The field of physics and its practitioners received commendation on Capitol Hill before Congress left town for August. In recognition that next year has been designated the World Year of Physics, on July 7 the House of Representatives passed a resolution in support of physics and physics education. “This resolution encourages the American public to be aware of the physics used every day and encourages them to learn more about it,” said its sponsor, Rep. Vern Ehlers (R-MI). “I hope that the American people will observe the World Year of Physics by supporting physics education and research. I encourage physicists and educators to engage the public, especially the children, in physics to inspire the next generation of scientists and engineers.”

The World Year of Physics in 2005 will be an international celebration of the field, timed to honor the 100th anniversary of the publication of Albert Einstein’s groundbreaking papers on the special theory of relativity, the photoelectric effect, and Brownian motion. In the US, the APS, the American Association of Physics Teachers, and the American Institute of Physics are leading efforts to organize events during the year, but individual scientists, teachers, physics departments, laboratories, science museums, and other groups are encouraged to plan local events in their communities. The resolution was introduced by Ehlers for himself and his fellow physicist in Congress, Rep. Rush Holt (D-NJ). “This resolution recognizes the important contributions of physicists to technological progress and the health of many industries,” said Ehlers. “As a physicist, I recognize the physics principles that are part of our everyday lives. “Through physics we can explore the depths of the universe and black holes, as well as the tiniest parts of the atom. I think it is just absolutely marvelous that we can explore our world in both the smaller and larger directions and have not reached its limits at this point.”

Co-sponsor Brian Baird (D-WA) remarked that he and other Members of Congress often turn to Ehlers and Holt for help in understanding technological issues. “Through physics,” Holt said, “we can explore the diverse phenomena from the existence of black holes to the composition of the atom and nucleus.”

Looking for an expert to speak to your group about Einstein’s relativity? About black holes? Or quantum entanglement? Or about Einstein the person? As part of World Year of Physics 2005, the Topical Group on Gravitational (GGR) and the Forum on the History of Physics (FHP) maintain a list of physicists known to be effective public speakers on topics related to Einstein, and match interested groups with appropriate speakers. “Anything that’s associated with Einstein is something that we can cover,” said Richard Price of the APS. However, the program organizers are continuing to add speakers as requests come in.

Every US student sent to the 2004 International Physics Olympiad brought home a medal. Held this year in Pohang, South Korea, the Olympiad brings together high school physics students from 72 nations around the world to participate in the global competition. Yi Sun (San Jose, CA), Anson Hook (Princeton, NJ) and Eric Mecklenburg (Gates Mills, OH) won gold medals, Anson Hook, Elena Udovina (Shaker Heights, OH) won a bronze medal, and Jeffrey Middleton (Austin, TX) brought home a home bronze medal. Udovina earned special honors: the most original solution in the competition, and the best score among female participants. This is the second year in a row that the US has earned top female student honors. Coaches Mary Mogge from California State Polytechnic University in Pomona, where she chairs the physics department, and Robert Shurtz, a physics teacher at the Hawkins School in Gates Mills, OH, accompanied the team to the nine-day competition. The American Association of Physics Teachers (AAPT) is responsible for recruiting, selecting and training teams each year. Udovina is featured in the photo on page 6.

The Back Page: Cultural Divide May Impact Labs Soonest
By Alan Karp

October 2004 Volume 13, No. 9
A Publication of The American Physical Society  http://www.aps.org/apsnews
“It only takes a little tiny difference overall to make it so that the universe now is made out of matter.” — Fred Gilman, Carnegie Mellon University, on CP violation observed in B mesons at SLAC, Los Angeles Times, August 7, 2004.

“Only now, eight months after the launch of the Cassini spacecraft, are we observing Saturn, The Baltimore Sun, August 30, 2004.

“Wollaston was educated at the Charterhouse, a private school in London, and later at Cambridge University, where he studied mathematics and physics. In 1802, he developed the refractometer, an instrument for measuring the index of refraction of a material. Wollaston’s work in direct sunlight. The prism was no longer needed; the artist could draw the image on paper by placing the prism and sighting lens, the so-called camera lucida, in front of the subject. The draftsman has the illusion of seeing both the reflected scene and also the object.” — Richard A. Valeriani, International Councillor, APS News, October 2004.

“Wollaston’s camera lucida is described in contemporary accounts as being pleasant in appearance and very polished and refined in manner, but he lived alone and worked in rigid seclusion. He died of a brain tumor on December 21, 1828. The mineral wollastonite was named in his honor.” — Richard A. Valeriani, International Councillor, APS News, October 2004.
Physics and Journalism: Different as Night and Day
By John Veysey

I published ten articles in the last two months. In physics, a profession that is particularly known for its public silence, that should make me eligible for a job, an award, or at least a gold star. I spent the summer as a journalism intern at the University of Illinois in Urbana-Champaign. But after only a three-day orientation, I reported to the Milwaukee Journal Sentinel, where I’d been assigned.

By the end of my first assignment—even before getting computer access—I was to cover a press conference given by EPA Administrator Leavitt. I panicked,Intended Audience, and wrote my story the published the next day. Not many people ever read or understand anything written by a physical. APS has about 40,000 readers. The Milwaukee Journal Sentinel sells millions of papers each week. Over the course of the summer, my editor taught me how to write for a wider audience; she knocked science off its pedestal.

Good research doesn’t always make a good story.

Throughout my fellowship, I struggled to write the beginning, or “lede” (pronounced “lead”), of my stories. Trying to write on a deadline, I often neglected the lede, planning to revisit it after finishing. But this never worked, with my editor sending me back to “take another crack at the lede.”

I had to see the differences between my good ledes and my bad ones. I needed to become a better writer, to craft a hook to catch the reader’s eye. The lede was the story. But that was the easy part.

More importantly, I had to understand that a casual reader doesn’t approach the story in the same way I do. As a scientist, the first thing I wanted in a story was the “idea,” then a detailed explanation, and finally what the implications might be. An audience for “cool” research is enough to make me read a story. But that’s not how many people read the Milwaukee Journal Sentinel.

It’s humbling to realize that people don’t automatically care about science. But as a science journalist, I should be able to write about all things scientific. Even though resistance to antibiotics has never been proved in the lab, the scientists warn it is only a matter of time. As an experimentalist, I appreciated that the fear is theoretical but this bias forced me to include a representative of the soap and detergent association making the same point.

There were researchers from Columbia University who recently did a study following two sets of families, one that used antibacterial products in their homes and one that didn’t. The research found no significant difference in the rates of colds and infections between the two groups—pretty conclusive I thought. But when I interviewed the soap and detergent association, it didn’t share this enthusiasm. They claimed that these products will make you healthier, but rather that they will kill germs, which no one disputes. Finally I was left to write the story. I took a lesson I had, added in a paragraph explaining the study’s results as well. The story was used in an unorthodox manner as antibiotics.

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Physics and Journalism: Not So Different After All
By Zerah Lurie

Whenever I tell people that I am studying journalism but I used to study physics, the usual response is “That’s quite the change.” I have always wondered whether there was a big difference between the two and after spending the summer as one of two APS Mass Media Fellows, I can better answer that question.

Getting a couple of physics degrees was, let’s be honest, difficult. As a science reporter in Milwaukee, I panicked, thinking I won’t have anything to talk about when I go back to the university. But I have spent the last year and a half thinking about science. But as a result, I’ve learned not merely to explain interesting science, but to explain why science is interesting. Publishing in a newspaper is a lot more fun than writing for academic journals.

My editor decided it was “time for another story on tornado safety,” and I reluctantly wrote a story weaving in facts with an account of a couple who survived the destruction of their house by sheltering under the stairs in the basement.

A week later, I received a call from an elderly woman who shared her enjoyment of my story. She even cut it out and put it on her wall. That doesn’t happen when you publish in Peer Review Letters.

Plus, she said that my prose was lucid and simple. For all educated academics, that’s really an accomplishment! In graduate school, my research covered about one topic a year, in mind numbing, hair pulling detail. Science reporting forced me to dive into two or three disciplines a week, sometimes even within the same field.

As an academic like myself, that’s really an accomplishment! In graduate school, my research covered about one topic a year, in mind numbing, hair pulling detail. Science reporting forced me to dive into two or three disciplines a week, sometimes even within the same field.

The House Appropriations Committee cut the NSF budget by 2%, while the full House approved a 5% increase for the DOE Office of Science and restoration of funding for the NIST core programs that plummeted in last year’s omnibus bill. The House Appropriations Committee cut the NSF budget by 2%, while the full House approved a 5% increase for the DOE Office of Science and restoration of funding for the NIST core programs that plummeted in last year’s omnibus bill. The House Appropriations Committee cut the NSF budget by 2%, while the full House approved a 5% increase for the DOE Office of Science and restoration of funding for the NIST core programs that plummeted in last year’s omnibus bill. The House Appropriations Committee cut the NSF budget by 2%, while the full House approved a 5% increase for the DOE Office of Science and restoration of funding for the NIST core programs that plummeted in last year’s omnibus bill. The House Appropriations Committee cut the NSF budget by 2%, while the full House approved a 5% increase for the DOE Office of Science and restoration of funding for the NIST core programs that plummeted in last year’s omnibus bill. The House Appropriations Committee cut the NSF budget by 2%, while the full House approved a 5% increase for the DOE Office of Science and restoration of funding for the NIST core programs that plummeted in last year’s omnibus bill.
Dentistry and the Priesthood Better Career Belts than Science

Over the years we have heard many pronouncements on "shortages" of scientific talent. These have not corresponded with reality. Recent pronouncements of the National Science Board, as discussed by Roman Czukaj in the July APS News, is an example.

An honest editorial on this topic entitled "Supply without demand" was published in Science Vol. 303, 20 Feb 2004, page 1105.

Some of my former students, even recent graduates, reported they were laid off from their jobs, even in 1998, even in "good" economic times. Conditions are of course worse during a downturn than the current one.

None of my friends who are dentists have been laid off.

On a recent trip to visit a renowned senior industrial researcher, I saw some empty offices next to his. I asked why the offices were empty and was told, "It is not helpful to trot out the old red herring of a Biblical claim of 6000 years for the age of the earth (or the age of the universe as another myth)."

A literal reading of the Bible shows that no such claim can be found anywhere in the page. Most of the modern scholarship by those who do take the Bible seriously, and also as such literature allows, shows why the word "day" ("yom" in Hebrew) of the Genesis text were intended to be read as long periods of time (i.e., periods of very many days, years). Such a view has been held throughout Christian history with Augustine (AD 354-430) as the first to clearly write about such issues.

Genesis, when read with an awareness of the wisdom Hebrew and within the context of the rest of the Bible record, actually offers an account in surprisingly good agreement with most key aspects of what physical cosmology and natural history is now basically telling us.

Recent books by Robert Newman, Hugh Ross and many others have made this point very lucidly. These books of course contain extensive physics training and respect for the actual physical data, whereas they also claim the title of 'creationist' and they do not hold to a fixed old earth.

It is not helpful to trot out the empty place of time of a very vocal minority of English speaking North American Christians and then pin those views on all Christians who would also seek literalism as the literal meaning of the Biblical text. It would be much more useful to refocus this discussion on the fact that many professional physicists and practitioners of just about every other field of science see very serious problems with macro-evolutionary theory. As P. C. W. Davies elegantly points out in a recent paper in the International Journal of Theoretical Physics (2003), the physical processes operating in our universe do not spontaneously generate the massive amounts of information needed to drive any credible macro-evolutionary process. The complaint that macro-evolutionary theory does not persuasively account for the colossal information content of life is one seldom rooted in hard science and not religion.

The real issue here is the suppression of dissent and debate. There are scientifically valid reasons for controversy here. As with many other areas of Science, we would do best to allow the debate to occur and to teach both sides of this controversy to anyone beginning a course of study in Biology.

There are certainly many who badly need macro-evolutionary theory to be true to justify a worldview that they have chosen. This is their choice and they should be allowed to have it.

However, such people should not be allowed to soley determine the rules of this debate or to suppress questions others would ask. Science flourishes best when assumptions are ruthlessly put to the test and free inquiry is encouraged.

With regard to macro-evolutionary theory, many are concerned that this is not what is actually happening.

Douglass L. Keil Fremont, California

Don’t Suppress Debate on Evolution

Mary Lu Larsen’s letter in the June issue of APS News was very disappointing. She tries to make her point by resorting to the old red herring of a Biblical claim of 6000 years for the age of the earth (or the age of the universe as another myth).

A literal reading of the Bible shows that no such claim can be found anywhere in the page. Most of the modern scholarship by those who do take the Bible seriously, and also as such literature allows, shows why the word “day” (“yom” in Hebrew) of the Genesis text were intended to be read as long periods of time (i.e., periods of very many days, years). Such a view has been held throughout Christian history with Augustine (AD 354-430) as the first to clearly write about such issues.

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Douglas L. Keil Fremont, California

Regarding the Former Ronald Reagan

“The Back Page” of the July issue contains a sentence with this clause “soon after the collapse of the former Soviet Union.” The former American edition did not collapse. Something that no longer exists cannot collapse. What collapsed was the Soviet Union.

Time To Say the “N” Word

I read with interest the commentary upon the content of Harold Varmus’s Back Page at the June 2004 issue. It seems to me that the American Physical Society would do very well to print a Back Page that offsets both political parties. Someone should layoffs the actual number concerning energy in the future. We are NOT going to get off on fossil fuels anymore. It is going to take a return to nuclear power on a large scale to achieve any change at all in the long-term energy policy of the United States.

In the present election, neither party will speak the “N” word, but instead moral platitudes about how renewables will save. However, every reader of APS News can tell a Gigawatt from a Kilowatt. The very necessary task of educating the public begins with such explicitly simple arithmetic.

Tom Shoahen

Lobbying Efforts are Misdirected

I recently attended DAMOP, where I walked around on many occasions the how for physics has been decreasing under the current administration. Then in the same issue of APS News that reported on DAMOP I found an article titled “Slayes’s Low-Key Approach Pays Off for APS Lobbying Efforts.”

The article points out that Slayes is employed to work on federal budgeting efforts. It has been very successful in pursuing its own liberal politics, the funding that he is supposed to be lobbying for has decreased. I can only think that APS would be better served if our lobbying efforts were instead focused on funding.

Greg Ranum

TUCON, AZ

Time Flies When You’re Having Fun

You got it right to an order of magnitude, a decade to be precise. In “This Month in Physics History,” you note the “thirty years” before the discovery of the antiproton (1955) and the production of the first antiprotons (1955).

Perhaps the Sixties got lost in a purple haze, or maybe you prefer to think that the Eighties didn’t count.

David Reis
Ann Arbor, MI

Ed. Note — We apologize— we did the calculation in the rest frame of the anti-proton and neglected to transform back to the laboratory frame.

Cosmic Rays Discovered in 1911–1912

Victor Hess received the 1936 Nobel Prize for the discovery of cosmic rays in experiments during 1911–1912, not 1930 as cited in the article about the positron (“This Month in Physics History,” APS News, August/September 2004). To explain the increasing intensity of ionizing radiation with increasing altitude during manned balloon flights up to 16,000 feet, Hess proposed that the radiation arrives on the earth’s atmosphere from “outside” of the earth. The mysterious radiation was called “horostrahlung” until Milikan coined the term “cosmic rays” in 1929. See also “This Month in Physics,” Vol. 12, p. 998 (1911); Vol. 13, p. 1084 (1912).

George W. Clark
Cambridge, MA

Positron Not Predicted Until 1931

Contrary to what is stated in “This Month in Physics History,” APS News, August/September 2004, the positron was discovered in 1931 by J. D. Jackson and C. D. Anderson. The fact that Einstein’s relativity implied that every particle in the universe had a corresponding antiparticle is in 1929.

Dirac published the Dirac equation in 1928, but he did not get around to predicting the existence of the antiparticle of the “dirac sea” until 1930, when he tried to identify the proton as the antiparticle of the electron. It was 1931 before he made the correct prediction of an electron as a partner of the electron.

J. D. Jackson
Berkeley, CA

To Tell the Truth

Thanks to Roman Czukaj (“National Science Board: Getting It Wrong Again?”, APS News, July 2004, p. 6)

His article reaffirms my faith in APS to tell the truth even when it’s bad news.

Allan Haken
Palo Alto, CA

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 4 October 2004
Triplets of Belleville: Mystery Solved?

Editor's Note: In the July issue of APS News we pointed out that Einstein's field equations for general relativity appear unexpectedly under the opening credits of the animated feature film "The Triplets of Belleville," directed by Sylvain Chomet of France. We asked our readers for their interpretation, and offered copies of the book "Physics in the 20th Century" for particularly convincing explanations.

We received many intriguing replies. We reprint some of them here, and, at the end, a communication from the Committee. We hope the mystery of how those equations came to be featured in the film is beginning to become clear.

*********

My girlfriend comes from a tiny town in the province of Belleville.—Ontario—the "big city." She is a believer in the Universe as a spiritual force.—there are no coincidences and it is up to us to find the true meanings in seemingly innocuous happenings. I am a physicist. The makers of the movie were not aware of the presence of Einstein's field equations.—this image was meant for me to view in APS News so that I could cut out the picture, show it to my girlfriend, and convince her that this image is a "sign" i.e. it stands for us to be together till the end of time.

Vlad Zeman
Toronto, Canada

For me the presence of the mathematical expression in the opening sequence acts as a sophisticated reference to the importance of gravity in what follows, as related to the film's subject matter (e.g. cycling), artwork (e.g. drooping faces and muscular legs), and dynamics (e.g. strained uphill climbs, falling frogs).

Los Alamos, NM

The equations appear during the opening sequence of the film, which is supposed to be an old cartoon from Los Alamos, NM (e.g. 'cycling'), artwork (e.g. drooping faces and muscular legs), and dynamics (e.g. strained uphill climbs, falling frogs).

M. Bulter
Berkeley, CA

Why do Einstein's field equations appear at the foot of the screen where the credits are shown in the opening of "The Triplets of Belleville?"

Robert HD, Boston, MA

Djagane Reinhart formed the Hot Club of France in 1934; much of the music of "The Triplets of Belleville" is based on Reinhardt's music.

Einstein is a member of a very famous physics Tripod of Einstein, Pauli, and Dirac (EPD) who published their work in 1935.

Chomet wanted to use as many triplet references as he could find from that era, but he could hardly find a way to write anything about the EPDR equation that could be easily recognizable. E=FMc² would be too easy, Einstein's field equations are really the perfect choice: cryptic to the general public (might as well hieroglyphs) but easily recognizable by the cognoscente.

A travel destination

Old Westbury, NY

If you've ever had to bike up a mountain, you have probably cursed gravity. As you're pedaling away, inching up the slope, you have a lot of time to think about it. And so, you eventually find out something about the equation of gravity.

In this movie, you can see the cyclists thinking about gravity during the race. The equations are an homage to cycling.

John Byrd
Berkeley CA

The following 3 people pointed us in the direction of Triplets of Belleville: "Physicist in Residence" Stéphane Durand. They will each be awarded the book "Physics in the 20th Century".

I purposely stayed to the end of the credits to see if there would be any explanation. There wasn't that I was able to discern, but I did get some information—namely, one person in the credits has "physicist" in his title.

My only guess is that the equation was an "aster egg" placed by the person who likes what one might find in a video game, a DVD, or a website. I can, of course, provide an algorithm for how to try to get the answer: Watch the film, remember this person's name in the credits, and contact him/her.

I bet she knows the answer!

Harold Cohen

Mason Porter

Although I would like to spin a dark and convoluted tale of the scientific oeuvre of the film makers, in which frustrated graduate students flee academia and the drudgery of tensor analysis and field theory to make big money in movies, I suspect that the truth is much simpler.

"Tripod" is a brilliant piece of animated film work, and a great deal of it was done on computers. In particular, the Belcan company GRID was involved in the production of "Tripod" and they used a product called "LightWave" by NewTek. According to Jan Ebo of GRID, one of the main software plug-ins used during production is called Relativity.

Thus, I'm pretty sure that the appearance of Einstein's equations of general relativity is a little inside joke involving the software used by the animators.

David Voss
Silver Spring, MD

The only connection I can make is that both the film and Einstein are associated with bicycles, i.e. the famous photo of Einstein riding his bike around the Princeton campus.

The opening sequence celebrates much of accomplishments of the 1920s, at least in the view of the director. This is shown by the appearance of Fred Astaire, Josephine Baker, Paul Whiteman(?), and Django Reinhardt. I believe that the message is that GR is one of the accomplishments of that era, possibly leading to these artistic developments since the publication of the GR theory predates the artists above.

Attila

Félix de Dieu

Not the author's true name; the real "sceur Grèe" died in 453 AD — Ed.

And now, a communication from Stéphane Durand himself:

Sylvain Chomet, the filmmaker, is one of my best friends. He lived for ten years in Montréal, but then moved on to Europe. He was fascinated by the idea that Einstein had spent a lot of time taking physics with him. He was particularly impressed by the huge amount of information condensed in some formula, especially in the main equation of GR governing the evolution of the entire cosmos from the big bang to its final state.

So, he simply decided (with his chief decorator to display it in the opening scene if you like). We think he is right — Ed.

APS Meetings Policy Boosts Non-Technical Contributions

A little-known policy governing contributed papers at the March and April meetings can allow authors to submit both technical and non-technical work to different sessions. Because of the large number of abstracts that are submitted, it is APS policy that "first author may present only one contributed abstract for the regular program." There is an exception, however, "if the second contributed abstract is of a non-technical nature, and is submitted for a session of broad concern to the physics community sponsored by an APS forum or Committee." In a recent call for papers, the Forum on the History of Physics (FHP) notes that for the first time it is organizing contributed sessions at both March and April meetings. The FHP Executive Committee hopes the rule will encourage attendees to submit abstracts not only on the subject of their current research, but also on history. "What do you get out of this?" the FHP call for papers asks. "The chance to sound off!"

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October 2004
Olympiad from page 1
year to compete in the international competition. High school teachers nominate their best students, and those who make the top 200 scores of each grade level are invited to attend the semifinal round of the selection process. A second test, transcripts, and letter of recommendation are used to narrow it down to 24 members of the US physics team. Those students then go to the American Center for Physics headquarters for final team training camp. Over nine days, the finalists receive an introduction to the first-year university curriculum and learn the material during their remaining time in high school. And when its over, five students are picked for the Travelling Team to compete in the International Physics Olympiad. The US program was started in 1986 to promote and demonstrate academic excellence and prepare students for the International Physics Olympiad. Since then, the teams have won a total of 22 gold medals; 16 silver medals; 24 bronze medals; and 10 honorable mentions. The US Physics Team is co-sponsored by the AAPT and the American Institute of Physics. APS is also a regular contributor.

Speakers from page 1

itization is needed of which to reduce the number of high school students who will probably be on four year colleges with students who are interested in physics, who would like to have an expert from APS come in and talk to them. Virginia Trimmer, vice-chair of FHP, is in charge of FHP's contribution to the physics program, and the physics program would especially try to reach historically black and Hispanic colleges, as well as groups in remote or less privileged areas. "We hope to be able to offer a little bit of travel support to people to go to truly poverty-stricken colleges," she said.

Another component of the program Price is organizing is a database of materials for speakers. Speakers might find a good graphic, a good quote, or even a complete lecture, so Price is collecting such materials and will make them accessible on the FHP website.

The GGR and FHP have taken up this project because these units feel particularly associated with Einstein, said Price. "We like to say we are the people who built rockets while knowledge about electrically charged particles was growing and made them accessible to students," said Price. "We hope to be able to offer a little bit of travel support to people to go to truly poverty-stricken colleges," she said.

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VEYESY from page 3

one story. Over the summer, I covered everything from exotic species ecology to Native American archeology to aequous geology. I even wrote a story about the life and times of someone who has won a Nobel Prize. I hope people will enjoy reading it and learning something new. It is a challenge to make sure you correctly understand the research. As a reporter, I interviewed many scientists, largely ignorant of their research. Nearly everybody I spoke with was kind and helpful, taking the time to explain their work. Understanding the science is a challenge. How do I learn it? I took me even longer to craft a story that would interest the general public. I'm not a budding journalist, but I'm also a budding journalist.

House from page 1

A theoretical high-energy physicists from New Jersey is the new APS Congressional Fellow for 2004-2005. Valerie Thomas, a research scientist at Brookhaven National Laboratory and a member of the Science, Education, and Environment Division, will spend the next year broadening her congressional experience through direct involvement with the legislative and political processes. The APS Congressional Fellowship program is intended to provide a public service by making individuals with scientific knowledge and skills available to members of Congress. In turn, the program enables the physicist to gain experience in the political process.

Valerie Thomas attended Swarthmore College as an undergraduate, graduating with High Honors and a BS in physics, and subsequently pursued graduate studies at Cornell University, earning a PhD in theoretical high-energy physics in 1988 with a thesis on the calculation of magnetic monopole decay in grand unified theories. While at Cornell, she became involved with nuclear arms control issues. That interest carried over into her postdoctoral research, which involved studying nuclear arms control treaties through the detection of solid-fueled rocket boosters and sea-launched cruise missiles.

As a postdoc, she helped organize the International Summer Schools on Science and World Consumption of materials. In her laboratory, she is developing GPS and radio devices to track objects in the waste and recycling stream. She is also co-chairing a committee on the use of science in environmental policy at Princeton. She has found the APS to be very useful in helping her develop an awareness on policy issues and gain experience in this area.

"The fellowship provides a wonderful opportunity for an academic like me to work in government," she said. "I hope to use my experience not only to help the private sector work more constructively with, and more broadly to develop a strategic vision for the continued development of technology, science, and environmental protection."

Following an intensive orientation process, Thomas will choose where to spend her Fellowship year, either working as a Congressional Staffer for one or two years, or staff for one year and then a position as a permanent policy scientist. Her policy interests include environmental issues—such as reducing carbon emissions—and nuclear issues, in particular, developing the growing use of nuclear, chemical or biological weapons around the world. More information on the APS Congressional Fellow program, See http://www.aps.org/public_affairs/fellow/index.cfm

Thomas is selected as 2004-2005 APS Congressional Fellow

A theoretical high-energy physicists from New Jersey is the new APS Congressional Fellow for 2004-2005. Valerie Thomas, a research scientist at Brookhaven National Laboratory and a member of the Science, Education, and Environment Division, will spend the next year broadening her congressional experience through direct involvement with the legislative and political processes. The APS Congressional Fellowship program is intended to provide a public service by making individuals with scientific knowledge and skills available to members of Congress. In turn, the program enables the physicist to gain experience in the political process.

Valerie Thomas attended Swarthmore College as an undergraduate, graduating with High Honors and a BS in physics, and subsequently pursued graduate studies at Cornell University, earning a PhD in theoretical high-energy physics in 1988 with a thesis on the calculation of magnetic monopole decay in grand unified theories. While at Cornell, she became involved with nuclear arms control issues. That interest carried over into her postdoctoral research, which involved studying nuclear arms control treaties through the detection of solid-fueled rocket boosters and sea-launched cruise missiles.

As a postdoc, she helped organize the International Summer Schools on Science and World Consumption of materials. In her laboratory, she is developing GPS and radio devices to track objects in the waste and recycling stream. She is also co-chairing a committee on the use of science in environmental policy at Princeton. She has found the APS to be very useful in helping her develop an awareness on policy issues and gain experience in this area.

"The fellowship provides a wonderful opportunity for an academic like me to work in government," she said. "I hope to use my experience not only to help the private sector work more constructively with, and more broadly to develop a strategic vision for the continued development of technology, science, and environmental protection."

Following an intensive orientation process, Thomas will choose where to spend her Fellowship year, either working as a Congressional Staffer for one or two years, or staff for one year and then a position as a permanent policy scientist. Her policy interests include environmental issues—such as reducing carbon emissions—and nuclear issues, in particular, developing the growing use of nuclear, chemical or biological weapons around the world. More information on the APS Congressional Fellow program, See http://www.aps.org/public_affairs/fellow/index.cfm

Hodapp is new APS Director of Education

By Ernie Trettick

Ted Hodapp has joined APS as Director of Education and Outreach, replacing Fred Stein, who retired in early September.

Hodapp, who has been in position since July 27, says that he is motivated by a passion to improve education opportunities and physics programs in the US for physics researcher and teacher for many years, Hodapp loves the "human element" of education. "I really love physics. It's just cool. I'm more than being able to help other people see that has been a great joy to me," said Hodapp.

Hodapp received his PhD in quantum optics and atomic physics from the University of Minnesota in 1988, and then joined the faculty of the physics department at Hamline University in St. Paul, Minnesota. There he introduced several reforms to the physics curriculum that included a junior-senior seminar and an undergraduate research experience. He was named as chair of the department, and chair of the Science Division, and helped develop divisional programs. "We also substantially modified many courses to provide more hands-on learning, supervised many undergraduate research students, and presented numerous public physics demonstrations as a member of the "PipePhics Patrol." Hodapp also carried out research in optics and laser cooling, and spent several years as an academic administrator.

Hodapp is pleased to come to APS because he sees it as "a unique opportunity to further the goals that are especially the need to get more minorities involved in science. "We have a vast untapped potential that could be channeled toward the workforce," he said. One key to tapping that potential is education, said Hodapp.

As Director of Education and Outreach, Hodapp will oversee all APS education programs. In particular, APS is not being able to spend a considerable amount of his time at APS to the Physics Teachers Coalition (PhysTEC) program. At the PhysTEC partnering institutions, physics and education departments work together to introduce changes that improve education for future teachers. PhysTEC focuses on encouraging a student-centered, inquiry-based approach to learning.

Hodapp's predecessor, Fred Stein, started the PhysTEC program in 2001. Hodapp said he believes PhysTEC has been very successful, and he plans to continue and try to "see Hodapp on page..."
generate oddly-hypnotic, but essentially useless, screensaver graphics. Perhaps you’ve wondered if there’s something better that the beige box can do with its time. If so, you’re in luck: your computer will soon be able to while away the hours crunching numbers for astrophysics research thanks to Einstein@Home.

The project is part of the World Year of Physics 2005 (WYP2005), which celebrates the importance and vitality of physics in the new millennium and marks the 100th anniversary of Einstein’s miraculous year. The Laser Interferometer Gravitational Wave Observatory (LIGO) Scientific Collaboration (LSC) and the APS are working to develop Einstein@Home to allow anyone with a broadband Internet connection to contribute their computer’s idle processing power to make more precise observations of the gravitational wave source.

Some recent Focus stories:

- **Needles Capture Whispers of Light**
  Zinc oxide nano-needles form the smallest “whispering galleries” for visible light ever created.

- **Get Wired for Superconductivity**
  A new type of wire offers electric current without resistance and is also strong and light.

- **Spotlight on Nanotubes**
  In carbon nanotubes, researchers can control precisely where electrons fall into holes to produce light. The effect promises new insights into these superstars of nanotechnology.

AIP STATE DEPARTMENT SCIENCE FELLOWSHIP

This Fellowship represents an opportunity for scientists to make a unique contribution to US foreign policy. At least one Fellow annually will be chosen to spend a year working in a bureau of the State Department, providing scientific and technical expertise to the Department while becoming directly involved in the foreign policy process. Fellows are required to be US citizens and members of at least one of the 10 AIP Member Societies at the time of application.

Qualifications: A PhD in physics or closely related field or, in outstanding cases, equivalent research experience.

Applicants should possess interest or experience in scientific or technical aspects of foreign policy. Applications should consist of a letter of intent, a two-page resume, and three letters of reference. Please visit http://www.aip.org/gov/stf.html for more details. All application materials must be postmarked by November 1, 2004 and sent to:

AIP State Department Science Fellowship, American Institute of Physics, Attn: Audrey Leath, One Physics Ellipse, College Park, MD 20740-3843.

ANNOUNCEMENTS

**APS CONGRESSIONAL SCIENCE FELLOWSHIP 2005-2006**

The American Physical Society is currently accepting applications for the Congressional Science Fellowship Program. Fellows will serve one year on the staff of a senator, representative, or congressional committee. They are afforded an opportunity to learn about the legislative process and explore science policy issues from the lawmakers’ perspective. In turn, Fellows have the opportunity to lend scientific and technical expertise to public policy issues.

**QUALIFICATIONS**

- include a PhD or equivalent in physics or a closely related field, a strong interest in science and technology policy, and, ideally, some experience in applying scientific knowledge toward the solution of societal problems.
- Fellows are required to be US citizens and members of the APS.

**TERM OF APPOINTMENT**

- is one year, beginning in September of 2005 with participation in a two-week orientation sponsored by AAAS. Fellows have considerable choice in congressional assignments.

**A STIPEND**

- of $50,000 is offered in addition to allowances for relocation, in-service travel, and health insurance premiums.

**APPLICATION**

- should consist of a letter of intent approximately two pages, a list of key publications, a two-page resume, and three letters of reference. Please see the APS website (http://www.aip.org/public_affairs.fellows.html) for detailed information on materials required for applying and other information on the program.

**ALL APPLICATION MATERIALS MUST BE POSTMARKED BY JANUARY 17, 2005 AND SHOULD BE SENT TO THE FOLLOWING ADDRESS:**

APs Congressional Science Fellowship Program
APs Executive Office
One Physics Ellipse
College Park, MD 20740-3843

Workshops on Professional Skills Development for Women Physicists

Do you want to influence hiring and policy within your department?

Do you have great ideas that you want to communicate to your colleagues?

Do you need, wish you had more space for your research? 

If so, the Committee on the Status of Women in Physics invites you to attend one of the five workshops entitled “Professional Skills Development for Women in Physics.”

Funded by the National Science Foundation, these workshops will cover women in key skills that are needed to enhance their careers:

- Training in persuasive communication, negotiation, and leadership will be presented by experienced professionals, with an aim toward increasing the incidence of female scientists within their own institutions.
- In addition, these workshops will provide a special opportunity for networking among participants.

Each workshop will be limited to 20 participants for optimal benefits.

Details are available on the CSWP webpage.

Now Appearing in RMP: Recently Posted Reviews and Colloquia

You will find the following in the July, 2004 online edition of Reviews of Modern Physics at http://rmp.aps.org:

**Colloquium:** Exactly soluble Richardson-Gaudin models for many-body quantum systems

—J. Dukelsky, F. Pollet and G. Sierra

This Colloquium reviews a new class of exactly soluble models for systems exhibiting strong pairing correlations. There is an exact correspondence between these models and a two-dimensional, classical electrostatic problem, permitting a simple geometrical interpretation of the solutions. Applications are given to nuclei, metallic grains, and Bose-Einstein condensates.

**HODAPP** from page 6

to expand its reach, and will welcome new ideas as appropriate.

Hodapp said he would also work “to continue to build bridges between APS and other societies, such as AAPT and AIP in order to capitalize on resources, ensure good communication, and mobilize people.”
Dear APS Members,

I was invited by the editor of APS News to write a letter giving a perspective of my recent reported news concerning security at Los Alamos National Laboratory (LANL). The culture of disregard for national security prevalent at LANL is at the core of this critical issue. As a professional member at Los Alamos, I have come to know in my 23 years at Los Alamos National Laboratory the primary concern for security is the backbone of the scientist, and it has been made clear that if LANL is not secure, it is not a place to work. I believe there is something about the Los Alamos culture that we have not yet been able to explain. The systems at LANL are not secure, and it has been made clear that if LANL is not secure, it is the only place to work.

I was invited by the editor of APS News to write a letter giving a perspective of my recent reported news concerning security at Los Alamos National Laboratory (LANL). The culture of disregard for national security prevalent at LANL is at the core of this critical issue. As a professional member at Los Alamos, I have come to know in my 23 years at Los Alamos National Laboratory the primary concern for security is the backbone of the scientist, and it has been made clear that if LANL is not secure, it is not a place to work. I believe there is something about the Los Alamos culture that we have not yet been able to explain. The systems at LANL are not secure, and it has been made clear that if LANL is not secure, it is the only place to work.

Cultural Divide May Imperil Lab's Survival

Rhon Keinigs

The entropy in the scientific community. It is my opinion that such attitudes and some of the resultant lab culture could be damaging going forward. I have been taken at LANL and will ultimately negatively impact our ability to fulfill our national security mission, making it very difficult to attract and maintain a productive workforce.

Some final thoughts and my analysis of the present situation at Los Alamos National Laboratory: A new policy embracing the three imperatives of Awareness, Intolerance, and Determination (AID) has been established by our director, and it has been made very clear that every member of the laboratory workforce must understand and operate under three directives:

1. We must ensure an awareness of our work environment and the strict adherence to the rules and procedures for safety, security, and compliance.
2. We must be intolerant of those who put co-workers, the Laboratory and the country at risk.
3. We must be determined to build on a foundation of excellence. Certainly, paramount to the Laboratory's ability to carry out its fundamental National Security mission is excellence in science. The potential for losing this excellence is recognized by U. of California President Robert Dynes, and was addressed during his recent visit to the Laboratory: "As we look to the future, (my) primary concern is the potential for losing this excellence of science! I believe this is what drives everyone else."

I fully concur. From my analysis of the present situation at Los Alamos I can only conclude that several measures being undertaken or being addressed are running the potential risk of driving away the very scientific culture that forms the backbone of the work we perform at the laboratory in the National interest.

Respectfully submitted,
Rhon Keinigs

Rhon Keinigs is a long-time staff member at Los Alamos. His research interests are in plasma physics, shock wave interactions in solids, and dynamic material properties of metals.