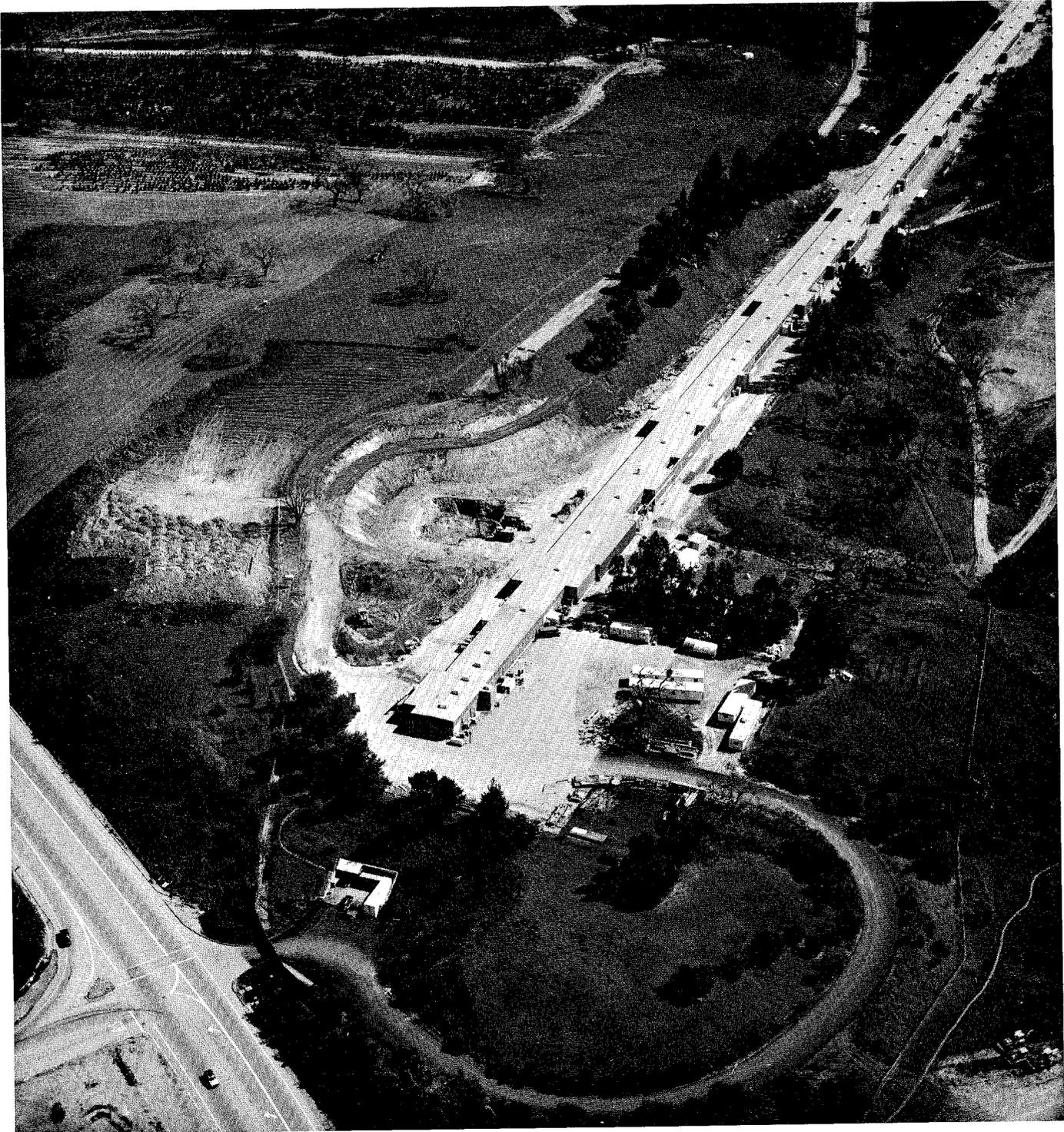


SLAC BEAM LINE

*The Quantum is only a tittle or jot;
On a little theory hangs a lot.*
— Frederick Winsor

Volume 15, Number 4 & 5

April & May 1984



THE COLLIDER GETS A SECOND RING

SLAC HOLDS EARTHQUAKE EXERCISE; NATURE ATTENDS

SLAC has a reputation for being thorough and foresighted, so not everyone was surprised when the Earthquake Exercise held at 9:45 am on Monday, March 26, was followed by a small, but real, version less than seven hours later. The memorandum and headline below document the events.

This coincidence was interesting enough, but three weeks later a significant earthquake of around 6.2 mag-

nitude occurred with its center ten miles east of San Jose.

Coincidence aside, earthquake preparedness is a deadly serious business. The story on the facing page reviews the background behind the exercise, how it went, what was learned, and most importantly, what individuals can do for their personal safety.

DATE: March 20, 1984

TO : Misc. Participants
 FROM : John Harris
 SUBJECT: Earthquake Exercise--March 26, 1984

At 9:45 a.m. on Monday, March 26, the laboratory experiences a major damaging earthquake.

In a real earthquake, there will be widespread confusion, damage and casualties. The telephones are not working, furniture, ceiling fixtures and broken glass litter the area.

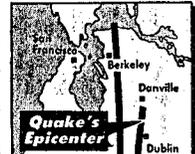
You have been chosen to participate in the exercise. Respond as you have been instructed. Enclosed is a red label badge. It is necessary to identify you to others who are involved in the exercise.

OLD UNIVERSITY • OFFICE MEMORANDUM • STANFORD

Calaveras Fault

4.0 Earthquake Rolls Through The Bay Area

By Edward Iwata and L. A. Chung
 A moderate earthquake rumbled through the East Bay last night, rattling windows, knocking bottles from store shelves and shaking the foundations of buildings from Splane County to San Francisco.
 The 7:36 p.m. quake measured



A SECOND RING FOR THE COLLIDER

Construction has begun for the underground vault which will contain the damping ring for the positron bunches used in the SLAC Linear Collider. Positrons produced near the far end of the accelerator will be brought back to the injector end and stored in this damping ring before being injected back into the linac for final acceleration to a collision point at the other end of the SLAC site. A similar ring for electrons has been in operation for more than a year.

Most aerial photographs of SLAC view the accelerator from the high-energy end of the linac, showing the storage rings SPEAR and PEP and the experimental buildings of the research yard. Now the injector end is taking on an interesting complexity of its own as shown in the cover photograph by Joe Faust.

Sand Hill Road cuts across the bottom left corner where it is intersected by Whiskey Hill Road. The large circular loop at bottom center is the access road to the injector end of the klystron gallery of the accelerator which runs up through the right top corner.

The new construction is in the center of the photograph on the left side of the accelerator. This pit will contain the concrete vault for the positron damping ring.

The matching electron ring is on the opposite side of the linac; its only feature visible from the surface is the cubical building just above the grove of trees. The dirt mounds to the left of the new pit are temporary storage of excavated dirt. The regular horizontal rows at top left mark the Christmas Tree farm. Stanford's Jasper Ridge preserve is off the photo to the right and bottom.

SLAC Earthquake Exercise	2-3
Slim Harris Retires	4
Boyd Rodgers Retires	5
Bob Boesenberg Retires	5
Quarks, Antiquarks, and Gluons	6
Chuck Hale — Inventor	6
Purchasing Department Award	6
Henry Boatner — In Memoriam	7
Norman Silveira — In Memoriam	7
News and Events	8

SLAC Beam Line, x2979, Mail Bin 94

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 Illustrations: Publications Department.

Stanford University operates SLAC under contract with the US Department of Energy.

EARTHQUAKE PREPAREDNESS

The heart of SLAC's Earthquake Emergency Plan is a special organization which will direct the laboratory immediately following a major earthquake. Their task is to find and aid the injured, protect property from further damage, and eventually to begin restoring operations to normal.

The organization consists of a command center and four groups: Executive, Advisory, Operations, and Building Managers. The command center will be immediately set up in the Main Control Room for the linear accelerator, which is the natural center of 24-hour communication at SLAC. The Executive group, consisting of the SLAC Director and a small staff, will get to the command center as soon as possible to receive status reports and make decisions. The Advisory group, headed by an Associate Director, will assemble at the command center to collect damage and accident reports and pass the information on to the Director with recommendations.

The Operations group, which is also headed by an Associate Director, will work from the plant maintenance building (next to Shipping and Receiving) to provide manpower, equipment, and materials to solve the problems identified at the command center.

The group of building managers does much of its work before the earthquake by organizing and educating the occupants of the major buildings at SLAC in proper response during the earthquake, including evacuation. After the earthquake they will determine who is injured or unaccounted for, make a rough estimate of the damage, get the information by runner to the command center, and perform immediate rescue if safe.

After two years of developing this plan, the laboratory scheduled a simulated test. A separate group prepared a list of accidents and specific damage and set up individuals to act as casualties. This information, of course, was withheld from the official groups.



Damage reports coming in to the command center.

The exercise went very well. There was enough real tension to test the organization and point out a few technical problems in the plan. The results have been reviewed, the plan is being modified slightly, and another test will be held in about one year. Observers from the US Department of Energy and Stanford University felt that the exercise was well executed and the plan well conceived.

This plan can only deal with the followup to the earthquake. The crucial actions during the shock are up to individuals. This immediate individual response could not be tested in this exercise, but that deficiency was remedied by nature within three weeks when a noticeable shaking was produced by a large earthquake east of San Jose. The results of this unplanned exercise were not so encouraging. Although many people did the right thing of ducking under a desk or standing in doorways until the shaking stopped, many more immediately headed outside. **Stay inside until you can leave safely.** A pamphlet with earthquake safety plans for families and individuals is available from the Safety Office (x2221).



SLAC's Medical Department on the scene.

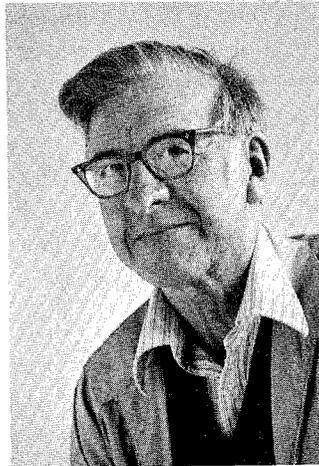


The Fire Department was fully involved in the drill. (Photo by Joe Humphreys.)

CLARENCE 'SLIM' HARRIS

In 1918 a terrible influenza epidemic spread around the world. It killed more people than died in four years of World War I. San Francisco was not spared, and a Mr. Harris, unable to leave his job there, sent his wife to Angel's Camp in the Mother Lode Country for her safety and for the safety of their unborn child. On December 3rd of that year the child was born, and they named him Clarence. He grew so tall he acquired the nickname 'Slim,' by which we still know him.

Slim's boyhood was spent in Grass Valley, California. His father was a mechanical tinkerer. He was a jeweler and a watch repairman, he ran a Chevy garage and later a bicycle shop. Whether due to this environment or to inheritance, Slim soon developed what would become one of his foremost traits: a curious, analytical and inventive mind, always looking for a technique or machine to do a job.



Slim graduated from high school in Oakdale in 1938. Soon after graduation he set off to fight forest fires with the CCC, but he also explored electronics, getting a radio amateur's license and his own station, with call letters WGRHM.

Someone encouraged the promising young man to head for UC Berkeley, with the enticement of perhaps joining the rowing crew. The family had just lost the garage business to a devastating fire, and an impoverished student was obliged to fend for himself. Dreams of rowing faded, but help came in the form of New Deal alphabet soup, an NYA-sponsored job building equipment to provide dc power to a cloud chamber magnet used in physics research at Le Conte Hall at Berkeley (Joe Ballam was to use this machine while working on his PhD). Thus was launched a career in which the name of Slim Harris and magnet power supplies became synonymous. Somehow there must have been time to pursue other interests because a young woman, Marge, whom he met at a school dance, caught Slim's fancy. Eventually they would marry and have three children.

A three year stint at Moore Dry Docks in Oakland provided more useful experience, testing diesel-electric propulsion systems for Navy ships. Then it was back to Berkeley, more studies, a California Professional Engi-

neer's license, and work at LRL in the then burgeoning field of accelerator construction. Eventually, Slim was to play a part in the design and operation of most of the machines that made that laboratory famous: the 37- and 84-inch cyclotrons, the MTA for Livermore, and the Bevatron. He also participated in a Brobeck Associates evaluation of a machine being proposed across the bay at Stanford. Slim must have liked what Pief wanted to do, because he joined the SLAC project in 1963.

At SLAC the switchyard magnet power supply system would be Slim's first major project, but eventually every magnet power supply at SLAC would receive his attention. The care and feeding of all the Research Yard, SPEAR and PEP magnet power supplies became his day-and-night preoccupation. He surrounded himself with a group of SLAC's unsung heroes, the 'power techs' who, come rain or shine, would do their best to keep experiments going. He tried to instill in them his own sense of dedication to work and to the fun of solving technical problems.

Always full of new ideas, it wasn't only power supplies that interested Slim. He has several patent disclosures and a couple of patents to his name. A number of people at SLAC recall his novel idea for using an ultrasonic microphone for pinpointing the source of a vacuum leak or of a high voltage corona discharge. When he discovered the world of computers, Wylbur, Fortran, Spice and Spires were just neat new schemes with which you could solve problems. Those of us who worked closely with Slim were often awed by him. Perhaps we even felt a bit guilty, because there was no way our enthusiasm or dedication could match his own. Those whom he supervised will agree that he was demanding, but will also attest to his sense of fairness and his personal integrity.

Bad health finally slowed Slim down. Years of strain on bone and muscle had taken their toll and he decided that retirement was in order. In no way will this be an easy chair retirement. Slim is recovering from knee surgery that should improve his mobility, and Marge has ambitious travel plans. There is the unfinished electric car, the cluttered dark room, the to-be-expanded unique solar heater, and the computer terminal. Then there is his interest in patent searches, and thoughts about commercializing some of his ideas. On his desk, as we were talking, was a book on "How to start a business in California." If that is not enough, there is his interest in UFO lore and ESP. He keeps in touch with us, and passes on his bright ideas.

Slim has retired, but he has not stopped being Slim Harris.

—Martin Berndt

BOYD RODGERS RETIRES

When Boyd Rodgers came to *SLAC* from UC Berkeley in 1965, the subcontractors were pouring the concrete for the last two sectors of the accelerator housing. He was soon hard at work on the electronics for the accelerator. Now, nineteen years and many projects later, Boyd is taking early retirement.

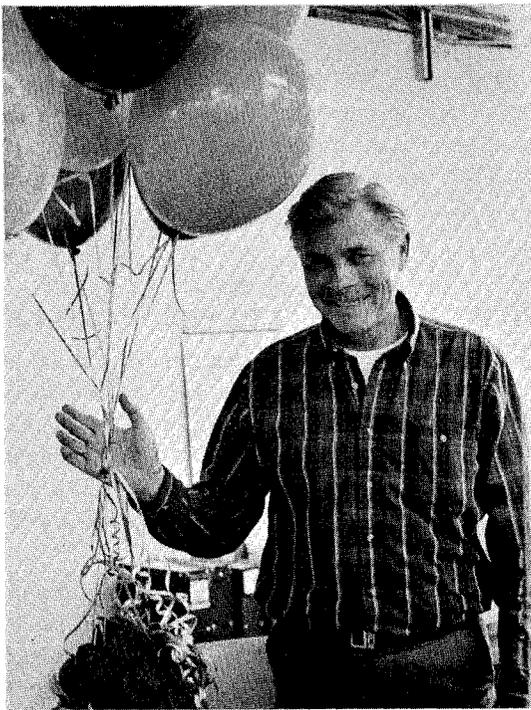
As a senior electronics prototype fabricator, Boyd soon took over the leadership of the Electronics Fabrication Shop, and in the spring of 1968 he was promoted to supervisor of that section. During the construction of the accelerator, Boyd supervised both the shop fabrication of electronic components and the installation, wiring and cabling of this equipment into the gallery equipment racks.

Special talents, a friendly attitude and the initiative to carry his assignments to a successful conclusion are characteristic of Boyd. He has been a leader in every respect.

In retirement, Boyd plans to do a lot of flying, golfing, and to continue working in his side business of car washing and material recycling.

Boyd will certainly be missed by our own group and by the many friends he has here at *SLAC*.

—Frank Generali



Boyd Rodgers

BOB BOESENBERG RETIRES

Bob Boesenberg has left *SLAC* after 29 years of service here and on the Stanford campus. He was hired by Jean Lebacqz in 1954. Before coming to Stanford, Bob had worked for an electric utility company in Illinois and before that he had been in the U.S. Navy.

Bob was hired to transfer braze assemblies to and from a vendor, but he soon became involved in microwave tube R & D activities, assembling special parts, preparing them for test and making modifications. He quickly learned about the special processes encountered in high power klystron construction, including precision machining, alignment, brazing, welding and materials selection for klystron development.



When *SLAC* came into being, Bob was responsible for coordinating the klystron parts manufacture and later the whole tube shop. He was heavily involved in materials procurement and acquisition of all the other supplies needed in klystron construction. When the outside vendors were not able to supply klystrons in time for the scheduled first turn-on of the linac, his workload got very heavy. Due largely to Bob's efforts, *SLAC* was able to build enough klystrons in-house and the machine was started up on schedule.

Bob made many friends at *SLAC* and Stanford during his long stay here. This was attested to at Bob's going-away party at Rick's Swiss Chalet last February when 150 people showed up to see him off.

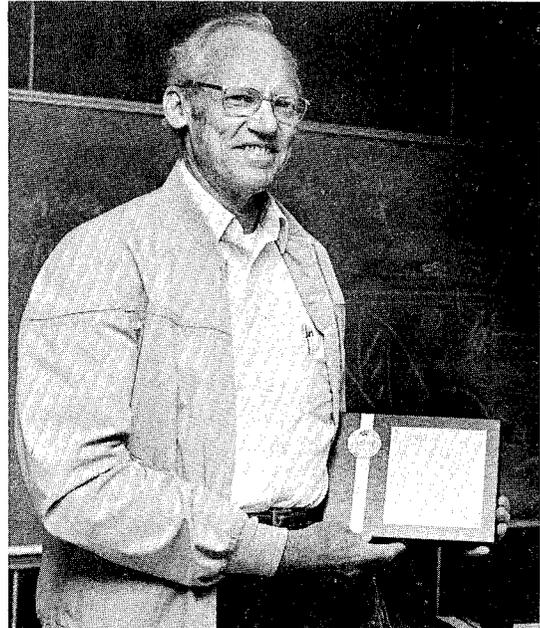
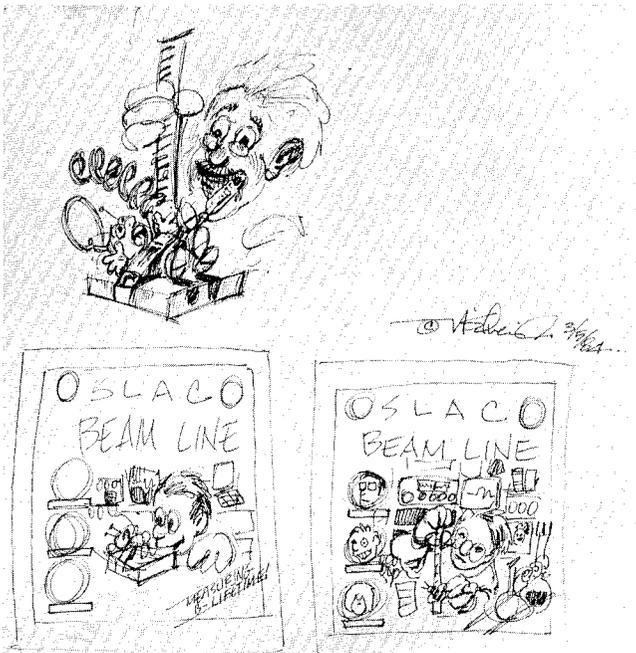
We will miss Bob a lot. He will probably retire in the Sonora area in a few years, but for the time being he plans to stay active in the high power tube field in this vicinity. With his many interests and connections he could be busy for years to come.

We wish him well in his new endeavors.

—Gerry Konrad

THE FINAL COVER

The 1983 April issue of the *Beam Line* featured a cover drawn in professional comic-book style, complete with a monster emerging from the Mark III detector. Artist Norman Silveira, an illustrator at the Stanford Synchrotron Radiation Laboratory, had begun to sketch ideas for this year's April issue, featuring the measurement of the 'b lifetime.' The photograph below shows a few of the preliminary sketches. Norman was killed in an automobile accident before that work was finished. A remembrance of Norman is given on page 7.



CHUCK HALE — INVENTOR

Chuck Hale holds the award presented to him by SLAC Director W.K.H. Panofsky in recognition of his invention of a novel pH meter probe assembly.

He devised a simple, low-cost, perforated housing assembly for the pH probe which contains a filtering sand that is periodically back-flushed with a liquid of known pH level. The back-flushing not only unclogs the filter, it also provides a pH base-line to determine if the probe is working correctly. Prior to Chuck's invention it was necessary to remove the probe and clean it twice a day. With the new device a once-a-week cleaning and checking of the probe is all that is needed.

—Herman Murphy

OF QUARKS, ANTIQUARKS, AND GLUE

SLAC theorist Helen Quinn recently wrote a popular account of some of the current work in high-energy physics, entitled 'Of Quarks, Antiquarks, and Glue.' This article, which first appeared in *The Stanford Observer*, is being reprinted as a special issue of the *Beam Line* and will be distributed in about a week.

BEFORE THE METRIC SYSTEM ...

... Consider the conversion rules for units of the [Sumero-Babylonian] system of linear measures. Six *she* is equal to one *shu-si*, 30 *shu-si* is equal to one *kush*, 12 *kush* is equal to one *nindan*, 60 *nindan* is equal to one *ush* and 30 *ush* is equal to one *kas-gid* (or *beru*).

—*Scientific American*, February 1984

MORE HONORS FOR SLAC PURCHASING DEPT.

The SLAC Purchasing Department has added two more awards to its collection. Earlier this year Dick DuVal, manager, DOE (SAN) Operations, presented SLAC with two bronze-and-walnut plaques signed by DOE Secretary Hodel. One was a Small Business Award and the other was a Small Disadvantaged Business Award.

Purchasing placed 62.1% of SLAC's procurement dollars with small businesses in fiscal year 1982. This was more than 20% above the goal of 51%. The goal for Small Disadvantaged Business was 5% and the actual amount was 8.75%, 75% above the goal.

The plaques were added to the gallery of awards outside the Purchasing Office in the A&E building.

—Ralph Hashagen

IN MEMORIAM — HENRY BOATNER

Henry Boatner died in his home on March 3, 1984. He underwent heart surgery in November 1983 and had just recently returned to work part-time. He was 57 years old. He is survived by a son, Charles, and a sister, Jessica Sibert.

Henry was a native of Louisiana. He attended Tulane University and the University of Wisconsin, where he received a BS Degree with honors, and was known as the only student majoring in Economics who was taking electives in Electrical Engineering. He served with the Navy in World War Two, getting his first exposure to electronics and radio. Prior to coming to SLAC he worked for the CAB and for MURA.



He joined SLAC in 1967 and began work in the EFD Power Supply Operations Group.

Henry will be missed by his co-workers. The legacy of his work is everywhere, in the Research Yard, at SPEAR and at PEP, wherever there is a magnet power supply system. We will be reminded of him whenever we need to refer to one of the many drawings and documents the drafting department prepared for him. His calm, methodical approach to work had a reassuring effect on co-workers and experimenters alike, regardless of how great the panic was. Henry also loved good conversation and was easily drawn into a discussion about religion, politics, literature, or reminiscences of his youth.

Contributions in Henry's memory may be made to All Saints Episcopal Church, 555 Waverley St., Palo Alto, a place he loved and that meant much to him. A memorial service for Henry was held there on March 19, 1984.

—Martin Berndt

NORMAN SILVEIRA — IN MEMORIAM

Norman Silveira, illustrator and draftsman at the Stanford Synchrotron Radiation Laboratory, was killed in an automobile accident on March 16. Although cut short, Norman's life was a rich one. He always had a happy, festive air about him and he had many close friends.

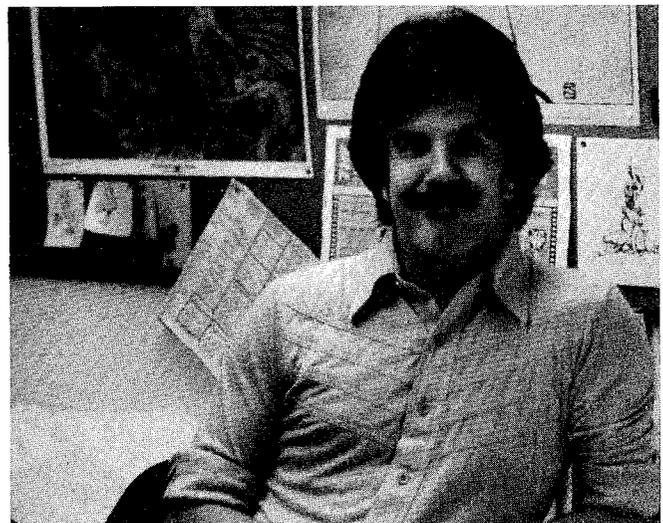
His most obvious talent was his artistic ability. Norman's roots as an artist went back to his youth, when at the age of three the restless child was given pencil and paper; according to his mother, this kept him quiet all day. During later economic hardtimes, his parents could not afford to buy him paper and he persisted by filling in all the margin space of the newspapers.

Norman won several awards for his artistic ability at Santa Clara High School, where he was also class president. In 1975 he graduated from the California Academy of Drafting in San Jose. His drafting skills were top notch, making his renditions of beamline components, assemblies, building, and future laboratory projects clear and easy to interpret.

Along with his drafting work, he also ran his own art company, Satyric Productions, producing artwork for posters, newsletters, T-shirts, advertisements, and business cards. He won first-prize awards two years in a row for drawings at the annual Creation Convention in San Francisco.

The wake held for Norman was warm and joyous. Many told cheerful stories of personal experiences with Norman and many toasts were made. By the end of the wake it was clear that almost all of the fifty guests had received some piece of art work from Norman. His generosity had matched his prolific talent. At SSRL his numerous sketches with unusual characters, his supplements to name tags (and sometimes to mechanical drawings) were a delight. His art was an integral part in producing a close family atmosphere at SSRL. Norman is a fond and remembered part of that family.

—Robert Mayer



NEWS AND EVENTS

BAY TO BREAKERS

The *Accelepede* will come out of hibernation for the Bay-to-Breakers run on May 20th. In addition to the red-boxed runners of last year, there will be a heterogeneous collection of runners as quarks (charmed, strange, beautiful, etc.) emerging from one end and a bunch of e^+ and e^- runners ready for injection at the other end.

Any runners interested in participating in SLAC's entry in San Francisco's equivalent to Mardi Gras/Carnaval should call Ken Witthaus (x2468) or Bob Gex (x2411). Help is available for costume design and construction.

SLAC has arranged bus transportation at a cost of \$5.00 per person. There will be a gala picnic at a choice site in Golden Gate Park after the race.



Last year's *Accelepede* on its mark and ready to go.

JOAN MINOR FEATURED AT JAZZ SHOWCASE

Joan Minor of Personnel was the featured performer at the Northern California Council of Black Professional Engineers' 1984 Inauguration held at the Dunfey Hotel on Saturday evening, April 7. The entertainment portion of the program was called 'Jazz Showcase,' and Joan's set was entitled 'Singing From My Soul.' And that she did!



Joan sang a nicely varied program of contemporary songs accompanied by the David Hardiman Quintet. The audience, which included many of Joan's friends from SLAC, greeted her warmly (this was her second appearance at the Council dinner) and she treated everyone to an upbeat performance. Joan is comfortable on stage and involves her audience in her warm, intimate style.

Joan began an engagement at Seventeen West in San Jose recently, where she will be singing Friday and Saturday evenings.

-Hilda Korner

CORRECTION

Ed Loens completed 20 years of service at SLAC in July 1983. He attended the 20-year-service awards ceremony at the Stanford Faculty Club on January 27. We printed his picture in the March *Beam Line* article about the ceremony, but his name was inadvertently left off the list of those honored.

CAFÉ IMPROVEMENTS

The ambiance of the SLAC Café will be improved and the menu extended to include pastries and soft drinks beginning May first. The coupon at right is your invitation to come over to the Café on the patio side of the auditorium breezeway for an afternoon break. It is open from 12:15 to 4:30pm daily.

Coupon

2 FOR 1

ON ANY BEVERAGE* AT

THE SLAC COFFEE BAR

*coffee... cappuccino... espresso... etc.

Not Valid After May 31, 1984

Coupon