

SLAC is operated by Stanford University for the Department of Energy

First Ever SMB School Starts at SSRL

FOR A STUDENT IN the sciences, having access to the latest tools is critical for success. Easier said than done, until enterprising scientists from SSRL (SLAC's synchrotron division) put their heads together and came up with an idea.

Ashley Deacon, Ana Gonzalez and Peter Kuhn organized the first annual school at SLAC for students in structural molecular biology (SMB) which was held at SLAC September 19-23. "The school was funded through our grant from the National Institutes of Health (NIH), along with some sponsorship from Compaq, SGI, Aguron and CCP4," said Deacon. SSRL is operated with funds from DOE's Basic Energy Sciences and the SMB program is supported by both NIH (NCRR and NIGMS) and DOE's Office of Biological and Environmental Research.

"We wanted students to be aware of the latest software for SMB," says Deacon, a staff scientist at SSRL. "We invited an international group of 26 graduate students and post-docs to our first school and our goal was to give them hands on training in the latest experimental and computational methods in crystallography." Courses were taught by a group of invited international experts, as well as by many members of the SMB group at SSRL.

"Science is truly international, and we had an outstanding group of students and tutors for our inaugural year," said Gonzalez, a protein crystallographer. "It's fitting that SSRL was the host site since it is the oldest synchrotron radiation (SR) source in the country and pioneered the application of SR to crystallography."

SSRL began in 1974, as a parasitic user of the synchrotron radiation produced during SLAC's high-energy physics experiments. The demand for SR became so great that, in 1991, SSRL became independent from SLAC's schedule when it acquired its own source of electrons to make X-rays. "And we've been oversubscribed ever since," says Keith Hodgson, Director of the division. The greatest growth areas are in biomedicine and environmental molecular sciences.



Organizers of the first Structural Molecular Biology School at SLAC were (l-r) Ana Gonzalez, Ashley Deacon, and Peter Kuhn.

Synchrotron radiation is simply electromagnetic radiation produced by electrons traveling in a ring. X-rays are one component of the electromagnetic spectrum, which also includes visible light, microwaves and radio waves. X-rays are useful for studying molecules and other microscopic things because they have smaller wavelengths than visible light. Scientists typically use radiation with the same or smaller wavelengths than the objects they are trying to observe. Protein crystallography uses protein samples that are in a crystal form. In a crystal, all the molecules are lined up the same way. X-rays that pass through the crystal are deflected by the molecules. These deflected x-rays are then measured by a detector. The data can be used to produce a map of the atoms, allowing the scientist to visualize the three-dimensional structure of the protein molecule.

"Once we have the structure, we can determine the function," says Deacon. "And of course, once we know the function, especially of viruses and other important biological macromolecules, then we can start to develop improved inhibitors to combat diseases, but of course, that is much, much further down the scientific road."

-P.A. Moore

Director's Corner



by Jonathan Dorfan

Last month we had the good fortune to have a visit from Mildred Dresselhaus, who is the new director for DOE's Office of Science. Dr. Dresselhaus was appointed to the job in August, taking over from Martha Krebs

who resigned last December. SLAC is one of the first labs that Dresselhaus has visited, and she spent half a day here in conversations about our scientific program and touring the facilities.

We focussed on the scientific objectives of the laboratory in both the high energy and synchrotron light programs. In so doing, we brought Dr. Dresselhaus up to speed on the ongoing research, while at the same time helping her to understand the Laboratory's aspirations for future projects. Part of the visit was spent in the inescapable discussion about the budget. I came away confident that Dr. Dresselhaus will be a strong advocate for increased support for the Office of Science programs.

The DOE sets its scientific priorities with strong input from discipline-specific advisory committees that are staffed by scientists from the appropriate discipline. In the case of the light source program (there are four major light sources in the US; one each at SLAC, LBNL, Argonne and Brookhaven), DOE has two advisory committees: Basic Energy Sciences Advisory Committee (BESAC, see <http://erntwww.er.doe.gov/production/bes/besac/BESAC.htm>) and Biological and Environmental Research Advisory Committee (BERAC, see <http://www.er.doe.gov/production/ober/berac.html>). ZX Shen (as vice chair) and Jo Stohr from SSRL serve on BESAC. Keith Hodgson from SSRL chairs BERAC. The next major proposal for SSRL is the Linac Coherent Light Source (LCLS, see <http://www-ssrl.slac.stanford.edu/lcls/>). Based on strong support from an earlier BESAC panel, we received major funding from DOE for the R&D to develop this proposal. We would like now to move into the

Conceptual Design phase, in the hopes of beginning construction in 2003. To do that requires that BESAC pass on to DOE a favorable response to the detailed study of the scientific case for the LCLS that has recently been completed. This scientific case will be presented to BESAC at its October 10-11 meeting. I will attend that meeting to pledge the Laboratory's strong support for the LCLS.

The High-Energy Physics Advisory Panel (HEPAP) is the committee that advises DOE in the area of high-energy physics. This panel is chaired by Fred Gilman of Carnegie Mellon (and formerly of SLAC), and has Ewan Paterson as its SLAC representative. HEPAP is playing a central role in a year-long planning process aimed at setting priorities for the future of US HEP. The process has three parts. The first is a so-called "white paper" commissioned by DOE and NSF which is being generated by HEPAP. The white paper will give short-term guidance based on an update of the HEPAP year-long study completed in February 1998 (known as the Gilman Report). Much has happened in the intervening two and a half years which allows HEP to give crisper and more directed advice, in particular in the area of future machines like the NLC. The white paper will be public sometime in October 2000. The second part of the planning process will be a HEPAP sub-panel study, to begin next Spring with a final report due by the end of 2001. The third part of the process involves a HEP community-wide, three-week study to take place in Snowmass, Colorado in the summer of 2001. This process will provide the HEPAP sub-panel with detailed input from the community. This three-part process is critical to the future of HEP in the US; it will generate, about a year from now, a blueprint for the expectations and aspirations of the field of HEP for the next 20 years.

To be sure, SLAC will be a key element of HEPAP's blueprint. We can also expect the blueprint to contain very strong support for the construction of an electron positron linear collider.

Annual SLAC Food Drive

MARY PARISH WOULD LIKE to send out a plea for donations in the food/toy drive this year. Last year, we were far below previous years' collections, and did not fill the barrels put out in various locations around SLAC. We need SLAC to participate more fully to help out the organizations that work year round for the needy. If anyone is interested in helping set up and collect donations, they can call Mary Parish at x2782 or e-mail mparish.

Work Safe, Work Smart

Two injuries involving days away from work have been reported since the last update of 7/17/00, according to Sharon Haynes, Workers' Compensation Coordinator. These incidents occurred on 7/26/00 and 9/11/00. The last injury involving days away from work was reported on 1/24/00, so SLAC's new record number of days between claims is 184 days.

DOE Office of Science Director Tours SLAC

MILDRED DRESSELHAUS, THE NEW director of the Office of Science at the DOE, was at SLAC for talks and tours last month. Dresselhaus has a PhD in physics from the University of Chicago. She has received numerous awards, including the National Medal of Science and 17 honorary degrees. The Office of Science that she has stepped into has an annual budget of about \$2.8 billion and is one of the largest sponsors of basic research in the federal government.

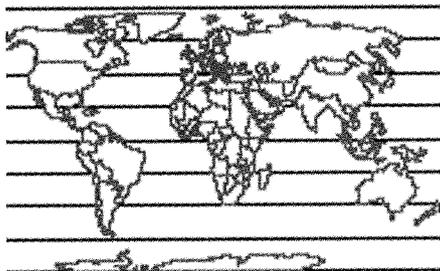
(Photos by P.A. Moore)



At the start of the tour, Greg Loew (center) is already deep into conversation with Dresselhaus (r). John Muhlestein (l) from the DOE Site Office accompanied Dresselhaus during her day-long visit to SLAC and gave her an overview of the DOE site office. Officials from the Oakland Field Office were also here for briefings.



At the Next Linear Collider's Test Accelerator, Dave Burke (l) showed Dresselhaus some of the technology being planned for the NLC. Dresselhaus (r) was a sharp and interested participant, coming back to Burke with pointed questions and comments. In the short stop at the BABAR control room, Dresselhaus met with a half-dozen users from around the world and peppered them with questions about their research and their roles at SLAC. "It's great to see someone so interested and involved," said one student on duty in the control room.



Borneo Jungle Tribe Benefits from High Tech Tools

TOOLS OF THE MODERN world, and accelerator physics, are now helping save the world's oldest rainforest on the island of Borneo. SLAC donated a salvage laptop computer to Earth Island Institute's Borneo Project a few months ago. Staff in Salvage, Administration, and Computing Services made an extra effort to get it prepared and properly formatted for the mapping software it now contains in its new life as a teaching tool for indigenous people in Borneo. The laptop went out at the last minute on Memorial Day weekend as part of a convoy of donated electronics. A volunteer carried it along on a trip to Uma Bawang, an interior village in Borneo.

The Borneo Project's mission is to help indigenous groups preserve and protect their ancestral lands from logging, and to promote the continuation of their culture through international outreach and exchange. They are currently running projects in micro-hydro electrification, mapping and crafts exchange. The

laptop is now part of a mapping project supporting nomadic Penan people.

The Borneo Project has trained local organizations to use conventional Western mapping techniques to help in their struggle against multinational logging companies and other corporate interests. This is especially important now, as the Penan tribe is engaged in a blockade to prevent any further logging in their customary territory.

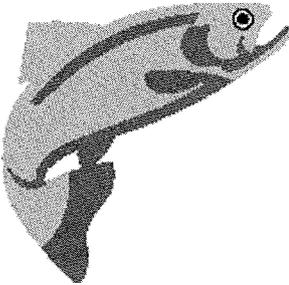
The SLAC salvage equipment program is available to local schools and eligible nonprofit organizations. See <http://www.slac.stanford.edu/gen/edu/education.html>, or contact PA Moore, x2605, xanadu@slac.stanford.edu for more information. More on the Borneo Project is at (<http://www.earthisland.org/borneo>), or call 510-527-4258). The group is very grateful for the equipment donated by the lab. The efforts of volunteers and organizations like SLAC are what help these non-profits continue their work. Thank you, SLAC!

—Lynda Winslow

Lab is Friend to

YOU'VE ALL SEEN 'EM - families of grazing deer, the occasional bobcat, rattlesnakes in the Klystron Gallery, and an errant skunk or two wandering into an open doorway. But what is SLAC's responsibility towards the land and the "locals," human and otherwise? None of the deer were available for comment, but humans living in the vicinity apparently think SLAC's all right.

In fact, when SLAC interviewed its neighbors in order to prepare a Community Relations Plan in 1993, it was found that almost no one in the local community knew what SLAC did, but they all had a positive view of the lab. According to Kirk Stoddard, SLAC was described as a "benign entity": working quietly, doing good things, and occasionally winning a Nobel Prize. Stoddard, an aquatic biologist by training, was the first person hired by SLAC specifically to work in environmental restoration.



What about now? "We occasionally get phone calls about conditions like discolored water in San Francisquito Creek, even though the creek is outside our lease holding," Stoddard said. "Virtually every time we have been contacted, the problem was caused by something or somebody other than SLAC, sometimes far removed. A resident once called from Sharon Heights to report a really strong smell of turpentine in the man-made 'creek' behind her house. 'What is SLAC doing?' she wanted to know even though no SLAC drainage crosses Sand Hill Road. So, Environmental Protection staff responded, and quickly traced the smell to a house that was being painted a few doors down the street."

A consortium was forming in 1993 to manage the watershed for San Francisquito Creek. Called the Coordinated Resource and Management Planning (CRMP) process, the concept attracted a wide range of stakeholders; SLAC and Stanford University were founding members, and the University hosted the inaugural meeting in November of that year. Stoddard has been a member of the CRMP Steering Committee since its inception, and SLAC staff have made several presentations at CRMP meetings. The CRMP process provides a great forum for exchanging information and meeting all the other folks involved with the creek: residents, activists, regulators, businesspeople, academicians and leaseholders. Stoddard says the contacts he has made through the CRMP have proven extremely valuable in building good community

relations and obtaining information more quickly.

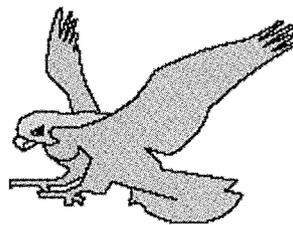
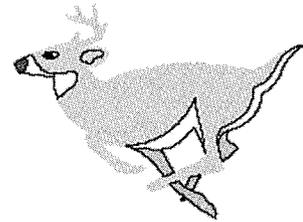
Due in part to the CRMP, SLAC is on very good terms with regulators, which range from local sewage authorities to federal agencies. "We've worked hard to cultivate good working relationships with our regulators, and we've had no major violations or penalties," Stoddard said. This is especially noteworthy in that SLAC is the largest and most 'visible' upstream entity in the entire watershed. The creek parallels the linac for about 2.5 miles between Searsville Dam and the confluence with Los Trancos Creek.

SLAC occupies 426 acres on Stanford-owned land adjacent to the Jasper Ridge Biological Preserve, an adjunct of Stanford University noted (among other aspects) for being a remarkably compact microcosm of most of the habitats in California. Despite all the ecological research done to date at Jasper Ridge, it was SLAC that performed the first comprehensive environmental survey of San Francisquito Creek in this area. The field work was done in 1992—fully 30 years after Stanford signed the contract with the US Government to build Project M (for Monster), which became SLAC. "Up to that time no one knew for sure whether SLAC had any impact on the creek," Stoddard said. To everyone's relief (and even mild surprise), the results indicated that SLAC was indeed a good neighbor.

Jasper Ridge is a biological preserve, set aside in perpetuity, whereas SLAC is part of Stanford's academic reserve, which includes open space among its various uses. Jasper Ridge encompasses Searsville Lake and

the first two miles of San Francisquito Creek, which is fed by mountain streams flowing between the upper reaches of Page Mill Road and Huddart Park. The creek flows from Searsville Dam, which was built in 1891, to San Francisco Bay. A popular resort in the 1920s and 1930s, Searsville Lake was finally closed to the public in 1973. The Jasper Ridge Biological Preserve was formally established in 1976.

Having a common boundary, Jasper Ridge and SLAC share an impressive



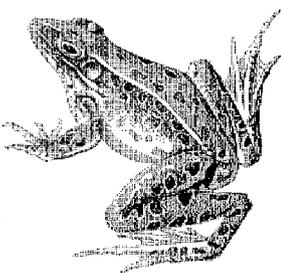
Feathers, Fur and Fish

biodiversity. Denizens include mule deer, tree frogs, red-tailed hawks, brown towhees, black phoebes, robins, finches, California thrashers, turkey vultures, white-crowned sparrows and great blue herons, not to mention diamondback rattlesnakes and skunks. The watershed is home to several threatened or endangered species of plants and animals, including the San Francisco garter snake, the California red-legged frog and the steelhead trout. Steelhead are seagoing trout that return to their place of birth to spawn. San Francisquito Creek is now the southernmost steelhead run in the Bay. Pollution is a major threat to the Creek, and SLAC operations need to take this into consideration. "The creek receives all of SLAC's storm water, sooner or later," Stoddard said, "and sediment control is every bit as important as keeping chemicals out of the storm drain."

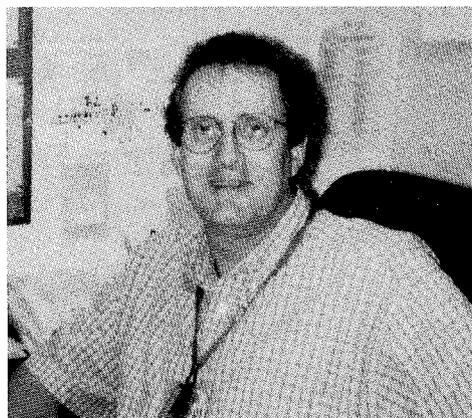
Several natural (that is, pre-SLAC) stormwater drainage ditches traverse the facility, notably at Sector 14, Sector 18 and IR-8. In accordance with the general stormwater permit, SLAC monitors runoff from the "first flush" that is, the first heavy rain of the season at four established locations to give a representative picture of the entire facility. Back in the 'good old days' at SLAC, someone was on call during the rainy season to take water samples, day or night. SLAC now uses automated samplers to collect stormwater runoff soon after a storm begins. "The theory is that any potential pollutants that have built up in the system are most likely to be detected in the first round of sampling analyses," Stoddard said.

Much progress has been made on the environmental front at the lab. Starting in 1985 as the Environmental Safety Office (with a staff of two), the Environmental and Restoration Department (EPR) is now one of six departments in the Environment, Safety and Health Division. Since 1991 EPR has completed a number of remediation projects, implemented programs, secured regulatory approval, maintained permits, developed procedures, and worked with the other divisions to become more integrated into routine operations. Of course, this means that eventually we will have only an Environmental Protection group; after all, the Environmental Restoration group is busy working itself out of a job!

—Lesley Wolf



It's An Emergency! What Do We Do?



WE FOLLOW THE EMERGENCY Preparedness Plan, of course. SLAC has a proactive approach to emergencies, and thanks to Steve Mahaley's efforts over the last year, several new documents and programs regarding emergency issues are being released. The Emergency Preparedness Plan can be found online at: <http://www.slac.stanford.edu/esh/manuals/epp2000.pdf>

"Complacency is the biggest problem," Mahaley says. As the Emergency Management Coordinator for the ES&H Safety, Health and Assurance (SHA) Department, Steve knows what he is talking about. During his 20 years in the Air Force, he saw more emergencies and disasters than most of us will ever go through. Mahaley was the Battalion Chief of the Homestead Air Force Fire Department when Hurricane Andrew hit Florida in 1990 and he organized the response to the disaster. When he moved to the Bay Area, he studied and received a degree in Fire Administration from Cogswell College, one of only seven colleges in the US to be FEMA (Federal Emergency Management Administration) certified. Now Mahaley devotes his time and energy to helping us at SLAC.

Since we have several fault-lines running through the area, Mahaley is planning for what we will need if an earthquake hits. Steve is coordinating efforts with the SLAC Medical Department and the Palo Alto Fire Department to organizing volunteers into Emergency Teams. To assist them, he has updated the ES&H Training courses.

Mahaley also hopes that the knowledge will be useful for emergency preparedness for families and homes. Training information can be found on the World Wide Web at: <http://www.slac.stanford.edu/esh/training/training.html>

—Larissa Williams

This article is seventh in a series to feature staff members of the ES&H Division. The ES&H Resource List is available on the ES&H Web site at <http://www.slac.stanford.edu/esh/esh.html>.

SLAC's New E-mail System: Have YOU converted?

THE END OF THE year is fast approaching and that's when the Exchange migration is due for completion!

Anyone still using our old POP or IMAP servers will need to convert to Exchange Server before the end of the year. Not sure if you are affected by this? If you find your name in this web page then you need to be converted: <http://www.slac.stanford.edu/comp/net/email/need-to-be-converted.lis>

The conversions have been going very well so far. The amount of time it takes to complete a single conversion varies widely but can normally be done in less than 2 hours, assuming a "standard" mail configuration. We've got over 650 users on the Exchange server already but we still have about 450 users to convert and with only 58 weekdays left as of October 1. We need to convert at least 7 people every workday between now and the end of the year.

Please do not wait till November and December when our workload will be high. You need to contact your local system administrator (NT, Mac, or Unix) and schedule an appointment for migration now.

For a list of local system administrators see: <http://www2.slac.stanford.edu/comp/winnt/local-administrators.html>

If you don't have a local system Administrator, please send e-mail to: desktop-admin@slac.stanford.edu.

Why are we being required to migrate from Eudora? For security! Eudora sends user ID and password "in the clear" every time we check our mail. "In the clear" means it is not hidden in any way. Hackers could get our user IDs and passwords quite easily.

Why did we decide on Outlook/Exchange for SLAC? We tested several email clients and servers, but Outlook/Exchange had the most to offer. Here are just a few of the most useful features:

- Outlook 2000 allows you to delegate others to send e-mail on your behalf;
 - Outlook 2000 has Public Folders that are kept on the Exchange server so information (contacts; calendars; e-mail) can be organized by groups and shared with all of SLAC or just the members of a group.
- Several web pages have helpful information for users and administrators. Begin with http://www2.slac.stanford.edu/comp/messaging/outlook_rollout.htm. You'll find what is needed to begin your conversion, information on upcoming classes, as well as Frequently Asked Questions and much, much more.
- Mark your calendar for our annual Cyber Faire, October 12th from 10:00 am to 2:00 pm in WKH Panofsky Auditorium and breezeway. At the Cyber Faire you can:
- Come by and have all your Outlook questions answered by our SCS mail experts! Look for the SCS Applications Table.
 - Sit in on the Outlook class at 1:00 pm in the Auditorium (great way to find out what Outlook is and what it can do)
 - We will have free Outlook 2000 Quick Reference Guides (for as long as they last!)
 - Sign up for the migration (we will have a sign up sheet to get your migration started!)

-Teresa Downey

Lab's First Napa Tour



(Photo: P. A. Moore)

SLAC Family and friends had an all-day tour of the Napa Valley last month, stopping at the Culinary Institute of America (CIA, Napa) for a cooking demonstration and tasting, and two small family-owned wineries for samples. Pictured here are (l-r) Maria Lungu, our medical doctor, and Gloria Labrador, nurse. Perhaps there's some truth to the rumor that a little red wine is heart healthy?

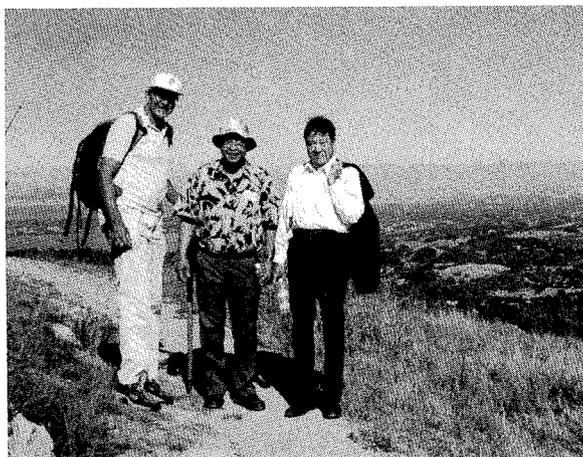
SLAC Theorist Honored with Food, Fun and Physics

IT WAS A DAY to walk and talk, eat and drink and honor a tall theorist who is called by a short, lower case name: bj (James) Bjorken. Over a hundred people gathered in the WKH Panofsky Auditorium in mid-September to honor Bjorken for his contributions to theoretical physics on the occasion of his retirement. "He looked at new areas of science, those that were difficult and unexplored," said one of the speakers, Leon Lederman, Nobel Prize winner and former director of Fermi Lab. Even the great Richard Feynman was reported to have said "I have done nothing that wasn't already in bj's notebooks," according to SLAC's Dick Taylor.

Bjorken is best known for his predictions derived from fundamental properties of quantum field theory about the behavior of deep inelastic electron scattering referred to as "bj scaling" and "the bj sum rule." His predictions, and their intuitive interpretation in terms of point-like constituents within the proton and neutron, (now known as quarks) were confirmed by Richard Taylor, culminating in a Nobel Prize in 1990 for Taylor, Henry Kendall and Jerry Friedman.

After the morning presentations, the participants were bused to the top of Windy Hill and invited to hike down, since no day with Bjorken is complete without a hike. The event was capped with a dinner outdoors at SLAC, with participants reminiscing about their adventures with bj.

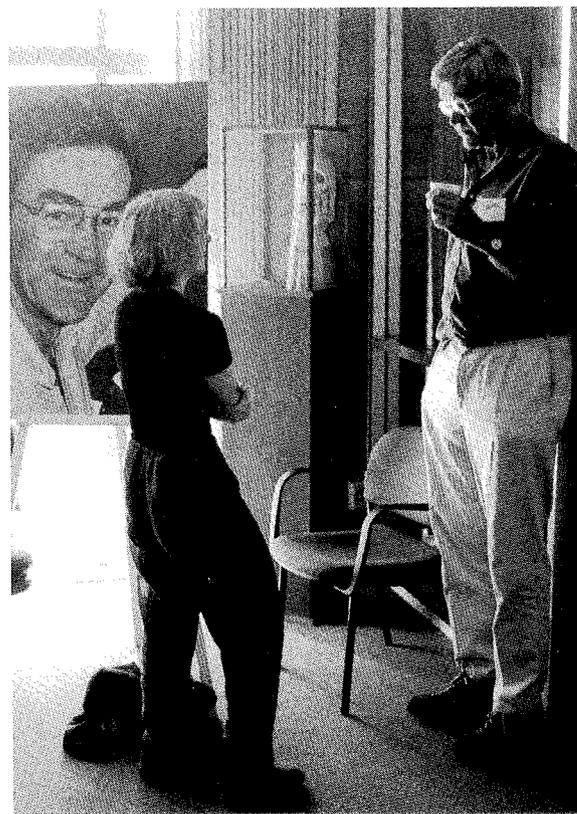
-P.A. Moore



Since Bjorken is an active outdoorsman, part of the program in his honor was a hike down Windy Hill. Here Bjorken (l) is pictured with SLAC colleague Paul Tsai (center), and Virginia Tech's Luke Mo (r).



Bjorken holds a copper representation of his scattering model, presented to him by Dick Taylor (right). Leon Lederman (far left) and Helen Quinn were speakers at the program.



Glennys Farrar from NYU chats with the guest of honor, James Bjorken, during a break in the presentations.



A. On October 17, Bebo White and I will present a seminar about web accessibility in the Orange Room from 2 – 5 p.m. The W3C's Web Content Accessibility Guidelines are in place to provide web site designers with specific suggestions on how to make their site content available to all users. 'Accessible' doesn't mean ugly or boring, and it will be DOE mandated in the near future. Come to the seminar and find out why accessibility is a good thing.

B. In the July *TIP* I asked for your comments about the SLAC home pages (see the form at www2.slac.stanford.edu/techpubs/WIM/newhomepage.html) in anticipation of a site redesign. I received 23 responses. The comments are available at www2.slac.stanford.edu/techpubs/WIM/results.html. What do you think? Some suggestions include: essentially clone the LBNL website, create a real intranet and hide most of the SLAC behind a firewall, use navigation tools like those at Amazon.com, and eliminate the welcome/detailed/highlighted page model. Do you need an interactive map to find your way around SLAC? Do you like the design and organization of the Brookhaven, LLNL, LBL, and Yale main web sites? Use the form to let me know what you think. You do not need to give your name, just your ideas!

It's 10 AM, And Does Your Escort Know Where You Are?



SLAC IS A WONDERFULLY diverse workplace, with many cultures and functions. This multiplicity of functions also has another aspect: access to certain areas is restricted due to the presence of industrial hazards (chemicals, electrical, lasers, radiation, sound). Such areas could

be dangerous to walk through because many of the hazards may be unrecognizable at first glance.

To promote a safe and healthy workplace, make sure you have the proper training to enter these areas, or have a trained individual accompany you. If acting as an escort, accompany the untrained individual at all times while in these areas to ensure their visit to SLAC is a safe and pleasant one.

Have you been properly trained to recognize and enter these areas? If not, are you being accompanied by a trained escort when you visit these areas? At SLAC, areas designated as Accelerator Areas and Radiologically Controlled Areas (RCAs) are full of industrial hazards. Access to these areas is based on an individual's level of training and is identified by the SLAC badging system.

The specific requirements for access to Accelerator Areas and Radiologically Controlled Areas (RCAs) is described in the SLAC document: "Site-Access, ES&H Training, and Radiation Dosimetry, Policies and Procedures, December 4, 1997" (viewable at <http://www.slac.stanford.edu/esh/dosimetry/newdp.html>).

SLAC MILESTONES

RETIRED

Dumaop, Edgardo, BSD, 8/15/00
Sandoval, Gustavo, KLY, 9/1/00

DECEASED

Robbins, Donn, retired from Facilities, on 9/8/00

Do you have a milestone you would like published in *TIP*? Email tip@slac.stanford.edu to have it included.

An individual may enter an Accelerator Area (but not RCAs) unescorted if he/she completes a computer-based Safety Orientation Program or has completed Employee Orientation to Environment, Safety & Health (EOESH). Such individuals will have a badge stating "Safety Orientation - No Escort Required" or "ES&H".

For access to an RCA, an individual must either be escorted by a properly trained individual or complete the appropriate radiological training (e.g., GERT or RWT); they must also wear a dosimeter. Personnel completing radiological training will have a badge stating "GERT", "RWT I", or "RWT II".

Everyone should show caution when entering any unfamiliar area at SLAC. One OSC member recalled finding people wandering through the Research Yard, clueless to the various hazards. And we've had situations where people didn't read or obey signage (hard to believe, right?). So please contact the building manager and/or ES&H coordinator for an introduction to the area which you need to access.

—Janice Dabney