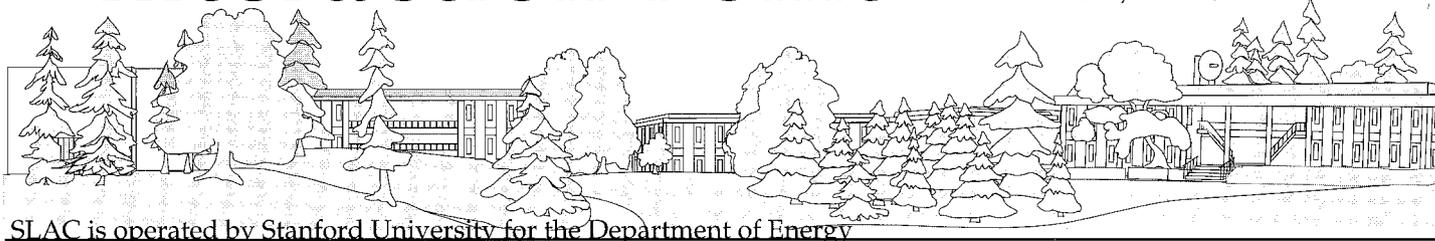


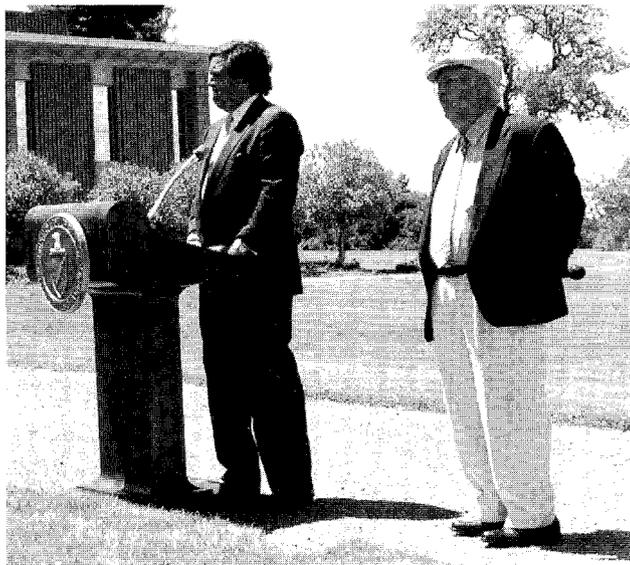
The Interaction Point

Events and Happenings
in the SLAC Community
July 1999, Vol. 10 No. 7



SLAC is operated by Stanford University for the Department of Energy

DOE Secretary Richardson Visits SLAC



The parking lot seemed to be the place for major consultations. At left, Jonathan Dorfan, Director Designate of SLAC, talks to the Secretary's advance man, Josh Weisman. At right, Greg Loew chats with a member of the staff.

SECRETARY OF ENERGY Bill Richardson visited SLAC on June 11 as part of his Bay Area visit that included the dedication of the National Ignition facility at LLNL. In speaking to the staff, Richardson complimented everyone on the good work of getting the B Factory up and running. Questions from the staff included issues such as visas, education, and technology transfer. There were more questions than time, and the Secretary had to leave the All Hands meeting to tour the research facilities, meet with the Directorate, and visit with young scientists before heading to San Francisco.



Striding toward the van for the start of the tour were various SLAC staff and members of the Secretary's entourage. (l-r) Greg Loew, Josh Weisman, Leanne Inadomi, Sidney Drell, and Brooke Anderson.



During his visit to SLAC, Secretary Richardson met with young scientists to discuss issues of importance to those just starting their careers. Pictured here are (l-r) back row: Michiko Minty, Peter Tenenbaum, John Brodie, Eduardo do Couto e Silva, Kristin Musgrave, Greg Dubois. Front row (l-r) Ina Reichel, Serena Debeer, Gayane Shabad, Eddie Lin, Secretary Richardson, Hooman Davoudiasl, and Gabriella Sciolla.

(Photos: P.A. Moore)

MacArthur Fellowship Awarded to Silverstein



ASSISTANT PROFESSOR EVA SILVERSTEIN, the newest member of the SLAC Theory Group, has just received the prestigious MacArthur Fellowship for her work in string theory. Nicknamed the “genius award”, this unrestricted fellowship is awarded yearly to some 30 exceptional individuals from across the country—

writers, artists, and activists, as well as scientists. Eva becomes the second MacArthur Fellow from SLAC, joining Professor and Deputy Director Emeritus Sidney Drell, who was honored in 1984 for his work in arms control.

In the past year, Eva has also garnered a fellowship from the Alfred P. Sloan Foundation, and an Outstanding Junior Investigator Award from the Department of Energy. She received her Ph.D. from Princeton University in 1996 and was a postdoc at Rutgers University for a year before arriving at SLAC.

The MacArthur Foundation cited Eva’s research connecting the longest distance scales imaginable with the very shortest. Einstein’s theory of gravity describes the large-scale structure and evolution of the universe. This theory contains a quantity called a cosmological constant, or energy of empty space. Einstein introduced this quantity, but called it his “greatest mistake” after the discovery that the universe is expanding suggested it might not be needed. Yet particle physicists wonder why it is not huge; each particle discovered seems to contribute to this theory. Recent supernova observations indicate that there may be a cosmological constant after all. However, it seems to be at least 55 orders of magnitude (55 factors of 10!) smaller than particle physics suggests.

String theory suggests a way to unify gravity with all the other forces, at distances up to 17 orders of magnitude shorter than can be probed directly at SLAC. Eva’s work, done in collaboration with Shamit Kachru of UC Berkeley, shows that string theory can produce tremendous cancellations in the predicted cosmological constant. It is perhaps the biggest step to date in the unraveling of this longstanding puzzle.

So, the next time you see Eva out on the Green at SLAC playing soccer, stop by and ask her to explain what you just read.

—Lance Dixon

Foothill Faculty Visits SLAC



Under a perfect sky during their visit last month, Foothill college faculty take a minute to pose with their SLAC hosts. (Front row, l-r) June Sison, Jennifer Sinclair, Don Pon. (Second row, l-r) Robin Erbacher, Gene Seelbach, Marnie Francisco, Nicole Henley, Chuck Miller, Brian Stanley. (Third row, l-r) Rick Martinez, Kathy Perino, John Sawka, Lee Walker, Tom Strand. (Fourth row, l-r) Eric Stietzel, J. J. Russell, Richard Daley, Angel Sierra. (Back row, l-r) Bill Dillon, Ken Baird.

Ambassador's Corner

AT THE 33rd STANFORD University Commencement Tour of SLAC, once again parents and friends of Stanford grads came to see the lab. This year Helen Quinn, Education Coordinator and Theoretical Physicist, took over as the Commencement Speaker at Memorial Auditorium from Doug Dupen, who served as the Commencement Speaker for over 30 years.

Warm appreciation to the following staff for their support of the largest annual Public Affairs event: Dak Baltazar, Anthony Bajic, Martin Berndt, Travis Brooks, Lance Dixon, Mandeep Gill, Rusty Humphrey, Nisy Ipe, Patrick Lui, Harvey Lynch, Jose Martinez, Timothy Meyer, Roger Miller, Greg Mitchell, Ken Moffeit, Fred Murphy, Sandy Pierson, Lee Sorrell, Walt Stolar, Dave Whittum, and Charlie Young. In addition, staff support was provided by Al Ashley, John Hally, Lorrie Harris, Erik Hassy, Herb McIntye, Phillip Miller, Rodney Reape and Ray Ynegas. The security staff helped guide busses in through the seldom used Sector 0 Gate along Sand Hill Road and routed 24 charter busses of visitors through the site for a very successful afternoon activity.

—Nina Stolar

Experiment Edges Theory 8-6 in Annual Softball Game



The winning Experiment team: (front row, l-r) Jim Johnson, Jonathan Dorfan, Mike Woods (Captain), Dick Zdarko, Clara Woods, Heather Rock Woods. (back row, l-r) Toshi Abe, Mike Kelsey, Tim Barklow, Dan Flath, JJ Russell, Greg Mitchell, Burton Richter, Andrew Eichenbaum, Ron Cassell, and Herm Winick.

EXPERIMENT EDGED THEORY 8-6 in the annual softball rivalry on June 5 at Roble Field on the Stanford campus. The Experiment victory was their 30th in the 38-year game history and the first time the game was decided in extra innings. Both teams battled fiercely refusing to yield until the top of the eleventh inning. Then it happened. The game turned strangely on a controversial play that had a very unexpected ending. Some witnesses say it was fate, some say poetic justice.

Players say that every ball game has a defining moment for which it will be most remembered—a game saving tag at the plate, the bases loaded strike-out pitch, the leaping catch at the wall for the final out and of course the extra inning game winning hit. Deadbeat sports writers and Hollywood hacks make a career dramatizing these plays for us. We are drawn to them and we value them for many different personal reasons. We store these memories in the deep recesses of our mind—kind of like a lucky coin that jingles in a pocket full of change.

The game was tied at 6-6 at the top of the eleventh inning when Experiment Mike Woods appeared to have driven in the game winning run with two outs and Mike Kelsey on base. Woods blasted a deep shot over the desperately outstretched glove of fielder Schuyler Cullen that landed next to the left field foul line. Theory appealed and after lengthy and heated debate the controversial hit was eventually ruled foul by only centimeters.

Woods returned to the batter's box and on the very next pitch launched another shot down the left field line. Cullen turned and chased the ball as it arched over his head. The crowd gasped and then cheered as the ball this time landed just centimeters inside the foul line in fair territory. Kelsey scored and Woods raced into third for another stand up triple. Lab Director-Elect Jonathan Dorfan was next up and singled to right scoring Woods. Those two runs proved to be the winning margin. In the bottom of the eleventh relief pitcher Dorfan mowed down the top of the Theory batting order to preserve the win for Experiment.

Experiment began the game with all the steely



(Photos: N. Stolar)

The Theory team shows their team spirit: (front row, l-r) Walt Stolar, Kenichi Mizukoshi, Yuval Grossman, Johan Rathsman. (back row, l-r) Lance Dixon (Captain), Howie Haber, Steve Martin and his wife, Christina, Hooman Davoudiasl, BJ Bjorken, Jake Mannix, Schuyler Cullen, and Maxim Perelstein.

confidence of a street gang. They scored early in the first inning after a triple by Toshi Abe and a base hit that was stretched into a home run by Ron Cassell. Experiment added another run, Theory answered with one of their own and the first inning ended 2-1. Strong pitching and circus catch defense dominated the low scoring game for the next three innings. Theory eventually tied the game at 2-2 but Experiment pitchers Big Daddy Richter and Dick Zany Zdarko completely dominated the Theory offense until the eighth inning. Meanwhile, Experiment batters whittled away at Theory pitchers Sid Lefty Drell and James BJ Bjorken in the middle innings picking up four runs on timely hitting by Greg Mitchell, Dan Flath and JJ Russell.

Sitting confidently on a 4-run lead, Experiment appeared to be cruising for another victory. They had already placed a call to the trophy engraver when Theory suddenly loaded the bases in the bottom of the eighth inning with two outs. All base runners were moving on the pitch when Howie Haber smashed a slicing double to right field. By the time the ball was chased down and thrown to catcher Jim Johnson three runners had circled the bases and scored. Experiment eventually put the side out but Theory had stunned them and tied the game with a four run rally.

Experiment batters continued to struggle at the plate in the late innings but made up for it with solid heads-up defense. Three times Theory put base runners in scoring position but could not get the winning run across the plate. Each time the lead runner was tagged out by sure handed Experiment fielders when they aggressively tried to stretch for the extra base. Theory had one last opportunity to win the game in the bottom of the eleventh but went down in order sealing the victory for Experiment.

So what do you think? Was it fate or poetic justice? Some Experiment and Theory players and fans hear only the jingle of the lucky coin.

For more details please visit www.slac.stanford.edu/gen/pubinfo/Softball/softball.html.

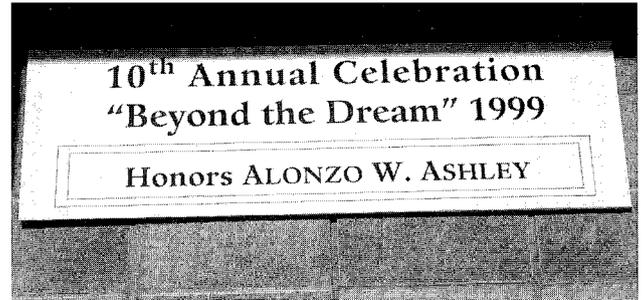
—W. Stolar

10th Annual Juneteenth Celebration

Photos courtesy of John Ashton)



Burton Richter presents Al Ashley with a proclamation stating: "Across all lines of ethnicity and gender he has demonstrated a commitment to fairness and, thereby, established relationships of trust among the diverse cultures throughout the laboratory." It was signed by three Nobel laureates (Martin Perl, Richard Taylor, and Burton Richter), Director Emeritus Wolfgang Panofsky, and Deputy Director Emeritus Sidney Drell.



ON JUNE 16, SLAC and the Black Association of SLAC Employees (BASE) held the tenth annual Juneteenth celebration and used the opportunity to honor Alonzo Ashley's thirty years of dedicated service to SLAC and Stanford University. Ashley was honored for his commitment to the higher education and the advancement of African American students in the fields of science and engineering.

Al was recognized by his colleagues at SLAC as well as by representatives from historically Black colleges and universities, the National Society of Black Physicists, and the National Conference of Black Physics Students, among others.

Friends, relatives and guests enjoyed an old-fashioned barbecue, delicious homemade ice cream, displays, and live entertainment by the Jamie Davis Quintet and the ever-popular door prizes.

As Dr. Richter told the crowd, "This is a celebration of Al Ashley's more than 30 years at SLAC. Al is ending his career here, and I will miss him. I have known him both as a colleague and a friend. It will be hard to fill his shoes in the laboratory." Dr. Richter then announced the establishment of the Alonzo W. Ashley Career Development Fellowship at SLAC, a tribute to Al's many years of service and a well-deserved honor.

—Glena Stewart



Al Ashley presents Jean Hubbard (Purchasing) with the Alonzo Ashley Humanitarian Award for her outstanding contribution to African-Americans at SLAC.



Al Stephenson and James Kelly were there to reminisce with Ashley about their college days together at Texas Southern University in Houston.

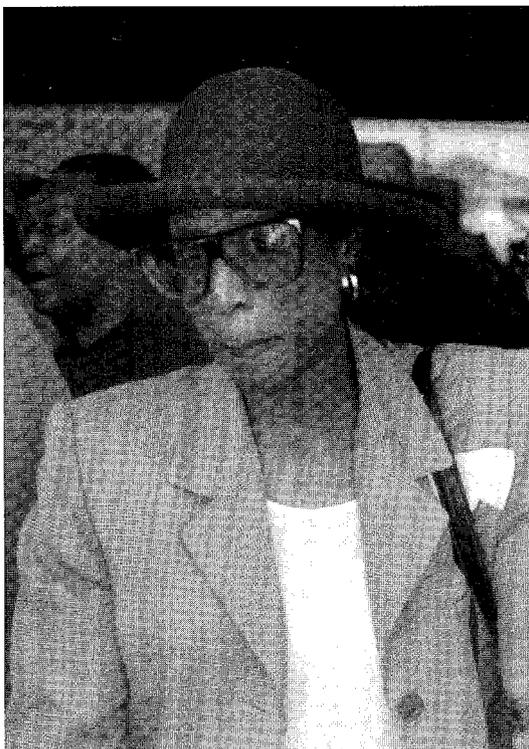
See the Juneteenth Photo Album: www.slac.stanford.edu/gen/pubinfo/juneteenth99/juneteenth99.html

10th Annual Juneteenth Celebration

(continued)



Art Walker, a Professor of Physics at Stanford University and a representative of the National Society of Black Physicists, spoke at the Juneteenth Celebration.



Cynthia McIntyre, a professor at George Mason University and president of the National Society of Black Physics Students, was on hand to honor Ashley. The Society had presented him with an award last year.

E155x Rounds Out the '90s in ESA

THE E155 EXTENSION RUN that ended in May has closed the books on a series of experiments in End Station A that have covered the '90s. Starting with E142 and E143 in the early part of the decade, the ESA experimenters have focused on understanding how the quarks and gluons combine to produce the well known spin properties of the proton and neutron (collectively known as "nucleons"). The answer is surprisingly different from the simplest picture in which the quarks carry most of the spin. In fact, they carry much less of the net spin than originally thought, which motivated additional experiments (E154 and E155) to try to understand exactly where the spin of the proton and neutron comes from. These experiments produced data that is unrivalled in its precision.

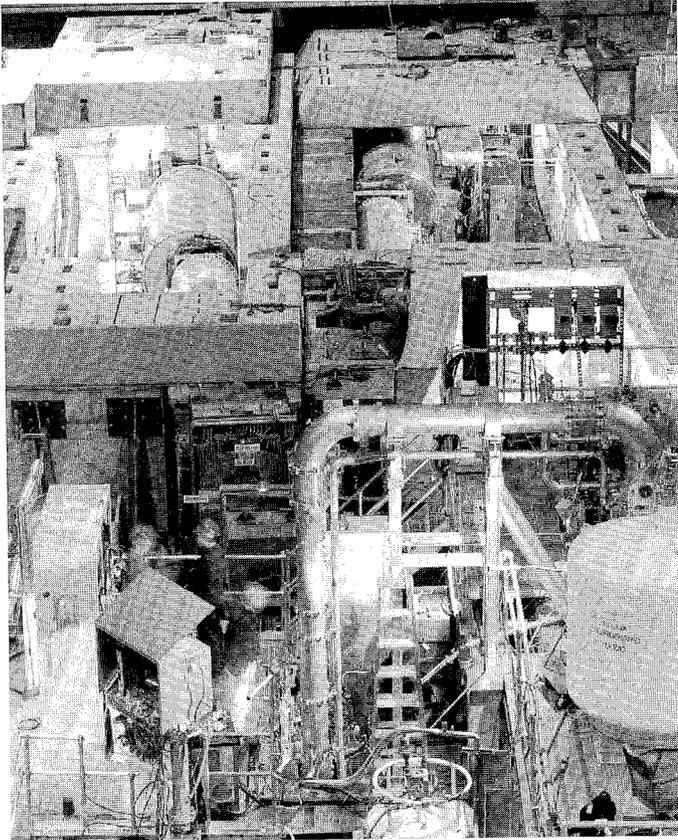
With the conclusion of E155, it was realized that the same equipment could be used to gain even more understanding of the proton and neutron by pointing the target spin perpendicular to the beam rather than parallel to it. This is one way to study the influence of the quarks and gluons on each other, thus providing another piece of the nucleon puzzle. Undaunted by the lack of budget for improvements to the detectors, the E155x crew of 75 ± 5 experimenters under spokesperson Ray Arnold (American University) turned to SLAC's "pre-owned" equipment lot (aka Salvage and innumerable dusty storage bins). Out of the dust rose several not-so-shiny, but very effective systems to sharpen the vision of the experiment's detector eyes. With the return of the refurbished target from Jefferson lab, the equipment list was complete. The E155x Target Group, led by the University of Virginia group and with support from the folks from the Experimental Facilities Department, undertook the imposing task of reinstalling the target and verifying that the ESA setup did indeed ensure the safety of everyone involved.

With all the pieces in place (and on time), E155x took center stage in the SLAC program and proceeded to collect a data set that improves the world precision by a factor of 4, corresponding to 16 times more data than all the previous measurements taken together. The delivery of beam from the linac was remarkably smooth with only 10% unscheduled downtime, thanks to the efforts of the Accelerator Department and the folks in the support groups in the Technical Division. The experiment went so smoothly that there was even a discussion of extending the extension to cover even more physics (E155 dos equis? E155xx?), but then it was time to hand the spotlight over to the grey elephant waiting in the wings... and of course, have

(continued on Page 6, Column 1)

E155x Rounds Out the '90s in ESA

(continued)



A flurry of activity preceded the recommissioning of the E155x target (foreground) and detectors (background)

an End-of-Run party to thank everyone who made the experimental program such a success! As the experiments of the '90s are winding down, the first experiments for the new millennium are jockeying for positions. The unique SLAC polarized beam offers many possibilities for good physics at low cost, even into the '00s.

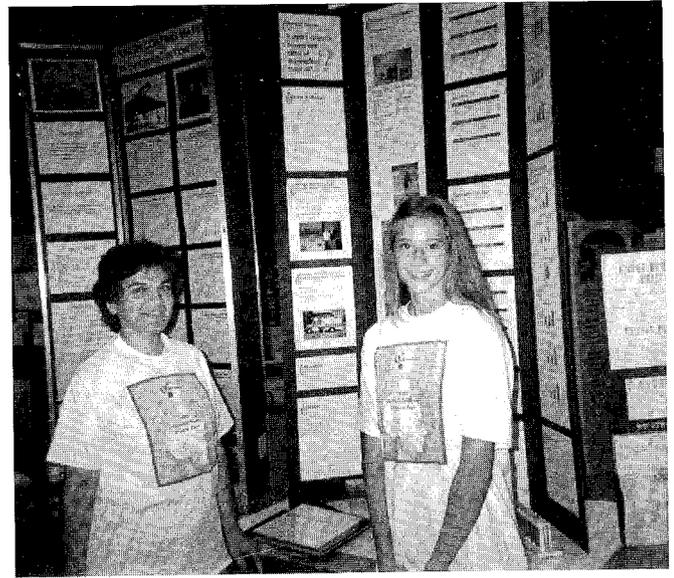
—Lee Sorrell

(Photo: R. Erbacher)



Greg Mitchell, Peter Bosted, Carl Hudspeth, Stephen Buelman, and Jim Johnson enjoy a little downtime at the E155x End-of-Run party.

Yeremian Judges State Science Fair



Dian Yeremian (l) at the State Science Fair in Los Angeles with one of the Bay area students.

WORKING AT WORK ISN'T enough for some people. Dian Yeremian took on more work at the California State Science Fair in May, travelling to Los Angeles to act as a judge. "I love working with the schools and kids," said Yeremian. "There are so many opportunities out there if people want to contribute."

Pictured above with Yeremian is a Bay Area student whose project was about the performance comparison of reclaimed motor oil to newly processed motor oil. The results showed that reclaimed oil performed just as well both in viscosity and lubrication. In the course of her research, the student also discovered that there are race car drivers who use reclaimed oil in their cars, which is good for the economy as well as good for the environment.

For the past three years, Yeremian has been an invited speaker at the annual Career Symposium for Academically Advanced Youth sponsored by Johns Hopkins. The regional symposium is held at UC Davis and high school students from around the state attend. If that wasn't enough, Yeremian also visits the schools her niece and nephew attend, to talk about colliders.

At the recent visit by Secretary of Energy Bill Richardson, he challenged scientists to get out and spread the good word about what we do. Dian Yeremian has taken up the challenge and would be happy to talk to anyone else who wants to help.

—P.A. Moore

NIH and DOE Joint Funding for Synchrotron Upgrade

COLLABORATION BETWEEN THE NATIONAL Institutes of Health and the Department of Energy looks like a win-win for all concerned, and especially for SLAC. NIH and DOE will jointly fund a \$53 million upgrade of the SPEAR facility at the Stanford Synchrotron Radiation Laboratory. A Memorandum of Understanding was signed on May 27, 1999 by NIH Director Harold Varmus and DOE's Office of Science Director Martha Krebs.

This is the first time an outside agency has agreed to assist in the funding of a DOE research facility. Since an increasing number of NIH-funded biologists are using DOE facilities, it seems appropriate for the agency to contribute to the program. The NIH investment will increase the effective amount of beamtime for biologists, who form about half of the 1600 researchers who use SSRL facilities annually.

SPEAR, the Stanford Positron Electron Asymmetric Ring, was originally developed as a colliding beam facility for high energy physics, but it has been an important source for synchrotron radiation experiments during its entire 26-year history. During the last decade, operational efficiency has grown steadily from 75% to 96%. This success has led to greater demand for use by an increasingly diverse group of scientists, especially those in biomedical fields, which was an important factor in the NIH funding decision.

Keith Hodgson, Associate Director for SSRL, is delighted with the opportunity to enhance SPEAR. "This upgrade expands our world-class service and technological ability, and it supports the strong regional need for access to synchrotron light sources," he said.

Specific goals for the upgrade, called SPEAR3, are

to bring stored beam current to 500 mA, five times greater than that of the existing SPEAR2 facility. At energy injection, beam current will be 3 billion electron volts (GeV). While the design and fabrication of technical systems will take about three years, an important objective is to minimize the installation period to six months in the year 2002 and resume experimental operations for users as soon as possible. Preparatory work will be done during normal two-month shutdowns for maintenance each year. This will also minimize the impact on users.

Tom Elioff, project manager for SPEAR3, plans to assemble a design team of about 40 people once funding is in place. "Moving SPEAR2 to a third-generation light source is important to keep science at the frontier. The more we know, the more we want to find out, and SPEAR3 gives us tremendous opportunities in so many disciplines," said Elioff.

The upgrade will improve the photon flux density. The increased brightness will extend the experimental capability in a variety of applications such as protein crystallography, x-ray absorption studies, powder and thin film diffraction studies, topographic studies of material structure, and surface microcontamination on silicon wafers.

The NIH-DOE collaboration has been under discussion for several months and has the strong backing of the Office of Science and Technology Policy (OSTP). Peer review panels have also encouraged the collaboration, recognizing the increasing demand for light sources by biologists. The collaboration of these two government agencies is an important step forward for all concerned.

—P.A. Moore

One-Stop Shopping?

AT OSC, WE'VE GOT training on the brain. Rod Hiemstra, the ES&H Training Coordinator for SLAC, approached the Operating Safety Committee chair a few months ago and suggested that a team effort be initiated to get a "reality check" on what kind of safety training is needed at SLAC. OSC agreed to be his contact to the rest of the world at SLAC, and a subcommittee of Frank O'Neill, Rich Jones, Michael Schneider, Jack Hahn and myself was set up with Heimstra at the helm.

The expertise the diverse members of OSC bring to the effort makes the outcome even more valuable. We reviewed proposed new classes and suggested some that required revision. OSC is glad to play a role in further streamlining the safety training at SLAC and meeting the needs of the work community. You (the reader) can play your role. Let us know if you question the focus of a present course, have an idea for the creation of a new course, or want to know the regulations behind a required course.

OSC will continue to expand its scope as necessary to meet the Lab's safety needs, working as a partner alongside the safety personnel in the divisions and the citizen committees. Without taking a mini-mart approach to ES&H, we might even say we provide some "one-stop shopping" for you when it comes to general safety issues at SLAC.

—Janice Dabney

Work Safe, Work Smart

An injury that involved days away from work occurred on 6/7/99, according to Sharon Haynes, Worker's Compensation Coordinator. The last claim involving days away from work occurred on 5/3/99. The number of calendar days between claims is 35 days. SLAC's record number of days between claims involving days away from work remains at 150 days.



8th International World Wide Web Conference

The 8th International World Wide Web Conference was held in May in Ontario, Canada. Over 1200 people from around the world attended, including leaders from academia, research organizations, government, and industry. Their goal was to gain a global perspective of the issues facing the Web community.

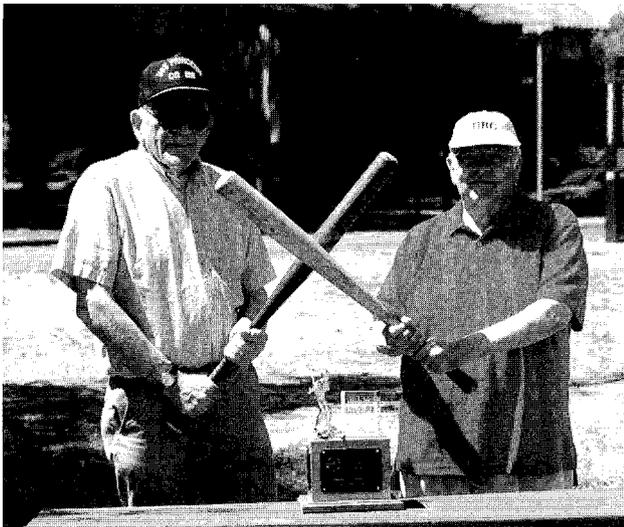
The conference consisted of one day of tutorials and workshops, two days of presentations by speakers from the industry and the World Wide Web Consortium (W³C), followed by Developers Day, for those who create web software, hardware, and protocols. In addition, the conference welcomed about 80 poster presentations.

Tim Berners-Lee (see <http://www.w3.org/People/Berners-Lee/>), the acknowledged "inventor" of the WWW and the W³C Director, opened the conference with his keynote address entitled "Challenges of the Second Decade." Berners-Lee recalled his original 1989 proposal, "Information Management - A Proposal" was reviewed as "vague but exciting." In late 1990, Berners-Lee developed the first browser for his NeXT computer, but it was not until 1993 that there was a proliferation of browsers and web servers, primarily in the academic community.

The first two major web conferences and formation of the W³C happened in 1994. Since then, developments have continued at record breaking speed including CSS1, HTML 3.2, HTML 4.0, XML, CSS2, DOM, WAI, XHTML, XSL and SVG. If this is gibberish to you, check out the W³C website at <http://www.w3.org>. At the end of Berners-Lee's speech, he appropriately remarked "Now go out and keep inventing those acronyms."

Berners-Lee expressed the future in terms of the "Semantic Web", characterized by machine communication based on data with well-defined meaning, definable results, and logical deductions. The Semantic Web is essentially a worldwide database created by making data understandable to machines. The Semantic Web, he said, will have as much impact on the world as the first generation Web has had, once we get it right.

Drell-Richter Softball Trophy



(Photo: N. Stolar)

THE DRELL-RICHTER TROPHY was inaugurated at this year's Theory-Experiment Softball game to recognize the nearly four decades of this annual tradition. The trophy was designed to pay tribute to Sidney Drell and Burton Richter who have fostered this rivalry over the years. It also creates additional incentive for the game.

The trophy represents Theory and Experiment confronting each other at Accelerator Park. The home run fence is represented by a beam tree, a traditional symbol of the lab. The beam tree was provided by Bernie Lighthouse (Personnel). The tree surfaces were polished by Reggie Rogers (Central Lab Shop). The base was creatively added by Phil Brunner (Craft Shop). Krefeld's of Redwood City put the pieces together, with room for six decades of results. Following that, another layer will be added to the base *a la* the Stanley Cup.

The trophy will be on display in the Visitor's Center.

SLAC Milestones

RETIRED

Wahl, Jim, Tech Pubs, 5/28/99

BABAR

May 26 - First collisions! Congratulations to all!!

AWARDS

Gasper, Kimberly, SLAC Security Staff: Honored by Burns International for "Courageous effort in saving life and averting disaster."

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

—Mike Woods