SLAC BEAM LINE

Where there is matter, there is geometry.
—*Johannes Kepler*

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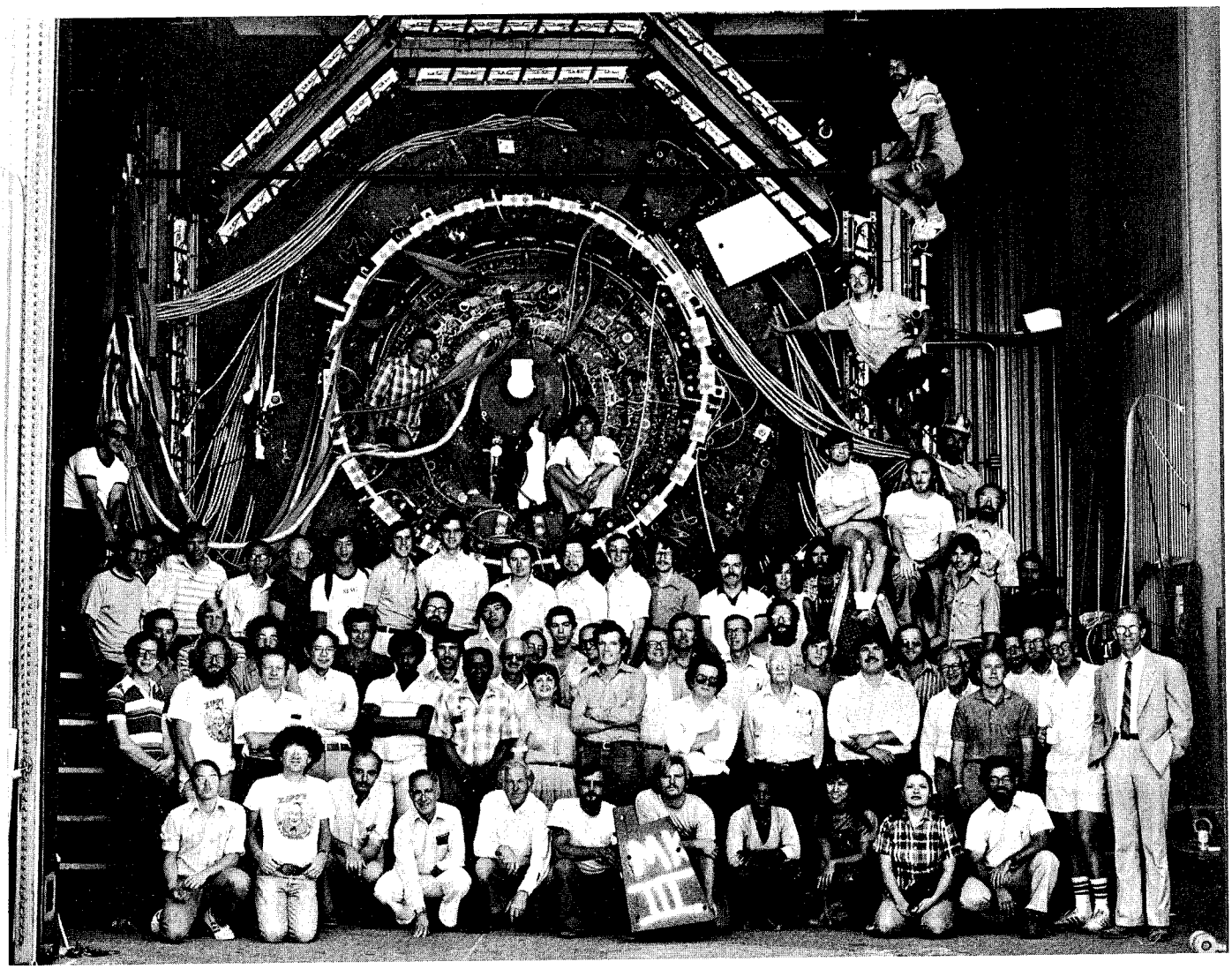


In This Issue

TERRY HEASLETT RETIRES

The end of April saw the retirement of one of SLAC's early-day employees, Terry G. Heaslett, after 18 1/2 years of service.

Terry arrived at SLAC at the old M1-M2 buildings on campus on November 1, 1962. He was employed first in the prototype shop, initially under Jim Williams and later J. C. Kilpatrick, before teaming up with Electronics Instrumentation, where he served until his retirement. As the head of EIN's coordination group, Terry was involved with a huge number of electronics projects over the years, and contributed significantly to many phases of these projects as a service to EIN's engineers as well as to SLAC user groups.

The hallmark of Terry's work was consistency and quality. Terry was not only highly productive but in addition, conveyed the impression that he enjoyed his work, and that each person's job deserved his full attention. These qualities were much appreciated by his colleagues and customers.

Terry was born in Saskatoon, Saskatchewan, and moved with his family to Oakland in 1923 at the age of 9. Later the family moved to Berkeley where he finished his schooling. His electronics career began when he went to work for Lenkurt in San Carlos in 1952, where, after a rapid 3-year rise, he became manager of the prototype shop. In 1948 Terry was married to his lovely wife, Ruth, who no doubt deserves credit for Terry's youthful vigor which caused him to work two years past (what used to be) mandatory retirement.

During the period 1968-1971, Terry was forced by serious eye problems to go on disability leave; surgery eventually corrected the problem to a point where he could return to work. Since his retirement, he has had to undergo bypass surgery, but is now at home and recovering nicely.

The reader may gather that among his many attributes, Terry has the constitution of a Clydesdale horse. A first-hand confirmation of this may be had by a short trip into Salmon waters on a small fishing craft: Terry not only is not bothered by the foulest of sea conditions (which really doesn't make sense for someone from Saskatoon, Saskatchewan) but moreover, sits serenely puffing on an odoriferous pipe which is sure to "do in" those aboard who don't have cast iron stomachs.

On April 28th a large group of friends gathered at a luncheon to express their appreciation for his long service and to give him a warm send-off into retirement. Included among the gifts were a beautiful beam tree and some special mementos of SLAC. I am sure that all Beamline readers who know Terry join us in offering congratulations and best wishes for the future.

—R. S. Larsen

ARCHITECT-ENGINEER FOR SLC

The Contract for the Architect-Engineer Services for the design of the tunnels and experimental hall for the Stanford Linear Collider Project was signed on June 10, 1981 with Tudor Engineering Company of San Francisco.

Tudor Engineering Company presented an exceptional team of experienced and highly qualified professional personnel that have an outstanding record of achievement. Mr. Don Rose, the Project Manager for SLC, has a great deal of experience in the design and construction of tunnels and underground structures. He was the project engineer for the feasibility designs and cost estimates of PEP before the project was authorized by Congress.

Tudor Engineering has been authorized to perform a portion of the preliminary Title I services. Next year they will complete this work and perform Title II detailed design. By performing the engineering in advance of congressional authorization of the project it will be possible to start construction as soon as it is authorized. Preliminary Engineering and Design funds were authorized for this project this year.

— Gordon Ratliff

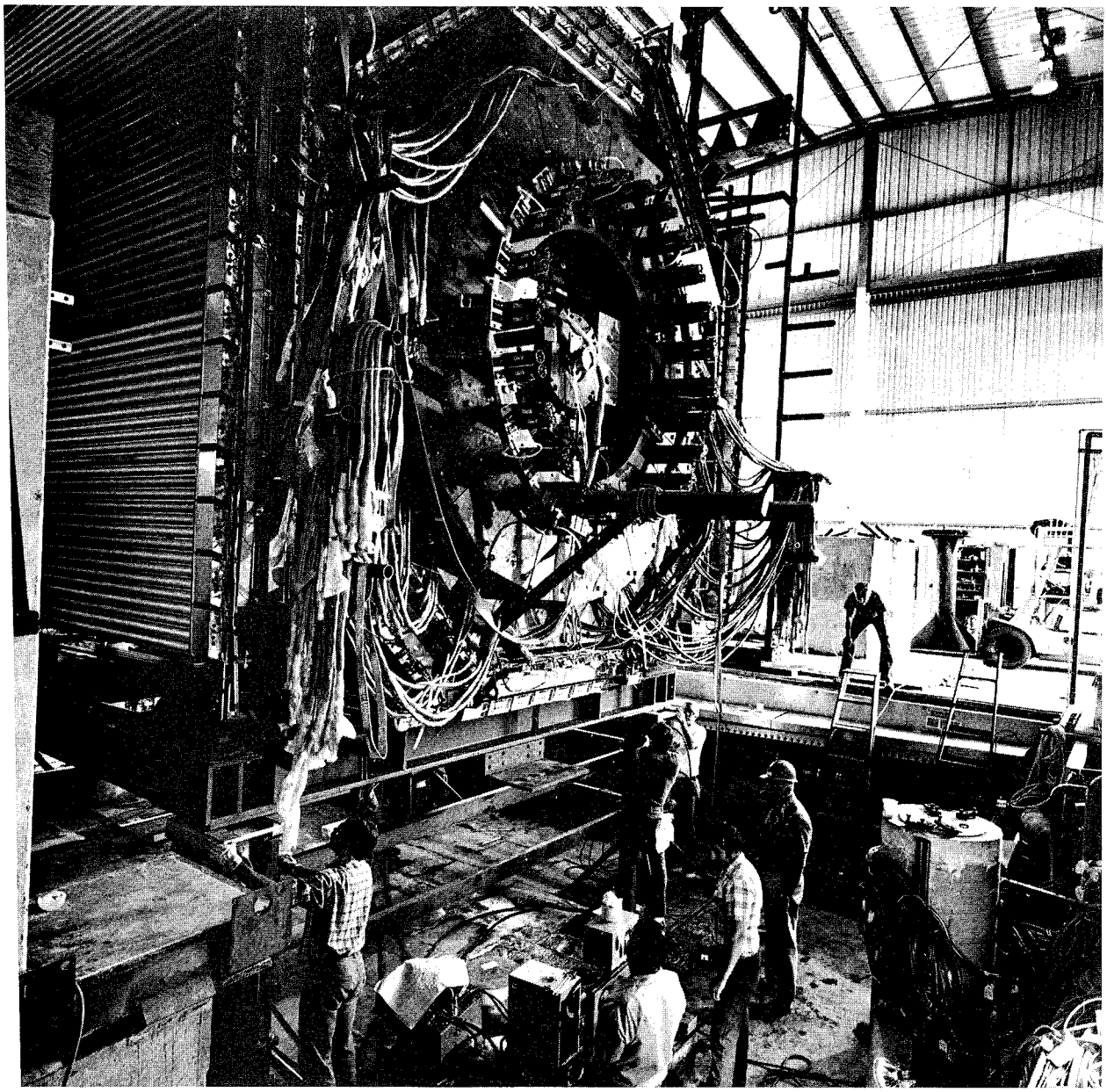


Photo by Joe Faust

THE MARK III DETECTOR

Mark III, the third, new, general-purpose detector for high-energy physics experiments at SPEAR, is now being installed.

The work at SPEAR began with the Mark I which set the pattern for 'general purpose' detectors at storage rings in 1973. Physicists using the Mark I at SPEAR discovered the ψ family and the τ lepton - opening a new frontier for high energy physics.

After several years, the Mark I was replaced with the Mark II, built using the experience gained from the first round of physics at storage rings and the new technologies which had been developed for particle detection. Within a year, the Mark II was moved over to the new storage ring, PEP, leaving a vacant interaction region and a lot of physics still to do.

Physicists and engineers from SLAC Group D, Cal Tech, UC Santa Cruz, Illinois and the University of Washington seized the opportunity of building a new detector, the Mark III, and have been working on the project for the last three years.

THE PHYSICS

The wealth of physics expected at SPEAR is based on the ψ family and the τ lepton.

The ψ meson is described a a combination of charmed quarks - a fourth kind of quark which had been hoped for in some theories and which the SPEAR work discovered. The new quark, called c for charm, is added to three quarks already known : u, d and s for up, down, and strange. Quarks themselves have never been seen alone in high energy experiments, but the combinations of two and three quarks make up the familiar particles of pi mesons and protons etc. SPEAR is in the ideal energy range for studying the combinations of these four quarks, a study formally known as Quark Spectroscopy.

A c-quark and a $\bar{c}$ -quark make the tight combination called ψ , whose discovery started this work. The excited states of the c- $\bar{c}$ combination are called ψ' and ψ'' etc. . Millions of these have been examined in the Mark I and Mark II, but there are very interesting decays including soft photons for which these detectors were not well suited.

A special combination of the c and $\bar{c}$ with opposite spins produces the η_c , a particle discovered by the Crystal Ball detector in the East pit of SPEAR. Only a few of these have been seen and a full study is of great interest.

The ψ may also decay into a completely new object proposed in some theories. Called a 'glueball', it would be made up of gluons- the particle thought to hold quarks together.

A combination of a c quark with a u or a d is called a D meson and these are produced in pairs at SPEAR. About 1000 have been studied - and many thousand more are needed. Another combination, c and s, called F should be produced but has not yet been seen convincingly at SPEAR.

Combinations of c with 2 other quarks make charmed baryons -similar to protons and neutrons, and a few examples of them have been seen at SPEAR, DESY and at proton accelerators. Several thousand of these should be produced each year at SPEAR for the Mark III.

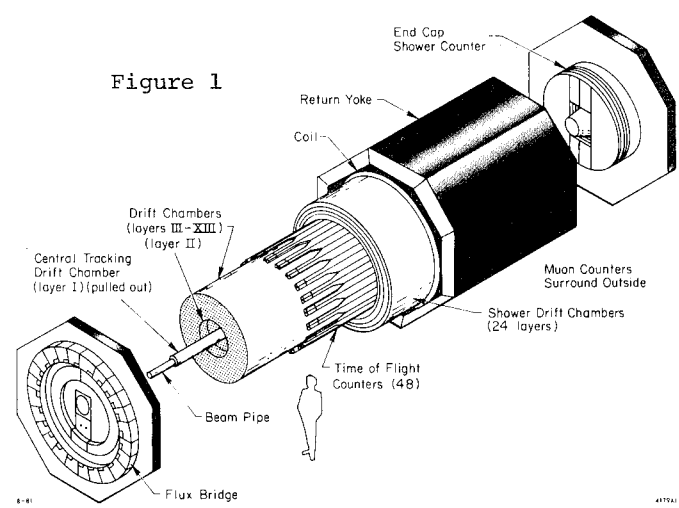
The τ particle is similar to the electron and muon and becomes the heaviest member of the family called leptons. Leptons are simpler particles than the quarks, but why there are 3 such particles differing apparently only in mass is a mystery. SPEAR is an excellent place to study these particles since they can be produced at an energy which does not give a great deal of background from the production of charmed mesons.

THE GENERAL DETECTOR

The ideal detector would identify and measure the momentum of all the particles produced in each $e^+ e^-$ annihilation. This is a tall order, for it means surrounding the interaction region completely with a variety of detector components which track charged particles, measure photon energies, convert other neutral particles into charged particles for energy measurement, range out muons, measure ionization losses and determine velocities. This is an impossible job for lots of reasons. Some components which do one of these jobs well, for example, interfere with looking closely at the other measurements. Compromises must be made, and this results both in special purpose detectors, such as the Crystal Ball which measures photon energies very well, and in general purpose detectors which try to cover all the bases to some degree.

The pieces of a general purpose detector are shown in Figure 1 - an exploded view of the Mark III. The electron-positron annihilations occur at a point in the beam pipe at the center of the detector and the produced particles travel out through the detector. Most of those will pass through at least some part of the detector- and this is important. If only 10% of the region were not covered, an event with 6 particles would have a better than even chance of one track escaping, and distorting the understanding of the event.

Figure 1



The combination of drift chamber and magnetic field measures the momentum of the charged particle, and the time of flight counters measure the velocity. The mass, and identity, of a charged particle is given by

these two measurements. The shower chambers in the central region and endcap measure the energy and position of photons and electrons. Particles detected outside the steel body of the detector are generally muons - the only very penetrating charged particle.

THE MARK III DESIGN

Apart from the Mark I iron, the Mark III is a new detector - with changes made to enhance the efficiency for quark and lepton physics.

In the Mark I and Mark II, the shower counter detectors for photons were outside the coil used to produce the magnetic field. These coils, however, absorb photons and, in particular, may prevent low-energy photons from giving any sign of existence in the shower counter. By making the new coil larger, it became possible to place the shower counter inside the coil diameter and hence make it sensitive to the lower energies. As a bonus, the coil could now be made thicker, reducing its electrical resistance, and cutting the power consumption in half.

In SPEAR, the average momentum of a particle is about 500 MeV/c - a consequence of the several GeV of energy in the colliding beams being divided by the large number of particles produced. At low momentum, particles scatter an appreciable angle as they pass through material, and this confuses the measurement of bending in the magnetic field which is used to determine the momentum. In the Mark III, the material between the interaction and the drift chambers was reduced as much as possible. The beam pipe is made of beryllium, for example, and the trigger counter surrounding the pipe is a gas wire chamber instead of solid scintillation material. This is one-third the material of the previous detectors.

The paths of the particles are measured in the drift chamber - a cylinder about 2 meters in diameter and 4 meters long which surrounds the beampipe. About 1,000 sense wires and another 3,000 field-shaping wires run longitudinally through the chamber. When a particle passes through the chamber, it leaves a trail of ions behind and the electrons then drift toward the sense wires. When these electrons are within a few microns of the thin, 20-micron wires, the intense electric field accelerates them so violently that they produce more ions and an avalanche of charge hits the sense wire. This charge, as well as the time at which it arrived is measured by the electronics attached to the wire.

This time measurement determines how close the original particle passed by the sense wire, and hence its position is accurately known. What is not known, however, is on what side of the wire the particle passed. This 'left-right ambiguity' was resolved in the previous detectors by using information from additional wires along the track in a lengthy fitting program with the computer. In the Mark III, the sense wires are not all lined up along radius lines, but each group of three is carefully staggered. A particle travelling along a straight line from the interaction point will pass at different distances from the three wires, and this difference determines which side of the group it passed on and saves considerable computer time later on.

The drift chamber electronics can also measure the amount of charge left and this gives additional information about the kind of particle which passed. If two particles of different mass have the same momentum the heavier particle will move more slowly. At the momenta common here the slower particles will deposit more energy in the gas. The two particles will curve in the same way through the chamber under the influence of the magnetic field, but the heavier one will leave more energy (ions) in the chamber. This measurement along with the other information about the track should allow the Mark III to distinguish among protons, kaons, pions and electrons.

The scintillation counters just outside the drift chamber are used to measure the time taken by the particles to travel the meter or so from the interaction point. This, in turn, determines the velocity and helps identify the particle. The particles are travelling close to the speed of light, and the time is measured in billionths of seconds -nanoseconds. The counters must be able to measure time of arrival to a precision of a fraction of a nanosecond. By using two-inch scintillator instead of the one-inch material customarily used, a stronger signal is produced in the scintillator and the precison should be about 0.2 nanoseconds compared to around 0.3 in previous detectors.

The most ambitious part of the detector is the shower counter which measures the energy of photons and electrons by the energy left as they interact in heavy material to produce a large number of lower energy electrons and photons - the 'shower'. The chamber is a sandwich of 24 thin plates of lead alternating with 1 cm thick gas layers with wire detectors similar in many ways to the system used in the MAC detector at PEP. The unique and difficult part of the design

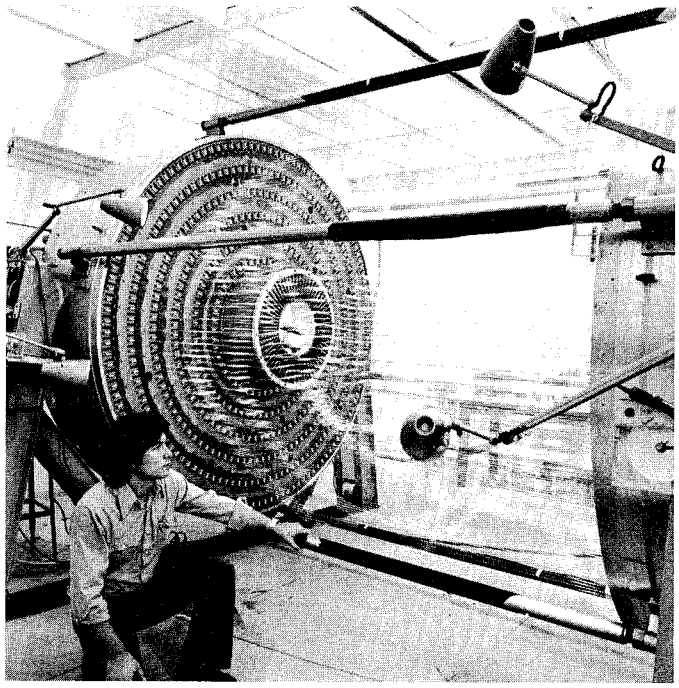


Photo by Joe Faust

Jim Roehrig Inspects Shower Counter Wires

was a result of squeezing the chamber between the scintillation counters and the magnet coil. Most detectors of this sort are made in modules which are fitted around the region as a hexagon or octagon, and which use up space as dead corners. The Mark III chamber is a single cylinder mounted on an aluminum support spool. Two similar layered structures mount on the ends of the cylinder to surround the interaction region almost completely with shower counters.

Finally, outside of the magnet iron, are mounted the muon counters. Muons do not interact very strongly with matter and gradually lose energy as they pass through the iron of the detector. Most of the pions, kaons, protons and electrons are absorbed by this time, and a signal in one of the exterior counters is most likely the mark of a muon. Two layers of counters are used in a pattern similar to that used at the Mark II.

All components of the new detector have been completed and were assembled into a single unit at the edge of the West interaction region at SPEAR. Some of this assembly work is shown in the accompanying photograph. The complete detector was then lowered into the region's pit.

Checkout will begin this Fall and data taking with the new instrument will begin in the Winter and Spring of 1982.

THE PEOPLE

PHYSICS

SLAC: K. Bunnell, D. Coward, K. Einsweiler, D. Hutchinson, L. Moss, R. Mozley, A. Odian, J. Roehrig, W. Toki, Y. Unno, F. Villa.

CAL TECH: R.M. Baltrusaitis, J. Hauser, D. Hitlin, J. Richman, J.J. Russell.

U.C. SANTA CRUZ: H. Bledsoe, D. Dorfan, R. Fabrizio, F. Grancagnolo, R. Hamilton, C. Heusch, H. Sadrozinski. T. Schalk, A. Seiden, D. Smith.

U. OF ILLINOIS: J. Becker, G. Blaylock, R. Cassell, H. Cui, B. Eisenstein, G. Gladding, S. Plaetzer, A. Spadafora, J. Thaler, A. Wattenberg, W. Wisniewski.

U. OF WASHINGTON: T. Burnett, V. Cook, C. Del Papa, H. Lubatti, K. Moriyasu, J. Rothberg, J. Sleeman, H. Willutzki, D. Wisinski.

ENGINEERING

SLAC: D. Bernstein, J. Bernstein, G.Burgueno, R. Eisele, H. Kang, E. McNerney, J. Moss, F. Plunder, B. Scott, K. Skarpaas, R. Sukiennicki, W. Wadley

CAL TECH: G. Belyansky, R. Cooper, W. Fridler,, H. Grau.

U.C. SANTA CRUZ: W. Nilsson, W. Roe.

U. OF ILLINOIS: J. Kohlmeier, L. Seward, J. Simaitis, F. Wise.

U. OF WASHINGTON: D. Forbush, H. Guldenman.

—Robert Mozley

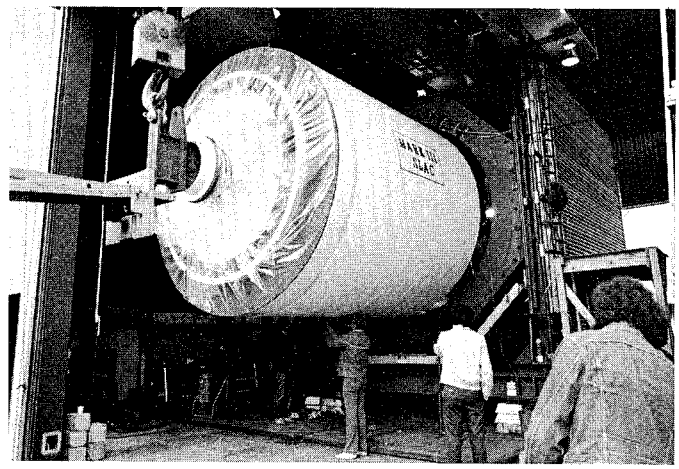


Photo by Joe Faust

Installation of the Shower Counter in the Magnet

PAUL ZINDER

Paul Zinder passed away on July 14, 1981 at the age of 63. He is survived by his wife, Sylvia, and son, Paul, Jr.

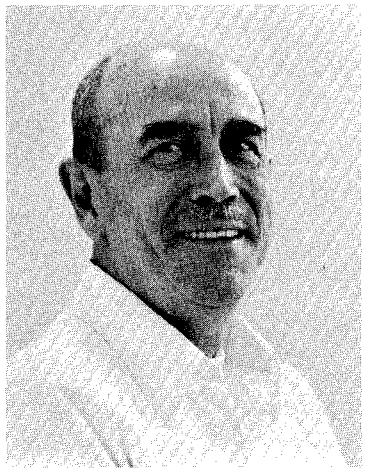
Paul was a long-time Stanford employee. He came to Hansen Labs in January of 1957 as a Senior Design Draftsman. There he contributed to the mechanical design and development of the MK I and MK V klystrons and the MK II, MK III and MK IV linear accelerators, all predecessors to the SLAC Linac. In November, 1961 Paul joined the staff of Project "M", later to become known as SLAC. Initially, Paul worked on the preliminary design and layout of accelerator support systems and then on their final design. When accelerator design was completed, Paul worked on design of equipment for several experiments. Paul then became involved in the design of components for SPEAR. His last assignment was with the PEP Rf group. Thus Paul contributed to the design of all the major facilities at SLAC.

Paul's working career began in Detroit in 1937, making time and motion studies. From 1940 to 1944 Paul served in the anti-aircraft artillery branch of the Army. In 1946 Paul earned a BS in Mechanical Engineering and later a degree in Business Administration. While working on his BS degree, Paul taught drafting and math courses at Heald's Engineering College in San Francisco. Paul continued to share his knowledge in later years by teaching drafting courses in East Palo Alto.

Paul enjoyed gardening and puttering around the house. He and his wife Sylvia had lived in the same neighborhood since 1950, having been original homeowners in the tract. They belonged to a group composed of people in their neighborhood who went on monthly weekend trailer/camper caravan trips to various recreational sites. Couples took turns choosing sites and "leading" the group. Sometimes, on Saturday evenings, they would put on amateur shows. Paul and Sylvia's soft shoe dance routine was a popular number. They were also interested in folk dancing and were among the most energetic couples at a department Oktoberfest several years ago. A very devoted couple, Paul and Sylvia were very church-oriented and participated in many of the church sponsored activities.

Paul will be sorely missed at SLAC. Paul's perseverance and continued contribution to PEP design in spite of his failing health was an inspiration to those working with him. Donations may be made in Paul's name to either the American Cancer Society or the Heart Fund.

—Pat Decker, Al Lisin



RETIREMENT--PETE MUNZELL

Pete retired April 30, 1981 after an illustrious SLAC career that began in February, 1964. Although the occasion was important to Pete--it was not an event he was unfamiliar with. After all, seventeen years ago he retired from service in the U. S. Army.

Pete was born in Clinton, New Jersey, but spent little time growing up there because at the tender age of 15 he joined the Army, beginning a career that saw him rise in rank from Buck Private to Colonel. He served in Europe and Korea but claims he had more fun during his early service days in the Cavalry. He never gained the fame and notoriety enjoyed by "Ronny" and Prince Charles of England--nevertheless, his wife Marge tells me he was a dashing figure on a charging mount.

Pete began his SLAC service as a Document Control Clerk but soon expanded his activities to include mastering the operation of every type of reproduction and duplicating equipment known. In 1972 he was appointed Supervisor of the Reproduction and Document Control Group. He introduced major changes in the Print Room and purchased microfilming and printing equipment that has helped to improve service markedly.

In addition to the many plaudits he received for his contributions to SLAC--as attested to by the numerous commendations in his personnel file, he earned the respect of his peers in the reproduction business throughout the mid-Peninsula area.

When last heard from Pete was playing a little golf, avoiding Marge's "honey do" projects as much as possible and catching up on visits with his daughter, Susan, sons Pete and Chris, and his many grandchildren. He also says he hasn't found it difficult getting used to the new pace. We all hope he enjoys this retirement because he richly deserves it.

—Joe Fish

DON JOHNSON RETIRES

Don Johnson has retired from SLAC after more than 18 years of service to the laboratory. Don came to work in January 1963 when the early design work was going on at the M-1 Building on the Stanford campus.

A piping designer whose work extended into all areas of SLAC, Don now has over 35 years of piping experience, including time with many national and international firms, such as Fluor Corporation, Stearns & Rogers, Bechtel Corporation, and H. K. Ferguson just prior to coming to SLAC. Being a perfectionist, Don's design was extremely clear and concise and contractors often complimented SLAC for the excellent piping drawings.

Don and his wife Robbie are avid campers and fishermen. Both bowled in the SLAC Bowling League for many years, and Don still holds some of the league records.

Don was born in Sandwich, Illinois, and spent much of his younger years in Nebraska. He came West to work in the aircraft industry during World War II, later moving to Texas before returning to California.

We will miss Don's excellent work, not to mention his dry humor and love of Willie Nelson's music. We wish him the best and hope his golf score stays below his age.

— Donn Robbins

Practical sciences proceed by building up; theoretical sciences by resolving into components.

—Thomas Aquinas

BILL YOUNGS RETIRES

Another familiar face at SLAC has disappeared. William C. "Bill" Youngs has put away his pencils, lettering guides, and triangles and has chosen early retirement.

Bill joined SLAC, then known as project "M", on January 1, 1962 as a draftsman, in the Mechanical Engineering Dept. doing both mechanical and electrical drafting. At that time everyone on the project was housed at "M1" building, later expanding to "M2" building as the group enlarged. These buildings were on the Stanford Campus, actual construction of SLAC buildings having not yet started. By then Bill had found a full time niche in the electrical group and for the next 19 years left his mark on many projects throughout SLAC. He subsequently moved into the SE&I Dept. which later became the Plant Engineering Dept.

Bill grew up in Michigan, working at various jobs there and around the country. He was a distribution technician for the Consumers Power Co. in Pontiac, a personnel clerk in General Motors, and probably the most exciting job was that of a test driver for Chrysler Corporations military tank division during the early 1950's.

During these periods Bill found time for night school and ICS courses in electricity.

When he finally made the move to California, he and his wife Cookie settled in Oakland and for a time operated a neighborhood bar. At about this time in his life he got serious about drafting, gave up the bar business and moved to Palo Alto after joining SLAC.

Due to the fact that he was artistic and exceptionally productive in drafting, Bill became involved in many preliminary, conceptual type electrical drawing projects such as SPEAR, PEP, and several experimental projects in the research yard.

Bill and Cookie have lived in Sunnyvale for the last several years and plan to continue on there, at least for the present. They have a second home at Clear Lake and I'm sure they'll spend quite a lot of time there, fixing it up and just relaxing.

At the present time though, they are on a three month leisure trip around the country in their motor home. At last report, they were seen heading South and West out of Virginia, one definite stop to be the Grand Old Opry in Nashville.

I am sure all of Bill's many friends at SLAC join to wish he and Cookie the best of luck, and loads of happiness in retirement. He will be sorely missed, especially when the next big project comes along.

— Bob Laughead

VIOLA BENNETT LEAVES SLAC

After four years at SLAC Viola Bennett has left to look for work in Utah, where she has lived most of her life. About the move, Viola said: "I've just taken up skiing--my son Brad is a certified instructor at Powder Mountain just out of Ogden Canyon. I'll be living within about a one-hour drive from there. I'm looking forward to lots of skiing this winter.

"I like the work I've been doing here at SLAC, and am going to really try to go to work at the University of Utah in Salt Lake--for the Physics Dept."*

Viola attended Ogden High School, Weber State College in Ogden, and Stevens Heneger Business College, also in Ogden. About ten years ago she left home to take a look at the rest of the world. Now, after working at SRI and SLAC, she is going back.

At SLAC Viola worked in the Accelerator Physics Dept. where she was greatly appreciated, even by people who get a certain amount of pleasure out of making themselves exasperating, difficult to locate, and impossible to pin down.

About her work Viola said: "If I can be sentimental for a minute, I'd like to say that I have really enjoyed working for Accelerator Physics. The engineers and physicists in this group are exceptional people. As a matter of fact, I've never worked with any physicists before and I'm sure they've spoiled me for any other physicists I'll ever work for. I've looked forward to coming to my job each morning (the only thing I ever disliked was the 25-mile drive each day to and from work). I've met some wonderful people at SLAC. Helen Perigo was my first introduction to SLAC and she was, and is, fantastic at public relations."

Our regret at Viola's departure is tinged with envy. She is returning to her childhood home. She will be near two of her three children and will be able to engage in her favorite sport.

We wish her well in her quest for work at the University of Utah and in her other activities.

*As we went to press we learned that Viola had found employment with the Electrical Engineering Department at the University of Utah.

GEORGE SHERMAN RETIRES

"I can only say that my years at SLAC were quite challenging--at times frustrating, but over the years I enjoyed the work.

"I would like to thank Bob Watt, Frank Barrera, and the rest of the group for the patient help and guidance afforded me during my years at SLAC. Also, many thanks to all the support shops, machine and welding shops especially, for making the completed projects so successful and rewarding. Keep up the good work and keep SLAC one of the top research labs in the world."

Those are the parting words of George Sherman upon his retirement after 15 years at SLAC. George worked in the Bubble Chamber Group on a variety of projects ranging from bubble chamber systems, and wire chambers to the storage and handling of cryogenic liquids.

Born in Colorado, George served in the Air Force in World War II, becoming a crew chief on a B-24 bomber in the South Pacific.

After that war George had a variety of jobs before joining the Jet Propulsion Lab where he worked on research and construction of rocket propulsion systems for space craft from America's first through Surveyor, which explored the planets Venus and Mars.

It has been a pleasure to work with George these many years. We hope he is enjoying his retirement.

— R. Watt

DOCTOR'S HOURS

Until further notice, Dr. Beal will be at SLAC every afternoon with the exception of Wednesday, when he will be here in the morning.

—SLAC Medical Dept.

PAUL LEE RETIRES

Paul Lee retired from SLAC at the end of May, after 27 years of service at Stanford, at the age of 58. His career in microwave tubes started at Varian in San Carlos in 1950. He was there until 1954, finally as a leadman in the tube production area. He came to Stanford from Varian in 1954 along with several other technicians, at least two of whom are still here (Willie Roberts and Blaine Hayward). Paul went to work at Hansen Laboratory. Some of the people he worked with there were Arnold Eldredge, Dick Messemer, Sy Sonkin and Jim Pope. In those days he worked primarily on electron guns and electroforming of sections for a medical accelerator. When SLAC got started, Paul began to work here in the Klystron Department in 1961. Since then he had been involved with ceramic-metal assemblies, brazing and titanium-coating of klystron windows.

Paul was born in Canton, China. During World War II he served in armor in the U. S. Army. He and his wife Lil will remain living in Palo Alto after his retirement. Their two sons are grown and away from home. Paul says that he intends to do some fishing and traveling after retirement. The rental property he owns in Hawaii will of course require some of that travel time. We wish Paul and his family all of the best for the future.

—G. T. Konrad

HAROLD E. TAYLOR RETIRES

After almost 15 years at SLAC, Harold "Ed" Taylor has retired.

Ed is a native Californian. He attended Burlingame High School, The Frank Wiggins School of Engineering, and the College of San Mateo. He had worked at many places on the Peninsula, including Lockheed, Kirk Engineering, Delcon Corp., Applied Technology, Gay-Lee Products Co., and Sierra Electronics.

Ed started at SLAC in August 1966, working in the Electronics Fabrication Shop. In 1969 he transferred to the Electronics Engineering Prototype Shop where he worked for Willy Johnson.

Ed retired in March 1981, mainly to take care of his wife Helen, who was seriously ill. Helen died in May so Ed is alone now.

Among his many interests, Ed is a radio ham (W6PNl). He will probably be happy to hear from other SLAC hams.

We extend our condolences to Ed on the death of his wife, and wish him good health and a busy, happy retirement.

—C. Olson

HARRY ROBERTSON RETIRES

Harry Robertson, SLAC stores catalog compiler retired on May 29, 1981. Harry commenced working in 1967 for Stanford University as a Storekeeper at the Stanford Marine Station, Monterey, California, and after seven years there, he transferred to the campus stores. In 1979 he was selected for the job at SLAC Stores.

Harry retired from the Air Force in 1966. He served at various air bases throughout Europe and the United States. His last duty station was in Fairbanks, Alaska, where he was able to do a great deal of fishing and hunting. Also while there he attended the University of Alaska, majoring in Accounting.

Harry now resides in Carmel, where he plays golf and does some fishing. Good luck, Harry--come in and see us once in a while.

—John Barreiro

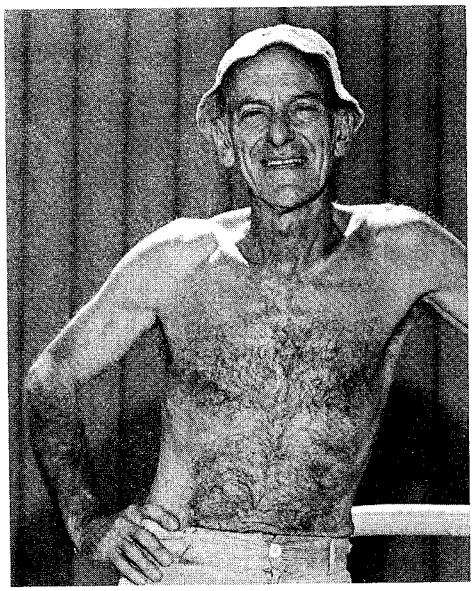


Photo by Joe Faust

ED TAYLOR RETIRES

The photograph shows Ed Taylor getting ready to do one of the things he loves the most - running. Running is not just his sport, it is his style, and a lot of people at SLAC got to know the back of his head pretty well for when he wasn't running around the outside of the accelerator, he was moving pretty fast inside.

Ed came to SLAC at its beginnings, in the summer of 1965 and took up the problems of the large spectrometers in End Station A as a mechanical engineer. Fortunately, Ed had trained himself in a variety of fields beyond the standard kit of mechanical engineering, and knew about electronics, servo-mechanisms and computing. One of the first jobs involved controls for moving the very large spectrometer platforms in a way that would maintain the precision alignment of all the magnetic elements- a job that took the breadth of skill that Ed could bring to bear.

Bill Davies-White remembers those spectrometer days with Taylor, " It didn't matter what the hell you gave him to do, he was like an old Terrier who would worry away at the problem until it was solved." Ed was apparently inseparable from an old lunch box in which he carried a screwdriver, a soldering iron, a meter and always just the right resistor. He was always into the guts of the thing, an innate fiddler improving on his machines.

Ed is now retired from SLAC and living in Seattle with his family. And running more than ever.

TEXT AND INFORMATION PROCESSING

The SLAC Publications Office has just leased an NBI System 8 word processor. The Director has established an ad hoc committee to evaluate this experiment and to study SLAC's future needs in this and related areas, such as electronic mail, computer typesetting, and preparation of machine-readable journal manuscripts. Information, ideas or opinions on any such topics are solicited from the entire SLAC community.

The Committee on Text and Information Processing at SLAC is chaired by Louise Addis (VM account, LIBRARY, or ext. 2411); the members are William Ash, Dave Downing, John Ehrman, Dave Gustavson, Len Moss, Leo Paffrath and Fran Unze.

—Len Moss

SLAC TELECOMMUNICATIONS SYSTEMS

SLAC Telecommunications Systems have grown from a beginning of a few units to the present mixture of more than three hundred fixed, mobile and portable units in the following subsystems:

1. Operations Net
2. Security Net
3. Experimental Net
4. Paging
5. Microwave
6. PEP Tunnel
7. Cable TV

The Operations and Security nets consist of a number of remote control consoles, interconnected by fixed wire lines, to a transmitter. Each net can communicate with its remote consoles and to its mobile and portable units.

The Experimental Net is confined to portable units.

SLAC Paging is the familiar dial telephone operated beeper system.

Two microwave units are used for point-to-point communications with LBL Berkeley. One unit is a video/audio conference facility. The other unit is for a future high speed computer data link.

The PEP tunnel system is a multiple frequency dual daisy chain communications system for communications into and out of the PEP ring. Communications will be possible between portables in the ring and control rooms.

Engineering, planning and coordination of these systems is done by Warren Struven. Maintenance and repair of most of the systems is the responsibility of the Instrument Repair Shop, Electronics Dept.

—Carl D. Caldwell

Photo by Joe Faust

The SLAC ATTACK team. In the back row, left to right, are Carlos Bertram, Magellan Starks, Bob New (manager), Jim Minich (coach), James Alexander and Richard Zdarko. In the front row are Bob Brown, Bob Adamson, Brian Harris and George Vertin. Not pictured here are Oscar Jones, Steve Defasio, Larry Vijil, Nate Pierce and Bob Nicholson.

A WINNING SOFTBALL TEAM

The SLAC ATTACK, our laboratory's own slow pitch team, finished the summer season with an eight game winning streak. Then, on August 25, they routed the opposition (The Phuds) 8 to 2 to win the C-1 divisional playoffs. They are now in the running for the all-league championship trophy.

We have reason to be proud of this--SLAC's first championship team since 1976.

—Jan Adamson

A NEW COMMITTEE

The Director has appointed a Committee to examine various ways of making SLAC a more interesting and pleasant place at which to work. The Committee mandate is very broad, and suggestions would be welcome. The members of the Committee are: Don Getz, Chairman, Hilda Korner, Dick Fuendeling, John Bland, Joan Gardner, Greg Loew, Bob Gex, Dick Taylor. Ex Officio Members: Bernie Lighthouse, Ruth Nelson, Nina Adelman.

SLAC Beam Line (Bin 80)
Stanford Linear Accelerator Center
Stanford University
Stanford, California 94305

Joe Faust, Bin 62, x2882 — *Photography*
Crystal Washington, Bin 68, x2502 — *Production*
Dorothy Edminster, Bin 20, x2723 — *Articles*
Herb Weidner, Bin 20, x2521 — *Assoc. Editor*
Bill Kirk, Bin 80, x2605 — *Editor*

Bin Number Distribution at SLAC Total: 1703 1/80												
	0-3	8-4	15-4	26-20	37-12	48-9	56-12	65-39	72-3	81-59	88-21	96-24
	1-24	9-3	20-32	30-46	38-3	50-18	57-29	66-16	73-13	82-9	89-14	97-91
	2-7	10-3	21-4	32-1	39-10	51-58	60-23	67-4	74-9	83-8	91-3	98-30
	3-6	11-15	22-15	33-27	40-107	52-19	61-20	68-10	75-3	84-9	92-2	
	4-19	12-115	23-23	34-4	42-12	53-47	62-35	69-54	78-26	85-27	93-0	
	6-18	13-29	24-18	35-10	43-30	54-0	63-15	70-1	79-94	86-6	94-33	
	7-2	14-4	25-3	36-17	45-1	55-46	64-19	71-26	80-7	87-16	95-36	