The SLAC News

VOLUME 2, NO. 1 — Stanford Linear Accelerator Center — MARCH 3, 1971

WORLD'S FIRST ANTI-OMEGA SEEN HERE

SERA has Busy Year

On 21 January 1971 the SLAC Emergency Relief Association held its third annual membership meeting for the purposes of electing a new board member, presenting its annual report, and discussing appropriate business.

Charlie Hoard of the Data Analysis group was elected to the board, replacing John Alcorn who completed his two-year term of office.

At SERA's subsequent board meeting Dorothy Ellison of EFD was elected SERA's new President, Larry Esquibel, Vice-President, and Charlie Hoard, Secretary.

John Alcorn, SERA's President for the past two years, presented SERA's annual financial report, as of 31 December 1970, to wit:

Checking Account	$1,816.04
Wells Fargo Bank	
Savings (4½%)	1,810.05
Citizen's Federal	
Savings (6%)	7,660.43
Total SERA Funds	$11,286.52

SERA'S total December membership was 288. Total December payroll deductions were $428.50.

During 1970, SERA made grant-in-aid awards to nine recipients, for a total of $3,265.20.

1970 proved to be quite an eventful year for SERA, considering the number of cases and the controversial nature of one of them. As a result of the latter, SERRA lost some of its membership. However, in the long run the SERA board benefited by acquiring a deeper understanding of member stitudes, and the SERA membership in turn gained insight into the considerable difficulties of evaluating such situations.

In any case, SERA remains a strong and effective organization for providing financial assistance to those within the SLAC community who, through no particular fault of their own, have experienced an emergency situation which directly threatens their ability to bear the costs of the normal essentials for living and for earning a lifelihood, but for whom all other sources of financial aid have been exhausted.

To our present membership we extend the deepest appreciation for your support and confidence. To those who are not members we encourage your consideration of SERA as a working community organization which can provide one dollar of actual help to a needy fellow worker for every dollar contributed.

Stanford Children's Center is Active

The Children's Center of the Stanford Community (CCSC) is flourishing at its location in the old Stanford Elementary School on Mayfield and Santa Teresa. Two programs are available and exist as essentially independent entities within CCSC. The first of these is the Day Care Program for 2½ to 5 year-olds, while the Drop-in Program is designed for infants (0-1 year) and toddlers (1-3 years).

The Day Care Program for pre-schoolers operates from 7:30 a.m. to 5:30 p.m. daily and is of particular benefit to low-income families because the fee, ranging from $45 to $90 per month, is based upon ability to pay.

For example, consider 2 parents working full time and earning $1000 per month with 3 children and no other major expenses. Their fee is $81.70 for the first child and $40.85 for the second. A woman with 1 child earning $400 per month will pay $55 per month.

The day care program's daily schedule includes opportunities for crafts, music, stories, block play, table toys, dramatic play, outdoor exercise, field trips and special activities.

You can enroll your child for one-half day, full day, Tuesday and Thursday, Monday-Wednesday-Friday, and various combinations. Call the Center at 327-3090 for general information or Susan Newcomer at 327-0828 for enrollment information.

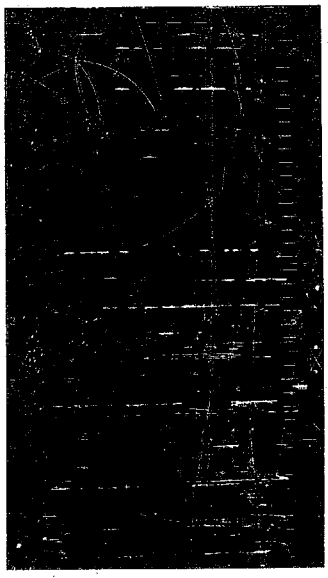
The Drop-in Center is designed for parents who must or wish to work and have very young children. Due to fire regulations, a maximum of 25 children can be accommodated. The hours for this program are 8 to 5 daily.

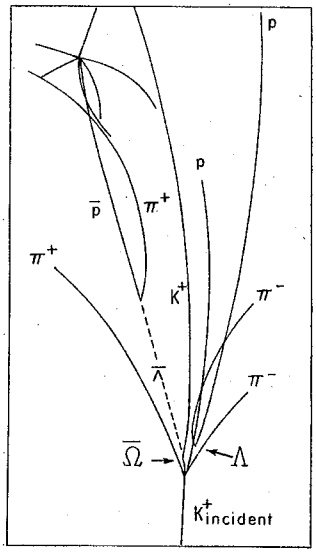
The drop-in program has not been able to establish a sliding fee schedule yet, so the rate is an hourly one. The rate for participating parents (those who are willing to volunteer one hour per four child hours) is $.60 per hour for one child and $.90 per hour for two children. At least one paid teacher is on duty from 9-4 each day.

Featured is a large room with center for activities like storytelling, block building, and table play. The cribs for sleeping are kept apart from the main hubbub of activity. For more information, call 327-3730.

As summer gets closer and you have to plan for the school holidays, think about the CCSC. Last year a very successful summer program for school-age children was run.

If the need develops, another summer program can be organized. Call the Center and express your interest. (327-3090).





Photograph and explanatory diagram showing the first sighting of the anti-omega baryon. The anti-omega-minus is the short stubby solid line at the center of the spray of particles at the bottom. It decays into the neutral anti-lambda (it makes no tracks and is portrayed by the dotted line) and a positively charged K meson (K+). The anti-lambda decays into an antiproton and a pi-plus. The spray of particles at the top results from a collision between the anti-proton and a proton resulting in their mutual annihilation. It was necessary to view the whole sequence to identify the anti-omega-minus.

The rarest and most elusive of the nuclear particles has been discovered in SLAC's 82-inch bubble chamber by physicists from the University of California Lawrence Radiation Laboratory, Berkeley.

The particle is the anti-omega-minus baryon, which has been the subject of a continuing hunt in the international high energy physics community for more than six years. The successful LRL search started four years ago, and involved the examination of over half a million photographs of nuclear interactions.

Baryons are one of the basic classes of nuclear particles — the building blocks out of which all matter is composed. The distinguishing charcteristic of a baryon is that it eventually decays into a proton, the nucleus of the hydrogen atom. Each baryon has a corresponding antiparticle, sometimes described as the "mirror image" of the particle. The newly discovered anti-omega-minus is the antiparticle of the omega-minus, found at Brookhaven National Laboratory in 1964.

The anti-omega-minus, which bears a positive electrical charge, is believed to be the last baryon with a lifetime long enough to make a track in a bubble chamber or other detector. Physicists expect to find many additional baryons and their antiparticles, but they are likely to have such short lifetimes that they will not leave visible tracks. The anti-omega-minus, on the other hand, left a track about an inch long, the space in which it traveled during its lifetime of about 15 billionths of a second.

The discovery was reported February 1 at the meeting of the American Physical Society in New York, New York, by the following Lawrence Radiation Laboratory staff members: Dr. Alexander Firestone, physicist; Dr. Gerson Goldhaber, UC professor of physics; David Lissauer, graduate student; Bryce M. Sheldon, measuring instrument technician; and Dr. George H. Trilling, professor and chairman of the UC department of physics.

The discovery of the omega-minus in 1964 created a stir in the world of physics because it was considered a triumph for the Eight-Fold Way Theory developed by Professor Murray Gell-Mann, of the California Institute of Technology, and Professor Yuval Ne'eman, of Tel-Aviv University. This theory organizes all the particles of physics into groups of either eight or ten particles, which are called octets or decuplets. There are also some particles which stand alone, called singlets.

The omega, though a member of a decuplet, is regarded as something of a "fluke" because it is the only member of the group which lives long enough to make a visible track in a bubble chamber. The other nine particles have lifetimes trillions of times shorter and are called resonances. Their presence can be inferred only from study of the particles into which they decay.

Dr. Goldhaber explained that the discovery is significant primarily because it completes the evidence that antiparticles exist for all the semi-stable baryons. "While there was little doubt in physicists' minds that the particle should exist," Dr. Goldhaber said, "the recent history of elementary particle physics has shown that nothing can be taken for granted." Moreover, the discovery will

Continued on Page 4

COLOR AERIAL PRINTS NOW AVAILABLE

Need a gift for the person who has everything? Is there a blank space on a wall that could use some ornamentation? If so, why not buy a 19 x 23 inch color aerial photo of the site? They're available from Mimi Lewis of the Budget Office, Room 210 of the A/E Building, at the incredibly low price of one dollar (guaranteed non-deductible for tax purposes).

SLAC's Klystrons— World's Most Powerful

by K. Maddern

Klystrons are the heartbeat of SLAC's accelerator. They provide the tremendous power to propel electrons at nearly the speed of light for two miles to the target. Weak radio waves are fed into the klystron at a fixed frequency. The klystron gives power to the waves, tailoring them exactly to the power requirements of the design structure of the accelerator system. Leaving the klystron, the now powerful radio waves are directed by a waveguide system into the accelerator itself. There the radio waves are met by a beam of electrons. Much like surfers on an ocean wave, the electrons are caught on the crest of each wave and are hurled down the

Charles Xuereb checking a klystron.

accelerator, met at regular intervals by another klystron which keeps kicking the electrons toward the target. The energy of the journeying particles supplies the medium for SLAC's nuclear probe. The klystrons provide the muscle for this ever-extending probe into a subnuclear puzzle.

In order for SLAC to reach higher energy levels, consideration at one time was given to purchasing more klystrons for additional power. However, respect for budget health deemed more purchases inadvisable. Necessity stimulated invention.

SLAC now produces the highest-power klystrons in the world. Not only are they the most powerful, but they are also noted for long life and reliability of design in performance. At present they are operated with power outputs of between 32 and 38 million watts (MW) with up to 50 percent efficiency at 270 thousand volts (kV) in permanent magnet. In plans for improvement, the next step is to operate at 40MW and 270 kV. In experiments, these klystrons already operate at 48 MW with 48 percent efficiency at 300 kV in electromagnet. (It is conceivable that one day they will reach 56 MW at 300 kV). At such voltage levels, it will take more time yet to incorporate the already proven potential of SLAC's klystrons into a reliably operating workaday design in permanent magnet. Most klystons for SLAC are presently manufactured by various commercial firms. However SLAC has led the way in development of the most potent klystrons and soon will produce 50 percent of all klystrons used here, in contrast to the present 20 percent produced. Research plans for the increased production are to eventually run the klystrons at 325 kV to obtain 50 MW in permanent magnet.

Brief Tour of Klystron Production Area

Klystron research is carried out in a cooperative way with ideas being exchanged between co-workers, innovations being generated by designers or members of the group, and results of such composite efforts showing in the improved tubes.

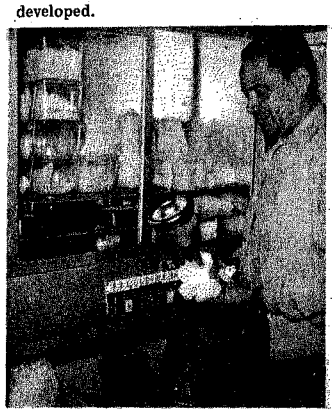
In the machie shop there is an artistic touch. The "anatomic" parts for the klystron tubes are made here, much use being made of copper. The men have added color to their surroundings by decorating the area with bright speckles of copper shavings from their machines.

In the cathode fabrication and ceramic area, it is not surprising to see men wearing stethoscopes and gauze masks. There must be no dust. Floors are polished, soft music is in the air, and in one room, spotless glass cases hold rows of white-wrapped objects. Newly-made or refurbished cathodes live here and are given tender care by men who make sure they each have their turn in "incubators" and a hot-box. Extreme cleanliness is imperative in keeping the cathode pure so it may operate maximally under heat in passing electrons to the anode. Close by, in the assembly room, the major parts of the klystrons are assembled in an atmosphere with elements of slightly more casual living than in the cathode area.

The bake station is where klystron bodies are heated to a temperature of 600° C. to simultaneously bake out impurities and create the vacuum which is crucial for effective operation of the tube. In the adjacent furnace area, klystron bodies are brazed with a copper and gold alloy for the tightest vacuum seal possible. With utmost care, people here operate their scientific kitchen with huge suspended furnaces which are lowered into place, and, as good chefs anywhere, give great attention to timing and temperature.

In the test area, an enclosure which resembles an airplane hangar, men put klystrons through an extensive job interview. Here, amidst an orderly jungle, white-coated workers operate among curling wires, blinking red lights, high voltage signs, explosive sounds and loud humming machines to test all klystrons before they are used in the accelerator. With one section of the area looking like a sub-oceanic playground, men might feel like divers tending a bevy of resting octopi with outstretched tentacles (testing cables). It is here that experiments on varieties of tube design form footwork for SLAC's ideas, among others, for either a super-conducting accelerator ("SuperSLAC" which would operate between 20-100 GeV) or a recirculating beam (40 GeV). Presently, SLAC is heading for "Stage 1¼," that is 1¼ times the present energy level (25 GeV instead of the present 20).

High-energy physics can give thanks to the daily amount of human energy expended in the klystron area, where a significant cog in the wheel of excursion into the subnuclear world is being developed.



W.R. Roberts holding an ultra-clean cathode kept in a "hot box."

SLAC MINORITY AFFAIRS COMMITTEE

During the summer of 1970, Dr. Panofsky established a Minority Affairs Committee (M.A.C.), made up of SLAC employees who volunteered at his request to serve on the committee for a period of one year. Shortly after the committee was set up, a memo was sent to "All Hands" announcing the existence of the committee and describing its function. This article is an effort to reiterate some of the information already distributed about the committee, to remind employees of who the members this year are, and to report on current activities.

The committee was set up to work with the Equal Employment Opportunity Officer, Larry Esquibel, and SLAC's minority representatives in individual cases involving minority relations which come to the attention of either the Personnel Office or the Committee. The original memo announcing the committee said:

"... Although this group is not intended to be a grievance committee in the formal sense, the purpose of the group will be to try to resolve controversies before they become serious grievances and to instill the kind of sensitivity among the different constituencies in the laboratory which is needed to create the mutual respect of the cultural, language, social and economic differences among groups of different racial backgrounds." This same memo invited SLAC employees to make suggestions for improvements in minority relations or to identify problem areas to members of the committee and we, as members of MAC, invite you to do this once again. The present members of the committee are: John Harris (Experimental Facilities Department, Ext. 2767); Suzan Jerome (Public Information Office, Ext. 2204); Jim Moss (Research Group D, Ext. 2194); Burton Richter (Research Group C, Ext. 2706); and Ray Ynegas (Experimental Facilities Department, Ext. 2194).

In recent months the committee has been asked to work on several individual cases, has undertaken intensive investigation, and has reported its findings to the Director and the Personnel Department. The committee is now being asked to work with the Personnel Department in conducting a survey of minority relations and programs at SLAC.

This survey will be two-fold. A portion of it will be statistical in nature; another portion will focus on problems, achievements and attitudes regarding minority and non-minority relations at SLAC. The Personnel Office will conduct the first portion and MAC is charged with conducting the second portion.

The committee members are aware that this is a difficult task and one which, if handled well, could be immensely helpful in improving conditions at the laboratory. We hope it will provide an opportunity for a frank exchange of information which will make it possible to determine where we stand now, what needs to be done or undone and how problems most frequently occur. Needless to say, for this kind of survey, we need project-wide information and it must come from SLAC employees. For this reason, the committee plans to conduct individual and group interviews among minorities and non-minorities. Anyone who feels he has something to say about minority relations should contact one of the committee members. All such information will be kept confidential. No names of individuals will be used in the committee's report of its findings. We hope that this will encourage employees to be very open in their comments and that they will feel free to comment on or criticize minority programs, the Personnel Office, the Director, MAC, or any other group at SLAC having to do with minority affairs.

Your cooperation will be very much appreciated. If you have any questions about the committee or the survey, please call and discuss it with one of the members of the committee.

Library Conducts Bookmobile Survey

The SLAC library is now conducting a survey to see if there is enough interest here to warrant obtaining bookmobile service with the help of the San Mateo County Libraries.

According to Bob Gex, SLAC Librarian, the possibility of providing bookmobile service is being considered because SLAC employees often come to the SLAC Library on the second floor of the Central Lab in the hope of finding novels and general non-fiction amid the scientific and technical books.

A bookmobile is in essence a miniature library which carries with it roughly 4000 volumes in virtually all areas of general interest. San Mateo County Libraries operates several of these. If bookmobile service is begun, all SLACers would be eligible for library cards whether or not they're residents of San Mateo County. The service is free unless your books are overdue. If a book you desire is not on the bookmobile, the librarian in charge can try to obtain it for you.

Bob urges all employees to complete the bookmobile survey, which will be distributed in the form of an All-Hands Memo and, in addition, welcomes any other comments and suggestions.

Emerge from the Doldrums

Are you suffering from the weekend blahs? Has the big brown cloud of smog cast a shadow of depression over a once-active individual?

Rather than continuing in such a state of mind, spend your weekends with the SLAC Ski Club and enjoy the fresh, clean mountain air of the Sierra ski resorts and the exciting nightlife at the ski lodges and the Nevada casinos.

The club has been renting cabins at the Sierra ski resorts: Squaw Valley, Heavenly Valley, Sugar Bowl and others, for the past two months. We will continue to rent cabins as long as there is snow to ski on.

If you are interested in participating in these trips or others to follow, please contact Steve Godfrey (SLAC), X 2834, or Ann Greenwood (SLAC) X 2691. If you are unable to contact Ann or Steve, attend the meeting of the SLAC Ski Club in the Central Lab Orange Room at noon on Wednesday, March 3.

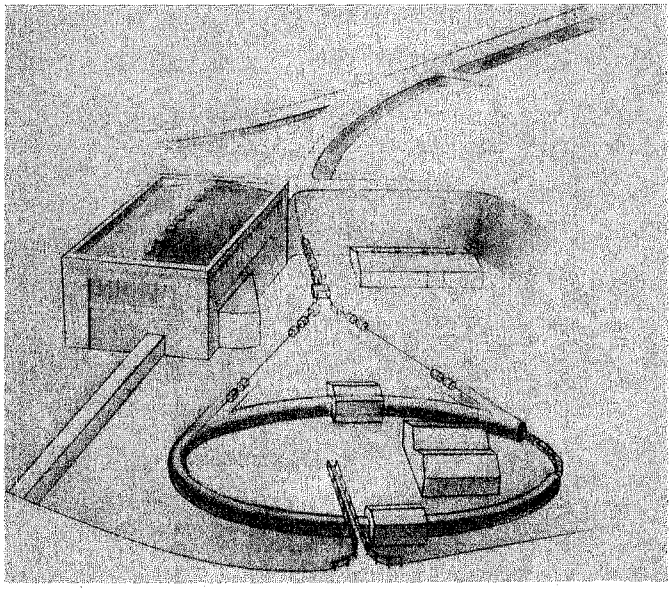
This club is also open to those lovely ski bunnies and dashing ski buffs who spend little time skiing. See you Wednesday the third.

WANT ADS

TYPING: Experienced technical typist (ex-SLACer) wants work. Low rates. Call Jeanne Buzzard between 9 and 5 at 732-1179.

FOR SALE: Journal of Mathematical Physics Vols. 1-10 complete (1960-69) and Reviews of Modern Physics, Vols. 32-41 (1960-69). Call John Ehrman Ext. 2307.

GIVEAWAYS: Bulletin of the APS, Vols. 11-14 (1965-69) and Physics Today (1965-69). John Ehrman Ext. 2307.



Drawing of SPEAR, showing the need for a separate transport system. As can be seen, SPEAR is now a symmetric oval-shaped ring. Drawn by SLAC Graphic Artist, Walter Zawojski.

SPEAR and the Accelerator

by Andrew Sabersky

SPEAR, the electron-positron storage ring now being constructed in the research yard north of End Station A, sees the great two-mile accelerator merely as a spigot producing electrons and positrons. To the accelerator and the beam switchyard, SPEAR is just another experimental beam line, one of many. In reality, the relationship between SPEAR and the accelerator is not so simple.

Earlier proposals placed the storage ring facility at Sector 20, two-thirds of the way down the accelerator. Positrons are created in the accelerator at Sector 11, one third of the way down the machine, and by Sector 20, they would have a high enough energy for injection into the ring. This plan called for a pretty, well landscaped site, since the facility could be seen from the outside world, that is, Sand Hill Road.

Economic considerations have made us change things quite a bit. It turns out to be much less expensive to install SPEAR in the north research yard area, even though this site means a rather long beam transport system from the end of the accelerator to the storage ring.

End Station A and SPEAR must be able to run at the same time, but at different beam energies. This makes a completely separate beam transport system for SPEAR necessary. All who have been inside the beam switchyard tunnel and have been the maze of beam pipe, instruments and cables might wonder how we can possibly cram another beam system in, especially when such a move was never thought of in the original design. Aaron Baumgarten and Harvey Hukari as designers and Wade Milner, head of alignment, have spent many hours measuring, thinking, and drafting the various methods of alteration and installation needed to get the new beam in.

One thing, at least, is in their favor. The injection energy of SPEAR is 1.5 GeV, about one-twentieth of the design energy of most of the components in the beam switchyard. This means that the SPEAR line magnets are very small. They look just right to those people who have come up to SLAC from the MARK III accelerator on campus, for 1 GeV was their normal operating energy.

The new beam line must be shoe-horned in the beam switchyard tunnel, running so close to the A beam line that each beam must be shielded from the stray magnetic field due to magnets in the other. The A beam bends 24° from the center line of the accelerator, and the SPEAR beam bends 48°, this placing it well clear of End Station A.

The SPEAR beam must carry two polarities of particles, negative "normal" electrons and positive anti-matter electrons. The magnets and magnetic lenses for these two are the same, but they must have opposite polarity for each. We cannot run both electrons and positrons at the same time; the beam from the accelerator must be changed and the beam line reversed every time. In the beam switchyard,, the positive and negative particles travel in the same channel, but just outside the tunnel wall the beams split and go to separate injector points at the ring.

The magnets and radiofrequency system of SPEAR will be run from a control building in the center of the ring, but the whole transport system is run from the new consolidated control room, formerly the Data Assembly Building. The construction of the transport system has been subcontracted to the Experimental Facilities Department, and is being managed by John Harris of EFD.

If you go into the beam switchyard tunnel, you can see magnet stands being installed and cables being re-routed for the new beam. The bending magnets and lenses are in production and test in the SLAC shops, and instruments are being assembled. First complete checkout of this unique electron-positron "line" is scheduled for Christmas, 1971, and is eagerly awaited by the storage ring group.

NEWS FLASHES

New High Energy Mark Achieved

The accelerator attained an energy of 22.1 GeV on August 23, 1970. This eclipses by 3% the old record of 21.5 GeV set on April 27, 1969.

New Records Set by 82-inch Bubble Chamber

During the October 6-28 running cycle, the 82-inch bubble chamber took over one million pictures, a new record. On October 20, it took its 10 millionth picture.

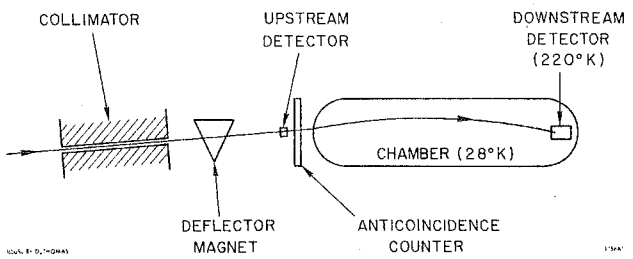
New Technique Improves Bubble Chamber Efficiency

by Charles Oxley

Successful placement of solid detectors in the liquid hydrogen of the SLAC 82-inch bubble chamber has improved the efficiency of a recently-completed study of pi meson interactions. The technique, applicable to an important class of experiments, has evolved to a high degree of perfection through the work of Irwin Pless of MIT, Henry Lubatti of the University of Washington, and Roger Gearhart and Bob Watt of SLAC.

Selection of expansions to be photographed is accomplished by counter selection of acceptable incoming particles. Further requirement is made that no particle reaches the back counter in the direction of the beam line. This guarantees that an interaction has taken place within the chamber.

The insert diagram shows the tactics of the experimental arrangement. The upstream detector specifies that a particle (pion) has entered, the anticoincidence counter signals if another pion has entered in an out-of-bounds area. The downstream counter is connected to the circuit logic so as to further specify that no particle has passed along the true beam line. That means that an interaction has taken place far enough forward in the bubble chamber volume that charged particles are variously dispersed throughout the chamber; they are either slowed down and stopped or swept out by the magnetic field in such a way that no charged particle reaches the on-beam counter. With a single set of counters as shown, preliminary trials early this year showed the success of the method by only photographed one expansion in ten.



Illustrating the placement of detectors in SLAC's 82-inch bubble chamber.

Before the data run recently completed, five counters in a row were placed at the rear of the chamber. Corresponding beam-defining counter systems were placed in the front. The electronic circuitry and logic operates to effectively place the five counter systems in parallel, thus giving five times as many events as would be possible with a single counter system. The counter logic recording system further specifies in which one (or two) of the five beam lines an event has occurred. This specification very much simplifies a visual scan and, in fact, will very soon permit entirely automatic scanning. With five counters there is one photographed event on the average for each two bubble chamber expansions, a very respectable use, conserving expenditure of film and wear on the bubble chamber.

The counters are lithium-drifted silicon one-half inch in diameter. They are placed about an inch apart within a five-inch diameter, a ten-inch long stainless steel cylinder. The associated solid state electronics are in the cylinder with heater elements and the whole cylinder is filled with a silicon gel. The temperature is maintained at — 55 degrees centigrade, a temperature at which the gel is plastic enough to afford some protection from the mechanical shock accompanying expansion. That temperature is also favorable to the electronics and counters. The cylinder juts five inches from the chamber bay into the active illuminated volume. This is a small sacrifice of a little-used part of the chamber. Other experimenters use the chamber with the cylinder in place.

The series of bubble chamber runs recently completed at SLAC will be analyzed, together with previous pictures obtained by the MIT group at the Argonne National Laboratory in Illinois, to give an improved picture of reaction dynamics of pi meson-proton interaction. Exposures at two energies at Argonne — 3.9 and 5.8 billion electron volts (GeV) — and two at SLAC — 8 and 15 GeV — each with positive and negative pions will provide grist for the theoretical mill.

Arved Soldner

It is with deep regret that we announce the death of Arved ("Arv") Soldner, a maintenance electrician in Crafts Shops since September 1967. He succumbed February 12 at Stanford Medical center after a lengthy illness.

SLAC NEWS
Stanford Linear Accelerator Center

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Anti-Omega Discovery

Continued from Page 1

enable physicists to begin the task of establishing the production and decay properties of the particle.

The experimenters believe that they have a chance of finding another anti-omega in the half-million pictures, since not all the possible candidates have been completely analyzed yet. The anti-omega is apparently much rarer than the omega, in that this is the first anti-omega to be seen anywhere, while 29 omegas have been seen throughout the world since 1964.

The photographs in which the anti-omega was discovered were taken by the Berkeley scientists here at SLAC. They used the 82-inch bubble chamber, which was developed at the Lawrence Radiation Laboratory in the late 1950's as a 72-inch chamber, and used at the Bevatron for nearly a decade.

Berkeley scientists reconstructed it as an 82-inch chamber and it was moved to Stanford in early 1967. In its earlier incarnation at Berkeley, the bubble chamber figured in the discovery of 16 particles and resonances. The anti-omega-minus is the first particle to be discovered in the modified chamber.

Electrons of 19 billion electron volts, generated in the SLAC machine, were directed at an aluminum target, and from these bombardments a variety of secondary particles emerged.

K-plus particles (kaons), having an energy of 12 billion electron volts, were separated out and directed towards the bubble chamber, which was filled with deuterium (heavy hydrogen).

When a kaon strikes a deuteron (a heavy hydrogen nucleus which consists of a proton and a neutron), a variety of particles is created, among which, it was hoped, would be an anti-omega.

BENEFIT OFFICE NEWS

This time each year many employees review their medical expenditures incurred during the previous calendar year for purposes of itemizing their medical expenses on income tax returns. Whether you intend to itemize these expenses or not, this is also a good time to review the applicability of Major Medical Insurance to any medical expenditures.

Stanford's Major Medical plan is designed to pay 80% of practically all medical expenses incurred by an individual for one or a series of illnesses or injuries, in excess of an annual deductible amount, up to $25,000. If an employee or his dependents have coverage under one of the three Stanford Basic Health Insurance plans, the deductible is $100 in medical expenses not otherwise covered or paid by the basic plan. Without a base plan and regardless of whatever partial benefits received from other health insurance coverage, if any, the deductible is $500 in total incurred expenses.

Covered medical expenses include charges incurred for hospital expenses; fees of physicians, surgeons, and physiotherapists; X-ray and laboratory tests; prescription drugs and medicines; and other medical services and supplies authorized or prescribed by your doctor. For any individual covered by this major medical plan, expenses may be submitted for services provided any time during a calendar year in which the claim is based. In addition, covered medical expenses incurred during the last three months of one calendar year may be used to meet all or part of the deductible for the ensuing year. That is, for example, if you did not establish a claim in 1969, all expenses incurred from October 1, 1969 through December 31, 1970 could be used in establishing a 1970 calendar year claim.

Obviously, in a brief news article it is difficult to cover all the features of the Major Medical insurance plan. However, even though our basic health plans provide excellent protection against heavy and prolonged medical expenses, Major Medical claims are not necessarily associated with "major" illnesses. With increasing costs, we submit many claims with drug purchases as the only out-of-pocket expenses involved.

For further information about Major Medical Insurance, drop by the Benefits Office in Room 238, A&E Building, or call us on Ext. 2357. We also have the complete figures for the amount of premiums paid by employees for medical insurance in 1970. This is a deductible expense for income tax purposes in itemizing deductions and we can readily supply the total expense.

FAIR HOUSING

by Larry Esquibel

Five SLAC personnel recently attended a Fair Housing Forum sponsored by the Mid-peninsula Citizens for Fair Housing (MCFH). Becoming aware of the issues involved in housing discrimination, formulating strategies for dealing with this issue, plans for mobilizing effective action and a general concern with community-consciousness were the topics of this Forum. In attendance were Jim Kallgren, Al Ashley, Gwen Bowen, Larry Esquibel and Bernie Lighthouse of Personnel.

As an employer, SLAC is concerned that all Fair Housing Laws protect its employees against illegal discrimination in housing because it is a proven fact that an employee who is discontented over discriminatory practices which affect him and his family will very likely be a discontented employee.

To compliment its concern, SLAC has become a subscriber to the Mid-Peninsula Citizens for Fair Housing, a non-profit corporation and, as such, SLAC is eligible to receive assistance in the area of Fair Housing from MCFH. MCFH is prepared to:

* Verify reports of illegal discrimination and assit our employees in obtaining their legal rights. Minority employees who suspect that they are being discriminated against in renting or purchasing apartments or houses are urged to report such incidents immediately by calling 327-1718 or Employee Relations at SLAC, extension 2355.

Bringing fair and firm pressure to bear on the people who persist in discriminating can change their practices.

* Provide descriptive material on methods of achieving equal opportunity in housing.

* Help all employees and management to become more aware and involved with the problems faced by our present and prospective minority employees.

For its part, SLAC agrees to:

* Provide cooperation and available resources to combat housing discrimination.

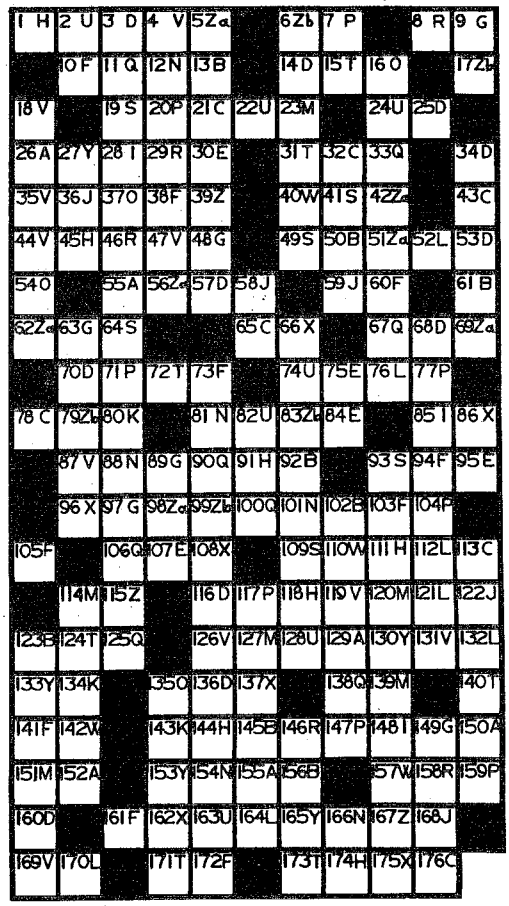
* Help develop programs to eliminate discrimination from the housing markets.

* Inform its employees about the goals and activities of MCFH.

Teaming together like this offers very promising possibilities of reducing and perhaps eliminating the evils of discriminatory housing practices. SLACers are urged to cooperate with the program. One way is to include an assurance when advertising an available house or apartment that it is available to anyone regardless of race, national origin, religion, age or sex.

SLACROSTIC I

by E.H. Austin



1. When an answer includes two words, numbers in parentheses following the clue indicate each word's length. Clues may include puns or anagrams.
2. Transfer letters from answers to corresponding squares in diagram. Blank squares separate words.
3. When complete, diagram will contain a quotation.
4. The first letters of the answers (read down) will form the author's initials, followed by the book title and chapter title.

A 26 155 129 152 150 55 Passes light or RF energy and may be airtight.

B 145 13 92 156 123 102 61 50 RF power source.

C 32 65 21 43 176 78 113 Stoned receiver? At one extreme. (4,3)

D 70 116 57 34 3 160 14 136 53 25 68 Duration of a rhythmical beat. (5,6)

E 84 30 75 95 107 Something about the moon symbolized by the Greek Letter phi.

F 94 161 38 60 141 172 10 105 73 103 Create Alec? Hasten the ordinary progress of.

G 48 89 149 9 97 63 No, here — sharpen again.

H 1 111 144 91 45 118 174 Actuate; provide synchronization.

I 28 85 148 Mark — Accelerator.

J 122 36 59 58 168 A kind of car or conductor.

K 143 134 80 Ohm's or Newton's.

L 132 112 121 76 164 52 170 .....-magnetic field.

M 120 127 114 23 151 139 Quantum of radiant energy.

N 154 12 166 81 101 88 W.W.--------, for whom a lab is named.

O 54 135 37 16 Three feet after beam switch.

P 7 71 117 104 77 20 147 159 A road near SLAC. (4,4)

Q 138 106 100 33 90 67 11 125 Reversed the polarity of.

R 29 46 158 8 146 I Chen? Spine or crest.

S 19 93 41 109 49 64 A kind of bath.

T 31 124 72 173 171 140 15 A prohibition on exams? (4,3)

U 2 128 24 82 22 74 163 Pagan.

V 35 119 126 47 4 44 131 87 18 169 Trial or test.

W 40 142 110 157 -----chart: program graph.

X 175 66 108 162 96 86 137 Describes a naked coil.

Y 153 27 165 130 133 Prefix meaning sulpher.

Z 167 39 115 Band between 300 mc and 3000 mc.

Za 42 69 98 51 56 62 5 Than this, 'tis more blessed to transmit.

Zb 79 6 83 17 99 Refrain from Old MacDonald.