SLAC BEAM LINE

"All composite things decay. Strive diligently."
--Buddha (his last words)

Volume 9, Number 1 *January 1978*

STANFORD LINEAR ELECTRON ACCELERATOR PROJECT

ORGANIZATION CHART December 19, 1960

Office of the Project Director

Project Director: E. L. Ginzton
Deputy Director: W. K. H. Panofsky
Secretary: B. Monks

Division of Adminis. Services

Assoc. Director: R. H. Moulton
Organiz. Planning: O. Snyder
Reports Editor: W. Kirk
Secretaries: L. Axt
P. Langston P. Brady

Technical Division

Assoc. Director: R. B. Neal
Staff Specialists:
E. L. Chu R. Helm
K. G. Dedrick K. Mallory
Secretary: B. Monks

Division of Business Services

Assoc. Director: F. V. L. Pindar
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E. B. Rickansrud W. Field
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Secretary: J. Post

Plant Engineering Department

Manager: K. Copenhagen
Project Engineers:
Civil: R. S. Gould
Mechanical: L. Gallagher
Electrical: P. C. Edwards
C. B. Jones K. R. Wilson
Architect: W. Kinst

Accelerator Structures Department

Manager: R. B. Neal (acting)
Accelerator Tube: A. L. Eldredge
J. A. Pope
L. E. Cain
Vacuum System: D. J. Goerz
Support & Alignment: R. C. Sandkuhle

Microwave Engineering Department

Manager: R. B. Neal (acting)
Klystrons: J. V. Lebacqz G. Beardsley
G. K. Mardinian J. Meloni
Windows: J. Jasberg R. Fowkes
Microwave Circuitry: G. Loew

Instrumentation & Control Engin. Dept.

Manager: K. Brown
Measurements and Local Control: K. Mallory
O. Kraus
Data Transmission and Distant Control: K. Breymayer
T. Christie

Electronics Engineering Dept.

Manager: R. B. Neal (acting)
Modulators: T. Turner C. Sphar
Injection: G. Dome

Research Planning Dept.

Manager: R. F. Mozley
H. D. DeStaebler

Accelerator Design Department

Manager: R. B. Neal (acting)
Mark IV Conversion and M Accelerator: D. Goerz
A. Crabtree

This month's cover is aimed mostly at SLAC's old-timers, many of whom recently received 20-year service awards (see pages 5-7). This organization chart shows who was doing what some 17 years ago on the proposed project that eventually became SLAC. The main activities at that time were engineering of various kinds and a lot of finger-nail biting as we waited to see if the $114 million proposal would be authorized.

In This Issue

EVIDENCE GROWS FOR CHARGED HEAVY LEPTON AT 1.8-2.0 GeV

[During the past several years, a special class of events has been observed at the SPEAR storage ring in which the annihilation of an electron and a positron produces an electron and a muon and no other observed particles. Some other particles must be present, however, because the detected electron and muon carry only a fraction of the total energy that is available in the initial collision. There is now a good deal of evidence to support the view that a new kind of particle, a "heavy lepton," is responsible for these puzzling events. The new particle, called the "tau" (τ), appears to be the third member of the very exclusive lepton family of elementary particles, which previously consisted only of the electron and the muon (plus their antiparticles and associated neutrinos). The electron was discovered in 1897, and the muon in 1937--40 years later. Now that another 40 years has passed, perhaps nature is ready to yield up a third fundamental lepton.

In contrast with the discoveries at SPEAR of the first two psi particles, $\psi(3095)$ and $\psi(3684)$, which gave dramatic and unmistakable evidence of their existence as soon as the conditions were correct, understanding the true nature of the tau particles is a much more difficult business. The case for the tau's being heavy members of the lepton family is based largely on circumstantial evidence, which at present is very persuasive but not yet definitive. But there is never going to be a "smoking gun" (see below), and its seems about time to begin giving this very important discovery some of the *Beam Line* attention it deserves.

The following article is reprinted from the November 1977 issue of *Physics Today*. It was written by the Senior Editor of that journal, Gloria B. Lubkin, after a recent visit to SLAC. A somewhat more comprehensive article on the tau discovery, with a bit more of the physics background information sketched in, is scheduled to appear in the *Scientific American* in a couple of months, probably March.]

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Early in 1975 Martin Perl and his collaborators at SLAC observed anomalous production of an electron-muon pair in electron-positron annihilation. At the time (*Physics Today*, October 1975, page 17) the group thought they could be observing a heavy lepton, a heavy meson, or an elementary boson. By now, the returns from four additional detectors are in. The detector groups reported their results at the International Symposium on Lepton and Photon Interactions at High Energies held in Hamburg late in August. All the groups believe the most likely explanation for the anomalous events is a charged heavy lepton, now called the "tau," a pointlike particle with mass 1.8-2.0 GeV. The heavy lepton would join its lighter siblings--the electron, muon, electron neutrino and muon neutrino. Presumably the τ would also have its own neutrino. The particle is called τ because it appears to be the third charged lepton to be found, and the Greek word for third starts with τ.

In the original experiment, done at the SLAC storage ring, SPEAR, by the SLAC-Lawrence Berkeley Laboratory magnetic detector group, Martin Perl had started analyzing the data, following an old hunch of his (shared with many others), that a heavier lepton than the muon might exist. Of the first 10,000 events he scanned, he found 24 where an electron, positive muon and lots of energy were produced or else a positron, negative muon and lots of energy were produced, with no photons and no other charged particles in the detector. One interpretation was that the electron and positron had produced a pair of charged heavy leptons, each of which then decayed into a charged lepton and two neutrinos. (At the time, the group called the new particle the U, for unknown.)

The anomalous events could have come from hadrons [such as pions] being misidentified as electrons or muons in the detector. After six months the group showed that only 25-30% could be coming from such background.

A more-difficult-to-eliminate possibility was that the events came from production of charmed mesons, now called D mesons, which at that time had not yet been found, although they had been predicted by Sheldon Glashow (Harvard) and his collaborators. Gary Feldman (SLAC) analyzed the e-μ events, which by then numbered 100. If the events were caused by a charmed meson, one should sometimes observe decays with an electron, a muon and additional charged tracks or photons. Although some such events were indeed found, they could all be explained as misidentified hadron events. By December, 1975, Feldman and Perl thought they had found heavy leptons. However, other groups at SPEAR and at DORIS, the storage ring at DESY in Hamburg, were not seeing them.

The following year, a new signature for heavy-lepton production was observed. This was an event with two charged particles, one of which was identified as a muon. A Princeton-Maryland-Pavia group reported 12 such events. Then the SLAC-LBL group observed 100 μ-X events in which X could be a hadron or an electron but not a muon. By then, Perl recalls, his group was fairly convinced that they were not seeing charmed mesons.

In the summer of 1976 Hinrich Meyer (University of Wuppertal) reported at the SLAC summer institute that the Pluto group was seeing elec-

tron-muon events. Although the DASP group at DESY saw some indication of the heavy lepton, their statistics were not significant. At this point many physicists questioned the heavy lepton explanation for the e-μ events.

Then Perl and his collaborators joined forces with Lena Barbaro-Galtieri (LBL) and her group, calling the team the lead-glass-wall group. In this experiment they covered 1/8 of the magnetic detector with lead glass to improve detection of electrons.

By the beginning of 1977 the DASP and Pluto groups began to see e-μ, e-X and μ-X events. Meanwhile, still another group was tooling up at SLAC, installing the Delco detector in the East Pit of SPEAR. (The SLAC-LBL magnetic detector was installed in the West Pit.) The Delco group was a collaboration among Stanford, University of California at Irvine and UCLA. Delco has ten times the solid angle of the lead-glass wall detector and can reject pions down to very low momentum, making it more difficult for a pion to fake an electron. The Delco group was able to analyze their data in time for the Hamburg meeting. At that time Jasper Kirkby (Stanford) said his group, too, finds no contradiction with the heavy lepton. The most interesting evidence was an apparent smooth (pointlike) production of e-X events as the beam energy was increased, in contrast with the violent oscillations they observed in multi-pronged events (which are due to charmed particles).

"How can you be sure you're seeing a heavy lepton and not a meson?" we asked. Kirkby wryly remarked, "There's no smoking gun." Perl described five pieces of evidence for a heavy lepton:

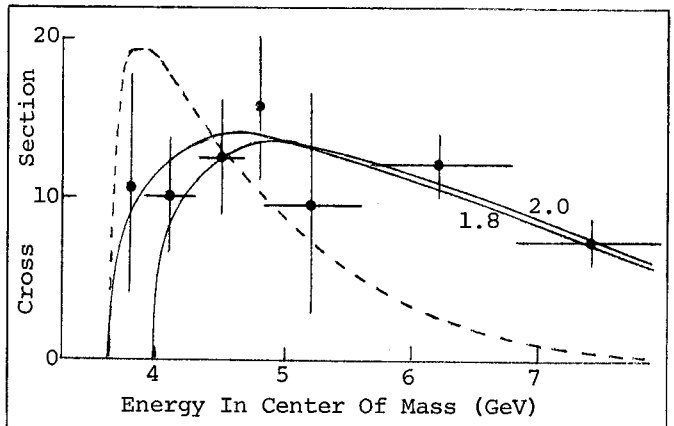
(1) If one has a charmed meson, one would expect the number of e-μ events to go up by factors of two or three at 4.1 and 4.4 GeV because the D mesons would be produced at those energies. Such an increase in production cross section is not seen.

(2) At higher energies, in the range 6-7.8 GeV, charmed mesons would be produced with lots of hadrons. Instead, the purity of the signal stays the same, even at high energy.

(3) When the D meson decays into an electron plus hadrons or a muon plus hadrons, the electron or muon generally has a momentum less than 100 MeV/c, whereas in typical electron-muon events the electrons and muons have momenta greater than 100 MeV/c.

(4) If the new particle were an ordinary baryon, the production cross section would be lower. Furthermore, once the energy was high enough to produce them, as the energy were increased further, additional hadrons would be observed. They were not observed.

(5) If the τ is a heavy lepton, it should follow the predictions of quantum electrodynamics, which says that the production cross section should vary as the inverse square of the total energy. The observed cross section agrees with theory within 20-30%.



Cross section (picobarns) vs. center-of-mass energy for the electron-muon events produced in electron-positron annihilation at SPEAR. The solid curves show the behavior expected for the production of a pair of heavy leptons, with the heavy lepton mass being either 1.8 or 2.0 GeV, as indicated. The dashed curve shows the behavior expected for the production of a pair of hadrons. Figure from Martin Perl of SLAC.

What next? All the experiments have had difficulty pinning down the exact mass of the τ. Because it decays with at least one undetectable neutrino, it is tough to tell exactly what the mass is. The ψ''(3772) resonance is just a trifle more massive than half the mass of the D_0 (1863 MeV) or D_0^+ (1868 MeV); so the ψ'', recently reported by the SLAC-LBL group, decays to D mesons. While running in that energy region, one can look for the τ. If it is not seen, the τ mass is greater than 1868 MeV. If it *is* seen, the τ mass is less than 1868. Both the lead-glass wall and Delco groups have seen some indications of τ being formed.

The very convenience of the D meson's mass being so close to that of the τ is also a profound disturbance to the experimenters. Perhaps the τ is in reality the D. Yet for all the reasons he outlined, Perl is sure that it is not. Is the similarity in mass just a coincidence or does it mean something? Only two groups have published values for the mass. The SLAC-LBL group gives (1.9 ± 0.1) GeV. Gerhard Knies (DESY) of the Pluto group said at the Hamburg meeting that the τ mass is (1.93 ± 0.05) GeV.

Another problem is that not all the expected decays of the τ are observed. So far the experimenters at DESY and SLAC have seen τ going to e + 2 neutrinos, μ + 2 neutrinos, ρ + 2 neutrinos and the A_1 meson plus a neutrino. But if τ is a conventional lepton, one would expect to see $\tau^- \rightarrow \pi^- + \nu$. At the Hamburg meeting, S. Yamada of the DASP group reported

(Heavy Lepton article continued)

that this decay is not observed with a 3-4 - standard deviation error.

Assuming that the τ *is* a heavy lepton, very likely it has its own neutrino associated with it. Perl explained that the τ cannot have the same lepton number as the muon or the τ would have been observed as neutrino-induced events at bubble chambers, and it was not. However, the τ could have the same lepton number as the electron. Both the SLAC-LBL and Pluto groups have established upper limits on the mass of the tau neutrino, in the same fashion as the mass of the ordinary neutrino is obtained from a beta-decay spectrum. From the e-μ mode, SLAC-LBL finds that the mass is less than 600 MeV/c^2. And from e-X events, Pluto sets an upper limit of 540 MeV/c^2. From their two-body decay events into A_1 and neutrino, Pluto infers an upper limit of 300 MeV/c^2. If there is a τ neutrino, we would have six leptons. And one can argue, we should by symmetry have six quarks. Or more.

NEW APPOINTMENTS IN PERSONNEL OFFICE

The SLAC Personnel Department has recently added several new persons to its staff. Hilda Korner has been appointed to the newly created position of Employment Operations Manager. Wyleacy Morgan has joined Employment Operations as an Employment Representative. Manuel Sanchez has assumed duties as Classification Analyst.

Ms. Korner comes to SLAC from the State University of New York at Buffalo, where she held several positions including Supervisor of Personnel Services, Director of Women's Recruitment, and Coordinator of Human Resources Development. Her duties at SLAC will involve her both directly and through staff in all aspects of employment: resource development, recruiting and interviewing, requisitions, posting and advertising.

Hilda Korner holds the newly created position of Employment Operations Manager. *(Photo by Joe Faust.)*

Ms. Morgan has most recently held the position of Personnel Consultant at Executive Systems, which is an affirmative action recruitment agency, and she has additional experience as a recruiter and training coordinator in the Bay Area. Her responsibilities will be in the mechanical areas, both professional and technical.

Wyleacy Morgan is now an Employment Representative in Employment Operations. *(Photo by Joe Faust.)*

Mr. Sanchez was a Management Analyst for the County of San Mateo before coming to SLAC. He has had experience in all phases of personnel work and also as an Engineering Associate for Western Electric. His responsibilities will primarily involve Classification work, with additional duties in such areas as compensation and special projects.

Two other new faces in Personnel are Diana Gregory, who is in charge of the emplyment records desk; and Jane Marcus, who is secretary for Employee Relations and Public Information.

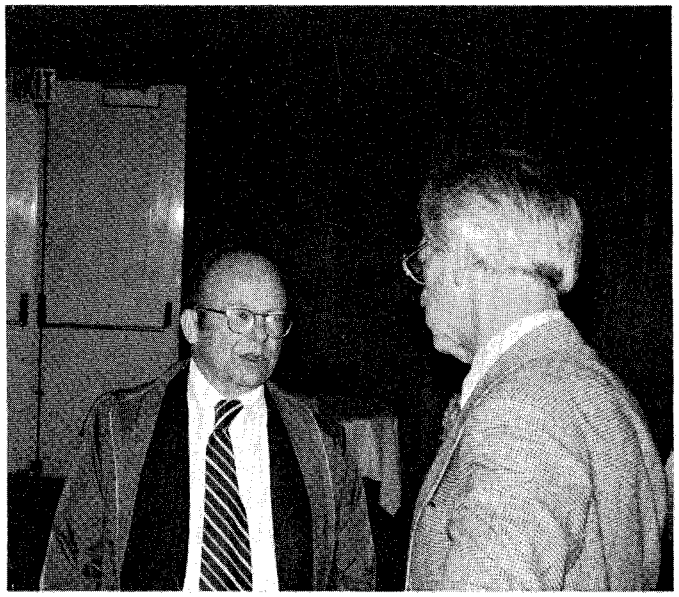
20-YEAR SERVICE AWARDS

Although the SLAC construction project was not authorized until September 1961, old-timers at SLAC tend to date the start of the project back to April 1957, which is the date when the original *Proposal For A Two-Mile Linear Electron Accelerator* was first submitted by Stanford University to the government sponsoring agencies. At that time the people concerned with "Project M," as it was then called, were members of the staffs of the W. W. Hansen Laboratories of Physics (Microwave Lab and High Energy Physics Lab) on the Stanford campus. A surprisingly large number of the original Project M'ers have stayed with the enterprise from 1957 to the present time, and last month their 20 years of service to M/SLAC was recognized in a special awards ceremony held at the Stanford Faculty Club on the evening of December 21.

The 20-year service awards were presented to the following persons:

Marion Adams	Kenneth Mallory
Robert Boesenberg	Earl Maninger
Robert Broeder	Lydia Moore
En-Lung Chu	Robert Moulton, Jr.
Herbert DeStaebler	Robert Mozley
Theodore Evans	Richard Neal
Blaine Hayward	Carl Olson
John Jasberg	Wolfgang Panofsky
Ted Johnston	Frederick Pindar
Carey Jones	James Pope
William Kirk	Burton Richter
Albert Koula	Willie Roberts
Jean Lebacqz	Eugene Roe
Paul Lee	Harry Soderstrom
Thomas McKinney	Paul Zinder, Jr.

Also in attendance were the wives and husbands of many of the persons being honored, as well as the following guests: Stanford President Richard Lyman and Mrs. Lyman; Stanford Provost William F. Miller and Mrs. Miller; Dr. Edward Ginzton (the first Director of Project M) and Mrs. Ginzton; and SLAC Personnel Director Doug Dupen and Mrs. Dupen. President Lyman and Dr. Ginzton each spoke briefly, then shared in the task of presenting the awards. The ceremonies were preceded by cocktails and dinner. The entire evening was planned and arranged by Al Ashley and Ruth Thor Nelson of SLAC.



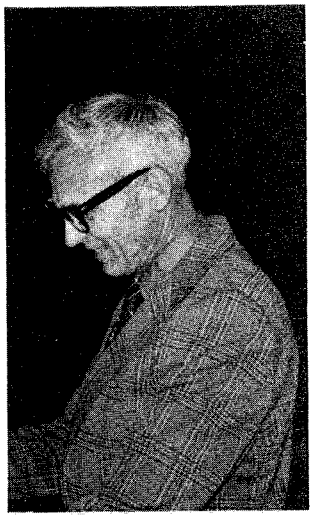
SLAC Director Wolfgang Panofsky is shown here talking with Ed Ginzton, who was the original Director of Project M.

Of the 30 persons listed above who were to receive awards, 25 were actually able to be present for the ceremonies. These 25 persons are shown in the photos on this and the following two pages that were taken by SLAC photographer Dick Muffley as the individual awards were presented.

--Bill Kirk

Bob Broeder receives his 20-year service award from President Lyman (left) and Dr. Ginzton. Pictures of the other award winners appear on the next two pages.

20-YEAR AWARDS

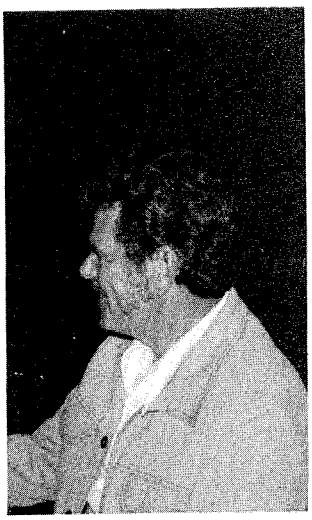


Marion Adams

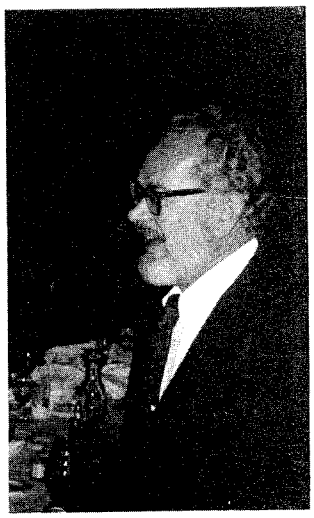
Bob Boesenberg

Hobey DeStaebler

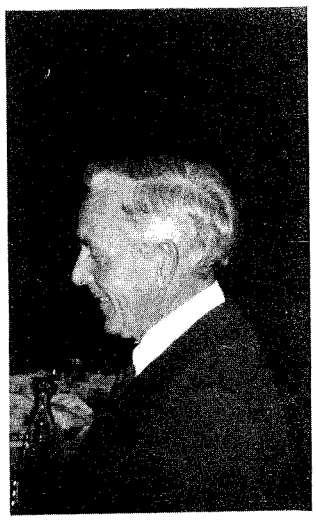
Ted Evans



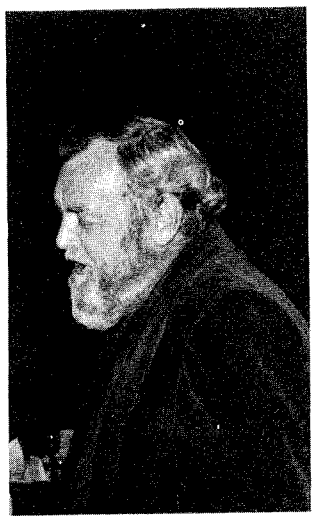
Blaine Hayward



John Jasberg

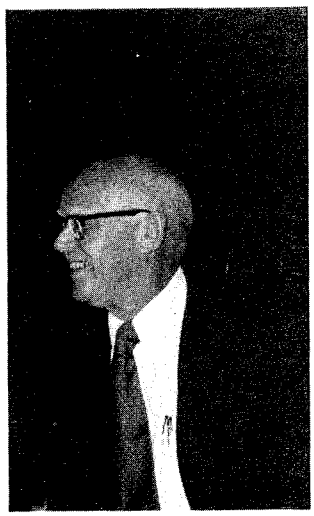


Ted Johnston



Bill Kirk

Al Koula



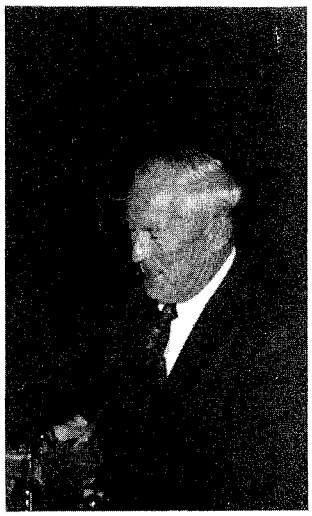
Jean Lebacqz

Paul Lee

Ken Mallory

20-YEAR AWARDS

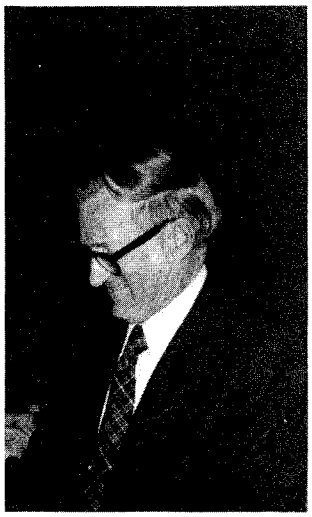
Lydia Moore



Bob Moulton

Bob Mozley

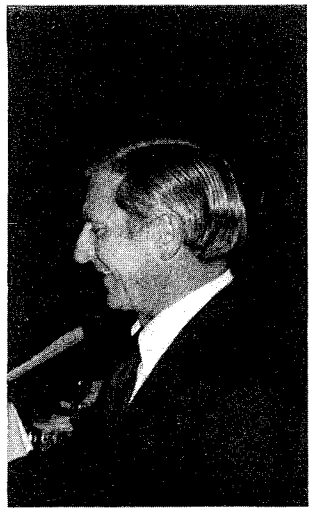
Dick Neal



Carl Olson

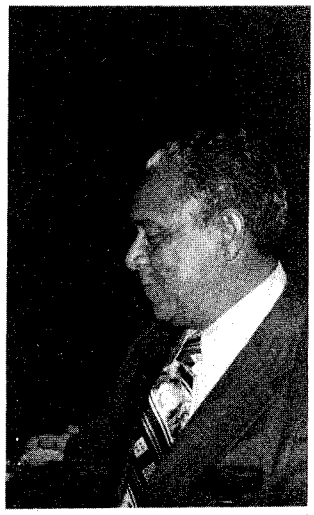
Pief Panofsky

Fred Pindar

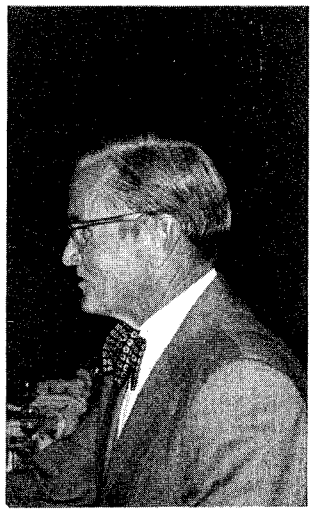


Jim Pope

Burt Richter



Willie Roberts



Harry Soderstrom

Paul Zinder

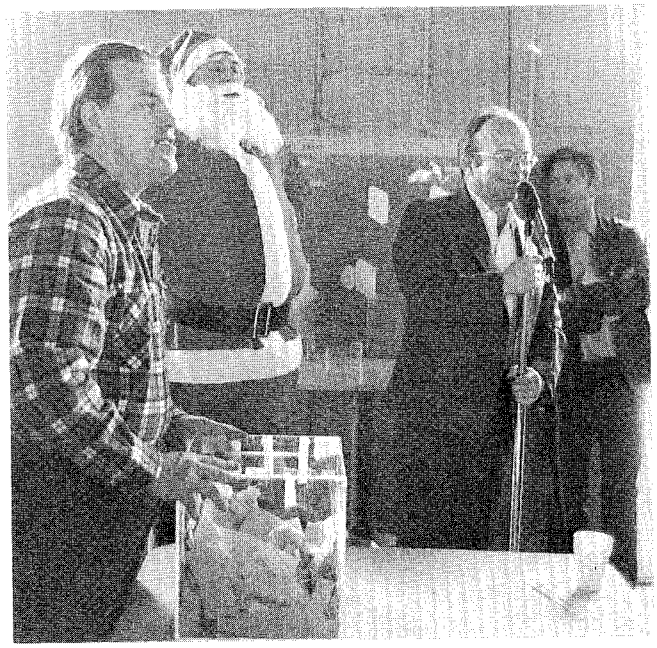
SLAC CHRISTMAS PARTY

On December 21, about 500 SLAC employees and members of their families found their way to the Cafeteria at noontime to participate in the annual Christmas festivities. A special luncheon was served, and drinks and dessert were provided at the party. During its course, the partiers managed to put away 132 liters of punch and 2112 cookies, with the latter being supplied in 4-dozen lots from the homes of 44 SLAC employees. They were delicious!

Live entertainment was supplied by a group of madrigal singers from Palo Alto High School. After a greeting from Dr. Panofsky, Santa Claus masterminded a raffle in which 10 turkeys and 8 beam trees were given out as prizes. The prize for best Christmas tree ornament went to Bob Morgan for the star he made, which was suspended above the tree. All in all, it was a merry afternoon.

--Kathy Slavin

(Photos by Joe Faust)



Ron Koontz, Santa and Chief Elf on center stage.

Part of the Christmas Party crowd eagerly awaits the results of the raffle.

The madrigal singers from Palo Alto High in action.

PEP NOTES

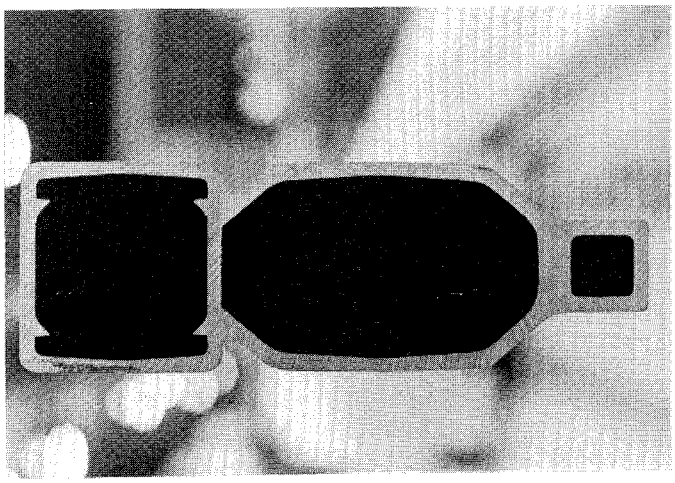
The Slot Machine

The job of the PEP vacuum people is to produce nothing at all--or as close to nothing as possible in the mile-long pipe through which PEP's beams must circulate for hours without any of those close encounters of the dirt kind.

Even with the strenuous cleaning preparation that we described a while back, the PEP vacuum chambers continue to outgas, and steady, strong pumping is necessary to maintain the required low pressure. In addition to conventional vacuum pumps located periodically around the ring, there is a built-in system of pumps within the vacuum chamber itself.

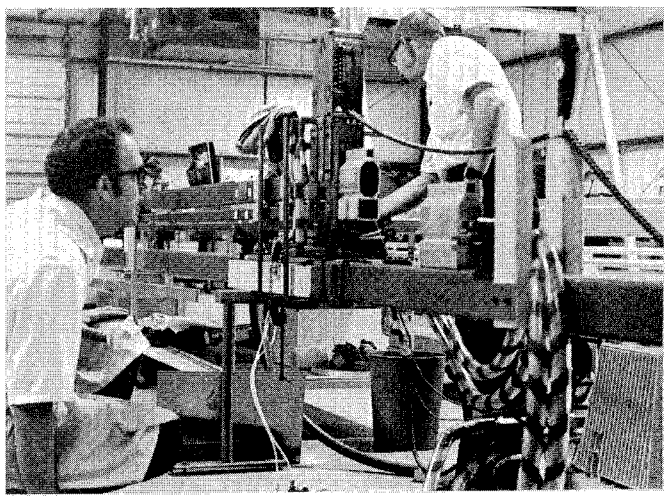
These sputter-ion pumps were originally developed for SPEAR, and are now used universally in storage rings. They consist of an array of small metal cylinders along the inside of the vacuum chamber, with a high voltage applied between the cylinders and adjacant plates to produce a small current of ions. What makes this small current effective is the fact that the magnetic field of the bending magnet used to guide the beams causes these low-energy ions to spiral around many times, thus greatly extending the path they follow in going from plate to anode. And during this long trip the ions sweep up much of the molecular debris in the area, finally depositing the whole package on the inner walls of the cylindrical anodes and thus making the world a cleaner place.

A cross-sectional view of the extruded-aluminum vacuum chamber for PEP is shown in the photograph on this page. This structure has been dubbed the "three-holer" by the rurally inclined. The large central passage is for the beams, while the smallest passage will carry high-pressure cooling water to take away the intense heat generated when synchrotron radiation from the beams strikes the adjacent (outer) chamber wall. The remaining passage is designed to contain the distributed vacuum-pumping system just described.



Clearly the cooling water must circulate in its own isolated channel, but what good does it do to have a solid wall between the pumps and the central beam passage? None at all, of course, and there must be many openings between these two passages in the final system. Then why have the beam and pump passages separated at all? The answer to that is "money." The pumping scheme we've been talking about is only used within the PEP bending magnets, and the three-hole construction of these vacuum-chamber sections makes it easier to connect them to the simpler chamber sections (without pumping passages) that are used in other parts of the ring. These simpler chambers have a smaller cross-sectional area, which permits the use of smaller quadrupole magnets, which use less electrical power, and we all know what that means.

The holes between the beam and pumping passages have to be made in staggered series of 3 each, reminiscent of an old Buick hood, at intervals all along the 50-foot lengths of the individual extruded-aluminum chamber sections, and it's no mean feat to punch such holes while working from the inside of a two-inch pipe. The trick that is used was developed at Cornell University; the resulting "slot machine," made by a company in Ithaca, New York, is shown in the photograph.



An hydraulically operated punching head is cranked through the chamber, stopping at intervals to knock out the required holes against a die. After this job is done, the chambers then get bent to the proper curvature, cleaned, outfitted and eventually installed in a production-line fashion.

--Bill Ash

SLAC WOMEN'S ASSOCIATION

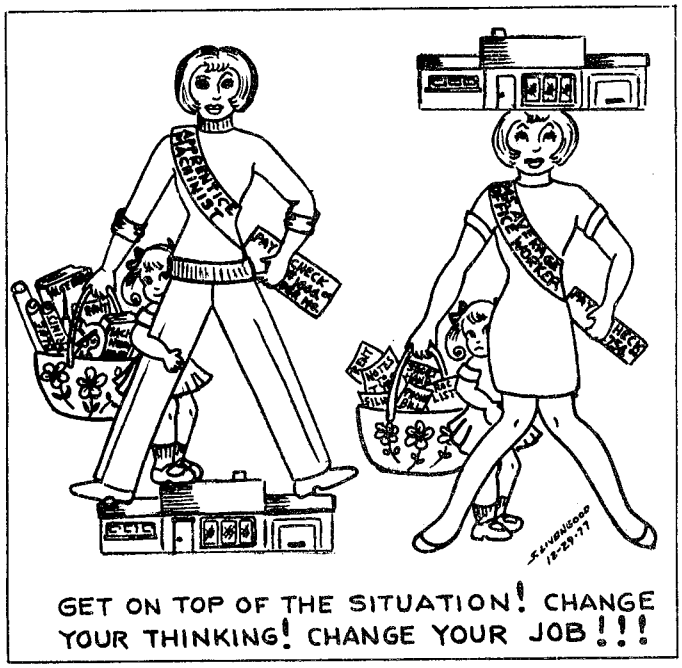
MACHINIST APPRENTICESHIPS

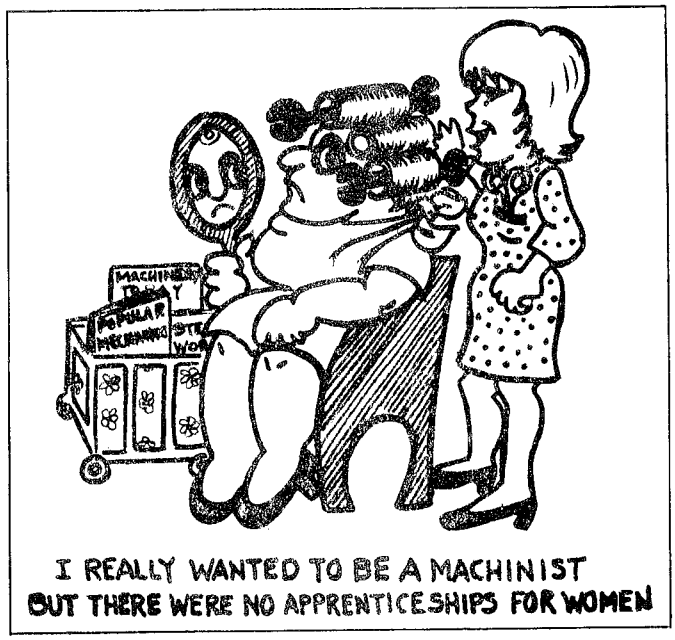
(Cartoons by Shirley Livengood)

With a view to encouraging women at SLAC to consider applying for the soon-to-be-posted machinist apprenticeships, the Women's Association held a "Let's find out about being a machinist" meeting on November 7. The meeting was divided into two parts. First, Herman Zaiss, head of SLAC's Mechanical Fabrication Department, spoke to us about the prerequisites for entering the apprenticeship programme and the structure of it. Then, Ray Pickup took us on a fascinating tour of the Central Lab machine shop, which he supervises.

The idea of an apprenticeship is to train a person in a trade starting from scratch, and reaching a high level of proficiency after several years. The emphasis in a machinist's training is on learning how to use drill presses, lathes and milling machines by working in a regular machine shop under the guidance of experienced machinists. Hence the prerequisites are relatively simple, namely a proficiency in high school algebra and geometry, and mechanical aptitude.

The latter prerequisite has been a stumbling block against the movement of women into technical jobs, because the extent of one's aptitude was often measured against too narrow a set of criteria. For example, many people thought (and maybe still do) that mechanical aptitude was only indicated by familiarity with the innards of an automobile engine. But what is really needed is the ability to see how several parts fit together to form a whole, and that is equally well measured by competence in following a dress pattern.





> A beginning apprentice machinist gets paid more money than a Secretary II can ever earn.

Zaiss explained that the in-shop training is backed up by mandatory attendance (during working hours) of College of San Mateo courses in drafting, machine shop practice and blueprint reading; these are necessary skills for a machinist, but are not prerequisites for entering the SLAC apprentice programme. The salary for a beginning apprentice is extremely attractive compared to clerical salaries--almost $1000/month. There are also 5% increments every six months, leading eventually to a salary of $1403/month at the end of the several-year programme.

Ray Pickup showed us some of the complex machine tools that can punch, drill, scrape, slice, file, chisel, grind and polish various types of material under the guiding hand of the machinist. Using these machines, the people in Ray's shop turn slabs of aluminum, steel, copper, tungsten and plastic into intricate devices such as vacuum vessels, target holders, and components for the PEP storage ring. Ray shared with us his ideas on what makes a good machinist: manual dexterity, patience, a delicate touch, and the ability to look at a drawing and visualize how the finished product will look. These talents are enjoyed by anyone who has a flair for making models or home carpentry. For example, Ray recognizes them in his 12-year-old

> At the end of a four-year apprenticeship programme, a machinist earns more money than a SLAC Ph.D. physicist who has 8 years of University education.

daughter, who can see how to assemble toy construction kits without pondering over the instructions.

Powerful muscles are not needed to be a machinist, so any woman with the talents mentioned above who is willing to learn a new trade would be a good candidate for the machinist apprenticeships which will be posted in early 1978. We hear that several women at SLAC have already contacted the Personnel Department for more information on these apprenticeships, and we wish them the very best.

We thank Herm Zaiss and Ray Pickup for taking the time to tell us about being a machinist.

--Cherrill Spencer

SELF-DEFENSE FOR WOMEN

On November 14, the Women's Association presented a talk by Sergeant Debbie Marinaro of the Stanford Department of Public Safety concerning self-defense for women, safety precautions, and the services that are available to women who have been assaulted.

Sergeant Marinaro began by discussing rape in general. It can happen anywhere, often in the victim's home, at any time during the day or night; most disturbingly, it can happen to any woman, young or old. The rape victim may be chosen entirely at random, she may be an aquantance or a formerly intimate friend who has withdrawn from the relationship, or the rape can be a premeditated act of revenge and humiliation.

The best prevention is being mentally alert and aware of what is going on around you. If someone seems to be following you, don't look back; instead, walk to the nearest place where there are likely to be other people around. If another car is tailing you, don't drive to your home but go to a gas station, fire station or police station. If you see a suspicious situation, even if you cannot stop and give help, try to notify the police as soon as possible, giving such information as a description of the people involved, and the license number, color and make of the car or cars.

> About 50% of rapes occur in the victim's home.

If you find yourself in a threatening situation, don't panic. Talk to the aggressor; tell him that you have VD, or that you are pregnant. A plastic lemon filled with ammonia to squirt in the face, or a hatpin or umbrella are things that can be used to scare off an attacker, but remember that they can also be used against you. Sergeant Marinaro demonstrated a small hand-held alarm that lets out a piercing shriek. You could try kicking his shins, biting, hitting the nose or groin, or poking the eyes to throw the attacker off balance enough to let you escape. But you must try to judge his mental state--that kind of resistance might just infuriate him to further violence. If you are being threatened with a weapon, there is not much you can do except submit in order to avoid being killed or seriously maimed.

Sergeant Marinaro gave a detailed description of what you should do, and what the police will do, if you should be the victim of a rape. Many rapes are not reported to the police at all because the woman feels ashamed and degraded. The sergeant made it clear that reporting the incident to the police does not necessarily lead to full court proceedings. The victim herself has the final decision on whether to file a complaint or not.

It is important to notify the police as soon as possible and not to change clothes or clean up or disturb things where the assault happened. The police will take you to a hospital, and you can ask for a female officer to escort you. At the hospital, the clothes you are wearing are turned over to the police, and a doctor will give you a standard medical exam that includes smears for blood, sperm and saliva. A chart will be filled out noting any bruises or other injuries. You will be given a VD test, a contraceptive pill, an anti-VD shot, and usually a sedative. The police will call your husband or a friend to bring some clothes and take you home. The police will try to get a complete report on how and when the assault happened. The exact details needed make it unpleasant for the victim, but a detailed report will help the police in identifying and tracking down the rapist and in connecting your attacker with other possible incidents of rape.

> You can ask for a female police officer to be present during the investigation of a rape.

If the rapist has been identified and you decide to file a complaint, the District Attorney will prosecute the case at no cost to you. You would have to give evidence in court to prove that there was coercion. Also, the presence of a weapon and the doctor's report about injuries sustained will be important evidence.

When pressed to demonstrate specific tactics in dealing with an aggressor, Sergeant Marinaro declined to do so, saying that there are no easy tricks that will always work. Physical self-defense has to be learned in an extended course, and for this reason a demonstration would be of no use and in fact might give a false sense of security. If there is enough interest in such a course, the Women's Association might be able to arrange a series of lunch-time lessons in self-defense.

--Arsella Raman

WON WOK!

When you hear someone yell "WON WOK!" in front of the Cafeteria during lunch hour, you can be pretty sure that the person is not really trying to order an oriental lunch but is instead giving an order for *group one to walk* instead of run. The group is one of two groups (evening and noon) that is participating in the Heart Disease Risk Reduction Program (HDRRP). The groups meet three times a week for 45 minutes of supervised exercise and jogging. The groups meet in front of the A&E Bldg. on the following schedules:

Noon - Monday, Wednesday, Thursday
5 PM - Monday, Wednesday, Thursday

Everyone at SLAC is welcome to join either of these groups. However, there is one prerequisite: you must first have a medical examination. Dr. Beal in the SLAC Medical Department will be glad to give you this exam, but please phone in advance (x2281) to make an appointment. There is also a minimal fee for each quarter.

--Gloria Hogenauer

SEMINAR ON SEXISM

What is sexism, and what actions can be construed as sexist? Is intent the determining factor, or is it the effect of one's actions that is important? These and other related questions were dealt with on December 7 in a special seminar that was presented to the members of Norm Dean's Storage Ring Vacuum Group. The half-day seminar was intended to familiarize the group members with some of the problems that women encounter in non-traditional jobs--as indicated by its title: *Women in Non-Traditional Jobs--Developing an Awareness.*

The first of three speakers at the seminar was Drucilla Ramey, who is a lawyer with the firm of Lombardi & Lombardi in San Francisco. She presented a review of sexism through the use of a number of historical and legal examples. Her presentation made it easier to understand why, even today, sexist attitudes continue to prevail over more rational judgements.

Second on the program was Christie Neibel, who is a Job Developer with the firm of Women in Apprenticeship Programs, Inc. Christie's presentation dealt with some of the problems that women typically encounter when entering a predominantly male environment. She cited a number of actual cases in which certain actions, or lack of action, contributed to an undesirable work environment with sexist overtones.

The third speaker was Mary Samis, a Consultant with the Fair Employment Practices Commission (FEPC). Her talk was intended to familiarize the audience with the role and responsibilities of the FEPC; with what constitutes sex discrimination and what sorts of actions tend to lend support to such a charge; and with the investigative process followed by the FEPC in handling a sex-discrimination case.

The program allowed time for the audience to ask questions and to participate in the discussions with each of the speakers. The program seemed to be very well received by the participants, and the concensus was that it had been a very productive and worthwhile session.

--SueVon Gee, Associate
Affirmative Action Officer

Leo Szilard stayed several years with the phage group between two periods of intense political activity. Before revealing his interest in the phage, Szilard had visited Luria's laboratory at the University of Indiana.

"Doctor Szilard, I don't know how much to explain," said Luria, embarrassed by the presence of the great nuclear physicist. "I don't know what to assume . . ."

"You may assume," Szilard replied promptly, "infinite ignorance and unlimited intelligence."

[From *A Random Walk In Science*, an anthology compiled by R. L. Weber.]

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