity? Where is the superhighway leading us?

LETTERS

"Trilateral Collaborations" Key to Future Funding of Science

D. Allan Bromley's piece, "A Changing Environment for Graduate Programs in Science" (*APS NEWS*, October 1995) addresses the need for a new rationale for federal support of basic research from a fairly narrow perspective. He raises some interesting points regarding the relative roles of what he terms the "three institutional pillars," namely, research universities, federal laboratories, and industrial laboratories. While noting that all three are "in serious trouble," his suggestion that universities solve their funding problems by taking selected research from the national laboratories is not responsive to the underlying dynamics of public support for science, and could very well be destructive to the cause he espouses.

Although he mentioned Vannevar Bush's 1945 report, *Science: The Endless Frontier*, Bromley did not emphasize its importance in framing and justifying the reasons for federal support of science over the past 50 years. Many are recognizing that with the end of the Cold War, the Bush rationale, anchored in the need for a strong national defense, has become inadequate. Furthermore, in the absence of a compelling alternative rationale, we should expect a fairly large decline in federal support for basic research, with the possible exceptions of those areas related to defense and health. This impending drop is rooted in the erosion of public support for science, and is likely to be more fundamental and longer-lasting than the present partisan struggles over budget priorities.

While there are many points of view on this issue, some common elements are emerging: (1) future support for much of basic science will be coupled to social, economic, ethical and political concerns; (2) better mechanisms must be developed to coordinate and integrate expertise needed to solve the increasingly complex problems facing society; and (3) considerable effort must go into improved communication with the public about science, not only its technical issues, but also its social impact.

To respond to these points and to articulate a new rationale, we recommend cooperation among the three institutional pillars, rather than seeking strategies for the survival of each separately. This recommendation is based on a strong record of collaborations between laboratories and universities. However, these collaborations only provide the experiential base for the new types of cooperation that will be needed. The future will require changes in the nature if not the quantity of such efforts, as well as greater integration of industrial participation. Bromley points out that recently the national laboratories have seen many of their

original missions change. This is true, and they are discovering that their facilities, capabilities and approach are very well suited to the new challenges to science, and to their role in this new model.

The collaborative approach is attractive because it builds on the complementary strengths of each "pillar." Faculty seek collaborations with laboratories in large measure for access to capabilities and facilities that are not found at the university. In addition, laboratories are recognized for the ability to pull together multi-disciplinary teams, including universities and industry, and to address large, complex, and often long-term problems. Laboratory staff find collaborations attractive because research universities are acknowledged as repositories of expertise and excellence in a wide variety of separate disciplines that can enhance laboratory research on multi-disciplinary problems. Furthermore, the laboratories can provide the location, infrastructure, and culture for fostering multi-institution cooperation and graduate research education. First-rate research gets done, problems are solved rapidly, and the involved students gain experience in a growing *modus operandi* for treating complex research problems.

Any new rationale for support of science should include a "world view" of how to solve global problems associated with shared concerns of developed and developing countries, such as food and energy production, while maintaining health and preserving the environment and the peace. Addressing these will require the combined contributions of all three sectors: the expertise in both technical and social disciplines offered by the universities; the capabilities in solving complex problems and in forming multi-disciplinary teams offered by national laboratories; and industry's ability to transmit research results into the economic fabric of the global community.

The alternative to such cooperation is separate, divisive initiatives by each of the "pillars" to maintain support. Instead, it is time to recognize that a unified approach will have the most dramatic impact, and that trilateral cooperation may be essential to achieve a new rationale for science that is more fully integrated with the social, economic, ethical, and political concerns of a more scientifically knowledgeable public. This idea deserves continued discussion and experimentation.

Charles F. Keller
Institute of Geophysics & Planetary Physics, University of California/LANL
Rulon Lindford
University of California Coordinator for Science and Technology

Correction

The report of Inertial Fusion advances presented at the 1995 DPP meeting (*APS News*, February 1996, pg.2) should have included the fact that the investigation of drive symmetry in gas-filled hohlraums was performed by a team lead by researchers from Los Alamos National Laboratory and presented in an invited paper by Dr. Norman Delamater. The team also included workers from LLNL, Centre D'Etudes de Limeil, General Atomics, and Physics International.

Physicists To Be Honored (continued from page 3)

Space Flight Center. Peak's research has resulted in numerous publications, many with undergraduate co-authors, and invited presentations. He was a founding member of the present Council on Undergraduate Research, and has been a governor of the National Conferences on Undergraduate Research since 1987.

AWARDS

1996 FORUM AWARD

Established in 1974 by the Forum on Physics and Society, the Forum Award is intended to recognize outstanding accomplishments in the endeavor to promote public understanding of issues involving the interface between physics and society.

Kevin Aylesworth
APS Congressional Fellow

Citation: "For promoting public understanding of the problems faced by young scientists."

Aylesworth received his Ph.D. 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. In May 1990, he founded the Young Scientists Network, an electronic bulletin board intended to publicize the difficulties facing young scientists and to help them discover career alternatives. It now has a membership of over 2,000 from many branches of science. He is an APS General Councillor, and is currently serving as an APS Congressional Fellow in Washington, DC.

1996 LEO SZILARD AWARD

This award was established in 1974 by the Forum on Physics and Society in recognition of Leo Szilard's concern for the social consequences of science. Its purpose is 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.

David Hafemeister
California Polytechnic Institute

Citation: "For applying physics to issues of

nuclear weapons proliferation, arms control, more efficient usage of our energy resources, and other matters of public policy; and for effective communication on such issues to the physics community, policy makers, and the general public."

Hafemeister received his Ph.D. from the University of Illinois in 1964. He is currently a professor of physics at California Polytechnic State University. He was the lead on technical matters for the ratification of the START, CFE, and TTBT arms control treaties while serving as a professional staff member of the Senate Committees on Foreign Relations and Governmental Affairs from 1990 to 1993. Other arms control tasks included service as the science advisor to Senator John Glenn from 1975 to 1977, and at the State Department Offices of Nuclear Proliferation Policy in 1979. He also served on the committee for Strategic Nuclear Policy in 1987, and as an advisor on arms control for several universities.

DISSERTATION AWARDS

1996 DISSERTATION IN BEAM PHYSICS AWARD

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

Dan Tyler Abell
University of Maryland
Advisor - Alex Dragt

Citation: "For his contributions in applying advanced mathematical theory of Taylor series of several complex variables to determine the domain of convergence for dynamical systems and for his contribution in advancing and determining an optimal symplectification scheme for the Taylor map applicable particularly to long term tracking in accelerator physics."

Abell earned his BA in physics at Swarthmore College in 1982. He then taught physics and math at the Dublin School, a small prep school in New Hampshire, before going on to pursue graduate work. He received an M.Sc. from the University of Maryland in 1989 for experimental work in surface physics, and his Ph.D. in dynamical systems and accelerator theory in 1995.

Working under the guidance of Alex Dragt, Abell's research centered on two topics: (i) the relationship between the domain of convergence of a given Taylor series map and the singularities of the motion in the underlying dynamical system; and (ii) optimal schemes for symplectifying a given Taylor series map for the purpose of doing long-term tracking studies in accelerator physics. He is continuing his research on the latter, with particular emphasis on applications to the Large Hadron Collider.

1996 NUCLEAR PHYSICS DISSERTATION AWARD

Gregory Joseph Schmid
Duke University
Advisor - Henry Weller

Citation: "For an innovative study of the radiative capture of polarized protons by deuterons below 80 KeV. The extraordinary care and persistence of his work and the depth of his involvement at all stages of the experiment and in the analysis have produced new insights into nuclear reactions at these very low energies. These results are important for our understanding of protostellar evolution and of the few-nucleon system as well."

Schmid received his Ph.D. in nuclear physics from Duke University in 1995. Since then, he has been working as a postdoctoral fellow in the nuclear science division at Lawrence Berkeley National Laboratory. His research at LBL has focused on two separate topics: that of helping to design a new generation of (γ -ray detector, and doing research in nuclear structure physics. His current work in detector design has dealt with writing computer Monte Carlo codes and cluster identification routines so as to maximize the performance of a proposed highly segmented Ge detector ("GRETA"). His work in nuclear structure physics has dealt with extending the known level scheme of ^{235}U by using the enormous resolving power of Gammasphere.

MEDALS & LECTURESHIPS

1995 DWIGHT NICHOLSON MEDAL

Established in 1993, the Nicholson Medal is intended to honor a physicist who has exhibited extraordinary qualities in such areas

as education, the improvement of the quality of life in our society, and fostering international cooperation in physics.

Yuri Orlov
Cornell University

Citation: "For uniting his love of physics with an intense dedication to international human rights; for his public espousal of openness and freedom in the face of severe personal consequences; for co-founding the Moscow chapter of Amnesty International and founding the first Helsinki Watch group; for helping establish Helsinki groups elsewhere in the Soviet Union; for his outspoken support of Andrei Sakharov; and for his continuing work for democratic principles in former-USSR countries, in China and in Bosnia. Yuri Orlov's commitment and accomplishments have inspired a generation of fighters for freedom worldwide."

After graduating from Moscow's Physical-Technical Institute in 1952, Orlov conducted research in theoretical physics at ITEP, working on the design of the facility's proton-synchrotron and developing a theory of nonlinear betatron oscillations and betatron and synchro-betatron resonances. He eventually earned a Ph.D. in 1958. After several years at the Yerevan Physics Institute in Armenia, he became laboratory chief of electro-magnetic interaction, and earned a second Ph.D. in 1963. He returned to Moscow in 1972, but was forbidden to work at ITEP or Moscow University. Instead, he joined the Institute of Terrestrial Magnetism and Dissemination of Radio Waves, from which he was fired the following year. He never again held a scientific position in the USSR.

Orlov is presently a senior scientist at Cornell University's Newman Laboratory of Nuclear Studies. Until his 1977 arrest, he published more than 50 scientific articles in leading journals and conference proceedings, and smuggled out three more while imprisoned. Since coming to the West in 1986, he has published ten more scientific papers, as well as several human rights and political articles. His autobiographical memoir, *Dangerous Thoughts*, was published in 1991.

Editor's Note: The recipients of the 1996 Apker Award will also be honored during the ceremonial session at the May Joint APS/AAPT Meeting. Names, citations and biographical information were published in the January 1996 issue of APS NEWS.

Sign on for Chinese Colleagues in Distress

The APS Committee on the International Freedom of Scientists has co-sponsored a petition with the Committee of Concerned Scientists on behalf of physicists and other scientists in the People's Republic of China who are imprisoned or are thought to have been imprisoned (have disappeared) because they have engaged in the peaceful exercise of their right to freedom of expression as provided for in Article 35 of China's Constitution. Four of the thirty-six scientists on whose behalf the petition has been written are physicists or physics graduate students; they are: Lin Zhang, Ziangzhong Zhu, Yanghua Lu and Baogingshan Han.

At the March and May meetings of the American Physical Society there are signature drives being conducted on behalf of these and other colleagues. If you will not be attending either of these meetings but wish to assist in this cause, there is a petition form on the world wide web at <http://aps.org/intaff/petition/>. The site will be operational through Sunday, May 5, 1996.

Your participation does make a difference. Please return the form as soon as possible!

1997-1998 Fulbright Awards for U.S. Faculty and Professionals

Opportunities for lecturing or advanced research in over 135 countries are available to college graduates and university faculty and professionals outside academe. U.S. citizenship and the Ph.D. or comparable professional qualifications are required. For lecturing awards, university or college teaching experience is expected. Foreign language skills are needed for some countries, but most lecturing assignments are in English.

The deadline for lecturing or research grants for 1997-1998 is August 1, 1996. Other deadlines are in place for the following special programs: distinguished Fulbright chairs in Western Europe and Canada (May 1) and Fulbright seminars for international education and academic administrators (November 1).

Contact the USIA Fulbright Senior Scholar Program, Council for International Exchange of Scholars, 3007 Tilden Street NW, Suite 5M, Box GNEWS, Washington, DC 20008-3009. phone: (202) 686-7877. Web page (on-line materials): <http://www.cies.org>. Email: cies1@ciesnet.cies.org (requests for mailing of application materials only).

EDITOR-IN-CHIEF

The American Physical Society is seeking a successor to the current Editor-in-Chief who is retiring. The Editor-in-Chief is one of the three operating officers of the Society and has responsibility for the research journals published by the Society. Since the Editor-in-Chief is responsible for the large editorial and journal support staff located in Ridge, NY, near Brookhaven National Laboratory, nominees should be prepared to spend a substantial amount of time there. Among the responsibilities of the Editor-in-Chief are preserving and enhancing the quality of APS journals, leading APS efforts in electronic publishing, working with senior editors to set journal policies, and handling appeals and ethics cases involving authors.

Applicants or nominees should be physicists with significant reputations and demonstrated organizational and managerial skills. Editorial experience is desirable. The initial appointment is for five years with renewal possible after review. Salary is negotiable. The desired starting day is January 1, 1997. The APS is an equal employment opportunity employer and specially encourages applications from or nominations of women and minorities. Inquiries, nomination, and applications should be sent by April 30, 1996 to:

Professor Burton Richter
Chair, Search Committee
The American Physical Society
One Physics Ellipse
College Park, MD 2074.

NOMINATIONS FOR PRIZES AND AWARDS

The following prizes and awards will be bestowed at meetings of the Society in the coming year. Members are invited to nominate candidates to the respective committees charged with the privilege of recommending the recipient. 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, Award and Fellowship button, for complete information regarding rules and eligibility requirements for individual prizes and awards.

PRIZES

1997 IRVING LANGMUIR PRIZE

Sponsored by the General Electric Foundation.

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

Nature: The prize consists of \$10,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: George C. Schatz, Dept of Chemistry, Northwestern Univ, 2145 Sheridan Rd, Evanston, IL 60208, Ph: (708) 491-5657, Fax: (708) 491-7713, email: schatz@cooper.chem.nwu.edu. Nominations must be received no later than 14 June 1996.

1997 JULIUS EDGAR LILIENFELD PRIZE

Sponsored by the Lilienfeld Trust.

Purpose: To recognize a most outstanding contribution to physics.

Nature: The prize consists of \$10,000, a certificate citing the contributions made by the recipient, and expenses for three lectures by the recipient given at an APS general meeting, a research university, and a predominantly undergraduate institution.

Send the name of candidates, biographical information and supporting letters to: Arthur Bienenstock, MS 69 SLAC, Stanford Univ, PO Box 4349, Stanford, CA 94309, Ph: (415) 926-3153, Fax: (415) 926-4100. Nominations must be received no later than 14 June 1996.

1997 LARS ONSAGER PRIZE

Endowed by Russell and Marion Donnelly.

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

Nature: The prize consists of \$10,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Joel L. Lebowitz, Dept of Math Rutgers Univ, Hill Ctr-Busch Campus, New Brunswick, NJ 08903, Ph: (908) 932-3117. Nominations must be received no later than 14 June 1996.

1997 ARTHUR L. SCHAWLOW PRIZE IN LASER SCIENCE

Sponsored by the NEC Corporation.

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.

Nature: The prize consists of \$10,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: H. Jeffrey Kimble, Division of Physics, MC 12-33, Caltech, Pasadena, CA 91125, Ph: (818) 395-8340, Fax: (818) 793-9506, email: hjkimble@juliet.caltech.edu. Nominations must be received no later than 14 June 1996.

1997 DANNIE HEINEMAN PRIZE FOR MATHEMATICAL PHYSICS

Endowed by the Heineman Foundation for Research, Educational, Charitable, and Scientific Purposes, Incorporated through the American Institute of Physics.

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

Nature: The prize consists of \$7,500 and a cer-

tificate citing contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Charles W. Misner, Dept of Phys, Univ of Maryland, College Park, MD 20742-4111, Ph: (301) 405-5958, Fax: (301) 314-9525, email: misner@umail.umd.edu. Nominations must be received no later than 14 June 1996.

1997 I.I. RABI PRIZE

Endowed by family, friends and colleagues of I.I. Rabi.

Purpose: To recognize and encourage outstanding research in atomic, molecular and optical physics by a physicist within ten years of receiving the Ph.D. degree.

Nature: The prize consists of \$7,500 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Sheldon Datz, Phys Div-MS 6377, Oak Ridge Natl Lab, PO Box 2008 Bldg 5500, Oak Ridge, TN 37831-6377, Ph: (423) 574-4984, Fax: (423) 574-1118. Nominations must be received no later than 14 June 1996.

1997 TOM W. BONNER PRIZE IN NUCLEAR PHYSICS

Sponsored by Friends of Tom W. Bonner.

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.

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Michael J. Musolf, MS-12H2, CEBAF, 12000 Jefferson Ave, Newport News, VA 23606. Nominations must be received no later than 14 June 1996.

1997 HERBERT P. BROIDA PRIZE

Supported by friends and colleagues of Herbert P. Broida.

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

Nature: The prize consists of a \$5,000 stipend and a certificate citing the contributions made by the recipient. The first prize was awarded in 1980 and beginning in 1981, every odd numbered year thereafter. An allowance will be provided for travel expenses of the recipient to the meeting of the society at which the prize is bestowed.

Send the name of candidates, biographical information and supporting letters to: Alexander Pines, Chem Dept, UCB, Berkeley, CA 94720, Ph: (510) 642-1220, Fax: (510) 486-5744, email: pines@cchem.berkeley.edu or the APS Home Page [http://aps.org] under the Prize, Award and Fellowship button. Nominations must be received no later than 14 June 1996.

1997 OLIVER W. BUCKLEY CONDENSED MATTER PHYSICS PRIZE

Endowed by AT&T Bell Laboratories.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Robert J. Birgeneau, 6-123, MIT, 77 Massachusetts Ave,

Cambridge, MA 02139, (617) 253-8900, Fax: (617) 253-8901, email: robertjb@mit.edu. Nominations must be received no later than 14 June 1996.

1997 DAVISSON-GERMER PRIZE

Sponsored by AT&T Bell Laboratories.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient. This annual prize will normally be awarded alternatively for outstanding work in atomic physics one year and for outstanding work in surface physics the following year. The 1997 prize will be awarded for outstanding work in atomic physics.

Send the name of candidates, biographical information and supporting letters to: Mark J. Cardillo, 1D-358, AT&T Bell Labs, 600 Mountain Ave, Murray Hill, NJ 07974, Ph: (908) 582-2418, Fax: (908) 582-3619, email: mjc@allwise.att.com. Nominations must be received no later than 14 June 1996.

1997 HIGH POLYMER PHYSICS PRIZE

Sponsored by the Ford Motor Company.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Jeffrey T. Koberstein, Inst of Material Sci U136, Univ of Connecticut, Storrs, CT 06269-3136, Ph: (203) 486-4716, Fax: (203) 486-4745. Nominations must be received no later than 14 June 1996.

1997 GEORGE E. PAKE PRIZE

Sponsored by the Xerox Corporation.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Charles B. Duke, 114-38D, Xerox Webster Research Center, 800 Phillips Road, Webster, NY 14580, Ph: (716) 422-2106, Fax: (716) 265-5080, email: duke.wbst128@xerox.com. Nominations must be received no later than 14 June 1996.

1997 W.K.H. PANOFSKY PRIZE

Sponsored by the friends of W.K.H. Panofsky and the Division of Particles and Fields.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Gary J. Feldman, Lyman Phys Lab, Harvard Univ, Cambridge, MA 02138, Ph: (617) 496-1044, Fax: (617) 495-0416, email: FELDMAN@HUHEPL. Nominations must be received no later than 14 June 1996.

1997 EARLE K. PLYLER PRIZE

Sponsored by the George E. Crouch Foundation.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Kevin Keith Lehmann, Dept of Chem, Princeton Univ, Princeton, NJ 08544, Ph: (609) 258-5026, Fax: (609) 258-6746, email: Lehmann@Chemvax.princeton.edu. Nominations must be received no later than 14 June 1996.

1997 PRIZE TO A FACULTY MEMBER FOR RESEARCH IN AN UNDERGRADUATE INSTITUTION

Sponsored by the Research Corporation.

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.

Nature: The prize consists of a \$5,000 stipend to the recipient, a certificate citing the contribution of the recipient, and a separate \$4,000 unrestricted grant for the research of the recipient to the awardee's institution.

Send the name of candidates, biographical information and supporting letters to: Howard A. Mizes, 114-22D, Xerox Webster Res Ctr, 800 Phillips Rd, Webster, NY 14580, Ph: (716) 422-5079, Fax: (716) 422-2126, email: MIZES@WRC.XEROX.COM. Nominations must be received no later than 14 June 1996.

1997 ANESUR RAHMAN PRIZE

Sponsored by the IBM Corporation.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Warren E. Pickett, Code 6604, NRL, 4555 Overlook Ave SW, Washington, DC 20375-5345, Ph: (202) 404-8631, Fax: (202) 404-7546, email: pickett@dave.nrl.navy.mil. Nominations must be received no later than 14 June 1996.

1997 J.J. SAKURAI PRIZE FOR THEORETICAL PHYSICS

Endowed by the family and friends of J.J. Sakurai.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Lawrence J. Hall, Phys Dept UCB, Berkeley, CA 94720, Ph: (510) 642-6536. Nominations must be received no later than 14 June 1996.

1997 ROBERT R. WILSON PRIZE

Sponsored by friends of Robert R. Wilson.

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

Nature: The prize consists of \$5,000 and a certificate citing the contributions made by the recipient.

Send the name of candidates, biographical information and supporting letters to: Christopher Leemann, MS

12A2, CEBAF, 1200 Jefferson Ave, Newport News, VA 23606, Ph: (804) 249-7554, Fax: (804) 249-7398, email: soltys@cebaf.gov. Nominations must be received no later than 14 June 1996.

AWARDS

1996 LEROY APKER AWARD

Endowed by Jean Dickey Apker, in memory of LeRoy Apker.

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.

Nature: Two awards may be made, one to a nominee from an institution that offers a Ph.D. program in physics, the other to a nominee from an institution that does not. The award to each recipient consists of \$3,000, an allowance for travel to the meeting of the Society at which the award is being presented, and a certificate citing the work and school of the recipient. Each of the finalists in the annual competition will receive an honorarium of \$1,000 and a certificate as an Apker Award Finalist. Certificates and grants equal to 50 percent of the recipient and finalist awards will be presented to the home institutions.

Send the name of candidates, biographical information and supporting letters to: Harry Lustig, Administrator, Apker Award Selection Committee, The American Physical Society, One Physics Ellipse, College Park, MD 20740-3844. Nominations must be received no later than 14 June 1996.

1997 MARIA GOEPPERT-MAYER AWARD

Sponsored by the General Electric Foundation.

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.

Nature: The award consists of \$2,500, plus a \$4,000 travel allowance to provide opportunities for the recipient to give lectures in her field of physics at four institutions of her choice and at the meeting of the Society at which the award is bestowed. Nominee must be a female physicist having U.S. citizenship or a permanent U.S. resident and received her Ph.D. after Sept. 1, 1986.

Send the name of candidates, biographical information and supporting letters to: Bunny C. Clark, Phys Dept, Ohio State Univ, 174 W 18th Ave, Columbus, OH 43210, Ph: (614) 292-1843, Fax: (614) 292-7557, email: bcc@mps.ohio-state.edu. Nominations must be received no later than 14 June 1996.

1997 SHOCK COMPRESSION SCIENCE AWARD

Sponsored by the friends of the Topical Group on Shock Compression of Condensed Matter Physics.

Purpose: To recognize outstanding contributions to understanding condensed matter and nonlinear physics through shock compression.

Nature: This award consists of a certificate citing the accomplishments of the recipient and a cash award of \$2,000.

Send the name of candidates, biographical information and supporting letters to: James Russell Asay, Div 5602, Sandia Natl Lab, PO Box 5800, Albuquerque, NM 87185-5800, Ph: Not Available, Fax: (505) 844-4543, email: jrasay@sandia.gov. Nominations must be received no later than 14 June 1996.

1997 JOHN WHEATLEY AWARD

Endowed by Biomagnetic Technologies and IBM, and friends in memory of John Wheatley.

Purpose: To honor and recognize the dedication of physicists who have made contributions to the development of phys-

ics in developing countries.

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

Send the name of candidates, biographical information and supporting letters to: Jorge G. Morfin, Fermilab, MS220, PO Box 500, Batavia, IL 60510, Ph: (708) 840-4561, Fax: (708) 840-2950, email: JORGE@FNALV.FNAL.GOV. Nominations must be received no later than 14 June 1996.

1997 FORUM AWARD FOR PROMOTING PUBLIC UNDERSTANDING OF THE RELATIONSHIP OF PHYSICS & SOCIETY

Purpose: To recognize outstanding accomplishment in the endeavor to promote public understanding of issues involving the interface between physics and society.

Nature: The award consists of a certificate citing the contributions of the recipient and a sculpture to be held one year and passed on to the next recipient.

Send the name of candidates, biographical information and supporting letters to: Nina Byers, Dept of Phys, UCLA, 405 Hilgard Ave, Los Angeles, CA 90024, Ph: (310) 825-3588, email: byers@physics.ucla.edu. Nominations must be received no later than 14 June 1996.

1997 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.

Nature: The award consists of a certificate citing the contributions of the recipient and a sculpture to be held one year and passed on to the next recipient.

Send the name of candidates, biographical information and supporting letters to: Nina Byers, Dept of Phys, UCLA, 405 Hilgard Ave, Los Angeles, CA 90024, Ph: (310) 825-3588, email: byers@physics.ucla.edu. Nominations must be received no later than 14 June 1996.

DISSERTATION AWARDS

1997 AWARD FOR OUTSTANDING DOCTORAL THESIS RESEARCH IN BEAM PHYSICS

Supported by the Universities Research Association.

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

Nature: The award consists of \$1,500 and a certificate to be presented at an awards ceremony at the Division of Physics of Beams Annual Meeting.

Send the name of candidates, biographical information and supporting letters to: Co-Chairs: Thomas Marshall, 213 Mudd Bldg, Columbia Univ, New York, NY 10027, Ph: (212) 854-3116, Fax: (212) 854-8257, email: TCM2@COLUMBIA.EDU and John Nation, 325 Engr & Theor Ctr, Cornell Univ, Ithaca, NY 14853, Ph: (607) 255-8703, Fax: (607) 255-3004, email: jnation@ionvax.tn.cornell.edu. Nominations must be received no later than 14 June 1996.

MEDALS AND LECTURESHIPS

1997 DAVID ADLER LECTURESHIP AWARD

Sponsored by the friends of David Adler.

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.

Nature: The award consists of an award an honorarium for the lecturer, and a certificate citing the contribution made by the recipient.

Send the name of candidates, biographical information and supporting letters to: J. Murray Gibson, Dept of Phys, UIUC, 1110 W Green St, Urbana, IL 61801, Ph: (217) 333-2997, Fax: (217) 244-2278, email: j_gibson@uiuc.edu. Nominations must be received no later than 14 June 1996.

1997 EDWARD A. BOUCHET AWARD

Sponsored by the Research Corporation.

Purpose: The Bouchet award is intended to promote the participation of under-represented minorities in physics by publicizing the recipients work and career development to the physics community, especially to young minority physics students.

Nature: The lectureship consists of a stipend of \$3,000 plus support for travel to an APS general meeting where the recipient will receive the award and give his/her first address. In addition, the recipient will be invited to lecture at least three academic

institutions where the impact of the visit on minority students would be significant.

Send the name of candidates, biographical information and supporting letters to: Jin-Joo Song, Ctr for Laser Res, Oklahoma State Univ, 413 Nobel Res Ctr, Stillwater, OK 74078, Ph: (405) 744-6403, Fax: (405) 744-6406, email: jjsong@okway.okstate.edu. Nominations must be received no later than 14 June 1996.

1997 JOHN H. DILLON MEDAL

Purpose: To recognize outstanding accomplishments by young polymer physicists.

Nature: The prize consists of a bronze medallion and a certificate.

Send the name of candidates, biographical information and supporting letters to: Jeffrey T. Koberstein, Inst of Material Sci U136, Univ of Connecticut, Storrs, CT 06269-3136, Ph: (203) 486-4716, Fax: (203) 486-4745. Nominations must be received no later than 14 June 1996.

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 1996 issue are provided below. Reprints of individual articles may be obtained by sending a written request and prepayment to the American Institute of Physics, Attention: Circulation and Fulfillment Division, 500 Sunnyside Boulevard, Woodbury, NY 11797-2999 or order by email with credit card from pcr@aps.org.

Ultracold Neutrons: Their Role in Studies of Condensed Matter. Robert Golub reviews the development of ultracold neutron sources, present applications in condensed matter physics and prospects for future development.

Intrinsic Reflection Asymmetry in Atomic Nuclei. P.A. Butler and W. Nazarewicz review the experimental evidence for reflection-asymmetric behavior in atomic nuclei and the theories that have been proposed to explain the phenomenon.

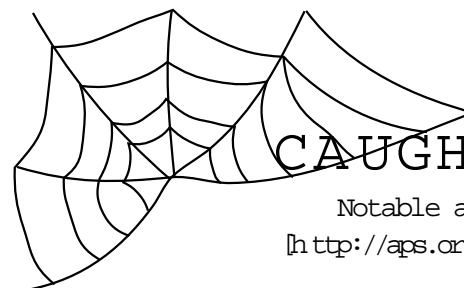
Solitons in Optical Communications. Hermann Haus and William Wong review the physics behind the successful use of optical fibers for long-distance electronic communication, with particular attention to the transmission of solitons.

The Low-Q², Low-X Region in Electroproduction. Barbara Badelek and Jan Kwiecinski review experimental and theoretical studies of the nuclear structure functions in the regime of low four-momentum transfer and high inelasticity.

Phase Transitions in Quantum Chromodynamics. Hildegard Meyer-Ortmanns discusses theoretical evidence for the existence of the QCD phase transitions and their properties, as well as experimental signatures that would be observable in relativistic heavy-ion collisions.

RMP Colloquia.

Large-N_c and Chiral Limits of Quantum Chromodynamics and Models of the Baryon. Thomas Cohen reviews two guiding principles behind current theoretical models of the baryon: chiral symmetry and the limit of QCD with a large number of colors. These principles give an understanding of pion coupling and the constituent quark model, but lead to a paradox.



Notable additions to the APS Home Page [<http://aps.org>] during the month of February.

New/Updated Links:

APS News Online (latest edition)

Units

- DMP Newsletter for February
- Forum on the History of Physics Newsletter (February Edition)

International

- Committee on the International Freedom of Scientists (CIFS) Homepage

Membership

- New Members List for 1/16 - 2/14

Meetings

- Updated March Meeting Information
- Virtual Pressroom
- OHIO Section Spring Meeting
- Enhanced Abstract Search Engine

Careers

- Enhanced Career/Employment Homepage

THE BACK PAGE

Formulating a Cohesive Science Budget Policy

by Congressman Robert S. Walker (R-PA) Chairman, House Committee on Science

Despite the disappointing failure to achieve a balanced budget agreement with the Administration in 1995, the House of Representatives has accomplished a remarkable amount of its agenda. For the first time in many years, congressional leaders put forth a comprehensive program for revitalizing the economy by reducing the deficit and the debt burden faced by future generations.

Within the context of that budget debate, it has been my goal as Chairman of the House Science Committee to assure a strong position for science policy. Federal funding for science has been viewed by the science community and the nation as a crucial function of the government and it is. Research enjoys strong support in Congress but, it's no longer a blank check. Researchers are increasingly called upon to justify their work and their results, and the competition among scientific fields is increasing.

Just how can science expect to fare in this climate of deficit reduction and government downsizing? It would be beneficial for science if the way in which federal science budgeting is conducted could be reformed. A sensible way to consider science budget issues is to change the way we approach science policy and budgeting. It is inaccurate to say that we even have a science budget now because science spending is spread over many appropriations bills. Last year, I authored an unprecedented Omnibus Civilian Science Authorization Act which bundled all of the Science Committee's authorization bills into one. This approach helped to emphasize three points: science is an important national issue; civilian science R&D should be considered as a whole, in order to better set priorities; and science is vital to our long-term national interest.

For these same reasons, the report issued by Dr. Frank Press and his committee at the National Academy of Sciences, *Allocating Federal Funds for Science and Technology*, is particularly timely. The committee has done an excellent job of succinctly identifying the circumstances in which science policy is made and the questions policy makers face. The Science Committee recently held a hearing on the report and there are areas of the report which I believe are particularly relevant.

The report calls for the development of an annual comprehensive federal science and technology budget and an overall review by the Congress. While a laudable goal, consideration of the science and technology budget as a whole through the entire authorization and appropriations process probably is not possible under the current committee structure. The dispersal of research entities throughout the executive branch also limits the effectiveness of this approach. We have tried through reducing the number of committees, and by proposing the elimination and consolidation of departments and agencies, to bring about a more cohesive and congruent science policy. This is a long-term project, but one still worth pursuing.

Dr. Press' report calls for ensuring that the science and technology budget of the federal government is "sufficient to allow the United States to achieve preeminence in a select number of fields and to perform at a world-class level in the other major fields." The Press Group suggests that these reallocation decisions be made with the advice and guidance of expert panels. A potential problem with this approach is that the recommendations of the panel will necessarily be both politicized and controversial. There is a true danger that the deliberations of these panels will be so lengthy and contentious that the final recommendations will be meaningless and out of date. The federal government has an ingrained tendency to work slowly; the outside world, however, is more suited to responding quickly to changing circumstances.

I am strongly supportive of the recommendation which urges increased international cooperation in science and technology. In this fiscal climate, particularly when it comes to large projects, such as the International Space Station and the International Thermonuclear Experimental Reactor

(ITER), international cooperation is essential to their successful completion.

Another recommendation with which I strongly agree is the call for federal laboratories to focus their work on the missions of the sponsoring agency. We can no longer afford to allow federal laboratories to go off in search of their own missions in order to justify their existence. The Science Committee has always supported technology transfer from the labs to the private sector, but as a by-product, not as a primary mission. The labs were established to support the research needs of the Defense Department or NASA or the Department of Energy, not the private sector, and we should insist that they maintain this mission-support focus.

A related recommendation is receiving some criticism — that federal research funding should generally favor academic institutions. The benefits of conducting research at universities are correctly enumerated in the report; however, benefits which accrue to the labs, such as multi-disciplinary, facility-intensive, and mission-oriented research, argue for strong support for them, as well. The academic and laboratory cultures should recognize that this report opens a door through which more aggressive communication and research partnerships should be pursued to build on the strengths of each.

The recommendation for sustaining merit review as the method of awarding research funding is also an excellent point. Without the rigorous evaluation of technical quality, relevance to mission that can only be provided by a researcher's peers, the United States cannot hope to maintain its recognized role as world leader in so many fields. In the past ten years or so, we have seen the disturbing practice of academic earmarking emerge in the legislative process, whereby programs are funded not necessarily on their merit, but because their sponsors have been able to use political muscle. Happily, I think we've finally begun to see a reversal of this trend, but the science community must realize that in engaging in these tactics, the research enterprise as a whole suffers.

One of the report's more controversial parts is the statement that the "federal government should encourage, but not directly fund, private sector commercial technology development." The line between basic research and applied technology is not an easy one to draw. The Science Committee has adopted as one of its precepts the idea that scarce federal resources should be concentrated on basic research activities, rather than on programs which subsidize private sector technology development. Clearly, a number of our federal agencies, such as NASA and the Defense Department, undertake technology development in pursuit of their missions. We largely support those activities. We have, however, taken a firm stand, both out of ideology and practicality, that the financial support of private sector technology development is industrial policy and is not an appropriate role for the federal government. Accordingly, we have taken steps over the past year to reduce the size of the federal programs which have been created for this purpose. The United States did not come to be a world leader in technology because the government invested in one technology over another. We are the leader in so many fields because we had an economic climate, and a legal and financial system which fostered and nourished innovation and private enterprise.

If used well by policy makers in both the legislative and executive branches, the Press report is a good tool for evaluating science policy. The danger is that it will be filed away as yet another contribution to the archives. I hope not. I want to use this report as a starting point for the discussions we will have over the coming months about better ways to approach the policies and the budget that science needs.

Congressman Robert S. Walker has represented the 16th District of Pennsylvania for 19 years. He is Chairman of the House Science Committee and is a member of the House Republican Steering Committee.



"We can no longer afford to allow federal laboratories to go off in search of their own missions in order to justify their existence."

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