



SLAC NEWS

VOL. 1, NO. 2

STANFORD LINEAR ACCELERATOR CENTER

APRIL 3, 1970

POMPIDOU'S VISIT CONSIDERED SUCCESS

French President Georges Pompidou's visit to SLAC, despite a large, noisy-but-orderly crowd of pickets, and an unbelievable army of police, was considered a success by all those directly involved, including the President himself. Dr. Panofsky has received several letters from high-level French dignitaries thanking him and the SLAC staff for arranging the visit and for the way in which it was conducted. An example of these is the following letter from Charles Lucet, French Ambassador to Washington and also in the tour party:

"Dear Dr. Panofsky, You have been kind enough to organize a visit of the Stanford Linear Accelerator Center during the stay of the President of the French Republic on the West coast of the United States. As you probably realized during his visit, the President was extremely pleased with your presentation as well as the very interesting conversations he had with members of the SLAC and of Stanford University. This was in many respects a very successful and exciting event and I am sure that the President will remember it as one of the highlights of his trip in this country.

"I know how difficult it was for you to organize in detail such a complicated event and I would like to thank you very sincerely as well as your staff for all the trouble you have taken to make this visit useful and enjoyable, and for the valuable contribution you have made to the success of the whole journey. Sincerely yours, Charles Lucet".

The President's tour included a visit to the Central Control Room where he and his party were able to see the instrumentation of the machine in actual operation. From there, the group walked down the stairs to Sector 27 of the Klystron Gallery and to its adjoining Visitors' Alcove which contains a 40-foot section of accelerator and all associated hardware. This arrangement simulates the Accelerator Housing itself and it was here that the only unforeseen event of the tour took place. Someone upset a garbage can and the echoing clatter over the two mile stretch of the Gallery had the secret servicemen, official party and SLAC hosts slightly unhinged for a short moment.

From the Gallery, the party was driven to the Research Yard and End Station A where the magnetic spectrometers and the physics performed in that facility were explained to the President. The group then went to the Orange Room of the Central Lab where Pompidou was briefed by Professor Weisskopf of MIT on trends in high-energy physics. Commissioner Theos Thompson of the U.S. Atomic Energy Commission described how the A.E.C. conducts its research and development program and explained that, though the number of direct Commission employees is less than 7,000, the number of people working on A.E.C. programs at universities, major laboratories and in private industry is over 120,000. Provost and Vice-President Richard Lyman, acting for President Pitzer, then gave the group basic information on Stanford University and

the meeting continued with a general discussion and question and answer session. President Pompidou, himself a former educator, asked a number of penetrating questions concerning the University and SLAC's organization, financing, student fees and student unrest and seemed to enjoy particularly his several exchanges with Pat Shea, one of Stanford's student leaders, and Pierre Boutin, a French exchange student representing the 80-plus French students on campus.

SLAC Benefits Office News

In response to many requests from employees, the SLAC Benefit Office has calculated the total amount of premiums paid for the various medical insurance coverages available at SLAC for use in itemizing medical insurance expenses on income tax returns. For those employees who itemize these deductible expenses, calculation of premiums was complicated in 1969 by intervening rate changes and employer contributions. Therefore, to avoid having to go back and add up the totals from your check statements, call the SLAC Benefits Office at Ext. 2357 for assistance.

During this time of the year, many employees will also be adding up all of their medical expenses for income tax purposes. This is, then, also a good time to determine if any benefits may be recovered by filing a Major Medical claim. Briefly, if you have Major Medical coverage, together with a basic health plan, you can recover 80% of your medical, hospital and drug expenses that exceeded the \$100 deductible. For those without a base plan, the deductible in 1969 was \$500. The deductible includes any expenses incurred for any one individual's medical expenses during the year, no matter how many different illnesses might have been treated. If it appears that you might have incurred expenses in 1969 that would exceed the deductible amount, it is not too late to submit a claim for Major Medical benefits.

Drop in or call the Benefits Office for more information or assistance in preparing a Major Medical claim.

Public Information Films

Recently the Public Information Office has been presenting films on high-energy physics in addition to the Wednesday Noon Movies. These showings include "The Future of High Energy Physics" and "Atom Smashers." While showings took place during the noon hours, several showings were scheduled to enable as many people as possible to attend.

Public Information hopes to continue this in the future. Upcoming movies are "Synchrotron," "Exploring the Atomic Nucleus," "Particles and People," and "The World of Enrico Fermi."

Your suggestions and comments will be appreciated.



French President escorted by SLAC Director W.K.H. Panofsky and Dr. G. Loew, head of Accelerator Physics. Additional photo on page four.

Vector Dominance Model Undergoes Test Here

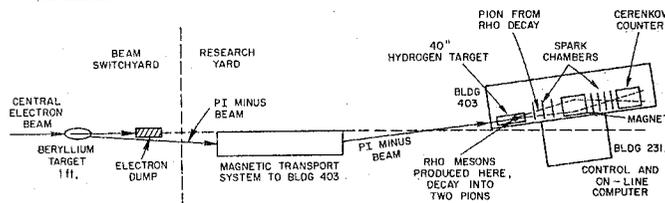
One of the major contributions SLAC has made to high energy physics knowledge has been a better understanding of the photon — the massless, discrete quantity of electromagnetic energy. SLAC is now attempting to extend this understanding by testing a theory which tries to explain how these photons participate in the nuclear force, the force which holds the nucleus of the atom together.

The theory, called the Vector Dominance Model (VDM) is built upon some similarities between photons and a class of very short-lived sub-nuclear particles called "vector mesons." A test of VDM was completed during the January running cycle by a Group B — Group C — IBM collaboration studying the production and decay of the most prominent of the vector mesons, the rho meson, with a mass of 765 million electron volts (MeV).

The beam layout for the experiment can be seen in the diagram. Rho mesons were produced in a 40-inch liquid

hydrogen target in building 403 by the interaction of negatively-charged pions with the protons making up the target. The negative pions were produced in the switchyard when the SLAC central electron beam collided with a beryllium target. Magnets and other devices directed the negative pions into the hydrogen target. Occasionally, a rho meson would be produced by a pion-proton collision. This could not be seen directly because the rho decays in a millionth of a billionth of a second. But we can infer that it was produced by tracking the two charged pions which are the decay products of the rho. This was done using a set of seven spark chambers, a magnet, and a Cerenkov counter. The spark chambers follow the pion tracks by "firing" whenever a pion goes through them. The wire chambers are capable of electronically keeping track of exactly where each pion goes. The Cerenkov counter made sure that the experimenter

Continued on Page 3



BEAM LAYOUT FOR VECTOR DOMINANCE MODEL TEST (NOT TO SCALE)

156781

Streamer Chamber Readies For New Experiment

The SLAC steamer group is in the final stages of shakedown for a new experiment — a collaboration with Brookhaven National Laboratory on the study of decay of the long-lived neutral K meson (K^0_L). More than the previous photoproduction experiment, it will make use of the distinctive advantages of the streamer chamber, which are: triggered operation, pictorial information about particle tracks, and fast cycling. Other important features of this experiment are time of flight selection and counter arrays within the streamer chamber itself.

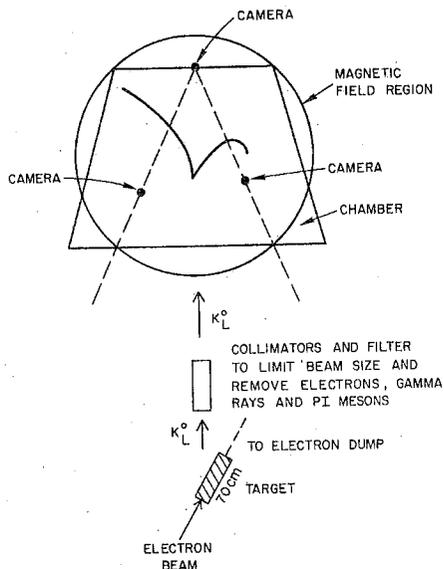
Interest in the decays of the neutral K meson is currently centered on very serious disagreements among many previous experiments. Much more may be involved in such cases than resolving a situation. If more definitive information is obtained, real difficulties in the present state of our knowledge may be brought to light.

Three quarters of the time the decay of the long-lived neutral K meson takes place by formation of a neutral particle and two charged particles of opposite sign. All of these particles in 15% of the

previous work. In addition, this experiment will determine Ξ by two and possibly three methods.

The inset figure shows the essentials of the experimental arrangement. From the bottom, the electron beam strikes a beryllium target which produces long and short-lived K 's along with radiation and a profusion of other particles. Filters and magnets select K neutral particles with a background of neutrons. A long flight path eliminates the short-lived K component with its five-hundred-times shorter life.

The active volume of the streamer chamber is designated by the trapezoid; the extend of the magnetic field for bending particles is shown by the circle. The cameras which view the streamer chamber are indicated. Two dotted lines show not only the separation of viewing field, but the line along which counters and lead-rich plates are placed to distinguish particles. Another extremely important part of the experiment is an electron arrival time indicator operating on secondary emission to give a short, precise pulse for time of flight. Operating



EXPERIMENTAL SETUP FOR STREAMER CHAMBER EXPERIMENT

cases are pi mesons. The other decays are by electrons, heavy or light, a neutrino, and a pi meson. The pi, electron, and neutrino occur 49% of the time; and the muon, or "the heavy electron," along with a pi and the appropriate variety of neutrino occur in 36% of decays.

These percentages or branching ratios are known to about 10% accuracy. There may be derived from these ratios a single number, known as the Ξ parameter, which should characterize these decays. The Ξ parameter, theoretically, is made up of form factors which indicate the spatial behavior of a physical reaction, in this case the interactions of the K and pi mesons.

The crucial Ξ parameter is available experimentally in two other ways: either by measurement of the muon polarization, or by a more detailed treatment of all the measurable momenta of the individual particles. This is the method of the Dalitz plot (a plot showing the energy of the pi and mu meson for each decay). Very serious inconsistencies present in these values are expected to be cleared up by the streamer chamber experiments. Many more events in greater detail will be studied, and so the experiment will be free from biases of

in the chopped beam mode allows measurement of K energies to an accuracy of $\pm 5\%$ by timing the arrival of the decay products at the scintillation counters.

Streamer chamber operation has been described by David Yount in an article in "The Physics Teacher," and in a *Scientific American* article (Oct. '67, Vol. 217, No. 4), which is also available as SLAC Publication 311.

Improvements in the SLAC steamer chamber have been made since the article was prepared, but the action principles remain unchanged.

The K beam consists of two halves above and below the high voltage central mesh which is pulsed briefly to almost a million volts. The decays of interest take place in the central region of the chamber and are recognized as V tracks. In a large number of cases these will pass through the counters and the lead oxide plates. Electrons are distinguished from pions and muons by their change in curvature or interactions on passing through the heavy plates. The electrons lose much more than mu's by electromagnetic processes.

Analysis of events takes place at Brookhaven and SLAC. For each event this involves the combination of counter

LETTER TO THE EDITOR

Dear Editor:

I am sure that by now most SLAC employees have noticed our new acquisitions — drab, economical, and utilitarian old army jeeps. I am sure that we all support the economy motive behind the procurement of these conveyances from the GAO surplus list; however, there is something about an olive drab army jeep that is esthetically unpleasing.

For a minimal amount of money these olive drab army jeeps could be converted into mobile objets d'art; they would be a joy to all who saw them on the site; at the same time since they are not driven off-site, SLAC would not risk offending some of the more uptight members of the local citizenry.

I propose that SLAC:

- 1) Buy a large assortment of different colors of "jeep paint;"
- 2) Turn over the paint supply with brushes to:
 - a) any Slac employee who wishes to try out his artistic skill on our new used jeeps, provided only that the finished work of art be moderately inoffensive and not obscene as defined by the prevailing contemporary standards at SLAC;
 - b) schoolchildren from the Menlo Park area and in particular from local ghetto areas who could be encouraged to come and try their artistic talents out on our jeeps;
 - c) any member of the Stanford community who has a long-repressed desire to be an artiste;
 - d) other community residents.

It seems that at a small cost, we could enormously brighten the atmosphere here at SLAC. In fact, the cost of paint and brushes is so cheap that if SLAC is that pinched for funds we could even get a donation drive going to buy the art materials — I, for one, will be happy to kick in a couple of bucks to start it off.

At any rate, I hope this is the start of a solution to the problem of what to do with the unsightly jeeps.

Yours sincerely,
Lance J. Hoffman
Computation Group

Paint Your Wagon?

This sounded like a great idea to me from a Public Relations and SLAC-image standpoint, of which our office is necessarily conscious, and from a publicity standpoint! I could envision reams of copy, racy photos, human-interest articles and possibly even a special edition of the paper coming out of it all! I knew nothing about policy in such things as the painting of government-surplus procured equipment, however, and before I got too carried away, I took up the matter with the chiefs. I received the following reply: "Mr. Moulton advises that this matter was discussed with Dr. Panofsky and the Directors. The conclusion reached was that Group Leaders could approve jeep decoration with some necessary restrictions. These will be conveyed to the Group Leaders in a forthcoming memo from Lloyd Gallager, Head of the Plant Office." It will be interesting to see what comes of the idea. —The Editor

data and information from the three photographs. It is a skilled and time consuming task. Some 18,000 events had been obtained in the trial run before a high voltage breakdown put the streamer chamber out of operation.

K^0 beams at SLAC have a smaller neutron contamination than similar beams at other accelerators, making this an excellent place to perform such an experiment. People involved in the experiment are Bunnel, Liu, Mozley, Odian, Park, Slone, Swanson, Villa and Wang of SLAC and Hill, Sakitt, and Samios of Brookhaven.

SLAC Ski Club Is Organized & Active

Approximately 30 people formed the nucleus of the SLAC Ski Club which began on October 22, 1969. The club was formed with the objective of providing that Stanford personnel, families and friends enjoy the advantages of organized skiing at minimum cost and with minimum effort. The SLAC club, unlike a student ski club on the main campus, is based on each SLAC Club member having 100% membership in the Far West Ski Association (FWSA).

Far West Ski Association membership entitles each SLAC Club member to various discounts, in the form of a coupon book, to 50% reduction on lift tickets at both local and out-of-state ski areas. It also provides a member with a monthly issue of the "FWSA News," and the "Western Skier" magazine.

Basic dues for a new SLAC Club member per year are \$6.00 per initial member and \$4.50 for each additional member of his family. (Just \$1.50 of each of these fees goes to the SLAC club with the additional going to FWSA. If a person is already a member of FWSA, his cost to join the SLAC Club would be just the \$1.50). Membership in the SLAC Ski Club is open to all employees of SLAC and their families as well as to other Stanford University Staff members and families and to Stanford University students. Non-affiliates of Stanford will be accepted if introduced by a member of the club.

The biggest drive of the club is for increased membership. They are hoping to have a group of about 100 by next ski season. This will allow them to establish a full-blown winter sport and social program and possibly get a club cabin for the 1970-71 ski year. They are also hoping, with the start of a membership drive in the fall of the year, to offer a pre-ski conditioning course and slalom racing later in the year.

So far this year, the club has had too noon-hour ski-film showings, one including a buffet luncheon, and one weekend trip to Mount Reba, Bear Valley. This was held on the weekend of February 6-8 and a group of 15 shared a cabin at \$5/per person per weekend. The skiing was excellent and none of the party got "cabin fever" from having to stay inside. It was reported, however, that one of the ladies of the party was seen dancing, at midnight, in the bright moonlight, barefooted on the hard-crusted snow, with sheer abandon among the trees, in a flowing, white diaphanous gown! How does that grab you?

For the balance of the season, the group is planning a ski weekend in April and a possible trip to Mammoth Mountain for the Memorial Day Weekend. To gain information about the club or to join, contact any of the following SLAC officers:

President: Bob Sukiennecki — 2691
Social Chairman: Bob Friday — 2282
Secretary: Gloria Strelchuk — 2745
Treasurer: Janet Schnecke — 2288
Membership Chairman: Dennis Feick — 2286

Want Ads

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

SLAC Dictionary

Part I

A number of terms not commonly used in everyday discourse are used in a high energy physics laboratory. While these terms are well understood by physicists and engineers, they often make no sense at all to other employees. In an attempt to remedy this, here is the first installment of a brief glossary, adapted from "Nuclear Terms" by the AEC Division of Technical Information. It is to be continued in future issues.

ACCELERATOR A machine that accelerates electrically charged atomic particles to high velocities. Electrons, protons, deuterons, and alpha particles can be accelerated to nearly the speed of light for use in nuclear research. Types of accelerators include the betatron, cyclotron, linear accelerator, and synchrotron. Familiarly known as "atom smasher."

ALPHA PARTICLE (alpha radiation, alpha ray) A positively charged particle, emitted by certain radioactive materials. It is made up of two neutrons and two protons, hence it is identical with the nucleus of a helium atom. It is the least penetrating of the three common forms of radiation (alpha, beta, gamma), being stopped by a sheet of paper. It is not dangerous to living things unless the alpha-emitting substance is inhaled or ingested.

ANTIMATTER Matter in which the ordinary nuclear particles (neutrons, protons, electrons, etc.) are conceived to be replaced by their corresponding antiparticles (antineutrons, antiprotons, positrons, etc.). Normal matter and antimatter mutually annihilate each other upon contact and be converted into gamma rays.

ATOM A particle of matter indivisible by chemical means. It is the fundamental building block of chemical elements. The elements, such as iron, lead, and sulfur, differ from each other because they contain different atoms. Atoms are unbelievably small. There are six sextillion (6 followed by 21 zeros) atoms in an ordinary drop of water. According to current theory, an electrically neutral atom contains a dense inner core (the nucleus) and a much less dense outer domain consisting of electrons in motion around the nucleus.

ATOM SMASHER (See accelerator).
BETA PARTICLE An elementary particle emitted from a nucleus during radioactive decay. It has a single electrical charge and a mass equal to 1/1837 that of a proton. Beta particles are easily stopped by a thin sheet of metal. A negatively charged beta particle is physically identical to the electron. If the beta particle is positively charged, it is called a positron. Beta radiation may cause skin burns, and beta emitters are harmful if inhaled or ingested.

BETATRON A doughnut-shaped accelerator in which electrons are accelerated by a changing magnetic field. Energies as high as 340 MeV have been attained.

BeV A billion electron volts. (GeV is the European equivalent of this).

BUBBLE CHAMBER A device that marks the paths of charged particles by photographing the train of bubbles they produce as they move through certain superheated liquids.

CERENKOV RADIATION Visible light emitted when charged particles pass through a transparent material at a velocity greater than that of light in the material. It can be seen, for example, as a blue glow in the water around the fuel elements of pool reactors.

Spring Is Here And So's Baseball

Spring is almost here and Dennis Healey, of the Research Area Department and Manager of SLAC's Soft Ball team, has his announcements out regarding sign-ups.

Soft ball is another SLAC-sponsored sports activity, with uniforms, fees and equipment provided by SLAC. The team is a member of the Palo Alto Recreation League, and Tom Osborne of that group held a meeting the 25th of this month at which time schedules listing practice sessions were established. Actual games will start sometime in May.

Anyone interested in joining the SLAC group should contact Dennis Healey at Bldg. 211 in the Research Area or call him there on extension 2173. He would like to have your name before April 1st because the Palo Alto Recreation League is again holding two slots open for SLAC. Last year we had two teams, SLAC A and B with 20 men to each one; however, if we only have enough people for one team, Dennis would like to advise the League so that they can open one of the slots to some other organization.

Many Bay Area industries sponsor these teams and SLAC has played opposite most of them. Last year we took second place trophy in the final play-off games. The team that beat ours to first place also beat SLAC two other times during the season. Manager Healey is now anxious for another try at the trophy — this time for first place. Incidentally, last year's trophy is on display in Bldg. 211.

Practice sessions take place once a week right after work and actual games are also played once a week but at either 7:00 or 8:30 p.m. Games continue, with the exception of a short half-season break, until September, and most of them are played at Palo Alto's night baseball park opposite the Stanford Shopping Center.

Cheering spectators are always welcome.

EDITOR'S NOTE: As opposed to "soft ball" as it is defined in some areas, this is a slow-pitch or "lob-ball league." The lowest hitter on last year's squad carried a meager .294 average, while our team leader had a whopping .612! There's lots of action with this type of hitting as both teams may score over 20 points per game.

Scanning Coordinator In Menlo Guild Play

Bill Quiett, a coordinator for scanning and measuring for Experimental Group D, has a major role in the Menlo Players Guild up-coming production of Lillian Hellman's **THE LITTLE FOXES**. Bill, who plays the father in the production opening this Friday night at the Burgess Theater, has an extensive background in theater work. He received a B.A. in Speech and Drama from the University of Iowa, and a M.A. in Theater from UCLA.

THE LITTLE FOXES, which was a hit movie in the late 1930's, starring Bette Davis, is considered to be the strongest of Miss Hellman's plays, according to a spokesman for the Players Guild. It is an elegantly structured story about the unscrupulousness associated with the rise of industrial fortunes on the ruins of the Old South. How does that grab you?

The play is given on Friday and Saturday evenings at 8:30 through April 18th. For those of you unfamiliar with the Burgess Theater, it is located on Laurel near SRI and the Menlo City Center. Reservations can be made at 366-7090 or 322-3261.

Golf League News

The SLAC Golf League will begin its 8th season the week of April 27, 1970 (beginning of Daylight Savings Time). Regular league play consists of about 24 weekly twilight tournaments and 3 or 4 weekend tournaments.

Twilight league play is at the Stanford University Golf Course and the members usually arrange for their own foursome. However, arrangements can be made for new members to be assigned to a foursome. There are two flights which are determined by handicaps. However, it is not mandatory to play with members in your own flight. One must have scores verified by another member to be eligible for prizes.

The Membership Fee is \$5.00 per year, payable the first week of play. This fee is to help defray the cost of prizes. Additional funds for prizes are provided by the SLAC Recreation Fund.

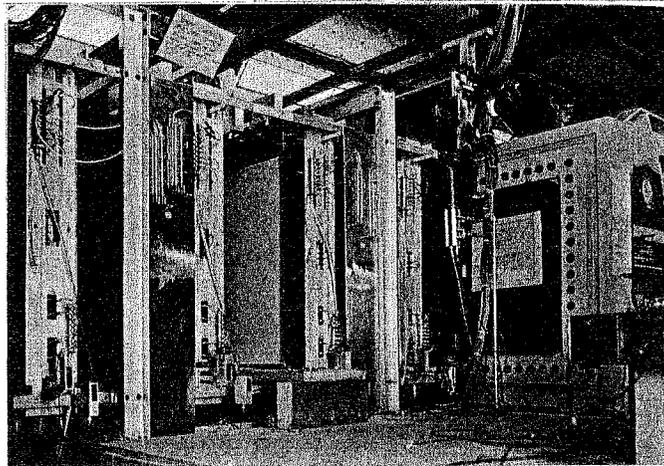
SLAC employees may purchase a script for \$25.00 at the golf course which

entitles them to play 10 rounds of golf. Or they may choose to pay the regular daily fee which is \$3.00 for SLAC employees.

The weekend tournaments are held at various other courses in the area. Members are encouraged to invite guests to participate in these tournaments. The number of flights is determined by the number of entries and the handicaps. Usually there is a special flight for ladies. Last year 65% of the participants won prizes.

Signup slips for this year's league will be distributed soon. If you do not receive one by April 1, 1970, and would like to join, please contact Peggy Goudas, Ext. 2430, Room 106, A & E Building.

Last year's team members hit a total of 19 holes-in-one among them. This would have been considered a spectacular phenomena except they were all hit on the 19th hole! How's that grab you?



From left to right is the second set of wire spark chambers, four of them, followed by the window of a large gas Cerenkov counter. These devices complete the job of tracking and identifying the pions produced by rho meson decay upstream in the hydrogen target.

Vector Dominance Model

Continued from Page 1

was looking at a pion rather than, say, a K meson.

By knowing precisely the paths of the decay pions it is possible to work

News Grabbers

Contributors of certain articles to this month's issue of the NEWS may notice the article has been modified or added to slightly. (This is not the case in the single Letter to the Editor which was printed exactly as it was submitted. The editor's comments are entirely his own there too as is the statement from the Directors).

Realizing the paper might be late enough so it would be coming out possibly on April 3rd, we thought we'd add a few "news grabbers." We planned to throw in a few "gotchas" too, but we weren't sure what that word meant. Maybe next time.

The Staff

backwards and compute the important data for this experiment; namely, the probability of producing a rho meson depending upon the momentum transferred in the course of the collision. Momentum transfer is a measure of how sensitively the interaction is being probed.

Well, why do this? How does rho meson production by pions relate to the photon? The relationship is the motivating force behind VDM, developed in the early 1960's by Sakurai and others, and is based upon photon-vector meson similarities. In particular, photons and vector mesons have the same "spin" and "parity." The spin of a particle is an intrinsic property of the particle, and may be thought of as an inherent rotation about its axis, as the earth rotates about an axis. Parity is a property of the

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SLAC NEWS

Stanford Linear Accelerator Center

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SLAC Personality- Mary Beth Jensen

Mary Elizabeth Jensen, an attractive, blue-eyed blonde with a very agreeable personality, holds down one of the most interesting, demanding jobs on the project. She is secretary to Dr. Panofsky, Director of SLAC.

Mary Beth has a bright pleasant office in the Central Lab and her desk is covered with books, papers and reports. She has held her present job for the past five years and prior to that worked as secretary to W.L. Field, Legal Counsel for SLAC. She also worked for Fred Pindar when he was at Hansen Labs and for Alf



Mary Beth Jensen

Brandin in the Stanford University Business Office.

Despite her excellent business background, Mary Beth remembers her lack of confidence at the time when she was offered a chance at her present job. A bit nervous about so much responsibility she proposed that she might try the work for a few weeks.

She recalls how the people in her group, among them Fred Pindar, Gene Rickansrud and Win Field, encouraged her and urged her to take the position, adding little bits of advice such as being sure to proof-read for errors all her letters before she gave them to Pief to sign! She thought she could handle that part of it. The University of North Dakota had awarded her the right to teach English and grammar and she spent two years doing so at Grafton High School, Grafton, North Dakota prior to her move to the West Coast. Another admonition was to consider that in this job, she might not always be able to leave work right at five o'clock — a fact which turned out to be all too true. But Mary Beth tried doing the best she could, and five years later, she is still on the job.

Her work involves the usual secretarial duties of dictation and typing, arranging meetings, and opening and following up on the daily mail. This latter job is one of the heaviest parts of her work load since Dr. Panofsky receives a tremendous volume of mail not only from the project itself but from all over the world. All of this correspondence must be answered

April, flowers, bugs
And things
Well, at least I know
it's spring
And my nose gets so
carried away
On these crazy, dusty, pollen
April days.
by Dave Jenkins

and Dr. Panofsky believes in the old-fashioned virtue of not putting off until tomorrow something that can be done today. Since Mary Beth prefers activity and keeping busy, this, too, is no problem for her.

She also enjoys her contacts with the many fascinating and interesting people who visit Dr. Panofsky and SLAC. She told us she has met many of these people and occasionally they send her greeting cards or thank you notes. One of the more recent of these notes was a Christmas card from the wife of a Russian physicist. The woman and her husband had visited SLAC last fall; and Mary Beth succeeded in another aspect of her job by taking the wife on an American shopping tour — apparently a delight for women of any nationality.

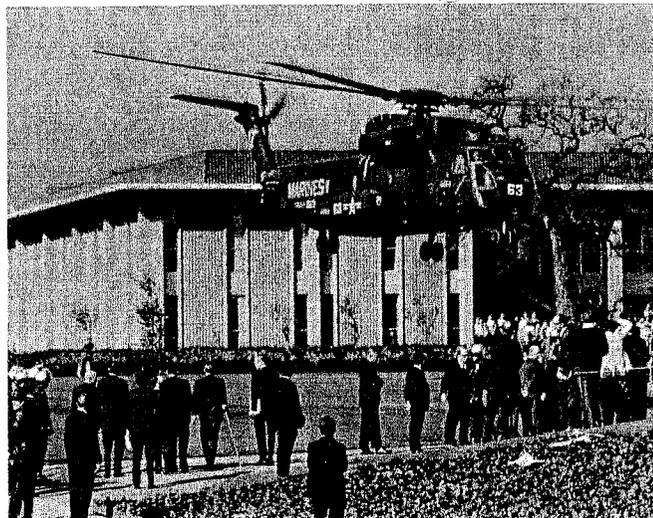
As a footnote, Mary Beth, giving one of her delightful grins, added that this same woman's son (who is also a scientist) was here two years ago and made a very special request of her. Would she please take him to some store where he could buy his wife an American dress for a present; Mary Beth was exactly his wife's size, and he would be so grateful. Mary Beth agreed, they went to Macy's, and she obligingly tried on several dresses for him. One very pleased Russian scientist returned to his country with a black silk dress for his wife, and Mary Beth had done her part for international good will.

We suggested then that perhaps Mary Beth was planning a vacation this summer as glamorous and exciting as her career position — Acapulco, the Costa Brava, perhaps a Ukrainian resort along the Black Sea? No such thing. She's looking forward to going back to that part of the American mid-west where she was born and where her parents still live — Minnesota.

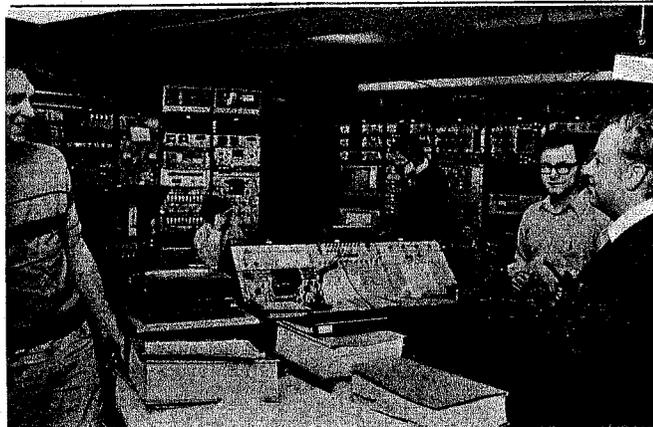
Machine Shop Training Classes

For four years, SLAC has been conducting training classes in machine shop practices and many people have taken advantage of this opportunity. The course is taught by Mechanical Fabrication Shops personnel and covers primarily the basics in lathe, drill press, power saw, and milling machine set-up — with emphasis on personal safety and proper equipment operation. Classes run two nights a week after regular working hours and continue for a period of three months. Students receive both lecture and on-hand shop training, with their text-books and machine time provided by SLAC. The course has proved very worth while in teaching correct shop practices to personnel from other groups and has acted as an additional source of experience for machine shop trainees with MFS. The latest class is specifically related to the minority and skills training program.

Dave Hoff, machinist in MFS's Light Machine Shop has been the instructor for the past two years, and the current class is being taught by Glenn Howard, also of the Light Machine Shop. Although it is not known at this time when the next series of classes will begin, it is suggested that if you are interested in this type of training, you should contact Herman Zaiss, Head of Mechanical Fabrication Shops.



The scene at the landing site.



Some verbal repartee between Burt Richter and Brig Williams, a graduate student (Group B), in Bldg. 231, the control center for the VDM experiment. The photo was taken in last January during the experimental run.

Vector Dominance Model

Continued from Page 3
mathematical functions used to describe particle states.

The rho (and omega and phi) meson and the photon have one unit of spin and negative parity. They differ, of course, in that the photon is massless. VDM makes the relationship explicit by predicting that the way in which rho mesons are produced by pions (i.e. the probability data mentioned above) should be in general equivalent to the way in which a photon interacts with a proton to produce a pion (the process called

photoproduction). So momentum-transfer data on rho production by pions should relate to pion photoproduction data. This is the basis of the test!

Group C found, back in 1967 using the SLAC spectrometer facility, that the probability for pion photoproduction at low momentum transfer was quite high. This strong photon participation in the nuclear force came as a surprise (and demolished the then-fashionable version of another model, called Regge theory). So, Burt Richter, David Leith, and company are investigating the low momentum transfer region in rho production.

If the probability of interaction is large in this region, VDM will have survived the test. However, if the probability goes to zero, the VDM will face a serious, perhaps fatal, setback. Prior to this experiment, no significant data had existed, so the game is wide open.

An interesting sidelight to this experiment is that about 5 percent of the data was analyzed on-line using a combination of an IBM 1800 computer in Bldg. 231 and the main SLAC 360/91 computer. (This is the first time the big computer has been used on-line). So, some preliminary results are known to the experimenters. But, at this point, the only quote they're willing to see in print is "no comment."

It is safe to say that whichever way the experiment turns out, the results will further advance man's knowledge of both the photon and the rho meson.

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