



SLAC NEWS

VOL. 1 NO. 1

STANFORD LINEAR ACCELERATOR CENTER

FEBRUARY 26, 1970

FRENCH PRESIDENT TO VISIT SLAC FRIDAY

Pompidou & Party Arrive At Ten

Georges Pompidou, President of the French Republic, will visit SLAC on Friday morning, February 27, arriving at approximately 10:00 a.m. Weather permitting, the President and his official party will come from San Francisco to SLAC by helicopter, landing on the lawn behind the A & E Building.

The President will be met by Stanford's Vice-President and Provost Richard Lyman, acting for President Kenneth S. Pitzer who is attending a conference in Buenos Aires, Argentina, and by W. Palmer Fuller, III President of Stanford's Board of Trustees, and Professor Panofsky. Others in the SLAC greeting party will include Congressman Pete McCloskey of San Mateo County, A.E.C. Commissioner Theos Thompson, Professor Victor Weisskopf of MIT and former head of CERN in Geneva, Switzerland, Professor Sydney Drell, SLAC's Deputy Director, and Dr. Greg Loew, Head of the Accelerator Physics Department who has been in charge of the logistics for the visit.

After the brief welcoming ceremony, the President and his party will be taken on a 45-minute tour of the facility. This will be followed by an informal briefing of the President by Professors Weisskopf and Panofsky and by Provost Lyman. Dr. Weisskopf is expected to discuss trends in high energy physics and the proposed 300-BeV future CERN accelerator and other European national accelerators. Dr. Panofsky will discuss the funding of research in Europe and the U.S., and Provost Lyman will describe Stanford University as a private institution, the decision making process in the University, and the interaction between University Administration, the Board of Trustees, Faculty and students.

Others in the official party travelling from Washington, D.C. and Cape Kennedy, Florida, where President Pompidou will have been visiting the day before his arrival in San Francisco, include French Foreign Minister Maurice Schumann, Charles Lucet, the French Ambassador to the United States, various

Logistics For Pompidou

For reasons of both personnel safety and for security during the time of President Pompidou's visit to SLAC, the area bounded by the Auditorium/Cafeteria, the A & E Building, the Central Laboratory, and the Test Lab will be roped off and closed to all foot traffic from approximately 9:45 to 11:30 a.m. on Friday the 27th. The rope barrier will also extend along the open end of the SLAC quadrangle toward the Sand Hill Road entrance.

Road blocks will also be in position across the perimeter road immediately to the west of the Auditorium parking lot and directly to the east of the Sand Hill Road entrance. These will go up at

Continued on page 4

counsellors, diplomatic advisers, protocol and press and information service personnel. Emil, "Buzz" Mossbacher, Jr., President Nixon's Chief of Protocol, will also be with the official French party arriving from the east and Andre Batault, Consul General of France from the San Francisco Consulate will join the party for the tour of SLAC. Although a number of the French delegation, including President Pompidou, are accompanied by their wives, the ladies will not be coming on the visit to SLAC but have elected, instead, to spend the morning resting in San Francisco.

Following the SLAC visit, the President and his party will return to San Francisco for a luncheon being given by the Commonwealth Club at the Fairmont Hotel where Pompidou is expected to deliver an address on the problems of youth. Following an afternoon of sight-seeing in San Francisco, President and Madame Pompidou will hold a reception at the Palace of the Legion of Honor near San Francisco's Presidio. The Stanford and SLAC officials and other U.S. members of the SLAC greeting party and tour arrangement group have been invited to the reception.

Prior to his arrival in San Francisco, President Pompidou will have spent two and a half days in Washington, D.C., conferring with President Nixon, various members of the Cabinet and Congressional leaders. Tuesday, he gave a luncheon speech at the National Press Club, and Wednesday, he addressed Congress. The President and Madame Pompidou gave a dinner in honor of President and Mrs. Nixon at the French Embassy Wednesday night. This morning, after visiting Arlington National Cemetery where he placed a wreath on the Tomb of the Unknown Soldier, President Pompidou conferred further with President Nixon at the White House prior to the farewell ceremony and his departure from Washington. This afternoon he will visit NASA installations at Cape Kennedy where he will take part in an exercise in weightlessness and a simulated Moon walk. He will arrive in San Francisco sometime this evening.

Saturday, the Presidential party leaves for Chicago where they will spend the day with the President meeting with city planners and architects. Sunday, the group will fly on to New York. On Monday, the President will visit the UN where Secretary General U Thant will give a luncheon in his honor. After a meeting with members of the Business Council for International Understanding and with TV networks on Tuesday morning, the Presidential party departs for Paris Tuesday afternoon.

Although President Pompidou is the first head of state to visit SLAC while in power, Theodore LeFevre, the former Prime Minister of Belgium also visited the project in the summer of 1967 while a special delegate to the UN. Also, Atomic Energy Commission heads from various nations, including Dr. Robert Hirsch of France and several from certain countries have visited SLAC in the past.



Georges Pompidou, President of the French Republic and Successor to Charles de Gaulle

SLAC & MIT Collaboration Studies Proton Structure

SLAC (Group A) and MIT scientists are now doing an experiment probing the internal structure of the proton and the neutron by taking the SLAC high-energy electron beam and causing it to interact with the neutrons and protons making up a liquid deuterium target. The target is located at the common pivot of the three End Station A spectrometers. The pattern made by the electrons provides a glimpse into the inner structure of these target particles.

The present experiment will be running through the March operating cycle and will be requiring 320 of the accelerator's 360 pulses of electrons per second at an intensity limited only by the accelerator's capability. The electron energies required vary from 4.5 to 20.5 billion electron volts (GeV). Dr. Richard Taylor of Group A is spokesman.

This experiment is a follow-up to a series of experiments done in mid-1968 and reported recently. These earlier experiments and their results, which were attainable only at SLAC because of the uniqueness of the high-energy electron beam and the precision associated with the spectrometers, excited the imagination of the physics community. The experiments indicate the possibility of point-like substructures existing

WITHIN the proton itself. It was found that when the colliding electron gave off an appreciable fraction of its energy to a target proton (the process called "inelastic scattering" by physicists), the probability of the rebound electron being deflected ("scattered") into angles at which the 20 and 8 GeV spectrometers were set diminished only very slowly as the momentum transferred from the electron to the proton during the interaction increased.

Physicists interpret this momentum-transfer variable physically as a measure of the sensitivity with which the interaction is being observed. The higher the momentum transfer, the more sensitive the probe. As probe sensitivity increases, the targets being probed should appear more and more diffuse — the proton should begin to appear more like cotton candy than like a hard, impenetrable sphere. But the lack of rapid scattering probability decrease indicates, in one model at least, that our cotton candy might be stuffed with impenetrable raisins. These point-like, non-diffuse objects are called partons. But this is not the only way to describe the data.

A less spectacular model is the

Continued on page 4

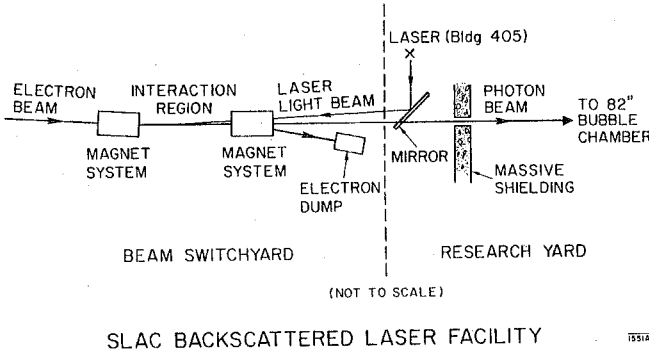
Back-Scattered Laser Beam Proves Effective

Recently, significant results of physics experiments made possible by the SLAC back-scattered laser beam facility have been reported. Examples of these were given by Gunther Wolf at the SLAC Particle Physics Seminar of February 9th.

The technique, known since 1963, has been brought to a highly usable state by

with 10^{11} electrons to yield a few thousand photons. The ruby laser can be flashed only every two seconds because of heating effects. The energy spread in the small, selected high energy photon beam is 2% and the beam is 95% polarized.

Because of the small output of the



the work of Joseph Murray, Charles Sinclair and others at SLAC. The degree of development was made possible, not only by much more powerful and precise lasers, but by the high energy, high intensity, and extremely good optical quality electron beam here.

For about seventy-five feet of path, the light from a ruby laser is run against the direction of the undeflected electrons emerging from the accelerator as shown in the accompanying schematic.

The production of a high energy light quantum beam occurs when the light interacts photoelectrically with the electrons. The red light from the laser has a quantum energy of less than two electron volts. As seen by the electron with its speed nearly that of light, however, the photon appears as a very much higher energy light "particle," because of the ordinary Doppler effect. Upon the rare occurrence of a collision, a light quantum of seven billion electron volts (GeV) is produced in the direction of the original electron beam from a 20 GeV electron. The low intensity of a few thousand photons per pulse is more than compensated for by the very small energy spread of the 7 GeV photons, and the very useful fact that they retain the polarization of the photon beam.

Here are a few numerical characteristics: In a laser pulse there is about a joule of energy consisting of 10^{18} low energy photons. These interact

with the bubble chamber is the detector of choice. More than seven hundred thousand pictures have been taken so far with the laser-induced photon beam. Emphasis so far has been on meson production processes, stressing vector mesons.

The use of a polarized photon beam permits more detailed knowledge of interaction and production processes. However, accurate analysis of polarization data would not have been possible without the small energy spread of the photons. Production of high energy photons by electrons striking material targets has produced extremely wide energy spreads. Almost without exception, this has required difference methods at several electron energies, losing much in the way of accuracy.

Thus far, this detailed information has allowed selection among proposed theories that were not previously subject to such a rigorous test. A few simple unifying results have been obtained by theoretical analysis. These are expressed in the heady terms of "S-channel helicity conservation," and "equal mixtures of natural and unnatural parity processes."

Improvements and other uses are evident. By focusing the laser light, beam profiles may be explored point by point in operating accelerators and storage rings. Frequency-doubling of ruby light in a nonlinear crystal will permit production of 10 instead of seven GeV photons.



Stanford Community Children's Center in Children's Convalescent Hospital.

Child Care Center Status

By Glenda Jones

Since June 1969 when SLAC employees first gathered to form the Child Care Committee, much has been accomplished towards establishing a Center for the children of the SLAC community. We met weekly during the summer, doing research and investigating the pros and cons and how-tos of child care centers. By joining forces with a group of parents from Escondido Village, in October we were able to start the Stanford Community Children's Center, located at the Children's Convalescent Home. The staff is made up of one hired teacher, parent volunteers and Stanford student volunteers earning work-study credit. Since the Center is organized and run by parents, they have worked as volunteer teachers, buyers of supplies, janitors, newsletter editor. They have hired teachers and have helped develop programs.

A brief description of the Center will give you some idea of the daily program. Children arrive between 8 and 9 a.m. The layout of the building has led to certain activities being done in different areas. There's a painting room with easels and paint supplies. There's a game room, a story telling and music room, the block and toy room, and of course, the doll and playhouse corner. All the kids love to dress up in parents' cast off clothes. There's one more room where they have craft activities and where the snacks are fixed. This is also where the crayfish and other animal life thrive.

The outdoor play area is large. One huge old oak tree is the guardian of a tire-on-a-rope swing. There are two other commercial type swing sets. A huge sandbox, barrels to crawl through, and a wooden crate house add to the outdoor fun. Hikes and nature trips are part of the outdoor activity, too.

At noon, the morning-only children are picked up by a parent. The all-day children eat their lunches, which they have brought from home. Milk is provided. There are cots for all the afternoon children. They sleep or rest until nap time is over. Then they play indoors or out. An afternoon snack is provided. Parents come anytime up to 5:30, and the day at the Children's Center is over.

This program is only a beginning. It hardly meets the child care needs of working women at Stanford. The site is temporary — the contract is up in June 1970. At most it holds only 27 children. There are campus-wide committees representing employees, students and faculty working on child care for the

entire Stanford community.

The SLAC Child Care Association has continued its work on getting a center here where we work. There's a big difference between "on-site" child care and leaving your kids miles from where you work. If your child needs you in a hurry, you are there. You can have lunch together if you want. You can be in touch with the teacher and the program and have some influence on it. You can be confident about the kind of care your child is getting and not need to worry about the unknown.

We are also concerned about how child care relates to equal employment opportunities for women. Low cost, on-site child care opens up job opportunities for women who could not look for work at places like SLAC. Instead they might be working night shifts in factories, taking low-paying housework jobs where they can take their children with them, or trying to exist on welfare. Equal employment opportunities for women won't be possible until the child care burdens are shared by everyone in society, not just the mothers.

The proposal we have prepared has now been distributed. Interested people at SLAC are encouraged to read and discuss it and make recommendations before we present it to SLAC directors. At a meeting of the directors, representatives of the Child Care Committee were told that a suitable site could be furnished for a SLAC child care center subject to the restrictions of the AEC lease and Stanford policy. The committee is urging the use of the breezeway between the auditorium and the cafeteria, at least until a building can be constructed.

If you're interested in helping the committee or knowing more about child care, contact any of the committee: Jim Berk (2272), Dick Bierce (2433), Ron Cochran (2749), Glenda Jones (2411) and Dave Soule (2433).

Vacation Home Swap Wanted

Phyllis Gardiner, Secretary to Experimental Group D, would like to have someone put her in touch with a family interested in exchanging vacation headquarters for three weeks this summer. She is particularly interested in the Vancouver, British Columbia area, in Colorado or Hawaii, but is open to suggestions. She has a three-bedroom, two-bath home, just off Route 280 in the Los Altos Hills, just 12 minutes from SLAC, to offer. Phyllis can be reached on extension 445.

WANT ADS

Want ads for the next issue of the News will be accepted up to March 18. Call 2204 for the necessary form on which to submit your ad.

Director Receives Award

Professor W.K.H. Panofsky was awarded the National Medal of Science by President Nixon with the announcement having been made at the first of the year. The presentation was made during a ceremony at the White House by President Nixon on February 16.

The National Medal of Science, first awarded in 1962, has been presented to 70 of the nation's top scientists since then. It is the Federal Government's highest recognition for outstanding achievement in the physical, biological, engineering and mathematical sciences.

For his fundamental contributions to meson physics, Panofsky was awarded the Ernest O. Lawrence Medal in 1961. But his contributions to fundamental research in physics have not kept him away from teaching.

His freshmen lectures have been received with enthusiasm by students, and this year he is teaching a special course, open to all students, on "Arms Control and Disarmament Negotiations between the U.S. and the USSR."

His background for the course came from four years' service on the President's Science Advisory Committee, and as a high technical leader in nuclear test ban discussions with the Soviet Union and within the U.S. Government.

Panofsky, who in addition to his many other educational and national duties has served since 1965 as consultant to the Office of Science and Technology of the Executive Office of the President of the United States, is 50, and a native of Berlin.

He did his undergraduate work at Princeton, and received his Ph.D. in 1942 from California Institute of Technology.

Bridge Club News

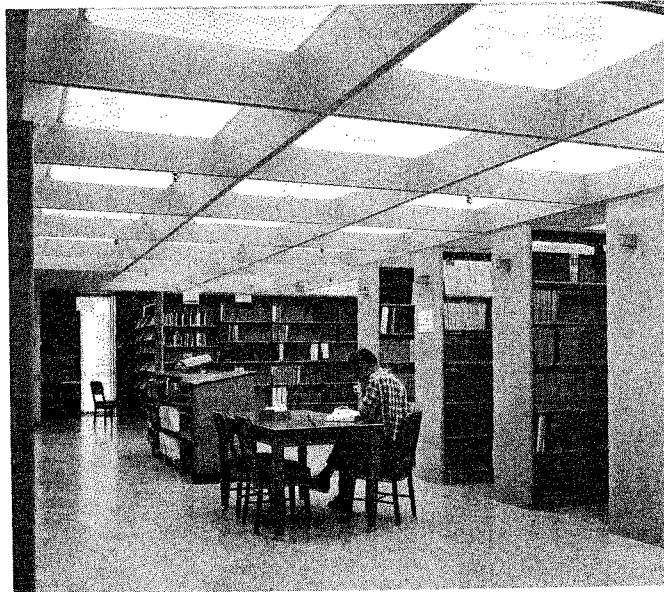
The SLAC Bridge Club, organized in July 1965, meets on the first Thursday evening of each month in the Orange Room of the Central Lab. It has about 50 active players and generally about seven tables are in play for an evening. Only one member of a partnership must be an employee or spouse of an employee of SLAC, Stanford, or the AEC. Everyone is welcome to play, and your name may be added to the mailing list by calling Louise Stanley at extension 2723. The table fees are 50 cents per player and go toward prize money for the evening. Cards and card tables are provided by the SLAC Recreation Fund.

The game is duplicate bridge, and generally a Howell Progression is used. This ensures a good mixing of pairs and the fairest comparison of scores. Joe Cobb is the Playing Director. The officers of the SLAC Club are Roger Gearhart, Treasurer, and Finn Halbo, Secretary. Others on the Board of Directors are Gordon Ratliff, Bill Brunk, Dick McCall, Glenn Hughes, and Joe Cobb.

Cash prizes are awarded for the top several players for each session. Among the recent winners — Carol Blumberg, Lee Hawkins, Al Gordon, Ted Jenkins, and their partners.

It is planned to award trophies to the outstanding players at the end of each year. The trophies will be earned by the highest cumulative score on the best 9 out of 12 plays during the year.

For an enjoyable evening, plan to reserve one evening a month for the SLAC Bridge Club.



The "Stacks" Area of New Main Library.

Main Library Relocates

SLAC's main library has finally made its long-planned move. For several years the library has operated as two separate units, the Main Library being located on the third floor of the Central Lab and the Technical Library situated in the A & E building. With the completion of the Central Lab Annex, the long hoped for plan on the part of the librarians has been finally realized. The library is now established at the back of the second

floor of the Annex. The former Tech Library has been incorporated into the Main Library and has an alcove to itself within the main room.

Thousands of books, manuals, reports and catalogs have been transferred to the new location and congratulations and thanks are certainly in order for all of the library staff for the job they are doing on shelving and cataloging everything into its new location. The opening date was Friday, the 13th of February. Librarians George Owens and Bob Gex (pronounced Jay) didn't seem to find that an inauspicious date despite the fact that two days before the scheduled opening many of the shelves were still bare.

The space formerly occupied by the library in the Central Lab proper will now be used to take care of the overflow of theoretical physicists, students, and guest users who have up until now been pressed for space so that they have been using a conference room in the building for offices.

Bowling News

The SLAC Bowling League, which bowls at 6 PM Wednesday evenings at Tresidder Union alleys on the campus, recently completed the first half of their scheduled games. The Mechanical Fabrication Shops team, the Sandbaggers, took first place at the half. Members were Ralph Wise, Herm Zais, George Cruickshank, Bill Daview-White and, as their lady bowler, Ann Starks from Personnel.

Now that the second half has begun, Donn Robbins and his Robbers are giving them heavy competition. Donn is President of the league this year. Interviewed regarding the league he provided the following interesting statistics.

The league was originated at SLAC in 1962 and it is a member of the American Bowling Congress. The league has some excellent bowlers and frequently supplies members for All-City Tournaments. Past Presidents include Bob Laughhead, Don Johnson, Tom McClellan, and so far the only lady President, Sally McCuddy.

John Kuhta of the AEC carries the highest men's average for this year (168) with John Mark and Ralph Wise as runners-up, each with 163. The ladies are represented by Geri Paradise with 147, Betty Maxwell, 144, and Barbara Karas, 142. A winners' plaque with the names of the winning team members for each year is currently on display in the entry to the Fabrication Building.

An awards dinner is planned, tentatively, for Wednesday, May 13th, where the presentation of awards will be made and new officers announced for the coming year. Donn added at this point that the present league has become so large and unwieldy that he hopes next year to see the league kept to ten teams of 4 bowlers each with one lady bowler to a team.

Choral Group Rehearses Show

The SLAC Choral Group has started rehearsals for their next show which will be presented during the latter part of May or early June. Rehearsals are held in the SLAC auditorium during the lunch hour on Tuesdays and Thursdays, and anyone interested is welcome.

The choral group has been in existence for several years. They have usually managed to give about three shows per year, one of which is the Christmas show. In October of 1968, they presented three performances of selections from "Showboat" and collected donations which went to a SLAC employee disabled in an accident. The group also presented this show at both the Palo Alto Veterans Administration Hospital and at Agnews State Hospital.

They are hoping that their new show, A Thing Called Love, will bring forth enough interested singers and instrumentalists so that they can make the performances a fund raising drive for SERA (SLAC Emergency Relief Association).

Go and enjoy yourself singing with the group — they have fun while they learn the songs.

SLAC News Off And Running

This first edition of the SLAC NEWS has been put together under rather harried circumstances because of the Public Information Office's involvement with the President Pompidou visit. The paper is off the ground, finally, however, and the second edition will be in print on or about March 26th.

Our printer asks that we have copy and photos to him for the second edition of the paper a week in advance. Therefore, the deadline for submission of articles, want ads or letters to the editor would be March 18th. Contributions of this sort are not only solicited but are considered vital. In essence, the paper will be no better than its readers help make it as there is insufficient staff in PIO for this office to generate full coverage of a type that would provide something of interest for all.

For this issue, we are particularly indebted to Ruth Paya, Secretary to the Mechanical Fabrications Shops, for her many articles on various project activities. We would also like to mention that Ruth won the PALO ALTO TIMES Christmas Short Story Contest and we hope to run that story in our next issue.

Weisskopf Discusses Basic Science

Professor Victor Weisskopf, professor of physics at MIT and former Director General of CERN at Geneva, Switzerland, is speaking tonight on the subject, "The Need For Basic Research." The talk, which is sponsored by Public Events, will be given in the Physics Tank on Campus at 8:00 p.m.

Dr. Weisskopf, who is widely recognized as one of America's leading atomic scientists, was born in Vienna, Austria, and received the degree of doctor of philosophy at the University of Göttingen, Germany. After serving as a research associate at the University of Copenhagen and at the Institute of Technology in Zurich, he came to the United States in 1937 to join the faculty of the University of Rochester, N.Y. He became a U.S. citizen in 1943.

A fellow of the American Physical Society, Dr. Weisskopf was its president during the 1960-61 term. He was Director General of the European Center of Nuclear Research (CERN) from 1961-1966, and on his return from Geneva he was nominated Institute Professor at MIT and was appointed Chairman of the Department of Physics in February of 1967.

Besides his many honorary degrees, Dr. Weisskopf is a member of the National Academy of Sciences, American Academy of Arts and Sciences and a corresponding member of many European science academies. He received the Planck Medal from the German Physical Society for theoretical physics in 1956. In addition to being on the board of editors of "Nuclear Physics," and "Annals of Physics," he is the author of numerous articles on nuclear physics, quantum theory and radiation theory.

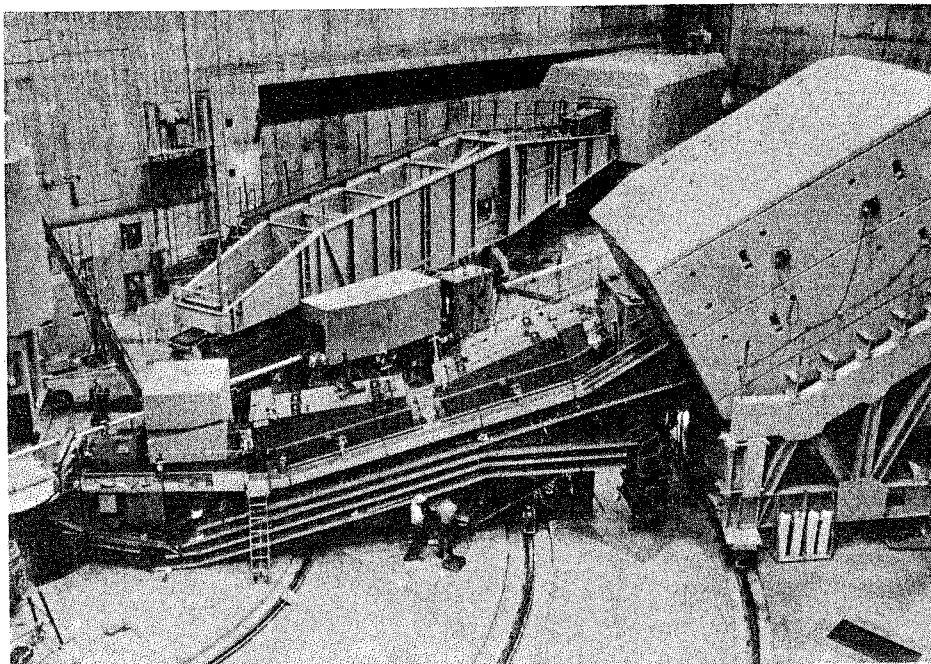
Logistics

Continued from page 1

approximately 9:30 a.m. and will be manned by an officer from either the San Mateo County Sheriff's Office or the Menlo Park Police Department and monitored by a SLAC representative who can clear authorized vehicles through. No spectator parking will be allowed on the site although visitors can park elsewhere and walk onto the site to view the arrival of the President from the Auditorium parking lot. This lot will have been closed off from morning parking.

As you have probably read in local area newspapers, the Jewish communities of the Peninsula are planning a peaceful protest at SLAC to coincide with the arrival of President Pompidou. The number of people who will be involved in this is not known but is estimated to be in excess of 200. They will be permitted to assemble in the Auditorium parking lot together with other spectators but will not be allowed beyond the road blocks or the rope barrier. Leaders of the groups have met with local police authorities and have assured them that the demonstration will be completely peaceful and that no sound equipment will be used.

It is hoped that a minimum of inconvenience will occur during the visit to SLAC personnel and Dr. Panofsky is requesting the cooperation of all in seeing that the visit of President Pompidou proceeds as smoothly as possible.



SLAC spectrometer facility located in End Station A. Counter-clockwise around their common pivot are the 8, 20, and 1.6 GeV spectrometers.

SLAC Personality - Gerry Fritzke

Many SLAC people have talents, hobbies or avocations in addition to their job abilities and it is felt it would be of interest to fellow workers to know something more about them. We hope to feature someone in each issue of the paper and this time Gerry Fritzke, Staff Metallurgist for SLAC has been chosen.

He has his office, lab and photographic dark room on the second floor of the Fabrication Building with the MFS Group and his work during the past year has included the following:

1. Investigation of electron-beam welding on columbium metallurgy.
2. Routine monitoring of corrosion of several alloys in magnet and cooling water systems.
3. Investigation of storage-ring fabrication problems.
4. Determining heat treating requirements for a constant temperature coefficient of resistivity shunt not available commercially.
5. Routine monitoring of OFHC copper.
6. Metallographic examination of radioactive target and protection device materials to determine reason for premature failure.
7. Investigation of suitability for use of several superconducting wire materials.
8. Preparation in calendar year 1969 of 25 detailed reports, with accompanying explanatory photos, on his examination of work of similar nature for various individuals and departments of SLAC.

Gerry has been Staff Metallurgist at SLAC since March of 1966 and has been responsible for the investigation and selection of materials needed for a wide range of environments (vacuum, radioactive, cryogenic, etc.). He also has a background in other materials, such as ceramics, liquid metals, and plastics, which he has investigated for possible use at SLAC.

During the year just past, Gerry presented a paper, "Joining Electronic Materials" at the Materials Engineering

Congress at Detroit. He also worked closely with HEPL (Stanford) personnel in metallurgically characterizing several types of fabricated columbium shapes intended for use in superconducting accelerator work. He also worked in this area at SLAC and tackled some of SLAC's plated technetium problems. He also assisted University personnel in solving some corrosion difficulties.

Gerry Fritzke's background qualifications list impressively. He is an active member of the American Society for Metals, American Welding Society, American Society for Testing and Materials, National Association of Corrosion Engineers, and the International Metallographic Society. He is also a member of V.I.T.A. (Volunteers for International Technical Assistance, Inc.) and has supplied technical assistance to them. He is a Registered Professional Engineer in the State of California.

In addition to all this, on his own "spare time" Gerry works on a number of projects in which he is personally interested. Evenings, he teaches Metallurgy and Metallurgical Laboratory Techniques at Laney College in Oakland, where he is also Chairman of the Metallurgy Advisory Board. He is also a docent in the Natural Science Division at the Oakland Museum and Gerry's interest in nature carries over to Sierra Club pack and field trips where he and his wife act as guides through Sierra Wilderness areas.

Gerry is also an excellent photographer. A photo on his wall of a cross-section of a piece of fractured metal may be next to telescopic photographs of areas of the moon which attempt to match published professional photographs of the same area. He also has many striking landscape and nature shots that he has taken on his many trips into the Sierra. There are no snaps of pretty girls in the lab but there is a pretty girl there. She is Jeannie Francis, Gerry's very capable Lab assistant and the wife of Derrel "Buck" Francis of Group E at SLAC.

SLAC & MIT Collaboration Studies

Continued from page 1

so-called diffraction model. In the diffraction model of inelastic electron-proton scattering, the interaction is effected by the exchange of very short-lived particles, called vector mesons, between the electron and proton. The vector mesons "rescatter" around the proton in the course of the interaction.

The present deuterium experiment is designed to help decide which model best fits the data. The parton model predicts a different result when the scattering is done from neutrons. This is because the neutron, being electrically uncharged, presumably has a different internal parton structure than does the proton, which carries a positive electrical charge.

The diffraction model, on the other hand, insists that electron-neutron

scattering should be the same as scattering from protons. The interaction is mediated by vector mesons which interact with protons by means of the same force responsible for the neutron-proton attractive force, the force responsible for stability WITHIN individual nuclei. This equal result would weaken, but not rule out, the parton model. But an unequal result would cast serious doubt upon the diffraction model. In the course of the experiment, scattering angles of 6 and 10 degrees will be viewed by the 20 GeV spectrometer. At each angle a series of measurements will be made at each of several different incident electron energies. Some 700 hours of data collection and beam set-up are require, as are from 500-750 hours of computer time for analysis.

When the results are published, probably early in 1971, they will be eagerly awaited by physicists and should greatly enhance our knowledge of the mysterious interior of the proton.

Non-Smokers Honor Roll Started

Following up on all the recent publicity regarding the dangers of smoking, Geneva Grayson of the Medical Department at SLAC has started an I.Q. (I Quit!) Honor Roll. It is a large scroll about 16 by 24 inches and is now hanging on the wall in the Medical Department. It lists the names of many of our SLAC people who have decided to heed the many warnings against smoking and have given it up.

The Honor Roll includes Med. Dept. personnel, including Dr. Robert Armbruster, but Geneva says she would like to see a lot more names added. If you'd like to join the "I.Q." group just drop into the Medical Office and ask them to add your name to the list. They now have 32 names — one of which shows an apologetic "I cheated!" Only "hard-core" non-smokers should add their names.

'Particle Physics' Reprints Available

In late August and early September of last year, Professor Panofsky together with Professor R.H. Dalitz, Department of Theoretical Physics, Oxford University Oxford, England, delivered a series of lectures on particle physics at the University of Sydney in Australia. The lecture series, which was sponsored by the Science Foundation for Physics within the University, was presented for the 12th International Science School for High School Students. Additional lectures in the series covered such topics as "Science and Society," "The Peaceful Uses of the Atom," and "Cosmic Radiation," and all were published in a book entitled "Nuclear Energy Today and Tomorrow."

Permission to reprint the Panofsky-Dalitz section of the book was granted to SLAC. Copies are available from the Public Information Office, extension 2904.