

The Interaction Point

Events and Happenings
in the SLAC Community
March 1991, Vol. 2, No. 3



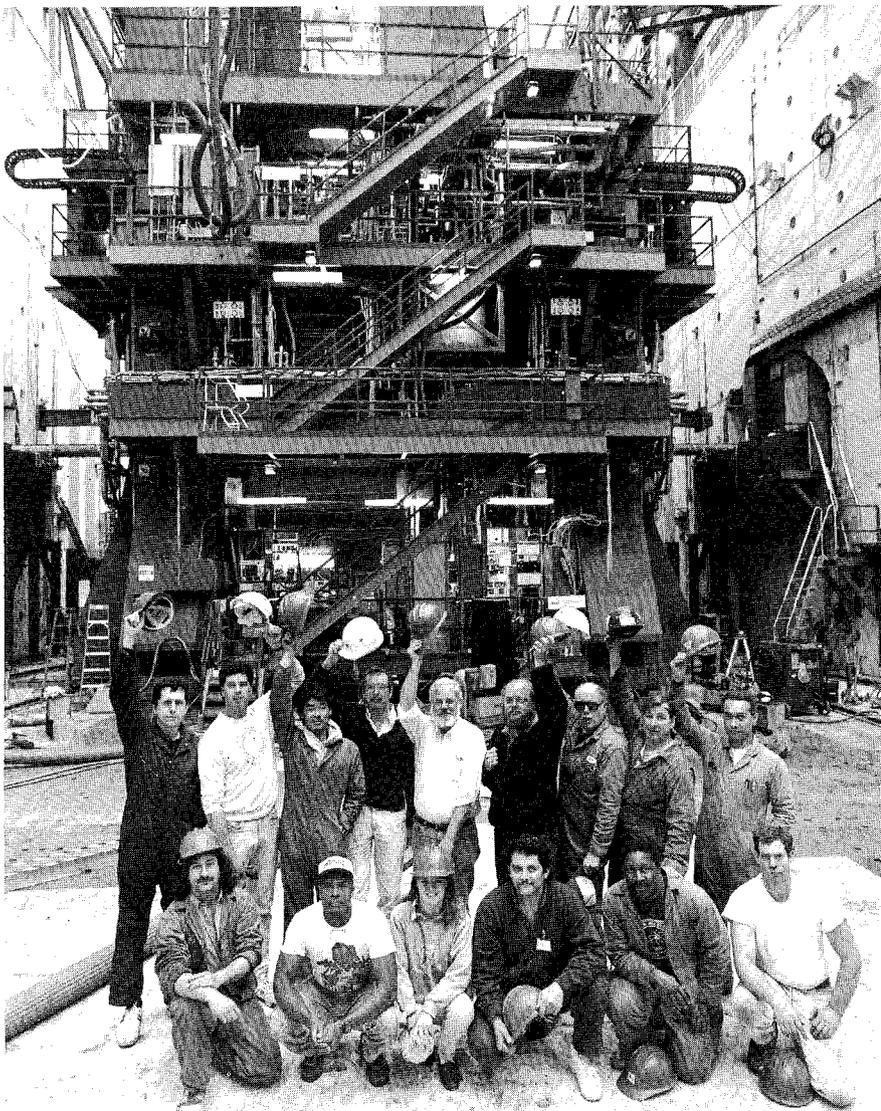
New Era Begins at SLAC

SLD MOVES INTO BEAM LINE

by Bill Ash

WITH A SIMPLE TURN of a valve on February 28, the SLD began moving east toward the beam line at a rate of about one inch per minute—a snail's pace but with 4000 tons of authority. This was the turning point from construction to commissioning for SLAC's newest and largest experimental facility, and the 33 institutions in the international collaboration that have been working on the project since the early 80s. Four years ago, boxes of the first pieces of the large steel support frame were delivered to the empty west pit floor. This was truly a project starting from the ground up. By last summer the space was completely filled with a state-of-the-art detector taking cosmic-ray data while the Mark II finished its run on the other side of the shielding wall.

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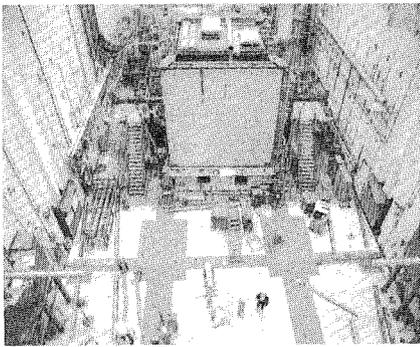


Crew members who spent long hours ensuring the SLD's successful move into place are standing (left to right): Dan Alzofon, Kris Dudley, Gibson Locke, Gerard Pütallaz, Vern Hamilton, Phil Seward, Don Peterson, Robert Moore, Jess Gutierrez; Kneeling (left to right): Rob Cruz, Jamode Caldwell, Beatrice Trautmann, Ray Rodrigues, Jamie Davis, Dave Engesser. Not present: Tom Sansalvera.

Hats Off to SLD Installation Crew!

ON SATURDAY March 2, 1991, the SLD successfully completed its journey from the west CEH garage area to the final beam line position of the SLC. The 4000-ton detector made the trip in under 16 hours and arrived on beam line on schedule. Our congratulations to the installation crew and to all the personnel who participated in the assembly of the SLD. Pictured at left are some of that crew who have put in many hours of overtime and have given up many Saturdays to see the SLD successfully installed.

—Bob Bell



The photo above shows the Mark II parked up against the east wall, resting after its tour of physics runs at SPEAR, PEP, and now SLC.

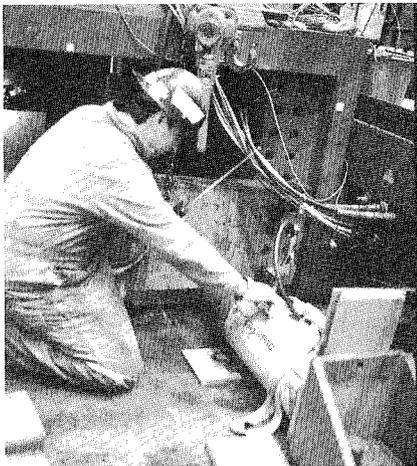
(Ash cont'd. from pg. 1)

Last Thanksgiving the great swap began. Sean Dyer and his crew moved the Mark II to the east end of the hall and removed the iron quadrupole magnets that had guided the collider beams into the detector.

Then, Robin Gray and his people took care of cleaning out the ends of the tunnel and carefully peeling back all the cabling to make room for the new shielding and the new superconducting magnets that will bring the beams into the SLD.

Now the stage was set for the final act. The detector was raised off the floor and transferred to rollers. Simple hydraulic jacks pushed the detector east in one-foot steps. In three days, the move was completed with positions checked, new tracks down, and power and water restored to the detector.

The new beam line is now being hooked up and shielding completed to be ready for the first beam in April.

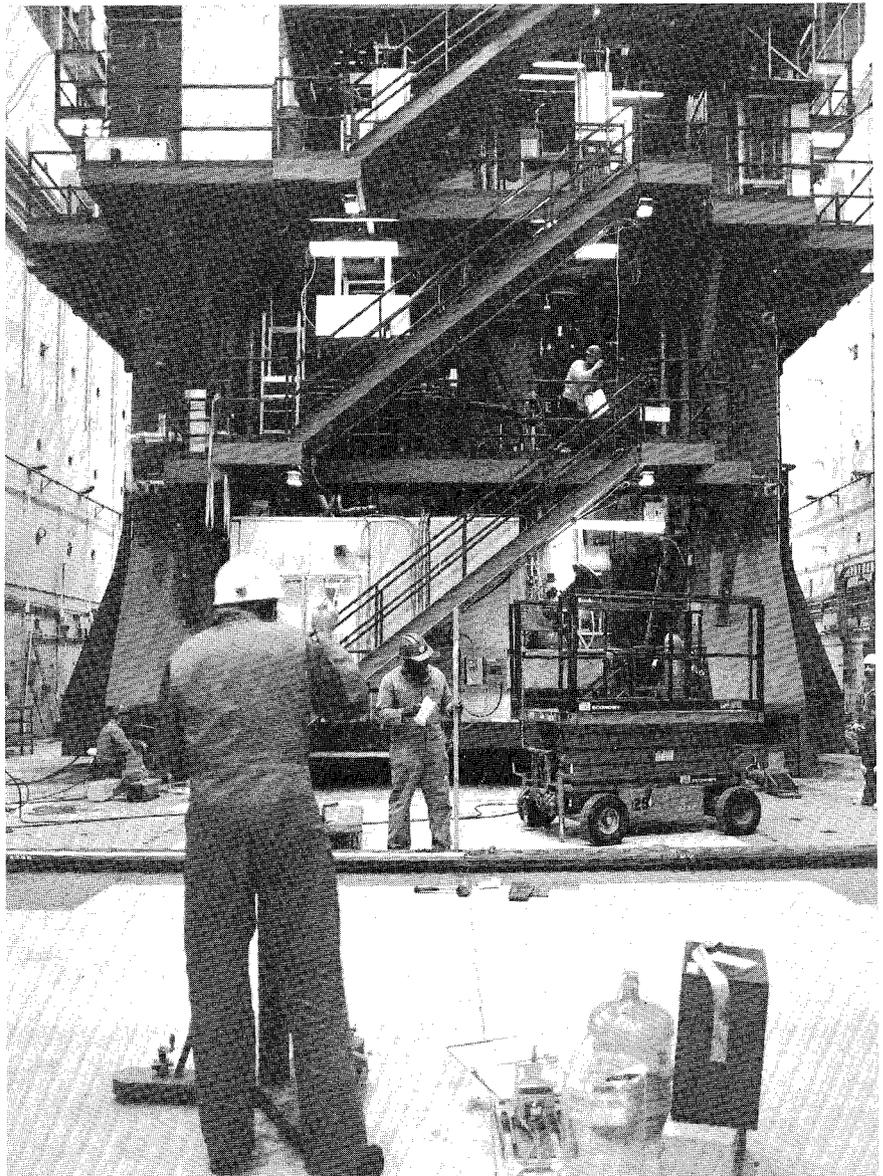


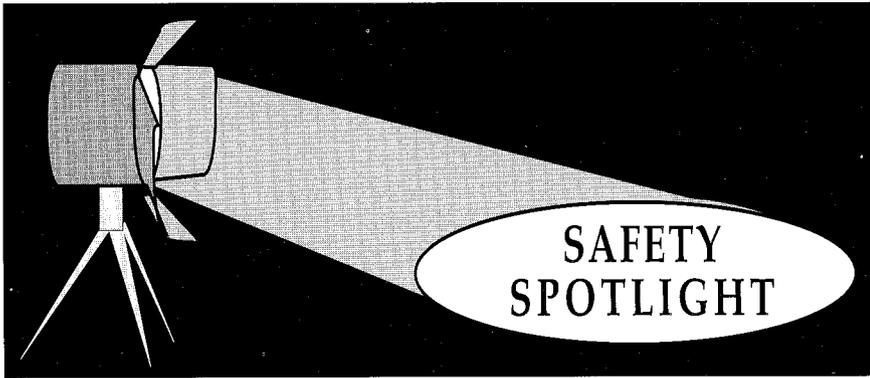
Rigger Robert Moore places a hydraulic jack between one of the detector legs and a plate bolted to the floor.

Below, the SLD is raised off the floor and transferred to steel rollers built into the four support legs.



Dave Engesser, the rigger in charge of the operation, adjusts the flows between two jacks before the detector begins its move.





DID YOU KNOW that there is a VM file entitled *SAFETY* that contains information about hazardous materials that may be present in your workplace? This resource is one means by which SLAC implements its Hazard Communication Program. The intent of the program is to assure employee awareness of potential hazards in the workplace and how to safeguard against those hazards.

The *SAFETY* file contains an index of all the Material Safety Data (MSD) sheets that are on file in the ES&H Division library. To access this file, simply type the word *SAFETY* at the VM ready prompt, and you will be presented with a menu of subjects to choose from to review the list of MSD sheets by manufacturer, product name, or ingredient. The file also contains lists of hazardous and carcinogenic materials, intended to help you evaluate the safety of materials in your workplace.

Copies of the MSD sheets listed in the *SAFETY* file may be obtained by visiting the ES&H library in Building 24, Room 217.

It is the responsibility of the Supervisor of operations using a hazardous material to obtain a MSD sheet and make it available to users of that material. The ES&H file is intended to assist supervisors in meeting that responsibility. If the required MSD sheet is not available through ES&H, it must be requested from the product manufacturer or distributor, and a copy provided to ES&H. Questions about MSD sheets and chemical safety should be directed to Ih Lin, Industrial Hygienist, at ext. 4295.

—Mary Hall Ross

Employees Honored for 20 Years of Service

THE ANNUAL SLAC 20-YEAR SERVICE AWARDS DINNER, honoring 24 employees, was held on Monday, February 11, 1991, at the Stanford University Faculty Club.

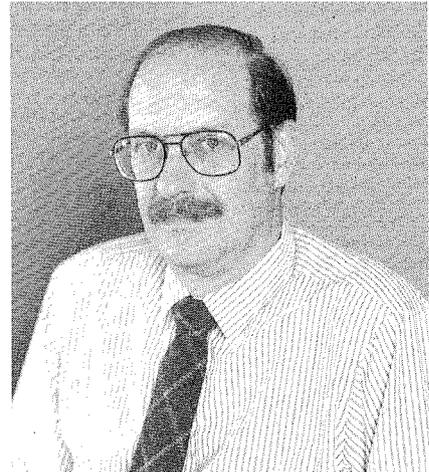
In his remarks to the guests, Burton Richter expressed his enjoyment at being able to honor the 24 employees who have reached this milestone. He stated, "In 1970, when you first began your working careers at SLAC, the two-mile-long linear accelerator was finished being constructed and our physics research program was well underway. . . The fact that we have succeeded so well is a direct result of the quality of the SLAC staff."

A highlight of the evening was guest speaker Doug Dupen, who was also an award recipient. Doug recounted the development and research milestones of the lab over the 20-year span and described the "vicarious thrills of being a participant in such an exhilarating enterprise."

According to Lew Keller, "It was a great talk on the excitement of working in high energy physics and what we are accomplishing. He related to our history and the thrill of being a part of it. Doug's talk gave people a warm feeling," he added. See box at right for names.

—Nina Adelman Stolar

SLAC Welcomes Robert Siemann



IN JANUARY, SLAC WELCOMED Professor Robert (Bob) Siemann to the scientific staff. Bob joined SLAC as a Professor in the Accelerator Theory and Special Projects Department. He will be working on the linear colliders, and heading up the SLC Positron Task Force.

Bob is well known throughout the world for his expertise in accelerator physics. He has spent the past 17 years as a professor at Cornell University where he made numerous contributions to accelerator science through his teaching and research.

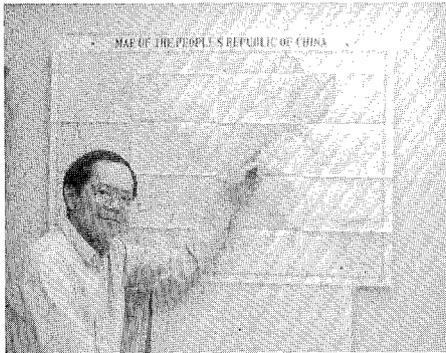
—Ron Ruth

20-Year Award Recipients

Salvador Alvarado, William (John) Broeder, Norman C. Chin, Percy Milton Clay, Gerard J. Collet, Abel de la Cerda, Doug Dupen, James Aaron Hay, L. E. Larry Henderson, Homer (Casey) James, Lucille A. Janasik, Lewis P. Keller, Kenneth G. Martell, Howard Martin, Juan M. Miranda, Ron F. Pacheco, Mary Louise Parish, Georgia Row, Erik A. Sorensen, Ralph E. Thompson, Alford O. Triplett, Ilse Vinson, Jim Wahl, Charles Wilson.

MARKing History with 1st US/China Physics Collaboration

FOR ANYONE WHO KNOWS WALTER TOKI, Assistant Professor with Group C, his reputation as a physicist and collaborator transcends the ordinary and elicits praise and respect from fellow physicists. In the words of Bob Mozley, "As co-spokesman for Mark III,



Walter's dedication to the success of Mark III as well as his interest and kindness in helping the students and new post docs (regardless of their University) was essential to the success of the collaboration."

Recently Walter has dedicated his talents to continue a project started nearly a decade ago, when Pief Panofsky and T.D. Lee together encouraged physicists at Beijing's Institute for High Energy Physics (IHEP) to build a storage ring. This resulted in the construction of the Beijing Electron Positron Collider (BEPC) that spans over 50,000 square meters of total floor space in the Ba Bao Hills of China. To date, it has produced over one million J/psi events. For the research and development phase of the BEPC, the Chinese opened doors to the West to learn new technology. During that time, SLAC played a large role in providing assistance to the design of BEPC based on experience we had gained from the construction and operation of SPEAR.

Also, SLAC and Mark III physicists provided guidance with the Beijing Spectrometer (BES), designed after the Mark III detector. In fact, with the exception of some

improvements, the design and software are virtually identical to Mark III. In April 1989, the BES moved into the interaction region of the BEPC.

To continue work on BES, Walter has been instrumental in forming the first formal US/China collaboration that together includes physicists from IHEP, SLAC, MIT, Caltech, UC Irvine, University of Illinois, and University of Washington. This historic effort marks the largest science and technology collaboration *ever* between the US and China. In October of last year, Walter joined representatives from the DOE in China to begin initial discussions for a collaboration. In December, he visited China once again with Burt Richter and Ewan Paterson to join the signing of a Memorandum of Understanding between the DOE and IHEP. February marked the collaboration's first meeting here at SLAC.

Walter feels this collaboration is an important one on many levels. Primarily, it has encouraged a joint science program between the two countries and created new science opportunities. Physicists from the Mark III and SLAC can provide valuable help with their experience, and the BES experiment provides access to new data at a time when there are few new experimental opportunities. As a result, China has become one of a small group of countries able to operate a high energy accelerator and produce forefront physics results. There is even a proposal in development to build a direct networking link to IHEP—which would be yet another historic milestone.

For now, Walter is content with continuing to build this new collaboration. This month, he will again visit IHEP to help with the calibration and debugging of the experiment. Later, he will continue his visits to assist with physics analysis.

—Andrea Higashi



Burt Richter shakes hands with S. Fang, Director of IHEP, during the signing of the Memorandum of Understanding. Ewan Paterson (standing at center) and Walter Toki (seated at far right) look on with other participating members.

GAUSSNOST: INP DELIVERS QUADRUPOLE MAGNETS



Left to right: V. Kamenov, V. Medjidzade, and A. Mikhailichenko of the Institute of Nuclear Physics at Novosibirsk, USSR, examining one of the quadrupole magnets.

THE FIRST QUADRUPOLE magnets for the Final Focus Test Beam (FFTB) were recently delivered to SLAC. These high precision lenses have been designed and fabricated by the Institute for

Nuclear Physics at Novosibirsk (INP) as part of an international effort to study the magnetic focusing systems needed for future e^+e^- linear colliders. The INP group has taken responsibility for

delivery of the main quadrupole, dipole, and sextupole elements of the FFTB beam line. The first magnets will be followed in early spring by 30 identical units, and the entire complement will arrive at SLAC later this summer.

Extensive tests and measurements made in the Soviet Union and SLAC testify to the care and exactness with which this hardware has been fabricated and assembled. The goal of the FFTB project is to produce nanometer-sized beam spots *one thousand times* smaller than the micron-sized beam spots of the SLC.

On schedule, the Final Focus Test Beam is planned to begin operations in fall of 1992 and will provide first-hand experience with a substantial number of the problems that will be encountered in the design and construction of the Next Linear Collider.

—David Burke

RECOVERY SLOW FROM FREEZE DAMAGE

IT HAS BEEN OVER THREE MONTHS since the record-breaking freeze hit the Bay Area and SLAC, and we are still in the process of recovery. Since the initial damage reported in the January issue of the *Interaction Point*, the assessment of the total damage has increased to over *two million dollars*. A task force headed by Ewan Paterson was immediately formed to plan and coordinate repairs.

A top priority item had been the repair of domestic water circuits and fire protection systems. These were brought back on-line in January. Repairs to the more complex systems, however, are taking much longer.

The logistics of the repair process on a *single* accelerator water cooling system alone is elaborate. First, obvious equipment and piping damage is repaired. Then, all electronic equipment, power supplies, and klystrons in the sector are protected with plastic. The system is slowly filled with LCW (low conductivity water) while observers identify leaks. The system is drained, repairs are made, and the process is repeated. Once these are fixed, the pumps are started and the systems pressurized. Still more leaks and fountains are found and addressed. In some of the worst areas, this process had to be repeated *five times*. Initial re-

pairs included the replacement of over 600 rotameters. There were still no less than 700 leaks, broken flow switches, and damaged valves found. No system was immune from damage.

Over 50 klystrons have required attention. Several sub-booster klystrons which drive sectors of high-power klystrons were severely damaged and the output cavity was severely detuned. The output power was reduced to near zero and rendered unusable. However, the innovative klystron group found a way to retune the cavity. By the end of February, all the LINAC LCW systems were operating and water was again circulating.

There is still much to be done. Many subsystems cannot be put into operation due to damaged flow switches. This is now a critical path item in getting the SLC up and running. After the SLC, there are other areas, such as PEP, which will require attention in coming months.

This multi-department effort, coordinated by Frank Turner, began on January 14 in Sector 1. Six weeks later, they reached Sector 30. We are very grateful for their dedication and effort.

—Ewan Paterson

Three SLACers Retire to Enjoy Outdoors

Ted Jenkins. . .



Ted shown in Italy pursuing one of his many hobbies—photography.

IN FEBRUARY, TED JENKINS retired from SLAC after 29 years of service.

Ted was born in Ketchikan, Alaska, and grew up all over the United States before coming to the Bay Area to attend UC Berkeley. Interrupting his education for three years to serve in the Marines during the Korean War, he returned to graduate with a degree in Physics, in 1954.

Ted joined SLAC in 1962. Originally with the Health Physics Group, he then transferred to the Radiation Physics Group as Assistant Group Leader until his retirement as Assistant Department Head. In fact, Ted *was* the Health Physics Group with the exception of one other part-time high-energy physicist, until the group was expanded in 1964.

He was responsible for most of the neutron measurements at SLAC and assisted with shielding designs for many major projects (SPEAR and SLC) and others a bit more obscure (Supersloop and RLA). Computational methods that he developed will be used for a long time.

Many other SLAC organizations benefitted from Ted's service, including the Campus Radiation Safety Committee, the Skills Training Program, SERA, and the Campus Bicycle Safety Committee.

Ted has many hobbies: writer (prose and poetry), runner, softball player, guitarist, photographer, bridge player, horseshoe player, avid reader, and on and on. He has always enjoyed family life, and, with his wife Mike, plans to spend even more time enjoying their 4 daughters and 7 grandchildren. He will also devote time to writing and consulting.

Ted was a familiar figure around SLAC with his friendly manner and colorful trademark bandanna around his neck. He will be sorely missed both for his technical skills and his ready willingness to help out.

—Dick McCall

Herb Weidner. . .



Is it Herb Weidner or John Muir? Photo taken on a backpacking trip near Yosemite in front of Ardeth Lake.

RUMOR HAS IT that Herb Weidner has retired after 27 years at SLAC. An event of considerable magnitude, a task force of investigators was assembled to verify the truth of the rumor. The report is now in, and yes, Herb has left.

Herb was manufactured by Brobeck, an East Bay engineering firm that converted ambitious young talent from the string-and-sealing-wax convention of classical research into "real engineers."

As head of the Beam Switchyard Group, Herb was responsible for that intriguing set of tunnels and

equipment which never ceases to amaze our visitors. His monument is truly "cast" in concrete. During the evolution of BSY into the Experimental Facilities Department, Herb was always in the thick of it, never forgetting SLAC's commitment to produce physics and to keep the user community happy.

When storage rings and colliders became the fashion, Herb contributed in his usual manner: quietly, but forcefully from the background. The Polarization Project, Tau-Charm proposal, and now the B-Factory project generated questions to some hard engineering problems, and Herb produced the answers.

Herb was known for letting others get the credit for ideas and work that he had done behind the scenes. Known for his frank opinions and advice, many people at SLAC often came to consult with him on technical and administrative matters. His service on numerous committees is legendary, and every participant in the SLAC foot race owes a debt of gratitude to Herb's committee that manages this great annual event.

We all know that Herb is the ultimate wilderness enthusiast: it has long been suspected that he is the reincarnation of John Muir. It is doubtful whether there is a spot in the Sierra Nevada, a canyon, a forest, or a wilderness that has not been graced by his presence. In the immediate future, he is planning a trip to that ultimate wilderness, Antarctica.

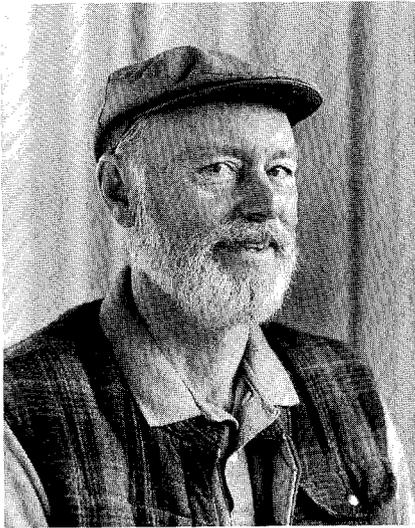
Herb has been a friend, helper, and advisor to so many of us; we will certainly miss him. However, we all know that SLAC engineers never retire, they just become consultants; we are not really saying "good-by," just "so long."

—Steve St. Lorant

(cont'd. on pg. 7)

(Retirees cont'd. from pg. 6)

Bill Lusebrink. . .



BILL LUSEBRINK IS RETIRING! This is hard to believe since Bill and SLAC have been together starting from the gestation period when SLAC was Project M until now. Bill joined Stanford University after considerable experience at Hanford and Vallecitas in nuclear reactor work including chemical separation and reactor operations. At Project M, he started working on accelerator components but then joined Plant Engineering at SLAC as head of the Crafts Shop. He then became Deputy Head of Plant Engineering. In parallel with all these responsibilities, Bill wore several other hats. I worked with Bill a great deal when he wore the hat of Laboratory Protection Coordinator. What this really meant was that Bill became the man on the spot when we had VIP visitors who needed special care, ranging from President Pompidou of France to lesser lights. It also meant when there was a potential for problems such as during strikes or anti-Viet Nam demonstrations, Bill had to anticipate trouble and take measures to avoid it.

The role of Laboratory Protection Coordinator really demonstrated Bill's true ability in dealing with people. When being the

observer for the lab at the picket lines he maintained friendship with both picketers and the lab bureaucracy. When DOE and its predecessor agencies wanted more visible security measures, he was able to persuade them that, in a place like SLAC, one might have more *real* security if there were fewer "trappings" of security which might be interpreted by our neighbors as though we had something to hide. Both Bill's role in Plant Engineering and as Protection Coordinator gave him the opportunity to meet not only almost all of the inmates of SLAC, but a vast number of outsiders as well. Each one of them appreciated his genuine willingness and ability to solve problems and to provide the needed support from Plant Engineering to the maximum extent it existed.

Bill's activities transcended SLAC. He was nominated and accepted to join the Stanford University Management Development Program which provides for interaction between SLAC's administrators and those on the main campus. It has been a long road from Bill's work at the Hanford Reactor in the state of Washington through Mark IV on campus, Project M, the Linear Accelerator itself, SPEAR, PEP and the SLC. All of us owe him a lot, both by feeling safer, support he provided, and as a friend. I'd like to join everyone at SLAC in wishing him the very best in retirement. Characteristically, he will spend most of that on ecology projects and other environmental activities. I expect that SLAC and Bill Lusebrink will keep closely in touch.

—Pief Panofsky

Patent Law Expanded

FIFTEEN MONTHS AGO, Congress passed the National Competitive Technology Transfer Act of 1989, expanding existing law to transfer technology discovered and developed at national laboratories to US industry and the consumer. SLAC has always been a part of this program and has seen numerous creations protected and licensed to industry. The Auditorium Breezeway displays the many plaques awarded to SLAC personnel whose inventions have been patented. Last year, Jim Simpson joined SLAC to assist with meeting the goals of technology transfer mandated by that new law.

All of us at SLAC should consider our original work in the light of possible uses beyond its particular research application. Technology with a potential for transfer should be closely evaluated.

Intellectual properties, with clearly discernible applications, are considered against the current marketplace before being protected and marketed. For inventions whose applications are not immediately obvious, it can be worthwhile to protect them solely on their clear novelty. It is also important to ensure that a copyright notice is prefixed to all software developed at SLAC to prevent it from slipping into the public domain without due consideration.

If you have an invention that seems patentable, give Jim Simpson a call at ext. 2213 and discuss the possibility and methods of technology transfer. If transferred and developed further by industry, you may find your creative efforts and hard work producing benefits to society that are far beyond the task for which they were originally intended.

—Jim Simpson

The Interaction Point is published by Information Services of Stanford Linear Accelerator Center. Editors: Andrea Higashi and Bill Kirk; Photographer: Tom Nakashima. Deadline for articles is the first of every month. Submissions may be sent on SLACVM to TIP or by SLAC mail to TIP, Bin 68. Phone 926-2263.

HIT-AND-RUN INCIDENT RENEWS THOUGHTS OF BICYCLE SAFETY



Michele Gallinaro is happy to be feeling well after his accident. He is shown here holding the rear wheel from his damaged bicycle.

AFTER ONE EVENING IN INTENSIVE CARE, Michele Gallinaro will think twice next time before cycling without a helmet. A visiting physicist from Frascati, Italy, working on SLD, Michele was riding his bicycle home at about 7:30 p.m., planning to stop first at the Sharon Heights Safeway. Travelling down Sand Hill Road towards the familiar turn lane that leads into the shopping center, he took a quick check behind him for on-coming traffic, then began his descent left towards Sharon Park Road. Soon after, he was hit from behind by a car and thrown from his bike. The incident was a hit-and-run.

At SLAC, there are many avid cyclists who commute daily to work, sharing road space and traffic rules alongside motorists. With warmer weather and longer daylight hours approaching, the spring and summer months will inspire even more cyclists, both novice and avid, to make the healthy trek up Sand Hill Road.

It is not uncommon to occasionally let the issue of safety slip once a cyclist reaches that point of "knowing their route like the back of their hand," or feeling like "nothing has ever happened to me," when it comes to being diligent about obeying bicycle rules.

It only takes one off day on the part of a motorist or cyclist to cause an accident. It is *always* the cyclist who runs the risk of greater or fatal injury. Listed below are some simple rules to remember contributed by SLAC cyclists. Making them a part of your daily attitude and precautions will reduce your risk of accident.

Michele was helped by a passing motorist, before being rushed to the Stanford Hospital Emergency ward. He suffered a fractured skull and bleeding in the brain, as well as some bodily cuts and bruises. The motorist who hit him has not yet been found.

—Andrea Higashi

BICYCLE SAFETY TIPS

1. Always wear a helmet properly. ANSI or SNELL approved is recommended. Remember that the majority of bicycle injuries occur to the head. A helmet can save you from serious brain injury and death.
2. Wear reflectors. Particularly for night riding, reflectors, brightly colored clothing and a light attached to your bicycle will assist a motorist's ability to see you.
3. Always drive defensively.
4. Follow the California Vehicle Code.
5. Beware of cars in a right-turn lane. They are paying more attention to traffic coming to their left than to cyclists appearing at their right. Oftentimes, they may not even see you.
6. When crossing through pedestrian walkways, get off of your bike and WALK like a pedestrian.

SLAC Welcomes Guests and New Employees:

David Britton, Group C; **David Calloway**, Group A; **Lung Hai Chang**, Klystron Group; **Wesley Craddock**, Experimental Facilities; **Junji Haba**, Group B; **Rodney Hiemstra**, Environ. Safety & Health; **Thomas Hyer**, Group C; **Anatoly Kulakov**, Director's Office; **Wai Keung Lau**, Klystron Group; **Ruth McDunn**, Environ. Safety & Health; **Herbert Moshammer**, Accelerator Theory and Special Projects; **Raimondi Pantaleo**, Research Division; **Dmitri Pestrikov**, Director's Office; **Suzanne Williams**, Information Services; **Bradley Youngman**, Experimental Facilities; **Marc Zand**, Environ. Prot. & Waste Mgt; **Michael Zelany**, Controls.