

SLAC BEAM LINE

*Discern steadfastly with your mind the far and the near together.
For Being does not divide from its connection with Being, not
loosened in arrangement anywhere, or compacted. --Parmenides*

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Some of the members of SLAC's Minority & Women's Committee were photographed after a recent meeting with the Director. From the left are Lucy Wilson, Katreina Youmans, W. Panofsky, Jim Ketcher (SLAC's Affirmative Action Officer), Gloria Cardenas, Hobie DeStaebler, Marco Buenrostro, Ken Stewart and J. J. Lipari. The absent members were Sal Alvarado, Bill Dawkins, Martha Zipf, and Mario Smalls. For more information about the MWC, see page EO-3 in this *Beam Line* issue.

From The Editor

We've been getting some complaints that the *Beam Line* is getting too fat (28 pages in January; 22 pages in February). Since there is a good flow of material coming in, we thought that we would try the experiment of splitting the March issue into two parts: 16 pages now, and another 12 or so that will appear on about March 20. Comments or suggestions about fat vs. thin issues would be welcome.

We'd like to thank Bob Gex and Ted Jenkins for their work on the "Equal Opportunity" story.

--BK

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March 20 Issue

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Dear Mr. Jefferson

(Note: The following article is reprinted from the journal Social Policy. Its author, Edward Schwartz, is President of the Institute for the Study of Civic Values.)

Recently I was asked to write a grant proposal for a project in Pennsylvania related to adult education. After accepting the offer I discovered that the guidelines for this proposal had to conform to federal specifications. I did endure this remarkable procedure, but shortly thereafter conjured in a horrible nightmare the following letter written to Thomas Jefferson in late July 1776.

July 20, 1776

Mr. Thomas Jefferson
Continental Congress
Independence Hall
Philadelphia, Pa.

Dear Mr. Jefferson:

We have read your "Declaration of Independence" with great interest. Certainly, it represents a considerable undertaking, and many of your statements do merit serious attention. Unfortunately, the Declaration as a whole fails to meet recently adopted specifications for proposals to the Crown, so we must return the document to you for further refinement.

1. In your opening paragraph you use the phrase "the Laws of Nature and Nature's God." What are these laws? In what way are they the criteria on which you base your central arguments? Please document with citations from the recent literature.

2. In the same paragraph you refer to the "opinions of mankind." Whose polling data are you using? Without specific evidence, it seems to us, the "opinions of mankind" are a matter of opinion.

3. You hold certain truths to be "self-evident." Could you please elaborate. If they are as evident as you claim, then it should not be difficult for you to locate the appropriate supporting statistics.

4. "Life, liberty, and the pursuit of happiness" seem to be the goals of your proposal. These are not measurable goals. If you were to say that "among these is the ability to sustain an average life expectancy in six of the 13 colonies of at least 35 years, and to enable all newspapers in the colonies to print news without

outside interference, and to raise the average income of the colonists by 10 percent in the next 10 years," these would be measurable goals. Please clarify.

5. You state that "whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or abolish it, and to institute a new Government. . ." Have you weighed this assertion against all the alternatives? Or is it predicated solely upon the baser instincts?

6. Your description of the existing situation is quite extensive. Such a long list of grievances should precede the statement of goals, not follow it.

7. Your strategy for achieving your goal is not developed at all. You state that the colonies "ought to be Free and Independent States," and that they are "Absolved from All Allegiance to the British Crown." Who or what must change to achieve this objective? In what way must they change? What resistance must you overcome to achieve the change? What specific steps will you take to overcome the resistance? How long will it take? We have found that a little foresight in these areas helps to prevent careless errors later on.

8. Who among the list of signatories will be responsible for implementing your strategy? Who conceived it? Who provided the theoretical research? Who will constitute the advisory committee? Please submit an organizational diagram.

9. You must include an evaluation design. We have been requiring this since Queen Anne's War.

10. What impact will your program have? Your failure to include any assessment of this inspires little confidence in the long-range prospects of your undertaking.

11. Please submit a PERT diagram, an activity chart, and an itemized budget.

We hope that these comments prove useful in revising your "Declaration of Independence."

Best Wishes,

Lord North

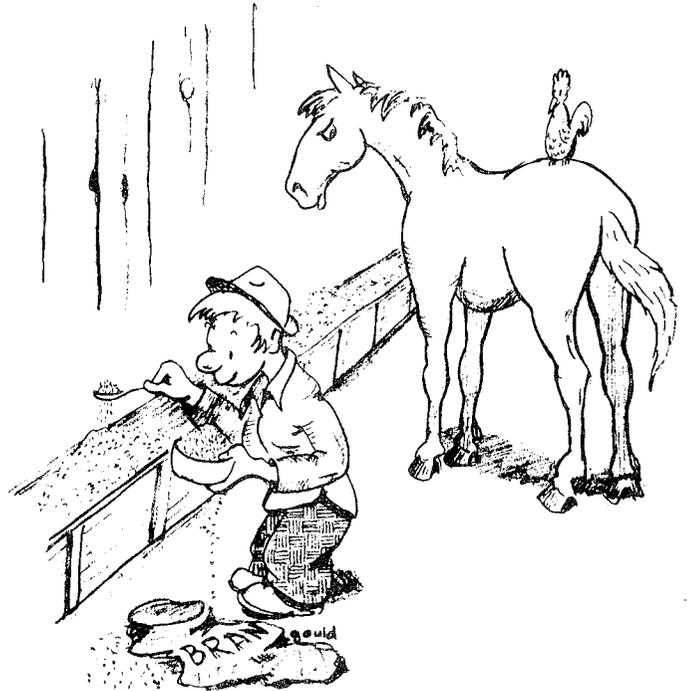
Nutrition

Nutrition in its various aspects has occupied some portion of nearly everyone's thought from time immemorial, I suppose. Nevertheless, nutritionists tell us that theirs is still a young science. If the rate of change of their views is an accurate indication, then the science surely must be in its infancy. Even with the uncertainties, however, several recent developments in the field of nutrition seem worth a brief mention here.

Vitamins. Is megavitamin therapy of any real value? For many years the orthodox view has been that any vitamin intake above the recommended daily levels was either wasteful or harmful. In the cases of Vitamins A and D it has been pretty well established that excess intake can in fact lead to various complications. However, the case is not so clear for the B group of vitamins, nor for Vitamins C and E; increased dosage of this latter group of vitamins may indeed have beneficial effects in certain situations. Nevertheless, there is continuing concern about the possible long-term effects of large doses of these vitamins.

Fiber. One of the more recent startling "discoveries" has been a growing appreciation for the beneficial effects of indigestible food fiber. Such fiber has been very largely removed from our diets as a result of the refining of flour. The fiber in wheat is the bran, and this bran may have a much greater beneficial effect than just the prevention of constipation. It is an established fact that in those parts of the world where wheat is not refined there is a much lower incidence of bowel cancer, diverticulitis, appendicitis, gall bladder disease, hiatus hernia, hemorrhoids, heart disease and diabetes. Whether dietary fiber is the only--or even the primary--factor responsible for this difference is not known and will probably not be known for at least several more years. However, I for one am impressed by the present evidence, and I have increased my own intake of bran fiber by eating whole-wheat bread, All Bran cereal (11% fiber), and by adding bran (15% fiber) to other breakfast cereals. Some grocery stores and most health food stores carry packaged bran. Of course, this is exactly the same bran that all properly fed horses get in their standard diet. Maybe the veterinarians have always known better than the nutritionists.

Blood Fats. Much is being learned about the hazards of excess fats (lipids) in the blood. Cholesterol and triglycerides are the two lipids that are usually measured. When the level of either lipid is high there is statistically a much greater chance of having a heart attack. Of the two, cholesterol seems to be the more



important. Present cholesterol levels can often be reduced by certain changes in eating habits, particularly cutting back on the intake of animal fats.

Artificial Food Coloring. Recent studies have indicated that there may be some toxic factor in such innocuous-seeming material as artificial food coloring (as opposed to natural vegetable colors). One example is the fact that certain kinds of hyperactivity in children seem to be alleviated when all such food additives are removed from their diets.

In The Future. During the next few years it seems reasonable to expect that the study of nutrition will provide us with more useful and dependable insights into sound eating habits and potential health hazards. Such studies are likely to prove helpful in answering such questions as why some people have difficulty with obesity, how pollutants in water affect our health, and just what role excess blood fats play in predisposing individuals toward heart attacks.

--Charles Beal, M. D.
SLAC Medical Dept.

ON-LINE COMPUTER LINK HASTENED PARTICLE FIND

(Reprinted from DATAMATION, Jan. 1975)

A newly completed communications link to a triplex computer installation played a significant role in the recent discovery by physicists of two new subatomic particles. Scientists at the Lawrence Berkeley Lab and the Stanford Linear Accelerator Center (SLAC) in California reported within two weeks the discovery of two members of what could turn out to be a family of new elementary particles.

Discovery of the particles--Psi 3105 and Psi 3700--and their characteristics of large mass (three times the mass of a hydrogen atom) and long lifetime excited the world of high energy physics when announced last fall. While many expected new particles, the properties of these were totally unexpected, scientists said, and suggested "some new kind of structure."

To produce these particles, physicists at SLAC used a storage ring . . .

Data from the experiments is gathered by an on-line Xerox Sigma 5 with 128K of memory. The processor controls the storage ring, checking on the working condition of the apparatus, but also does sampling and partial analysis of experimental data, as well as the data logging.

Controlling the storage ring, it appears, is no trivial task. The beam inside can be accelerated and decelerated--known as changing the energy levels. But this so-called ramping process cannot be done linearly without producing resonances [beam disturbances] in the machine. Thus the Sigma 5 must compute a complicated, tortuous path upward or downward to avoid these resonances. "It (this control) would be absolutely impossible without reasonably sophisticated computer control," says Marty Breidenbach, an elementary particle physicist who was part of the discovery team but who also understands the computer process.

Until last summer, the data produced from the experiments was spooled onto tape by the Sigma 5, and analysis of the data for physics results was performed off-line on a triplex configuration at the SLAC computing facility. "Our style had been to make sure the apparatus was okay, and we'd figure out the physics later," says Breidenbach. "It meant a delay of a couple of hours, if one were in a rush and chose to rush the tapes to the main computer center. Otherwise it was much longer."

According to Joe Wells, assistant director of the computing facility, it was only two weeks prior to the historic initial discovery that a real-time link was established between the Sigma 5 and the triplex. For the first time, physicists were getting an instant analysis of the

physics and an active feedback to their experiments. Now the Sigma 5, with an IBM System/7 alongside, can talk to the triplex over a coaxial cable at speeds up to 200,000 bytes/second.

At SLAC, the configuration includes a two-megabyte 360/91 and two three-megabyte 370/168s. The dual 168s operate under VS2-1.6 and under ASP 3.1, and the 91 under MVT Release 21.0. The software that performs the sophisticated physics analysis, which is more than 800K bytes in size, formerly operated in the batch mode. It has been modified to run in real time, says Wells.

Essentially what the physicists do is to measure the interaction of electrons and positrons at varying energy levels within the storage ring. They allow collisions to occur for a few minutes, then raise the barriers to prevent them while the data is being analyzed by the triplex configuration. The results that come back to a typewriter terminal are manually graphed.

Normally this plot shows up as virtually a flat horizontal line. Last summer, however, after several runs with the storage ring, they received what appeared to be statistically inconsistent data, raising suspicions and setting them off on a search for the cause. A concerted search, centered on a narrow spike in the graphed line, began on Saturday, Nov. 9. They got the machine up to the required energy level, got a real-time reading back, and decided that the energy level must represent but one edge of a conical-shaped spike. At a higher energy level, they plotted the other edge. This prompted a binary search for the tip of the cone. Working around the clock, the experimenters found the new particle on Sunday afternoon and were able to describe its mass and width.

"I'm sure we could have done it without the real-time link," says Breidenbach. "But a process that required a day with the link might have taken a couple of weeks without it. All that time would have been very frustrating. We would know we were on to something but wouldn't be able to find the center. Information that became obvious to us in something like a half-hour might have taken days. Considering the excitement, I'm not sure we would have survived it."

The following week was spent trying to learn more about the particle, and the hunt for more particles also began. Normally the ring is used to make a run, stopped, then another run made. Instead the machine physicists transformed it into a scanning machine, changing the energy levels on the fly, so to speak, while the beams were colliding. It was, to be sure, something that could only be done with computer control of the complex ramping procedure and on-line analysis of the physics data.

--Edward K. Yasaki

An Extension Cord For E-114

About a month ago, on the morning of Tuesday, February 11, SLAC janitor Benny Munoz was working in the Main Control Center (MCC) when he noticed a pool of water on the floor next to the power supply that provides current to the A-beam-dump magnets. After Benny had called this to the attention of the MCC maintenance technicians, they decided to open up the power supply to see what was going on. What they discovered was a water leak in the cooling system for the main power transformer within the power supply--a most unpleasant situation.

Photons & The A-Beam Dump

When the leak was discovered, Experiment E-114 was running in End Station A. This experiment was in the process of trying to create and study the recently discovered *psi* particles by a method known as "photoproduction" (production by photons). The photon beam that E-114 was using in this work was obtained by having the electron beam from the SLAC accelerator strike a thin target (TC-20), which is located just up-beam of a device called a "beam dump,"

near the end of the A leg of the beam switchyard. The photons that are produced in this target are accompanied by a heavy flux of both primary and secondary electrons which have to be disposed of in some way. This is accomplished by making the mixed beam of photons and electrons (and other junk) pass through a series of closely spaced bending magnets which deflect the electrons out of the way but do not affect the electrically neutral photons. In this case "out of the way" means deflecting the unwanted electrons downward so that they are "caught" by the A beam-dump. Since these deflected electrons can be carrying as much as several hundred kilowatts of power, the beam dump is a very large water-cooled device that is able to dissipate all of the deposited heat.

A Temporary Solution

With the power supply for the A-beam-dump magnets out of action, Experiment E-114 could no longer get a photon beam, so they switched over to "electroproduction," in which the SLAC accelerator's electron beam is used directly. But the probability of creating the new *psi* particles is much lower with electrons than with photons, so this mode of experimental running was a sort of stop-gap measure while waiting for good times to return.

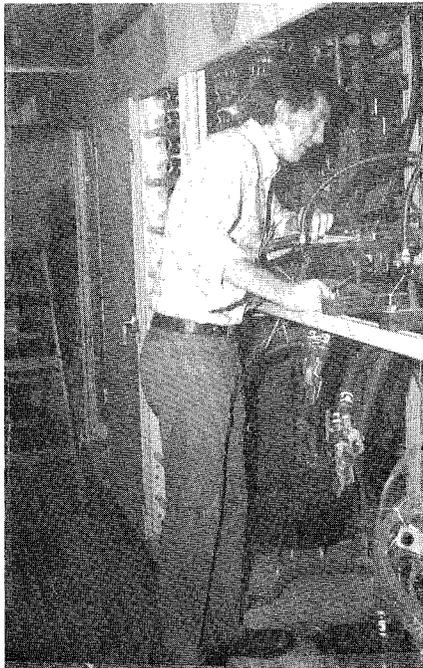


Photo by Dick Muffley

MCC technician Earl Hamner is shown working on the A-dump-magnet power supply after the damaged transformer had been removed.

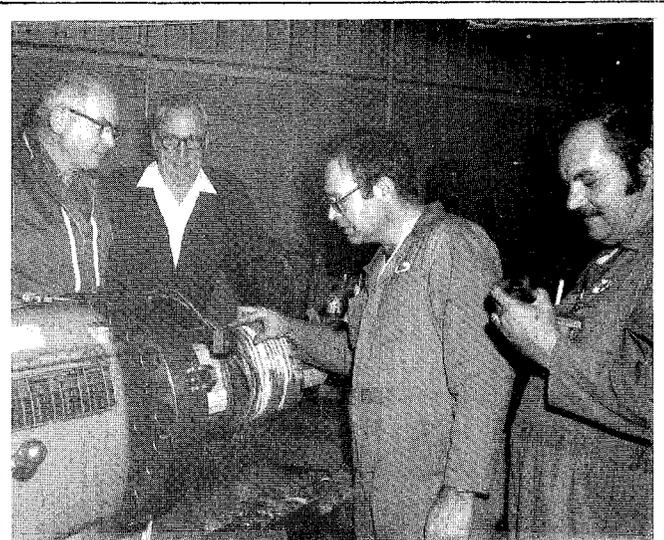


Photo by Dick Muffley

From left to right, Bill Brunk, Larry Didier, Wayne Shetler and Clyde Kennedy are shown examining the damaged transformer core as it is being unwound on a lathe in the Heavy Assembly Building.

Meanwhile, the defective transformer was removed from the power supply and taken up to the Heavy Assembly Bldg. for diagnosis and repair. After the experts had taken its pulse and measured its blood sugar, they gave out a prognosis of at least one week in sick bay.

Since psi particles have recently been SLAC's most important product, there was some agitation about the possibility of a quicker solution, and very shortly thereafter it was decided to do something about bailing out good old E-114. The nearest power supplies big enough to do the job of powering the dump magnets were located in the research area about a country mile away (would you believe 750 feet?). Besides, you have to think more than twice before you decide to move a multi-megawatt power supply: they're so big that they are practically built-in. But for that very reason SLAC constructed, several years ago, a power distribution system called the "D.C. Tie-Line," which makes it possible to switch around any of several large power supplies so that they are connected to any of several large electrical loads.

Since large power supplies are expensive, the idea is to avoid having them sit around idle during a running period. Instead, they should earn their keep by working on a pretty high duty cycle. The D.C. Tie-Line is an

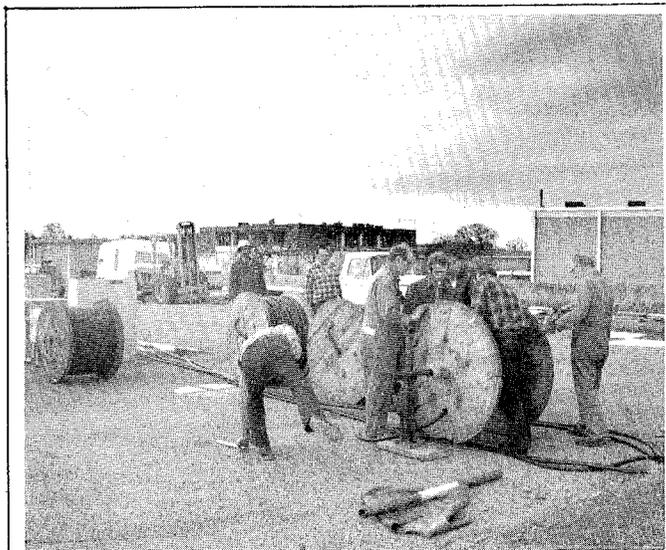


Photo by Dick Muffley

When this photo was taken, two separate cables had already been run. The group shown here is getting ready to pull the third (a total of four were used). Farthest from the camera are Walter Cross, in the hard hat, and Howard Flynn. Tony Barrera is picking up a piece of pipe. From left to right around the cable reel are Ken Moore, Ed Loens, Ed Stephenson (partially hidden), Gary Heath and Eric Sorensen.

effective way to accomplish this. By connecting most of the big power supplies into the Tie-Line, the available capacity can be used to best advantage without having to move and rearrange equipment every time a new experimental set-up is made.

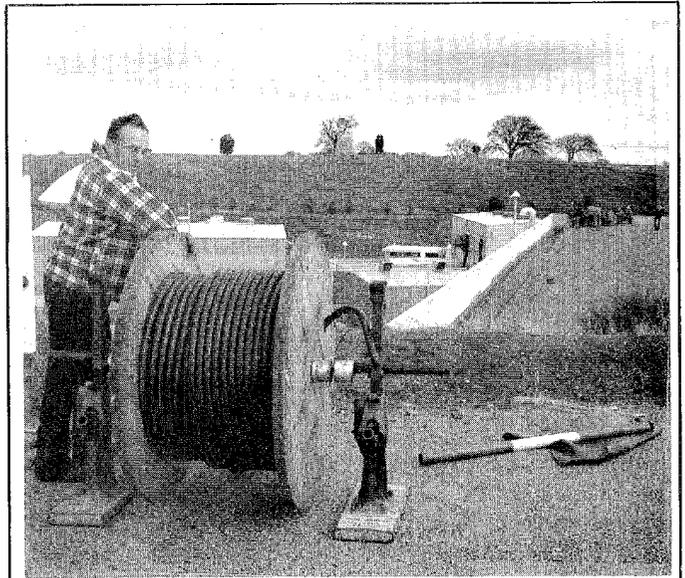


Photo by Dick Muffley

This is a view looking east across the roof of End Station B. The second of four heavy DC cables is being unreeled by Howard Flynn. The crew seen in the middle distance is lowering the cable over the side of End Station B. A second group working down below in the research yard is routing the cable to its eventual destination: the "patch box" located next to Building 109.

The Fixers

Now into the picture comes the Electrical & Electronic Installation Group from SLAC's Experimental Facilities Dept. (EFD). This is the bunch that installed what is known as the "Cable Plant" in the research yard, and that keeps busy in maintaining, rearranging and cleaning it up. And they've become pretty well used to handling emergencies, too.

To begin with, 3000 feet of 500 MCM cable was borrowed from SLAC Stores. (It's coming back ASAP, John.) This particular kind of cable is *big*. It weighs 2 pounds per foot, costs \$2.50 per foot, and can carry about 500 amperes. So with a big snake like that to contend with, on February 12 a small army of cable-pullers was assembled to take on the job. First the reels of cable were moved up to the hilltop on the south side of End Station B. Then four separate 750-foot lengths of cable were unreeled, one at a time, carried across the roof of End Station B, lowered down the north wall of the end station to the shielding

blocks atop Beam Line 19, routed along that beam line and then along the wall of Bldg. 109, and finally connected into the D.C. Tie-Line at the "patch box" near that building. And all this manhandling, remember, had to be done four separate times.

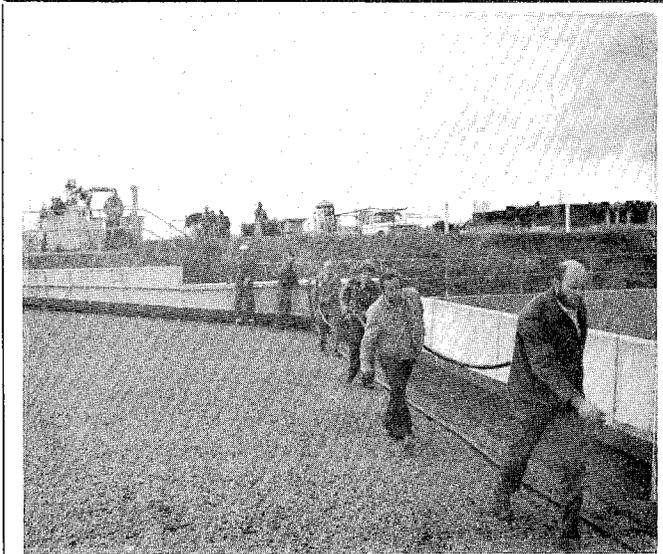


Photo by Dick Muffley

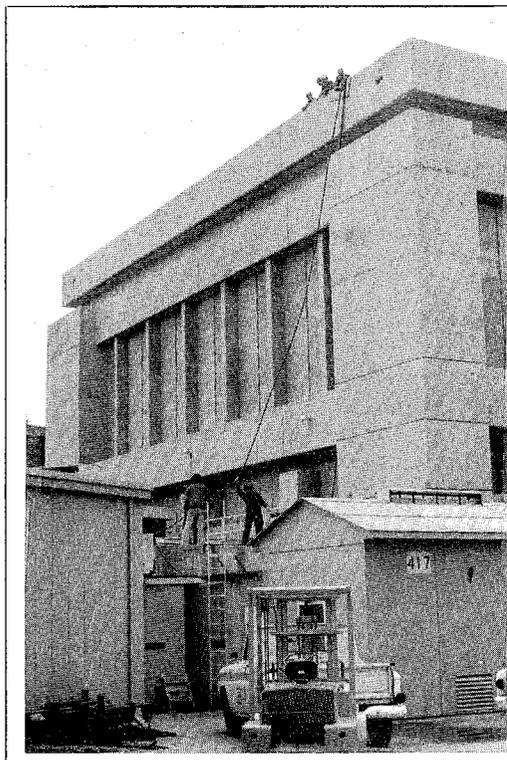
This is the head-end of cable #3 as it was being pulled across the roof of End Station B. From front to back the people are Jim Ewing, Tony Barrera, Gary Heath, Eric Sorensen, Ed Stephenson and Walter Cross. In the background Howard Flynn is stationed at the cable reel, controlling the pay-out speed.

Operating E-114 On A Shoestring

Throughout the cable-pulling day, February 12, the skies were overcast and gloomy, but mercifully the rains didn't hit until after the job was done. The 3.4 megawatt power supply was connected through the Tie-Line and temporary cables to the A dump magnets, and at 4:30 PM on February 13 (some 48 hours after the shut-down) the shoestring system was fired up and worked like a charm. To assure safe operation of this temporary lash-up, the interlock system had already been modified by Emmett Carmena and Gary Snowberger. The E-114 experimenters (from the University of Wisconsin and from SLAC's Group F and the Spectrometer Facilities Group) were as pleased as punch with the whole affair. They switched back immediately from electroproduction to photoproduction and continued their search for psi particles. And just to cap off a happy story, the search turned out to be very successful: psi's were indeed photoproduced, and the E-114 measurements of this process will be an important contribution to the growing science of psi-chology.

Repairing The Transformer

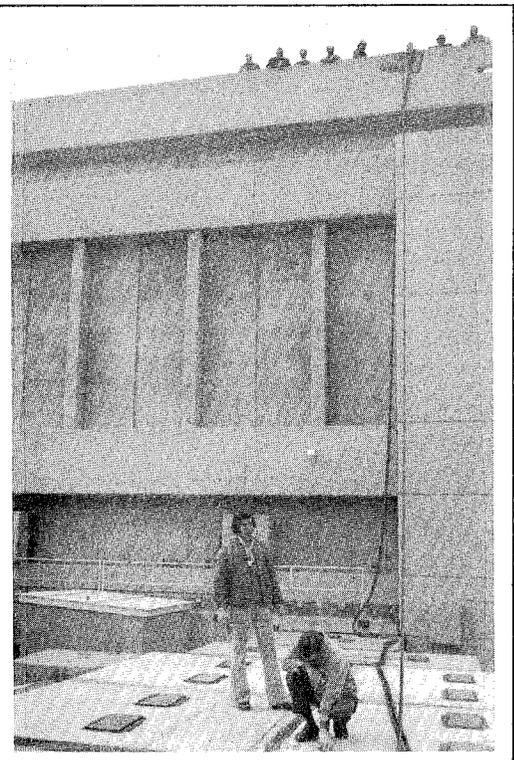
Meanwhile, back at the Heavy Assembly Bldg., the defective transformer from the beam-dump power supply in MCC was carefully taken apart to find out specifically what ailed it. The answer, it turned out, was that the transformer's water-cooled conductor had arced over, thus puncturing the conductor and causing the water leak. After the leak in the conductor was repaired, the core of the transformer was



*Photo by
C. A.
Harris*

In these photos the cable is being fed down from the roof of End Station B to the concrete shielding blocks which cover Beam Line 19 in the research yard. One the right, Riggers Joe Trevino & Ernie Stevens are shown checking the cable route along Beam Line 19 toward Bldg. 109, where the cables are to be connected to the D.C. Tie-Line. Four of these big cables had to be run in order to provide enough current-carrying capacity to power the dump magnets.

*Photo by
Dick
Muffley*



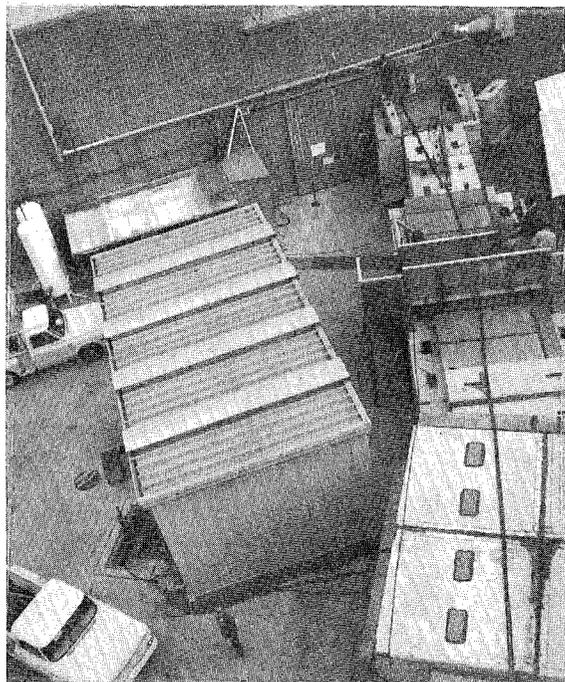


Photo by Dick Muffley

The emergency cable can be seen running along the top of Beam Line 19 and then making a left turn and continuing along the wall of Building 109 in the research yard.



--Photo by Ken Johnson

This photograph shows four of the key SLAC people who were responsible for carrying out the long cable pull that got Experiment E-114 back on the air with its study of the photo-production of the new psi particles. From the left are electrician leadman Ed Loens, and crew leaders Ed Stephenson, Bill Smith and Mel Sylvia. Loens gathered up the necessary materials, and crews headed by each of these four men formed the nucleus of the personnel who actually did the work.

rewrapped with insulation and then re-installed in the transformer yoke. By February 24 the rebuilt transformer was ready to go back into the power supply, and on February 25 the original system for powering the beam-dump magnets was back in full and successful operation.

Well done, cable-pullers and transformer

fixers, and everyone else who had a hand (or a strong back) in getting the work done. Next time we have to switch an electrical load over to a new power supply let's hope that about 10 feet of AWG #16 two-conductor lamp cord will do the trick.

Herb Weidner & Ken Johnson

THE DINOSAUR

Behold the mighty dinosaur
 Famous in prehistoric lore,
 Not only for his weight and length
 But for his intellectual strength.
 You will observe by these remains
 The creature had two sets of brains--
 One in his head (the usual place),
 The other at his spinal base.
 Thus he could reason a priori
 As well as a posteriori.
 No problem bothered him a bit
 He made both head and tail of it.

So wise was he, so wise and solemn,
 Each thought filled just a spinal column.

If one brain found the pressure strong
 It passed a few ideas along.
 If something slipped his forward mind
 'Twas rescued by the one behind.
 And if in error he was caught
 He had a saving afterthought.
 As he thought twice before he spoke
 He had no judgment to revoke.
 Thus he could think without congestion
 Upon both sides of every question.
 Oh, gaze upon this model beast
 Defunct ten million years at least.

--Bert Liston Taylor

(From *A Random Walk In Science*, edited by R.L. Weber, Crane Russak & Co., New York.

EDUCATION TREND AHEAD FOR NURSES

By Suzanne McGovern
[San Jose Mercury, Jan. 15, 1975]

To Improve Standards

PALO ALTO -- Nurse Joan Gardner foresees a time when nurses, like educators, will be required to seek continuing education in order to fulfill state and national licensing requirements.

Mrs. Gardner, who has been elected to chair the convention of the American Assn. Of Industrial Nurses (AAIN) in San Francisco this spring, says her group is most concerned with professional standards.

The convention, which will attract 8000 nurses from across the country, will focus on continuing education, according to Mrs. Gardner. It will offer approximately 14 educational seminars in a three-day period--all pertaining to new techniques and new trends in the profession.

She is an industrial or "occupational health" nurse employed by the Palo Alto Medical Clinic and assigned to Stanford Linear Accelerator Center (SLAC). She runs a fully equipped medical clinic, and looks after the health needs of approximately 1000 employees.

She claims that most of her work lies in the area of "preventive medicine." But during her interview, she administered treatment or advice to a half-dozen employees suffering from a variety of sprains, cuts and bruises.

According to Mrs. Gardner, occupational health programs vary from company to company, but at SLAC, it's a vital entity.

"We see about 85% of the employees each year," she said. "We administer everything from complete physicals to flu shots, first aid, and even cold remedies."

The key to the success of the clinic, according to Mrs. Gardner, is "accessibility." The clinic is open on an informal walk-in basis. Employees may see a doctor or nurse without having to take off a long time from their jobs.

Because a doctor is on the premises at least half a day, the department may administer prescription drugs and injections. "We also carry out orders (for patients) from private physicians," she said.

The medical department responds to all emergency situations at SLAC. It provides other services, such as immunization for foreign travel. And it even writes a column for the company newspaper, "Beam Line."

She sees the move toward continuing education as the coming trend in nursing. "We [AAIN] have been stressing it for years," she said.



--Photo by Joe Faust

SLAC Nurse Joan Gardner is shown holding a "strep plate," a gadget that is used to find out whether your sore throat is being caused by a streptococcal infection. These plates are now processed locally by the SLAC Medical Department, which reduces the time required for diagnosis to 24-to-48 hours. The device hanging on the wall, for measuring blood pressure, is a sphygmomanometer, in case you really wanted to know.

"Now it is being required more and more by state licensing agencies."

"I think it will soon become mandatory statewide."

She said that her convention will discuss new trends in management of occupational health programs. The group will meet concurrently with its counterpart, the American Occupational Medical Assn., the national association for industrial doctors.

ADVISE AND CONSENT

. . . At one point today, Mr. Allen had the Senate in such a parliamentary tangle that a vote was taken on the following:

A motion to table a motion to reconsider a vote to table an appeal of a ruling that a point of order was not in order against a motion to table another point of order against a motion to bring to a vote the motion to call up the resolution that would institute the rules change.

--New York Times, Feb. 25, 1975

We vote "Ayyyyyyyyyeeeeee!"

Adventures In Geneva, Part II: Chairs, Rabbits & Cats

While we were living in Geneva, Switzerland, we bought a great big round chair. You may have seen these things--a big white plastic chair, all red on the inside, very dramatic, made in Finland. Anyhow, we bought this chair and had it delivered to our apartment. We lived on the 17th floor of this apartment building, which was serviced by an elevator that only went up to the 16th floor. When the chair arrived, they couldn't get it into the elevator, so these two big burly guys (I think there were three of them, actually) grabbed the chair and walked up 17 flights of stairs with it. Now this chair is *heavy*, but they managed to get it all the way to the top, outside our front door, and they rang the bell.

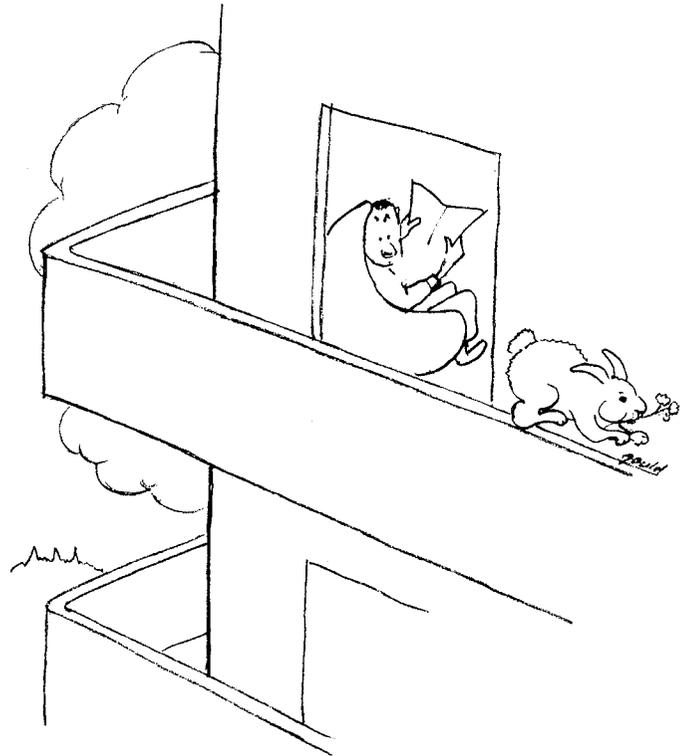
Voila, here's the chair! Good! It goes through the front door into the hall, no problem. But when they try to take it from the hall into the living room, lo and behold it won't go through that door, and it also won't go through the door into the kitchen. In fact, it won't go through *any* door except the front door into the hall.

Well, you know how movers are. They figure that all they have to do to get it through the door is turn it in a certain direction. But what they don't realize is that this chair is pretty much of a sphere, and no matter which way you turn it, it still measures about the same width. It's not exactly a complete sphere because one part of the surface is cut away to make the hole where you sit inside. And the result, the way it's cut, is that you still have about 2/3 of a sphere left.

So each of the three movers would give it a try, while I tried to explain to them (in my bum French) that it wouldn't work that way because it's almost a sphere, and you can see that you're wasting your time. But still they kept trying it, this way and that, without getting it through, until finally they gave up and said that they would send out their boss.

Well, for the next three days this stupid chair just sat out in the hall and nobody came. Finally I called the company, Oh yeah, they said, they'd send out their specialist. So out comes another great big burly guy, the specialist, and he goes through the same gyrations as the other guys, while all the time I keep trying to explain to him (again in lousy French) that it won't work and that he'll have to take the chair out and bring it back up some other way.

Eventually it got to the point where I had to call in another moving company, and they started the job by carrying the chair down the 17 floors to street level. Then they lowered ropes down from our balcony all the way to the



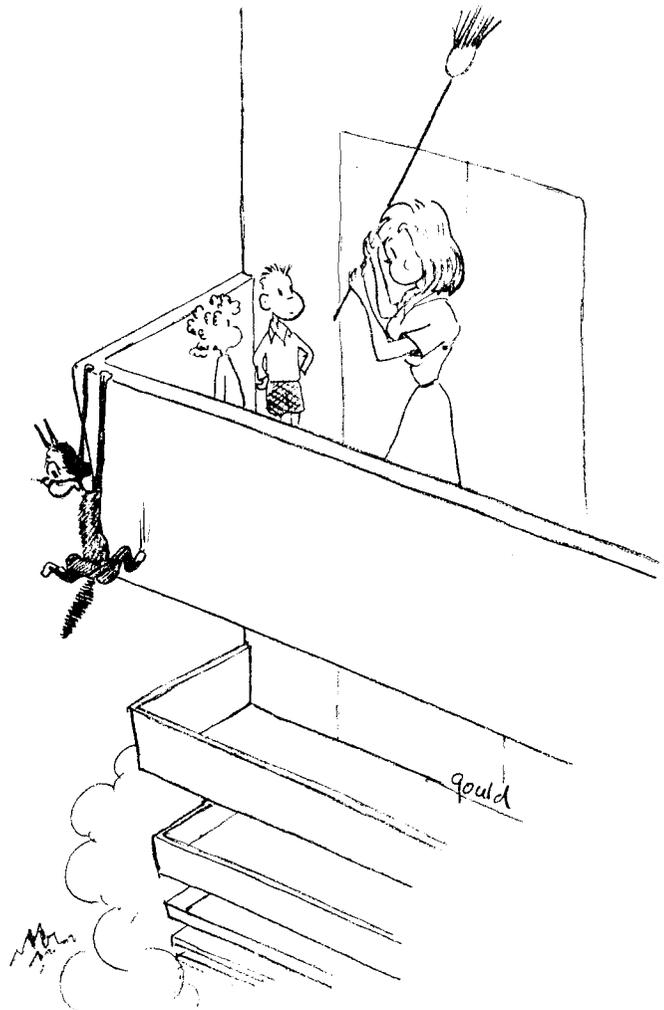
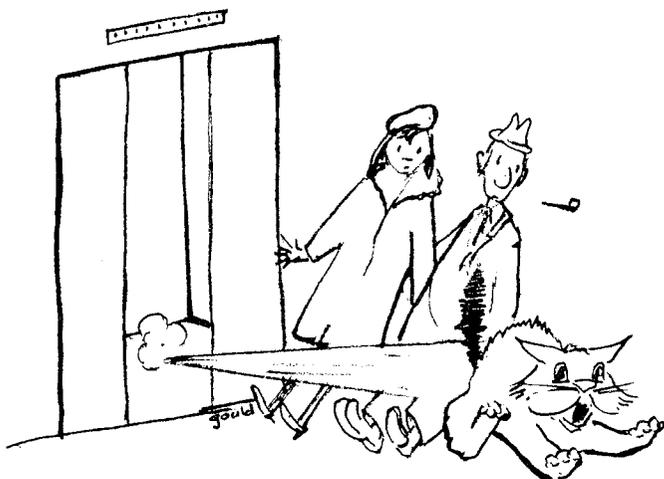
street and tied them to the chair. Then they hauled the chair up and brought it into the living room through the balcony door. *Voila*, here's the chair, finally.

During the three years we lived in that apartment we also had a sofa brought up the same way, and when we finally moved out of course we had to go through the inverse process to get the chair and the sofa out of the place. It was pretty hair-raising to watch the way they did it. If you can imagine 6 or 7 movers, half of them Spanish and the other half Italian, arguing with each other about how to tie the ropes onto the chair and sofa, and finally winding up with what looked like a couple of shoestrings--I wouldn't have walked under that rig to save my soul. I was so damn sure that it was going to fall that I just stood there and cringed during the whole 17-floor trip down to the sidewalk. But it was just an example of how things had to be done. Even when the chair and sofa were first brought up to the apartment with the ropes, we had to sit down and have a cognac with the mover and assure him of the magnificent job he was doing--even though all the while I was just waiting for the load to let go and be smashed to bits on the concrete below.

(Continued on page 11)

On Sunday morning, while we were still living on the 17th floor of Concrete City (10,000 people lived in this apartment complex, and it was just a maze of concrete), I was reading the Sunday paper, and I had just made some comment or other to my wife, Judy, about the radishes we had planted. The radishes were planted in boxes on the balcony of our apartment. We were growing them because we wanted our kids to see *something* growing in this concrete jungle. Anyhow, something was eating our radishes, and I had just commented to Judy that I couldn't imagine what kind of bug was eating them because the things would sprout up to a certain height and then all of a sudden one day the leaves would be gone. So about then I looked up from the paper and lo and behold there out on the balcony is a large white rabbit gnawing away on one of the radish plants! I rubbed my eyes to make sure that it wasn't some sort of *Alice In Wonderland* thing that was happening, but sure enough it was a real rabbit. So I walked out on the balcony and picked him up, and he turns out to be friendly as hell and really loves my radishes. I brought him back into the apartment for awhile for the kids to play with. They really loved him and thought he was a super rabbit.

Eventually we learned that one of our neighbors, who lived about four apartments over, had this rabbit who had learned to walk along the balcony railings and bounce down wherever there were plants on the balconies and eat the damn things. Everybody knew him, and he went everywhere and ate everyone's plants. That wasn't too bad an arrangement, but apparently some cats caught on to the idea, too, only they were more interested in the planter boxes than in the radishes that were growing in them. So we also ended up with visiting cats on our balcony, too.



I used to grab the cats when they came and put them in the elevator and send them down to the first floor, so when someone opened the elevator doors down there, somebody's cat would come flying out. Judy had a different technique with the cats, which worked for awhile: she simply shooed them away. That was fine until one day when the cat she was shooing took a flying leap up onto the balcony railing but missed. Now a miss at 17 stories is a serious business, but fortunately for the cat his toenails hadn't been cut, and with a frantic last effort he managed to hook onto the steel railing and was left dangling 17 stories above the street. The sound of the cat's nails scraping steel--together with the fact that the children, who observed the whole scene, immediately began accusing their mother of murder (catricide?)--was enough to make Judy switch over to the elevator policy right then and there.

--Bob Bell

EXTRA BEAM LINE COPIES?

This is both a request and an offer. The request is this: if you have any extra copies of the *Beam Line* lying around, please send them back to either Herb Weidner, Bin 20, or Bill Kirk, Bin 80. Our supply of certain issues is very thin, so we'd appreciate getting any unwanted copies back.

On the other hand, we've recently been printing several hundred extra copies of the special "pull-out" sections that some *Beam Line* issues have contained during the past few months. Specifically, we'd be happy to supply copies of the following articles to anyone who may want to have them:

1. "An introduction to colliding beam storage rings," Parts I and II together from the August and September 1974 issues, 8 pages.
2. "We have observed a very sharp peak," the Dec. 5, 1974 special issue on the discovery of the new psi particles, 12 pages.
3. "More on psi," from the January 1975 issue, 8 pages.
4. "SSRP: The Stanford Synchrotron Radiation Project," from the January 1975 issue, 12 pages.
5. "The State of SLAC," the Director's all-hands talk from the February 1975 issue, 10 pages.

WANT ADS

For sale: Bicycle baby seat, black, new in box. \$6.50. Tom McPharlin, ext. 2198 or 2447.

**LOS ALTOS ART CLUB DISPLAYS
IN SLAC CAFETERIA**

Now you can enrich your soul as well as your body while lunching in the SLAC Cafeteria, for we have a complete new art show filling the boards. The Los Altos Art Club is our benefactor, and each month a new artist will be featured.

During February our artist was Mrs. Jeane Kluga, whose paintings reflected her love of the sea and the mountains, and of our California heritage.

During March our guest artist is Ms. Dee McLaughlin, who has painted professionally since 1950. A long time resident of Santa Clara, Ms. McLaughlin teaches painting and also serves as an art therapist at El Camino Hospital.

A list of the paintings on display each month, along with descriptions and prices, will be posted in the Cafeteria for those who may be interested in a possible purchase.

--Harry Changnon

SLAC Beam Line (Bin 80)
Stanford Linear Accelerator Center
Stanford University
P.O.Box 4349
Stanford, California 94305

Published monthly on about the 10th day of the month. The deadline for material to appear in the next issue is the 1st day of the month.

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About why the Nile behaves precisely as it does I could get no information from the priests or anyone else. What I particularly wished to know was why the water begins to rise at the summer solstice, continues to do so for a hundred days, and then falls again at the end of that period. . . . Certain Greeks, hoping to advertise how clever they are, have tried to account for the flooding of the Nile in three different ways. Two of the explanations are not worth dwelling upon. . . . The third theory is much the more plausible, but at the same time furthest from the truth: according to this, the water of the Nile comes from melting snow--but as it flows from Libya through Ethiopia into Egypt, that is, from a very hot into a cooler climate, how could it possibly originate in snow? Obviously, this view is as worthless as the other two.

--Herodotus, *The Histories*

Charmonium?

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EQUAL OPPORTUNITY

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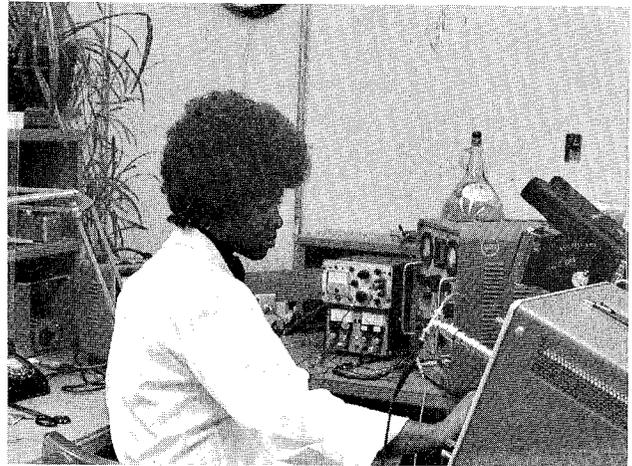
Editor's Note

1. SLAC's Affirmative Action Officer
2. Affirmative Action Coordinators
3. Minority and Women's Committee
4. Special Task Force On Women
5. Training Programs
6. Summer Programs

Editor's Note: Most of the information in this article was pulled together by Bob Gex, SLAC's Head Librarian. His contribution starts with Section 1, "SLAC's Affirmative Action Officer," which is on the next page. In this prefacing note I would like to give some opinions about the subject of this article.

Since the *Beam Line* has not had much material on Equal Opportunity matters in recent issues, our main intent in this article is to give a brief review of the various activities at SLAC that have something to do with Equal Opportunity or Affirmative Action. This is probably a useful thing to do, but for future *Beam Line* issues we'd like to see a somewhat different approach. Instead of having us write something about EO and AA, it would probably mean a lot more if the writing were done by some of the people--minorities and women--who really see the problems. So we'd welcome any input of this kind. It could be something that was written (it doesn't have to be very fancy), or it could be an interview with some *Beam Line* type or with someone else you know at SLAC. Almost any way to get the message across would be OK.

The various activities that this article will describe have a simple purpose: *equal opportunity* for everyone at SLAC in regard to jobs, to wages and salaries, to promotions, and to training programs and other learning situations. But to say the words "equal opportunity" doesn't just make it happen. Suppose that a job opportunity became available--in the PEP group, for example--for an "orbit theorist." It's not very likely that many minorities or women would apply for a position like that. Of course, there would be an explanation for the lack of minority or women applicants: "Very few qualified candidates." But the explanation wouldn't help very much in solving the problem. For the job of "orbit theorist," and for many,



--Photo by Ted Jenkins

Carolyn Burton was one of the first female students in the Skills Training Program (STP) at SLAC. She had worked previously in the SLAC Library, and she is now learning her skills in Ray Larsen's Electronics Instrumentation Group.

many others, the idea of *equal opportunity* will continue to be a sort of bad joke until something gets done about it.

But what? Well, it could be making a special effort to find qualified candidates through contacts with other colleges, or through local professional organizations. Or it could also be trying to solve the problem for the next job by setting up a training program, or by working toward better science courses at Ravenswood High School. Some of the problems can't be solved right now, but right now is a good time to begin solving some of the problems.

Most people realize that the words *equal opportunity* and *affirmative action* do not mean exactly the same thing, even though they are sometimes used that way. And there are probably some people who feel at least a little resentful about the effort that goes into affirmative action activities. We don't know of any easy answers to that. The problem will only go away when the opportunity for all persons has truly become equal--that is, when opportunity does not depend upon race or color or sex or any other superficial things, but only upon the "e-quality" of the individual person. But that day is not now.

Enough opinions. On to the facts.

--BK

1. SLAC's Affirmative Action Officer

Jim Ketcher is SLAC's Affirmative Action Officer (AAO). The responsibilities and duties of the AAO could be described in a few rather windy paragraphs, but it's more to the point simply to list the things that Jim does:

- (1) Reviews all personnel transactions, including hiring, transfer or termination, for possible indications of discrimination or of unequal application of policies and rules. (The new application form helps make this review more effective.)
- (2) Monitors all changes in personnel policy to see that they do not adversely affect affirmative action goals. Advocates policy changes that would advance affirmative action (AA) goals.
- (3) Attends weekly meetings of SLAC Directors ("Checkoff meetings") to advise on AA matters and to advocate AA programs.
- (4) Maintains contact with SLAC minority groups and individuals. Sometimes serves as spokesman for minority-group interests.
- (5) Oversees application of AA policy changes until they become routinely handled by Group Leaders or Department Heads. (JK: "Forever.")
- (6) Monitors training programs through contact with Training Coordinator, students, and program graduates.
- (7) Serves as Chairman of Affirmative Action Coordinator's Committee, and as advisor to the Minority and Womens' Committee.
- (8) Serves as member of AA committees at Stanford University and at AEC (now ERDA).
- (9) Serves as member of several informal AA interest groups.

2. Affirmative Action Coordinators

This new group was formed recently to advise and assist in AA matters throughout the Laboratory. The members of the group (see list below) are appointed by the four Associate Directors of SLAC. Each member is responsible for monitoring and reporting on the status of AA activity within the section of SLAC that he or she represents. Jim Ketcher acts as the Chairman of this group. Information that is fed back by the members at group meetings is used in arriving at recommendations for improving the AA program.

Affirmative Action Coordinators

Louise Addis	Robert Rowe
Dick Callin	Harry Soderstrom
Chris Ferrari	Ken Stewart
Mary Ann Fisherkeller	Alex Tseng
Charles Kruse	Vic Waithman
Al Lisin	Herb Weidner

Energy Research & Development Administration
ANNOUNCEMENT

No: 11
Date: February 4, 1975

To: All employees

Subject: EQUAL OPPORTUNITY POLICIES
ENERGY RESEARCH & DEVELOPMENT ADMINISTRATION

The Energy Research & Development Administration is fully committed to national policies requiring affirmative action to assure that minorities and women have equal opportunity with respect to all jobs at all levels. I am personally committed to these policies because they serve our national interests and our Administration's objectives.

Equal opportunity is an important managerial responsibility worthy of the same attention as that given to other Administration goals.

Equal opportunity programs and policies must be fully supported by all establishments within the jurisdiction of this Administration, including contractor establishments. All ERDA management officials must take appropriate steps to establish and attain these objectives. Toward this end, training and educational opportunities must be provided to develop all persons' natural gifts and talents to the fullest possible extent.

However, it is not enough merely to establish training and educational opportunities. These opportunities must meet both ERDA and individual employee needs. All management officials are responsible for assuring that employees who have been given such opportunities for self-development, and who have successfully completed them, are also allowed to exercise the skills acquired through these programs by assignment to more challenging and responsible jobs.

The equal opportunity programs of the elements that have come into ERDA reflect overall progress both in Federal employment and contractor personnel. However, much more needs to be done, particularly in the engineering, technical and managerial levels. This will require aggressive recruiting and developmental activities by all concerned.

Our goal is to treat all persons equally and fairly, without regard to race or sex, and to assure that in performing the challenging and exciting tasks that lie ahead in ERDA we fully use all available talents.

Robert C. Seamans, Jr.
Administrator

3. Minority And Women's Committee

<u>MWC Membership</u>			
Sal Alvarado	2818	J. J. Lipari	2272
Marco Buenrostro	2371	Mario Smalls	2784
Gloria Cardenas	2441	Ken Stewart	2739
Bill Dawkins	2681	Lucy Wilson	2681
Hobie DeStaebler	2416	Katreina Youmans	2674
Martha Zipf	2877	<i>(two vacancies)</i>	

The MWC, appointed by the Director of SLAC, gives minority and women employees an opportunity to bring up any job-related problems which they feel result, directly or indirectly, from their minority or women status. The MWC also assists the Director by carrying out assignments that provide information about the relationships between minorities and non-minorities, and by suggesting ways to improve these relationships. Any employee who feels hesitant about approaching the Committee as a whole may contact members on an individual basis. The Committee members and their telephone numbers are listed below:

4. Special Task Force On Women

This special task force was appointed by the Director of SLAC for the specific purpose of carrying out a thorough comparison of job classifications vs. work assignments for all exempt women at SLAC. The task force consisted of the following persons:

- Marie LaBelle (Ch.)
- Dorothy Ellison
- Glena Stewart

The task force submitted its report to the Director last December. As a result of their study, the task force recommended that the Personnel Office be asked to undertake a review of the job classifications of 19 women whose work appeared to be underclassified. The other recommendations included changes in the job classification system that were designed to make it function more effectively with regard to the categorization of women's jobs. This task force has now completed its work and has disbanded. This method of examining problems in the Laboratory has proved very successful, and similar task forces may be formed in the future.

SKILLS TRAINING PEOPLE



--Photo by Ted Jenkins

This is Bob Nicholson, who is now training as a Data Aide. Bob suffered a back injury while working as a Rigger at SLAC, and for that reason he is now seeking to develop a new skill in the data-analysis field.



--Photo by Ted Jenkins

Fred Hooker, on the left, was one of the first students in the Skills Training Program. He worked closely with Ron Koontz, and graduated from the program in December 1971. Fred is shown instructing Ronnie Myles, who is a student at Ravenswood High School and also a part-time SLAC employee.

5. Training Programs

SLAC's training programs have been effective in upgrading the skills of a number of minorities and women. The Coordinator of the training programs is Ted Jenkins of SLAC's Health Physics Group. The following training programs are now in operation:

(1) Skills Training Program. This is a 3½ year program that trains unskilled people for technician-level jobs. There are presently five persons in this program. Some of the past and present participants in the Skills Training Program (STP) are shown in several of the photographs in this article.

(2) Co-op Program. This is a 2-year program that is conducted cooperatively with both Foothill and DeAnza Colleges. The program leads to an AA Degree, and it trains people for technician-level jobs. There are presently four persons in this program.

(3) Vocational Skills Program. This is a 4-year program that trains people in a specific technical skill--for example, as a Journeyman Machinist. There are presently four Apprentices in this program.

6. Summer Programs

As in previous years, SLAC expects to have a number of high school and college students working here this summer. Most of these stu-

dents will be participants in one or the other of the following programs:

(1) Summer Science Program. This is a program that combines employment with supervised classroom instruction and with directed research activities. Its aim is to encourage college students from disadvantaged backgrounds to explore the possibility of careers in science. It is financed jointly by SLAC and by the Association of Western Universities. Participants come from many parts of the United States. They may live in dorms on the Stanford campus, and they receive a stipend of \$100 per week. Last year there were 31 students in this program.

(2) Youth Opportunity Program. The Youth Opportunity Program (YOP) is intended to provide summer employment and work experience at a scientific laboratory for disadvantaged young people between the ages of 16 and 22. No training other than basic safety training is given. Participants are paid at a rate that is determined by their level of education. Last year there were 42 YOP students at SLAC, and their pay scales started above the Federal minimum of \$2.10 per hour.

If you know of anyone who would be interested in either the Summer Science Program or the Youth Opportunity Program, please encourage him or her to apply at the SLAC Personnel Office.

--Bob Gex

MORE SKILLS TRAINING PEOPLE



--Photo by Ted Jenkins

Ray Ortiz and Pauletta Fountila are shown discussing an electronics project. Ray graduated from the Skills Training Program in 1974, and he now spends part of his time acting as an Instructor in the Program. Pauletta came into the STP from the Purchasing Office at SLAC. She is scheduled to graduate from the STP in 1976.



--Photo by Ted Jenkins

This photo shows Ann Graham, left, and Corrine Jose, both of whom have taken the Winter Quarter off from their studies at Foothill College to work full-time in the Electronics Assembly Shop at SLAC. Ann and Corrine will return to Foothill next quarter, but both plan to come back to SLAC during the summer.