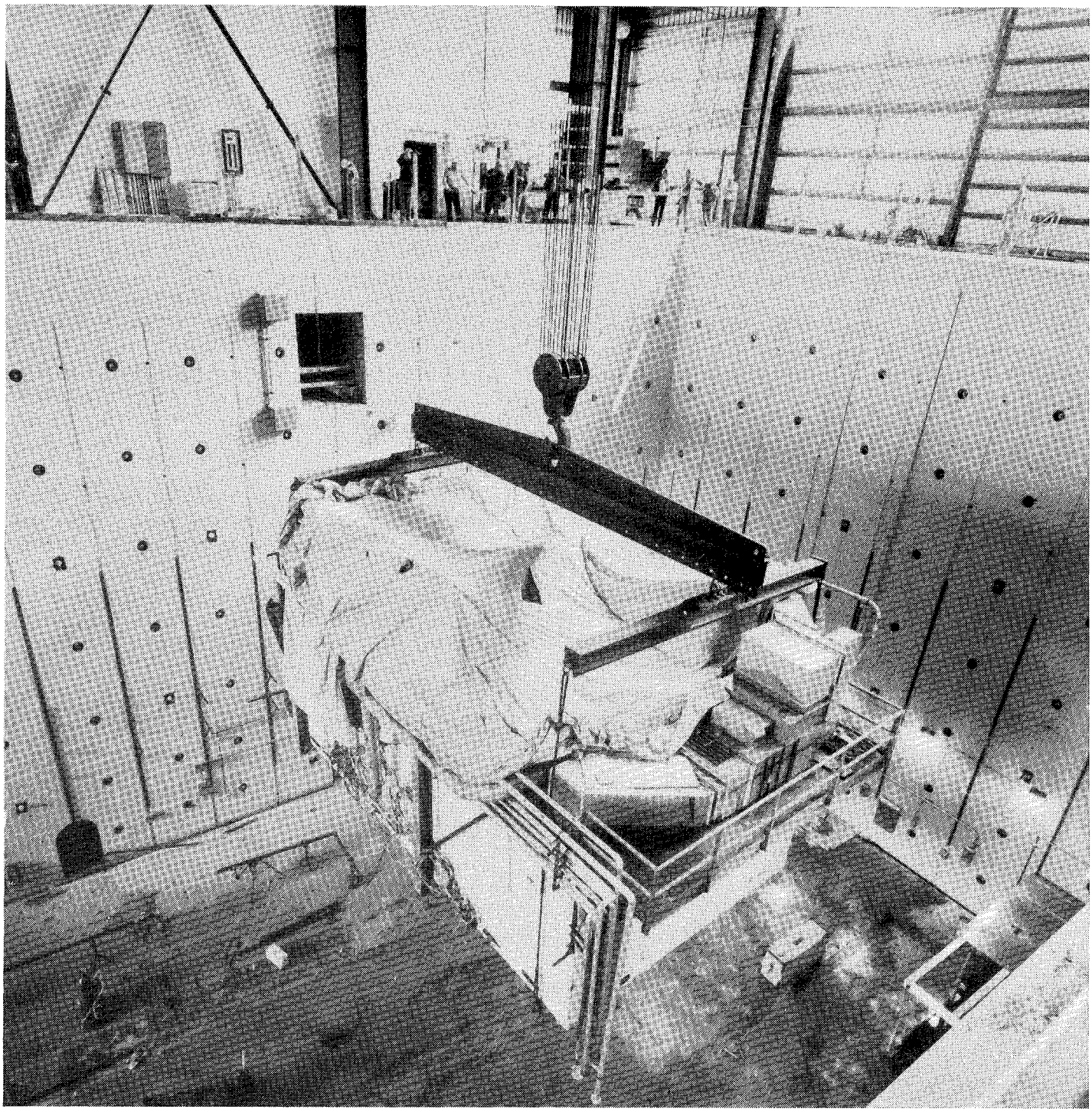
SLAC BEAM LINE

Say not 'This is the truth' but 'So it seems to me to be as I now see the things I think I see.'

— John McPhee
"Annals of the Former World"

Volume 17, Number 2 *June 1986*



MARK II LEACH on the Move

TWENTY YEARS OF BEAM

In May 1966 *SLAC* first achieved beam. *(See the announcement on page 12.)* From the early days at Stanford to the current state, many people have been involved in the birth and development of this laboratory.

This issue covers recent changes at *SLAC*: The commissioning of the *SLAC* Linear Collider *(SLC)*, the progress of the *Mark II* detector, detectors moving from *PEP*, and staff notices are included.

Remember we're counting on help from you, the reader, to contribute articles and suggestions for future issues. Please send your ideas to *SLAC* Bin 11 or by electronic mail to *NINA*.

–Nina E. Adelman

SLC STATUS

When the Collider Experimental Hall *(CEH)* contract was awarded, the completion date was February 22, 1986. However, the contractor made no allowances for weather delays and this date appeared unrealistic. The occupancy date was dictated by the *Mark II* and the *SLC* Final Focus installations; their plans were flexible enough for some slippage. Nonetheless, the building was far from finished in February and as the date slipped each month, the people associated with *Mark II* and the Final Focus System assumed perpetually worried countenances.

There was a gleam of hope — the contractor was able to finish enough of the experimental pit, the mezzanine, and second floor to allow joint occupancy before completion. This was a mixed blessing. Joint occupancy means living in dust and noise, with steady streams of construction workers parading through. The worst of this is now over. The *Mark II* detector is moving into the pit; computers, electronics, final focus apparatus and the human survivers of the ordeal are getting settled into their new home.

Commissioning of the *SLC* systems is underway. The *SLC* components involving the linac are almost complete and tests on these systems have begun. Beam has been extracted up to the positron target. A few components in the positron turn-around must be installed before positron beams can be brought back and reinjected into the linac. The north damping ring is beginning to work again and the reassembly of the south damping ring is almost complete. Through the summer, all of these systems will be brought into operation and the three-ring circus — simultaneous operation of both damping rings and the positron return line — will begin.

The arc magnet installation schedule calls for all magnets to be in by the end of July. Precision alignment, testing of magnet movers, and installation of beam position monitors are all going on full-speed in the south arc.

–Don Getz

MARK II INVADES COLLIDER HALL

The photo on the front cover shows the first major step associated with the move of the *Mark II* to the new *SLC* Collider Experimental Hall *(CEH)*. The *LEACH* building was successfully transferred on May 8, 1986.

The *LEACH* (Local Electronics And Cryogenics Housing) contains 34 racks of digitizing electronics, power supplies, trigger, and calibration circuits. It also provides roof space for cryogenics, air conditioning, gas handling, and electrical systems. It weighs nearly 48 tons.

The *LEACH* was to have been moved from its location at *IR-12* at *PEP* to the *CEH* Pit on April 30, 1986, entirely by *SLAC* riggers using two fork lifts on one end and the LeTourneau (aka the Green Monster) on the other.

The excessive weight of the *LEACH* and the failure of a hydraulic hose on one of the forklifts (which caused an abrupt one-inch loss of elevation) caused the building to be left at the corner of the Loop Road and *IR-12* Road for six days.

On the morning of May 6, Bigge Company (which will also move the *Mark II* detector during June and July) rolled an 88-wheel trailer to *SLAC* onto which the *LEACH* was loaded.

The remaining trip to the *CEH* was uneventful. Finally, on May 8 at 11:30 am the 100-ton overhead crane in the *CEH* gently lowered the *LEACH* approximately 60 feet into the pit.

–Tom Glanzman

THIS ISSUE

THE MAC DETECTOR: 1976–1986

The *MAC* detector, which occupied *PEP*'s interaction region four, began life as a proposal in December 1976, took its first useful data in 1980, and recorded its last event at the end of the *PEP* cycle in February 1986. Forty people had run more than 2000 shifts and collected 100 million events, of which about 0.2% were 'interesting.' As one sat in the *MAC* quiet room at 4 am as the lights flashed at 5 per second, it was sobering to realize that our big namesake could make hamburgers a hundred times that fast.

MAC was short for *MA*gnetic *C*alorimeter. Most of its 600 tons consisted of iron plates with interspersed ionization detectors, designed to measure the energy of protons and pions as they showered in the iron. The iron was also magnetized, so that the momentum of muons (the *MAC* experimenters' main obsession) could be measured as they went through. The important thing was not to leave holes through which particles coming from the interaction point could escape unmeasured. *MAC*'s coverage for muons was better than that of any other detector at *PEP* or *PETRA*. There was more than just iron plates: In the middle, in a magnetic field parallel to the beam direction, was a drift chamber which enabled the experimenter to 'see' charged particle tracks. Outside the drift chamber, but inside the iron, was a device made with lead plates instead of iron plates; its job was to measure the energies of photons and electrons.

MAC was supposed to be built quickly and inexpensively. It was in fact ready at *PEP* turn-on, and it cost much less than any of *PEP*'s other general-purpose detectors. It was not designed for the excellent momentum resolution or particle identification ability of its neighbors at the adjacent interaction regions. Instead, muon and electron identification were to be its strengths, and here it exceeded expectations. The detector turned out to be very productive and unexpectedly resilient. Its experimenters measured the bottom-meson lifetime, modified *MAC* to search for new particles, and modified it once more to do a better job on lifetimes. For this final modification the idea of a straw-type vertex detector was adopted from the *HRS* detector, and it worked so well that it has since been widely copied. Along with it, *BGO* arrays with photodiode readout were installed, the first in high energy physics to contribute to a published result.

There was also the original physics shopping list: The top quark, unfortunately, was beyond *PEP*'s reach. Another high priority item was a measurement of the electroweak interference in muon pair production; this was done with errors half as large as those published by any other group — and it was also done with tau pairs, to nearly the same accuracy. 140,000 'clean' hadronic events were found, from which a systematics-limited precise hadronic production rate was found. Precise branching ratios for the tau lepton were measured. Twenty papers on these and a variety of other topics have appeared in the journals, and another half-dozen are on the way.

The greatest disappointment was that only about a third as much data as expected was recorded with the vertex chamber. Designing, building, and installing this innovative device in less than a year took a herculean effort on the part of a small number of people in the collaboration, and it would have been nice to have come closer to the goals that fueled the effort. However, *MAC* did considerably more physics than was anticipated, in large part because of the magnificent support of our techs, the shops, the people in the *PEP* control room, and those on the top floor of Central Lab. But *MAC* is now an old detector, and it is time to unplug it, and to move on to newer and better things.

–Don Groom

TOM PULLIAM, 1985. We regret the passing of our friend and colleague, SLAC Engineer Tom Pulliam. Although MAC was only one of many of Tom's projects in his long career at SLAC, we'd like to think it one of his favorite. As our engineering coordinator, he translated the garble of our group meetings into sensible actions and kept the detector running. He brought us good judgment and good humor. MAC is now history, but Tom is a man we'll remember.

–B. Ash

HRS OBITUARY

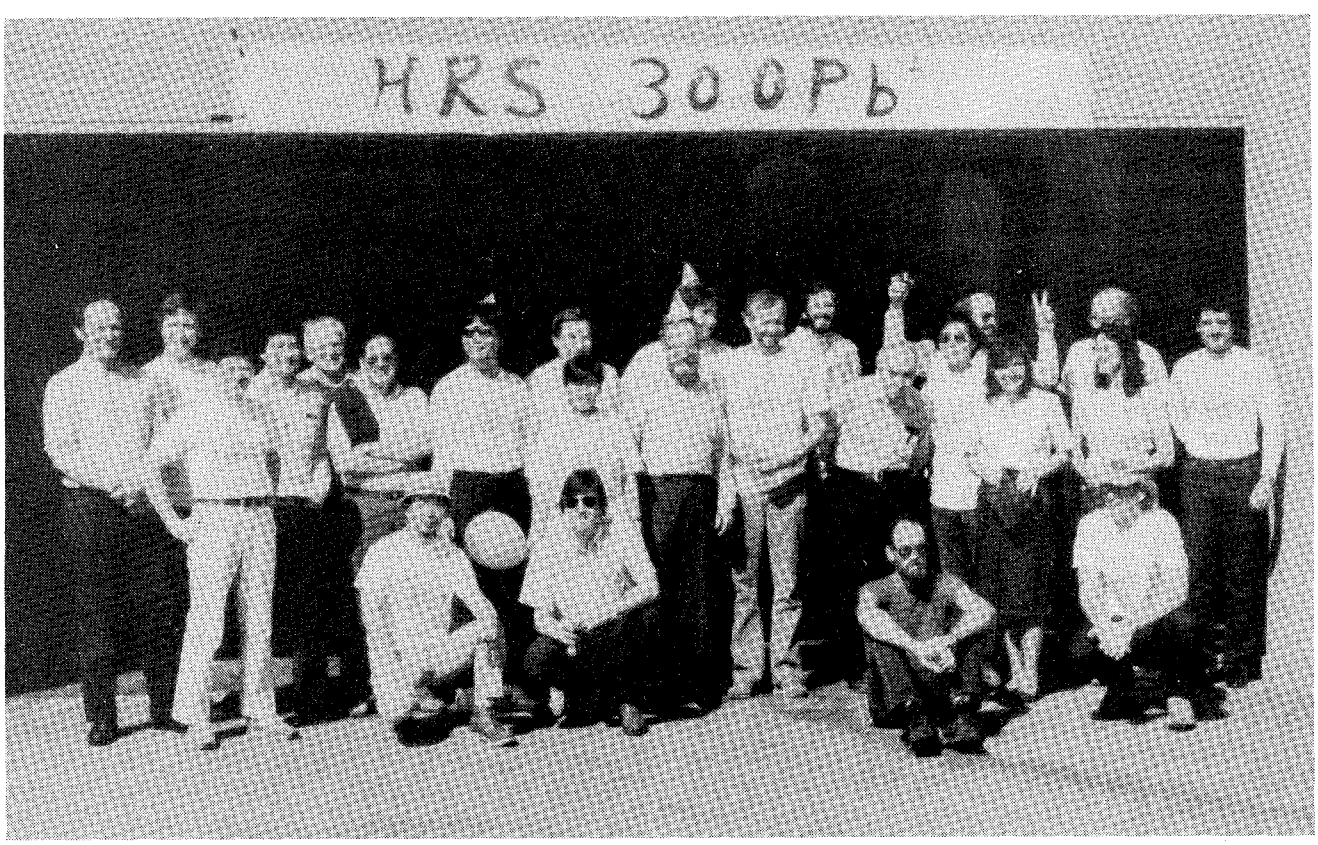
The pumps have ceased their pounding on the refrigeration platform. The fans no longer strain to carry heat away from the *LEACH*. No alarms blare. The only sounds come from fingers tapping out *FORTRAN* half a room away. Interaction Region 6 is quiet.

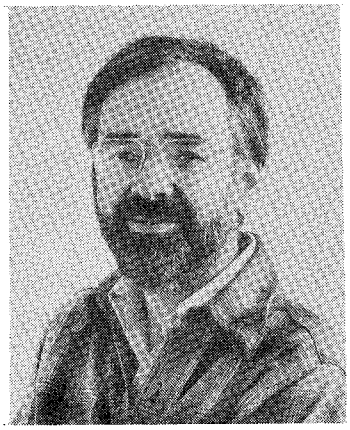
It all began with the magnet, of course — almost two thousand tons of low carbon steel surrounding the 107 ton niobium-titanium coil. The epic and record-breaking journey of the coil from Argonne to *SLAC* took place in 1979. Once at *SLAC*, the magnet was skillfully turned on its side and reassembled by Jim Nolan and his crew. Then the detector elements were placed inside. The central drift chamber, built with fifteen layers of sense and drift wires, was filled with the mixture of 89% argon, 10% carbon dioxide, and 1% methane, which we so modestly called *HRS* gas. There were the outer drift layers within the coil at a mean radius of 1.9 meters. Beyond that, the electromagnetic shower system — still within the coil. The four 'C's' of the endcap shower counters plugged the ends, and so the detector rested until one year later when the toroidal Cerenkov counters were slipped between the central and outer drift chambers. In the fall of 1983, the final and (next to the magnet) the most famous piece was put in place — the vertex chamber made out of mylar straws.

In the fall of 1981, the *H*igh *R*esolution *S*pectrometer recorded its first events at *PEP*. Our first publication, on D and D* production, demonstrated that the 'High Resolution' label was no idle boast. This paper and subsequent ones showed the peak of the detector's abilities — that is, the detector's ability at peaks — K^0 peaks, D^+ peaks, F^+ peaks, and so on. Much, but not all, of the *HRS* physics has involved hadron production. The resolution on high momentum tracks allowed precise studies of bhabha events and of charged hadrons near the kinematic limit. Electroweak asymmetries were measured and searches for new particles were made. Although the *HRS* started late relative to other *PEP* and *PETRA* detectors, it managed to produce some firsts: The first observation of the tau decaying to five charged prongs, the first F^+ lifetime from e^+e^-, and, recently, the first observation of scalar and tensor mesons in e^+e^-.

In the spring of 1986 the *HRS* recorded its last events; a total of 300 pb-1 had been gathered. To date, the experiment has culled from this data some two dozen publications and 10 PhD theses. Another half dozen theses are in the works, and no one knows how many papers. The *HRS* has had a robust, rich, and productive five years of data taking. The memory, and the analysis, linger on.

–Phil Baringer





Charles Prescott

PRESCOTT, ASSOCIATE DIRECTOR

Charles Prescott will replace Richard Taylor as Associate Director, Research Division, this August. Charlie received his BA from Rice University in 1961 and his PhD from Caltech in 1966. His thesis work was on the photoproduction of eta mesons at the long-since defunct Caltech 1.5-GeV electron synchrotron. Charlie began his 20-year association with *SLAC* first as a user from Caltech and *UC*, Santa Cruz and then, beginning in 1971, as a *SLAC* staff member. In that year, he joined *SLAC* Group A as a research associate. Three years later, Charlie became a staff physicist. He joined the *SLAC* faculty in 1980 as an associate professor and was promoted to professor last year.

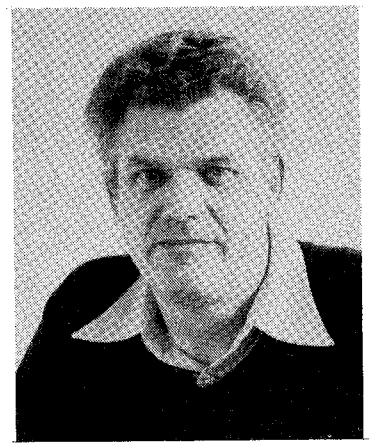
Charlie's early work at *SLAC* concerned the study of deeply-inelastic electron scattering. These experiments established the parton model of the nucleon — that the nucleon is a composite particle made up of point-like charged particles and some neutral particles. We now identify the charged particles as quarks and the neutral particles as gluons.

This early work in electron scattering led to Charlie's most famous experiment, *E-122*. In this experiment Charlie and his co-workers looked for an extremely small difference between the scattering rate for electrons spinning to the left and electrons spinning to the right. The model of Weinberg and Salam (the Standard Model) predicted that electrons spinning to the left would scatter about 1 part in 10,000 more often than electrons spinning to the right. In 1978 there were several wrong experiments and anomalous results which could not be explained by the Standard Model. *E-122* gave results in complete agreement with the Standard Model and excluded a large class of alternatives. It was partially on the basis of this experiment that Weinberg, Salam, and Glashow won the Nobel Prize in 1979.

Charlie's continuing interest in polarized electrons has led him to emphasize the importance of longitudinally polarized electron beams at the *SLC*. At the last *EPAC* meeting a proposal to build a polarized electron beam facility at the *SLC* was approved and this facility should be ready in 1988.

Charlie participated in the *DELCO* experiments at SPEAR and *PEP*, and has been working on the preparation of the *SLD* detector for the *SLC*. During 1985-6 academic year, Charlie has been on sabbatical leave at *CERN*, in Geneva, Switzerland, working on the *LEP* storage ring. He will take up his new duties on his return.

–Gary Feldman



Richard Taylor

RICHARD TAYLOR, RESEARCH

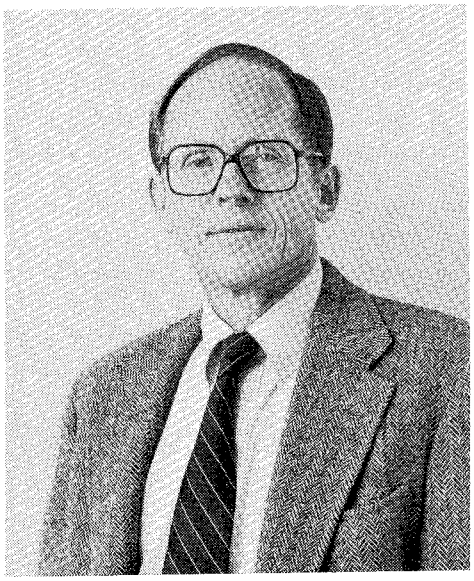
Dick Taylor's long association at *SLAC* and Stanford began in the mid 50's with his thesis under Bob Mozley at *HEPL*. From *HEPL* he went to the linear accelerator lab at Orsay, France. He spent a year at *LBL* before coming to the fledgling *SLAC* housed in the M-1 building at Stanford. Dick was involved in the design of the Beam Switchyard, then design and construction of the End Stations as a member of Group A, headed by Pief.

As Pief took on additional responsibilities Dick became group leader, heading the effort to design the End Station A spectrometers and the counting house — the whole electron scattering facility.

Early experiments involved elastic electron scattering in collaboration with *MIT* and Caltech. The comparison of electron and positron scattering was followed by the famous deep inelastic scattering experiments that showed quarks inside nucleons. These experiments culminated in Charlie Prescott's polarized electron scattering experiment demonstrating parity violation.

Dick will return to research and he plans to visit *DESY* for a few months in 1987. He also takes an active interest in the Stanford Savoyards produced by his wife, Rita.

–H. DeStaebler



Kaye Lathrop

LATHROP HONORED

Dr. Kaye Lathrop, Associate Director, Technical Division, recently received one more distinction in an already distinguished career when he was named to the National Academy of Engineering, considered the highest professional honor for engineers.

Dr. Lathrop, who has received several scientific awards including the E.O. Lawrence Memorial Award in 1976 and the American Nuclear Society Exceptional Performance Award in 1980, was honored for 'seminal work in developing neutron transport methods used worldwide.'

In his early days at Los Alamos National Laboratory, where he was Associate Director for Engineering Sciences from 1979 to 1984, Dr. Lathrop developed transport computer codes to solve time-, angle-, and energy-dependent neutron and photon transport problems in one, two, and three space dimensions.

Dr. Lathrop came to *SLAC* in October of 1984 to head the Technical Division just as the *SLAC* Linear Collider *(SLC)* project got underway. The *SLC* is, in large part, the reason he is here.

"I was fascinated by the challenge," Dr. Lathrop said. "The *SLC* is a very bold idea, one that is technologically challenging because the precision with which it must operate is beyond any previous undertakings."

The construction of the *SLC* has not been simple, nor without its headaches. Although many parts of the machine are new, the project involves upgrading the linac while other groups try to use it for experimentation.

"It's like upgrading a Boeing 707 to a 767 in midair with all the passengers on board," said Lathrop.

Before coming to *SLAC*, Lathrop spent more than 20 years at Los Alamos. There he was part of the theoretical division and participated in a safety research program for the Nuclear Regulatory Commission.

At one point, Dr. Lathrop directed the computational facility at Los Alamos, similar to *SLAC'S SCS* but larger in scope. He called the experience one of his more satisfying duties because he was able to improve operations substantially.

Lathrop's immediate goal is to "make the Technical Division the best professional organization it can be, technologically and functionally." Eventually he hopes to make time for personal projects, such as research on computational methods.

Recent budgetary actions from the federal government — specifically the Gramm-Rudman-Hollings Act that calls for spending cuts to balance the budget — have caused concern among *SLAC'S* Directorate; Lathrop is no exception.

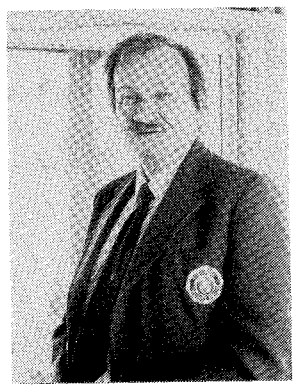
"In basic science research there are more large projects than ever before, and more competition for the budgetary dollar," he said. "We have to make our case more eloquently than ever before. *SLAC'S* problem right now is to make the new facility [*SLC*] work, but if there's a freeze [in funding] it will be much harder."

"The future of the *SLC* looks good for at least ten years," he said. "Look at *SPEAR* — it's still producing good physics after more than ten years. And, we're working on concepts for the next generation of positron-electron colliders now."

–D. Thorneycroft

OFFICER OF THE MONTH

When you arrive at *SLAC* wave to the man in the Guard Shack at Sand Hill Road Entrance. You will be saying "Congratulations Lee."



Lee Hobbs was honored to receive the Guard of The Month award by Pinkertons, Inc. This award is made to the individual guard, out of several thousand employed, who stands out among the rest.

We at *SLAC* know that it is more than just once a month; it is everyday that Lee is on duty. In the many years *SLAC* has been in operation with Guard Service, this is the first time such an honor has been bestowed on one of our guards. Congratulations, Lee, we all know you deserve this award and many more.

–Jim Hamm

3.4MW POWER SUPPLY TO SLC

This story was submitted by Martin Berndt with the following note appended. It seemed only fair to include the note along with the story, which follows in basically unedited form. - Ed.

I am sending you the little story I told you about. Let me know if you think it is proper. I will take no offense at any comments you wish to make. Above all, I hope it doesn't sound sexist. It is just that some of us are tempted to use the feminine gender when referring to machines that have become dear to us because of all the work and the hours devoted to them, just like sailors when they talk about their ships.

Glamorous she isn't! Years of service and hard work have taken their toll. She had to undergo major relocation, cosmetic and even transplant surgery. But she is still able and ready to continue working here at *SLAC*.

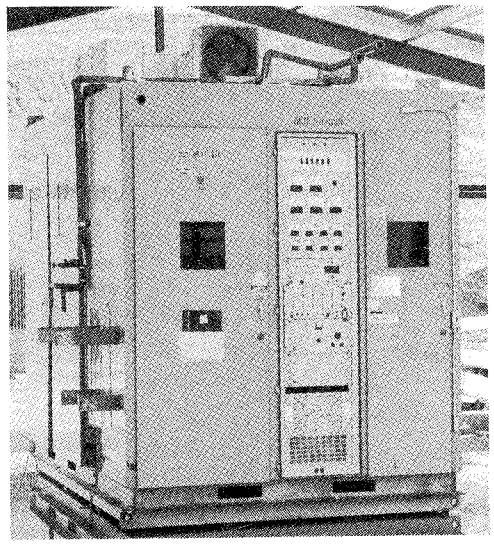
This story is not about a faithful *SLAC* 20-year employee, but rather an equally faithful machine that has been around that long. Magnet power supplies may not be the most glamorous high-tech devices, but they play an important role in *SLAC* experiments. Like many a faithful veteran at *SLAC* the 3.4MW power supply, now being readied for the *Mark II* experiment at the *SLC*, can tell her own story about *SLAC*.

Built in 1966 by Ling Electronics, the 3.4MW power supply (one-tenth of the power that *SLAC* needs) was originally on a trailer to make access to the experiments easy. There were many problems and emergency action had to be taken by performing the first major transplant surgery: New rectifier transformers were bought and the trailer was discarded in favor of a fixed location in the Research Yard. Over the years, this machine was used to power experimental magnets for the 40-inch and 80-inch Bubble Chambers, the 54-inch Spark Chamber, the Streamer Chamber, and the *LASS* Dipole. In 1977 she was moved to the Heavy Assembly Building so the *Mark II* magnet could be measured. The occasion was used to do some major renovation and rebuilding of the control system and regulators.

Again it was time to move in 1979, this time to *PEP IR-12*, as part of the *Mark II* detector. Major surgery was necessary in 1983, when one of the PCB-filled rectifier transformers failed, and a replacement was installed. This Spring, following the *PEP* shutdown, the power supply was moved to the *SLC* Experimental Area, there to serve the *Mark II* Detector.

The power supply may be old and show signs of weakness. But with loving care and attention, it looks like she'll just keep on going.

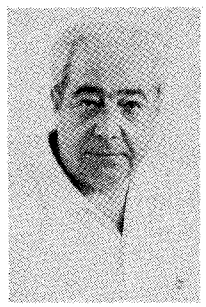
–Martin Berndt



3.4MW Power Supply

BILL BUCHANAN RETIRES

Bill came to *SLAC* in April of 1971. He filled a req for a job that was to last approximately six months, and to *SLAC*'s good fortune, he wound up staying 15 years.



Bill was born in Port Huron, Michigan and learned his trade at Muller Brass along with numerous job shops and tool and die manufacturers in the Detroit area of Michigan.

While at *SLAC*, Bill worked in the *MFD* Heavy Assembly Shop as a Lab Mechanic. Among his many notable achievements was the contour machining of many of our high tech precision magnets. Additionally, he was very much involved with the Crystal Ball Project during its machining stages. With his retirement, Bill is taking with him a wealth of knowledge and information that we will surely miss at *SLAC*.

Bill and his wife, Bertha (Birdie), have purchased a new home in Lompoc, California, located on a golf course where he will spend most of his time playing golf and riding around in his new electric golf cart. We all wish Bill and Birdie the best of luck in their new endeavor.

–William Reynolds

GERHARD KONRAD TO LANL

Gerry Konrad has been involved in designing and building klystrons at *SLAC* for over 10 years. He now has an opportunity to work in a similar area at Los Alamos National Laboratory *(LANL)*. *LANL* recently was asked to build a prototype particle accelerator for the *SDI* (Star Wars) program. A key element of that accelerator is the *RF* system. Gerry was selected to head up that system and made an 'offer he could not refuse' to play a major role in that program. He took up his new appointment on May 1 and is moving his family out next month to a home he has already purchased in the White Rock suburb of Los Alamos.

Gerry Konrad joined the Klystron Group at *SLAC* in 1973. At that time *SLAC* was beginning an upgrading program of the *SPEAR* Ring which required additional *RF* power to be supplied by klystrons. This klystron is quite different from the 2 mile accelerator klystron and was quite a challenge. The Klystron Group needed some additional help to proceed with the design and fabrication of the *SPEAR* klystrons, and that resulted in the addition of Gerry to the group. Since the design and fabrication of the *SPEAR* klystron was not apparently a sufficiently difficult challenge for Gerry, he took on additional problems of improvements of the then-existing permanent magnet focussed linear accelerator klystrons.

Prior to his arrival on site, the Klystron Group had been able to improve the power output and the efficiency of the linac klystrons by going to electromagnet focussing. However, the tubes had to be much longer than was desired and the electromagnet did not appear to be a really practical way of operating the whole machine at that time. Hence Gerry undertook the study of further improvements of permanent magnet focussed klystrons and he was able to achieve a klystron which produced 40MW at the operating voltage of 270KV — a 20% improvement over previous permanent magnet results.

By that time, *PEP* was the next project for the Klystron Group to be involved in and Gerry was fully involved in the design, fabrication, and care and feeding of the *PEP* klystrons which produced 500KW CW at approximately 350MHz with an efficiency approaching 65%.

At about that time Gerry was appointed the Klystron Department leader. With his predecessor who was now a consultant to the Klystron Department, he helped in the design of a novel tube called the 'trirotron.' Unfortunately, financial limitations prevented the completion of the trirotron because at that time *SLC* became more than a gleam in the eyes of *SLAC'S* management and two competing possible klystrons capable of supplying *SLC'S* needs were the highest priority.

The first is the present 50-65MW tube being built for *SLC*. But a lot of time and effort was spent on the development of a 150MW tube, co-sponsored by Japanese firms (Mitsubishi and Toshiba). Although this tube development was very successful, it was decided to continue with the 50 (now 65) MW tube development because of time constraints. The 50MW (now 65MW) klystron is now installed in about 2/3 of the available sockets.

We sincerely believe that *SLAC* will miss the contribution he could still have made here, and wish him the very best for his future at Los Alamos.

–J.V. Lebacqz/M. Allen

RETIREMENT OF CLIFFORD ROYAL

Clifford Royal retired April 17, 1986 after twenty years of service to *SLAC*. His most recent assignment was as Mechanical Systems Manager in the Plant Maintenance Services Group. Cliff joined *SLAC*'s Plant Engineering Department as a Maintenance Mechanic in 1966. Cliff brought a lot of valuable mechanical skills and experience with him since he had previously served twenty years in the US Navy as Aviation Chief Machinist and Chief Petty Officer. He also worked for Linde Division of Union Carbide on the *NASA* wind tunnels at Moffett Field.

At *SLAC*, Cliff started out as a Surveillance Mechanic who was called on to find or fix just about everything. He primarily covered mechanical utility systems on rotating shiftwork. On his assigned shift, he was responsible for maintenance and operation of all water systems, compressed air and special gas systems, water purification, boilers and hot water systems, central chillers, air conditioning, and *BSY* vacuum systems. Over the years he was involved in all of them, making emergency repairs or calling others for assistance when required. Keeping the accelerator beam running safely was always the top priority and Cliff saw to it that accelerator utilities were available on his shift.

We wish Cliff the very best of luck and good health to enjoy his retirement years and hope he will find time to drop by and say "Hello" once in a while to his many friends still at *SLAC*.

–Bill Lusebrink

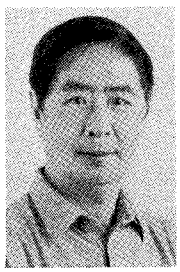
I&C RETIREES

This spring saw a number of retirements from the I&C Department, three in March and one in April. The March retirees were T.V. Huang, Audrey Howard, and Bill Pioske; Geoff Jones retired in April.

T.V. HUANG retired in March after nearly twenty-eight years of association with Stanford. T.V. came to *SLAC* in 1965 after seven years as a student and research assistant at the Stanford Electronic Lab on campus. He was assigned a position as an engineering operator in the Main Control Center *(MCC)* but after one year, he transferred to the Instrumentation and Control Group *(I&C)* as a design engineer. He was given the responsibility of improving and modifying the controls and displays to meet the needs of the ever-changing experimental program.

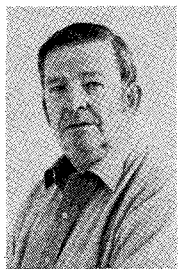
T.V. worked in this field — ergonomic design of displays, panels and controls at the *MCC* — for the following 20 years. His responsibilities were expanded to include the Beam Switchyard *(BSY)*, which in the 1970's was in a state of constant flux. He became the resident expert on all I&C systems associated with the *BSY* & *MCC*, and directed the engineering design and installation of the changes and additions. T.V.'s willingness to work in any location on any engineering project made working with him a pleasure. His tact and courtesy in dealing with others were always manifest.

T.V. left behind a legacy both technical and personal. His engineering contributions are in evidence today — the console in *MCC* and much of the *BSY* instrumentation are direct results of his efforts. Equally important, he left behind many colleagues and friends who have enormous respect for his dedication, devotion and loyalty.



T.V. Huang

Audrey Howard



Bill Pioske

Geoff Jones

AUDREY HOWARD retired in March. She had been at *SLAC* since 1967, working in the *I&C* Department for the whole of that time. She was originally hired as a Keypunch Operator but was promoted to Data Aide in 1974. Her responsibilities included the data entry and verification of the computer wire lists for the linac and, until last year, the entry of all *SLAC* drawing release information for the Plant Engineering Document Control Department. She was recruited into this latter activity because she was one of the fastest and most accurate keypunch operators *SLAC* ever had. Her work in wire lists entry and verification was her most valuable and lasting contribution.

Audrey approached the job with a rare dedication and skill — undaunted by the hundreds of thousands of data points that had to be entered, checked, and rechecked. For the next ten years she presided over the expansion of the wire lists, coping with the thousands of changes that were continually made as new installations were added in the linac and as old equipment was removed.

She did a remarkable job in keeping these records up-to-date and we owe her a debt of gratitude for her untiring efforts over the past 18 years. With her resignation, we lost a valued and respected colleague. Audrey has moved to Idaho with her husband Glen who retired recently from *SLAC*.

BILL PIOSKE retired in March after eighteen years at *SLAC*, the last eleven with *I&C*. Bill joined *SLAC* in 1968 and was assigned to the Data Analysis Group as a senior technician. He worked on the "Spiral Reader" and other electronic systems for the next seven years, then transferred to *I&C* at the associate level. Warren Struven needed help in designing linac computers and interface systems; Bill joined him in this work. Over the years, the emphasis shifted from computer and digital hardware to *RF* cable systems, and it is in this field that Bill has made his most recent and valuable contributions. With Warren providing engineering guidance, Bill has been at the forefront in developing electronic equipment for the *CATV* networks at *SLAC*. *(Continued on page 10.)*

GEOFF JONES retired from *SLAC* in April, much to the regret of his many friends and admirers. Geoff joined *SLAC* in December 1977 after working on the Stanford campus for ten years in the Canadian Navy.

At *SLAC* he worked on *PEP* as the coordinator responsible for fabrication of *CAMAC* modules, vacuum controllers, ion gauges, and other electronic equipment. Then he participated in the system and detail design of the Instrumentation consoles in the *PEP* support buildings. After *PEP* was completed, he contributed to two major upgrades of the Instrumentation systems and also helped on a major *SPEAR* upgrade. On the *SLC* project, he completed *(Continued on page 10.)*

TRAVEL, ANYONE?

Those who frequent the *SLAC* Travel Office may have noticed some new faces. The recent additions to the office are Barbara McLachlan and Carol Menser.

Barbara came to *SLAC* in January by way of the European World Travel Agency where she assisted *SLAC* travelers as part of her job for the past nine years. Barbara said the office is very similar to a real travel agency, but is less hectic and involves more paperwork, such as travel and expense reports.

The Travel Office was automated in late fall of 1985 with the installation of terminals that allow the office to check schedules and make reservations. The terminals connect with Trans World and American Airlines databases, but reservations and information can be obtained on just about every airline.

"Our office can do everything except issue tickets," said Barbara. "It cuts down the number of phone calls [to make a reservation] from six to one or two, and makes life easier for everybody."

Carol came to Travel in April after two-and-a-half years at the Electronics Department and a total of six years at *SLAC*. She does more office work now, handling more forms than she ever thought she would, after preparing chassis and parts for assembly at Electronics.

Travel handles all aspects of business travel for *SLAC* staff. The most recurrent problem for Travel Office staff is the last minute booking — especially when people want a cheap fare and a good seat. The Travel Office tries to avoid such bookings because they are generally more expensive. Also, rescheduling at the last moment causes the same sort of headache.

Travel Office Staff

However, Valerie Phillips, the Travel Office Manager, said "Most *SLAC* people are very helpful and kind. We recognize that most travel's not fun, and we're basically sympathetic" to the problems faced by *SLAC* travelers. Valerie has worked for Stanford University for more than 11 years, coming to manage the *SLAC* Travel Office in March of 1982.

–D. Thorneycroft

(PIOSKE continued...)

Bill was enormously dedicated and hardworking, very much at home working independently after only the most cursory exposure to a new challenge. His quiet and unassuming demeanor sometimes masked his competence and accomplishments, but those who have had the pleasure and privilege of working with him know that Bill was the person to have on hand when there was a tough assignment to be completed.

Bill will be sorely missed by those of us who have relied on his technical expertise and who have enjoyed his company over the past years. Bill will spend much of his time with his family at his second home on a lake in Northern California.

(JONES continued...) the *AC* and *DC* power distribution systems and the vacuum system for the Damping Rings, and during the same period he was the chief coordinator for the *NPI* project, doing all of the power, vacuum, magnet, gun, and beam diagnostic systems. More recently, Geoff had been completing the design of the Positron Source vacuum system.

In all of his work at *SLAC*, Geoff received high praise from his supervisors and colleagues. His services were always in demand because of his dedication, high skill level, and his cooperative and helpful nature.

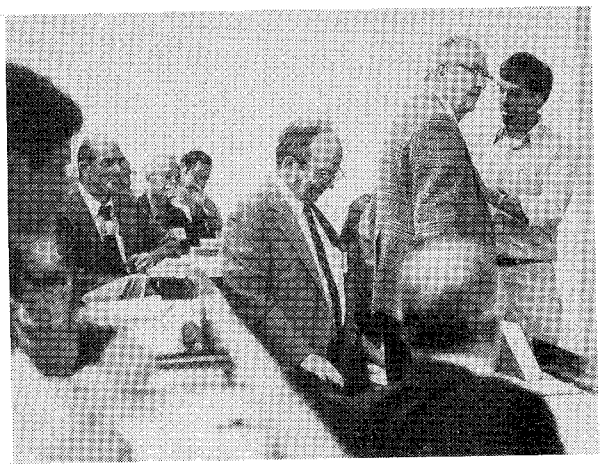
In losing Geoff, *SLAC* lost one of its most dedicated and knowledgeable coordinators.

All of our recent retirees left with the warmest wishes of their friends and colleagues. We wish them each a long and happy retirement.

–Ken Crook

LINAC86 AT SLAC

SLAC hosted the Linear Accelerator Conference June 2-6, 1986, featuring such speakers as Luis Alvarez of *LBL* (pictured below preparing for his talk). The Auditorium Lobby proved to be a congenial meeting place for participants between sessions.



Annual Ballgame

THEORY VS. EXPERIMENT

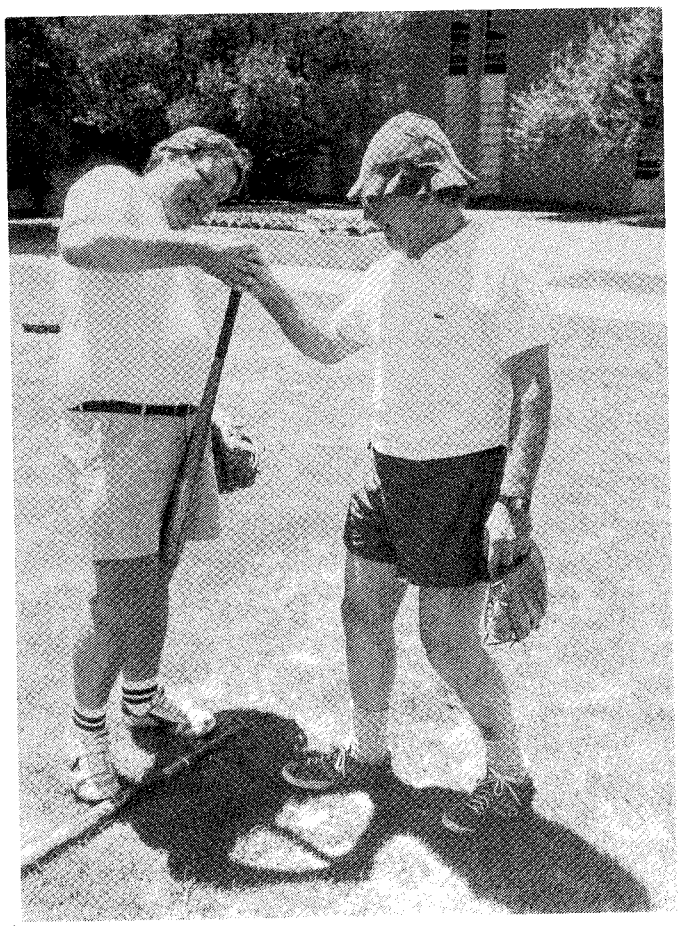
Once a year the Research Division at *SLAC* sends forth its theorists and experimentalist to the playing fields for a dignified contest of sport — a metaphor for the delicate interplay of measurement and theoretical analysis that consumes their efforts the rest of the year.

The match began as shown at right with the traditional arm-wrestle for first ups between theorist Bryan Lynn, experimentalist Hobey DeStaebler, and an unidentified bat.

The game continued with the same respect for tradition, including the outcome: experiment over theory, 26 to 10, for 25 victories in 28 attempts.

Theorist Michael Peskin described the results differently: "I hope that, in your report on yesterday's softball game, you will make clear the significance of the 26-10 final score: This is the long-awaited experimental confirmation of the heterotic string!"

Wait til next year.

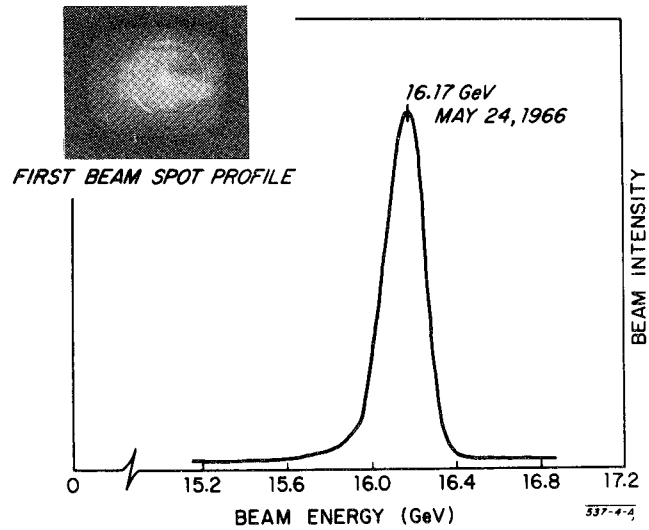


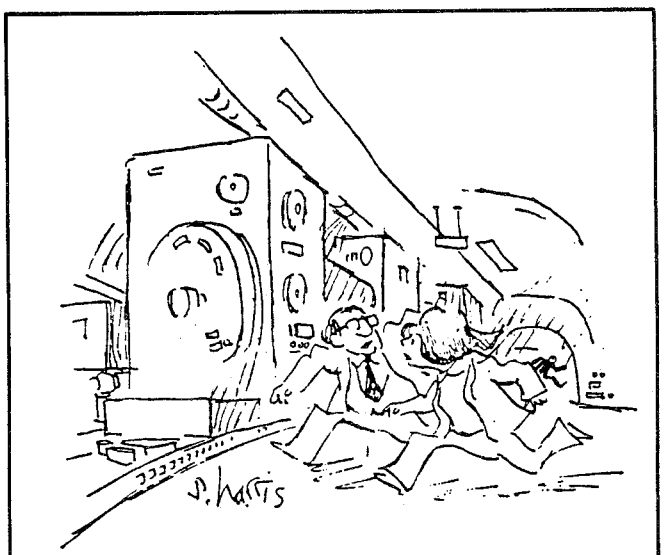
This announcement was sent out on May 24, 1966, to acknowledge the efforts of the SLAC staff in achieving beam for the full length of the accelerator for the first time.

A major goal was reached with our achieving our first full length beam this month. This superb performance could never have been accomplished without the dedication and hard work of every member of the staff. I want to express my sincerest personal thanks for your part in our achievement.

Warmly,

Wolfgang K. H. Panofsky
Director





"It started with just the particles being accelerated, but now everything around here has speeded up."

SLAC BEAM LINE, x2204, Mail Bin 11

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