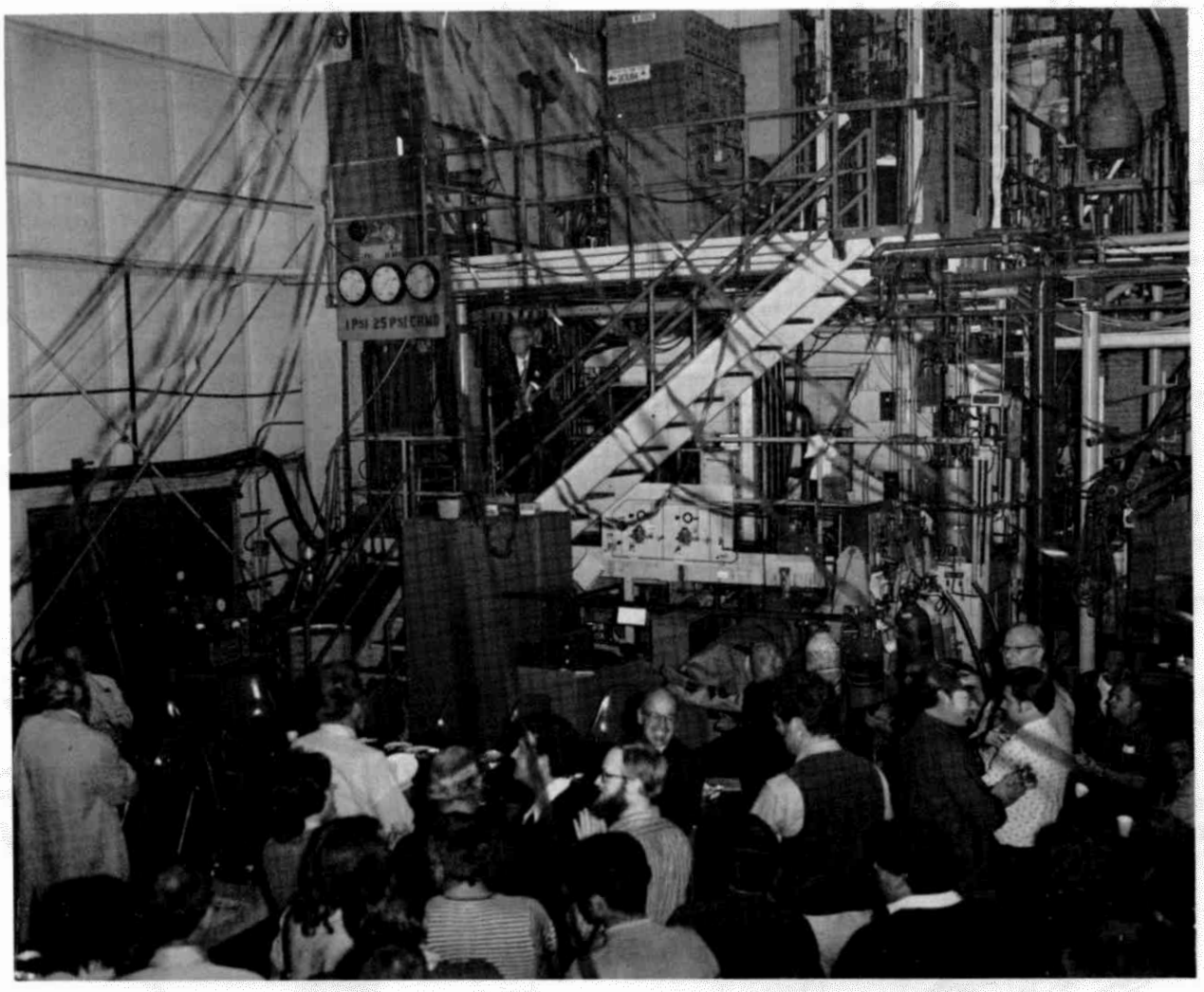
The Beam Line

VOLUME 4, NO. 16 **Stanford Linear Accelerator Center** DECEMBER 4, 1973

"Moratorium" Party for 82" Bubble Chamber

Paul Hernandez (LBL), Louis Alvarez (LBL), Bob Watt (Head of SLAC BCO), and Dr. Alvarez' two children standing on the stairway to (what was) the 82" topdeck.



A new model "streamer" chamber -- decorations courtesy of Sally McCuddy (BCO) who used 82" test film for streamers.

SLAC is saying goodbye to the 82" bubble chamber, at least for now.

After a history of nearly 14 years of use, first at LBL (then called LRL), and then at SLAC, the 82" is being closed down for an indefinite period of time. The 82" chamber was first constructed at LRL as a 72" chamber. It operated there from March, 1959 to April, 1967 (8 million pictures were taken during this period), at which time it was disassembled in order to modify it and transfer it here to SLAC as an 82" chamber.

It took about one year's time for parallel efforts and modifications at LRL and SLAC to take place, and the actual final transition was relatively smooth. In December, 1967, the 82" bubble chamber at SLAC became "sensitive" and was ready for a list of "things to do" to debug and prepare it for an experiment. In March, 1968, the first experiment was run on the 82" chamber. Since that time (until October, 1973), the chamber has taken 24.3 million pictures, with 58.7 million chamber expansions

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Running Circles Again

Sixteen runners representing SLAC, Stanford Running Club, and Los Altos High School assembled at the starting line for the Alex Gallegos-Gregg Hover Challenge Race on Saturday, October 27.

The idea to hold this event came about several weeks ago immediately following the SLAC Annual Long Distance Run, when second place runner Alex Gallegos approached Ron Hover, whose son, Gregg, was the unofficial Third Place winner. A friendly rivalry began, and from it came the idea for a challenge second run.

Extremely fast times were recorded for the race run over the 4-mile route around the gallery:

1st - John Ferguson, SRC, 20:56
2nd - Tony Deaguero, LAHS, 21:07
3rd - Ray White, SRC, 21:37
4th - Dave Cathiell, SLAC, 21:45
5th - Gregg Hover, LAHS, 21:51
6th - Tony Beaman, SLAC, 22:13
7th - Bill Jackson, LAHS, 22:37
8th - Jeff Richman, Fingers Lake Runners, New York, 22:48
9th - Alex Gallegos, SLAC, 23:34
10th - Ikaros Bigi, SLAC, 24:07
11th - Ted Syrett, SLAC, 24:23
12th - Dave Robinson, SRC, 24:30
13th - Ken Moore, SLAC, 24:34
14th - Jeff Newmeyer, SLAC, 25:27
15th - Justino Escalera, SLAC, 27:03
16th - Bill Dawkins, SLAC, 30:50

The timers were Gerard Putallaz, Don Camp, and Ron Hover. Thanks, fellas, for your assistance!

Three more events are being planned to take place during the next two months, and we are try-

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AEC Chairman Visits

Dixy Lee Ray, AEC Chairman, visited SLAC on the afternoon of November 13. This was the first AEC high energy physics lab she had visited.

Accompanied by Dr. John Teem, head of the AEC's Division of Research, Dr. Ray met with Deputy Director S. Drell and Associate Directors R. Neal and J. Ballam for about forty minutes and then spent about an hour and one-half touring the site.

On tour, she visited (among other places) End Station A and SPEAR. She was particularly interested in the spectrometers in ESA, and had a lively discussion with Hobey DeStaebler (Group A) on their operation.

Dr. Sid Drell accompanies Dixy Lee Ray on her tour of SLAC.

Contract Signed for New Computer Buiding

A contract was signed on October 9, 1973, for the architectural and engineering services required to construct a new building to house the Computation Center at SLAC. The total project is estimated to cost $2.9 million.

Parties to the contract are Albert Hoover and Associates, Architects, of Palo Alto; and Stanford University, which operates SLAC.

The three-storey, 50,000-square-foot structure will house three large computers (two IBM 370/168 computers and an IBM 360/91) used in analyzing the data SLAC obtains through its research in physics and also the 100 or so personnel from the Stanford Center for Information Processing and SLAC's own Computation Group needed to man the facility. It will also house a number of smaller computation systems. Its location will be south of the Central Lab Annex and east of the temporary buildings now in use.

The contract signed also provides for three subcontractors on the project in addition to the principal contract with Hoover and Associates. Civil engineering will be carried out by Brian, Kangas, Foulk and Associates, Redwood City; structural engineering by Pregnoff, Matheu, and Beebe, San Francisco; and Arutunian and Kinney of Palo Alto will provide landscape architecture.

SLAC itself will provide the electrical and mechanical engineering work and the technical management for the project.

Groundbreaking should take place during the summer of 1974, with complete occupancy expected in August 1975.

Technical Manager at SLAC will be Fred Hall and Project Coordinator at SLAC will be Glenn Tenney. Both Hall and Tenney are members of our Plant Engineering Department.

Party for 82" HBC

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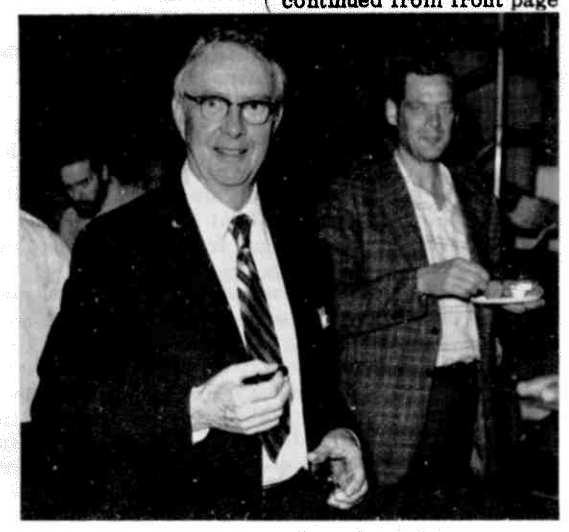
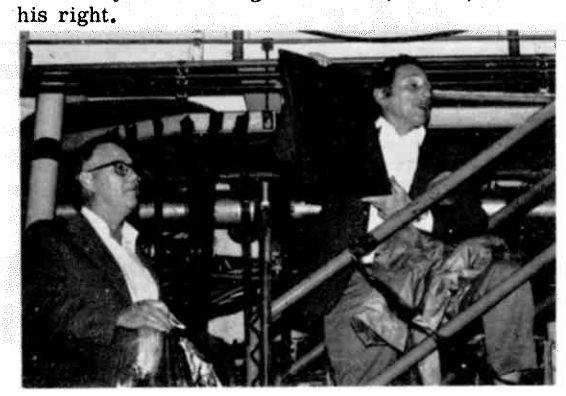


Dr. Louis Alvarez came for the festivities. In 1968, he won the Nobel Prize at LBL for "the discovery of a large number of resonance states, made possible through (your) development of the technique of using hydrogen bubble chambers and data analysis." George Chadwick, SLAC, is on his right.



Dr. Ballam (right) presents a plaque to Bob Watt which reads "To Robert D. Watt and the Crew of the 82" Bubble Chamber: In appreciation for their contribution to high energy physics through the magnificent operation of this chamber."

("big bang" noises, if you've ever been around while it operates).

A good number of our present Bubble Chamber Operations staff came from LRL along with the chamber itself and have continued to function as "the valves of the machine" (as Jim Ferrie of BCO puts it) in a team which grew to meet the needs of SLAC users.

What happens without the 82" chamber?

Both the 40" and the 15" chambers (previous Beam Line articles described their use) will step in full-time to fill the hole left by the 82". In fact, the ratio of pulses to pictures in the 82" was about 2:1, which produced a large number of pictures. Many of these pictures were of very common events. However, in the changeover to the 15" (Rapid Cycling Bubble Chamber), faster on-line computer analysis techniques will keep pace with the fast pulse-rate of the 15", with the result that perhaps only one picture in every 300 pulses would be taken. Particle detectors in the chamber transmit electronic signals to the computer, and it tells the camera whether or not to take a picture. (This transaction takes place in less than 3/1000 of a second, a "long time" in present computer language.) Thus, the highly-discriminating detectors will be a watchdog over what happens in the chamber, and the cameras will respond to those events considered worthy by the computer program, rather than just take enormous numbers of pictures of common events.

With all the activity of winding down the 82" and cranking up the 40" and 15", the BCO staff is being re-positioned in new duties. The goal of 60 pps for the 15" will be quite an accomplishment and will take a hard-driving effort from all the staff to achieve.

(Several BCO staff members who wish for health reasons to remain anonymous asked that special mention be made of Jim Ferrie, their "roving expert.")

Car Pools To Be Formed

If you're tired of highway congestion and its attendant pollution and are also concerned about the rising costs of gasoline and oil and the growing scarcity of those substances, you may be interested in forming a car pool with SLAC employees living near you. If so, the Personnel Office would like to help.

Those interested in forming car pools should send (don't phone) the following information to Marie Arnold (Bin 11): name, address (including zip code), SLAC bin number and phone extension, and hours of work. Personnel will take this information and set up tentative pools on the basis of geography and hours of work. Each member of each pool will be given the names and SLAC extensions of the other people in his or her group. One person in each pool will be asked to organize the pool from this point on -- if you are interested in being an organizer, please indicate this when you send Marie the information asked for above.

AEC Happenings

The week beginning Monday, December 17 there will be an AEC Compliance Team visiting at SLAC. Any one interested in meeting with them please contact Jim Ketcher, extension 2352.

Running Circles ...

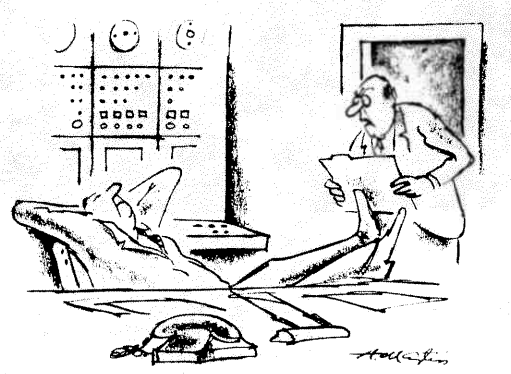
(continued from front page)

ing to include the bicyclists in these activities wherever possible. Brookhaven National Laboratory has a program similar to ours at SLAC where they hold a Long Distance Run and a Bicycle Race. We are now trying to arrange a challenge race with them, and if they accept, the event will possibly be something like this: an 8-mile footrace and a 16 mile bicycle race would take place at SLAC (and hopefully at Brookhaven). The SLAC races will be held on the circular road surrounding the Administration Building, Cafeteria, and Central Lab complex. The course is approximately 0.8 miles long, so the runners will have to run around it 10 times and the bicyclists 20 times. The average time of the first 10 runners to cross the finish line will be computed and this time will be our official time entered. The same system will be used in the Bicycle Race: more on this event later.

On Wednesday, December 19, in the week just before Christmas vacation, we're in the stages of planning a lunchtime Goodwill Jog of the SLAC facility. It will be a 6 1/2 mile run: for those runners with a short lunch break, a drop-out point after 2 1/2 miles has been arranged at Sector 30. The bicyclists are invited to join in on this one, although this will not be a speed event due to traffic and potholes, etc.

Hope to see you there!

Ken Moore
Plant Maintenance



"Bradley, are you visualizing, synthesizing, conceptualizing analyzing, finalizing, or catching up on your sleep?"

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P.O. Box 4349, Stanford, California 94305
Tel. (415) 854-3300 Ext. 2204

SLAC Job Openings

The following positions are available at SLAC for internal placement.

PS&E Tech II (SPEAR)
General operation of SPEAR and associated systems; may fabricate, install, maintain, modify, repair various electrical, electronic, or electromechanical components or systems.; recognize, identify, and take proper action for correction and preventive maintenance of related equipment; use computer hardware and software to degree required to control ring; will be required to work under minimum supervision as single operator on duty; maintain effective communication with experimenter/use so that operational efficiency is maintained.
Salary: $730-932 Shift: Rotating Req. 7765

PS&E Tech II (Electronics Department)
Under general supervision, perform work in electronics such as: mechanical fabrication, assembly and wiring of electronics chassis; trimming, drilling and loading of printed circuit boards; printed circuit board layout; assembling coaxial and multi-conductor cables and installation of interconnecting wiring on the Accelerator.
Salary: $730-932 Shift: Day Req. 6656

Maintenance Person I (Plant Maint. & Utilities)
Provide plant surveillance and assist in operation of plant utility and experimental systems as required. May be called upon to assist in maintenance of a variety of experimental and utility equipment in operation at SLAC. Surveillance duties will be of a security nature as well as plant operation and will include the entire site.
Salary: $746-822 Shift: Rotating Req. 7840

In addition to the above positions available at SLAC, a complete listing of open positions on the Stanford campus and the Stanford Hospital are posted outside of the Employee Relations Office, Room 238, A&E Building, and in the Employee's Canteen in the Research Yard.

Contact the Employee Relations Office (phone extension 2355) if you are interested in any of these positions.

Metric Conversion Committee Formed

In the not too distant future SLAC people will probably be measuring distances in meters and centimeters and volumes in liters and cubic centimeters as SLAC, along with many other laboratories, is studying the long range problems of changing from the English system of measurements to the metric system.

To help with this study, Deputy Director Sid Drell has appointed a thirteen-member Metric Conversion Committee, whose functions are to (1) establish the total scope of metric conversion as the conversion applies to SLAC; (2) recommend a plan (and schedule) of conversion; (3) estimate the cost of conversion, and (4) recommend techniques for introducing SLAC personnel to the use of the metric system.

J. Voss (MED) is the committee chairman. Others on the committee are K. Bailey (Accel. Elect.), R. Bell (MED), S. Butler (MFS), R. Coombes (Group G), R. Davis (BCO), R. Gould (PED), G. Harding (Craft Shops), R. Hashagen (Purchasing), C. Kruse (AP), G. Ratliff (Plant Office), G. Renner (Personnel), and H. Weidner (EFD).

The committee's initial report is expected in mid-December.

Bicyclers

The following safety notice was issued at another AEC lab after a bicycling accident there.

"This disabling injury (broken arm), resulting from taking a shortcut across rough terrain, prompts a review of some principles of safe bicycle operation.

- Inspect bicycle for mechanical soundness and safe operation prior to use.
- Use bike racks for bicycle parking. When bikes are dropped or topple over onto the lower trailing edge of the front fender, tire-to-fender clearance is reduced and fender strength is diminished.
- Pedal with the balls of your feet for better control, more power and increased clearance to front fender.
- Stay on established bikepaths and roadways. Use bicycle lanes where provided. Ride on far right of roadways whenever bicycle lanes or paths do not exist.
- Walk bicycles when crossing in crosswalks.
- Obey traffic control signals and signs. Bicycle riders are required to comply with vehicle codes.
- Yield right of way to pedestrians and other vehicles in accordance with vehicle codes and ordinances.
- Stop with other vehicles at crosswalks that are controlled by crossing guards or occupied by pedestrians."

The Beam Line

Stanford Linear Accelerator Center

NOTE TO MEMBERS OF THE SLAC FAMILY FROM PIEF IN SWITZERLAND:

This is the first time I have been away from Stanford at Christmas time for fourteen years. It is good to learn here at CERN about the progress and methods of the High Energy Physics institutions in Europe, but it is even better to find that SLAC is regarded as a truly great laboratory by all. I am also pleased (but not surprised!) that SLAC runs even better when I am not there. With many thanks and best wishes for a great Christmas and peaceful New Year.

Pief Panofsky

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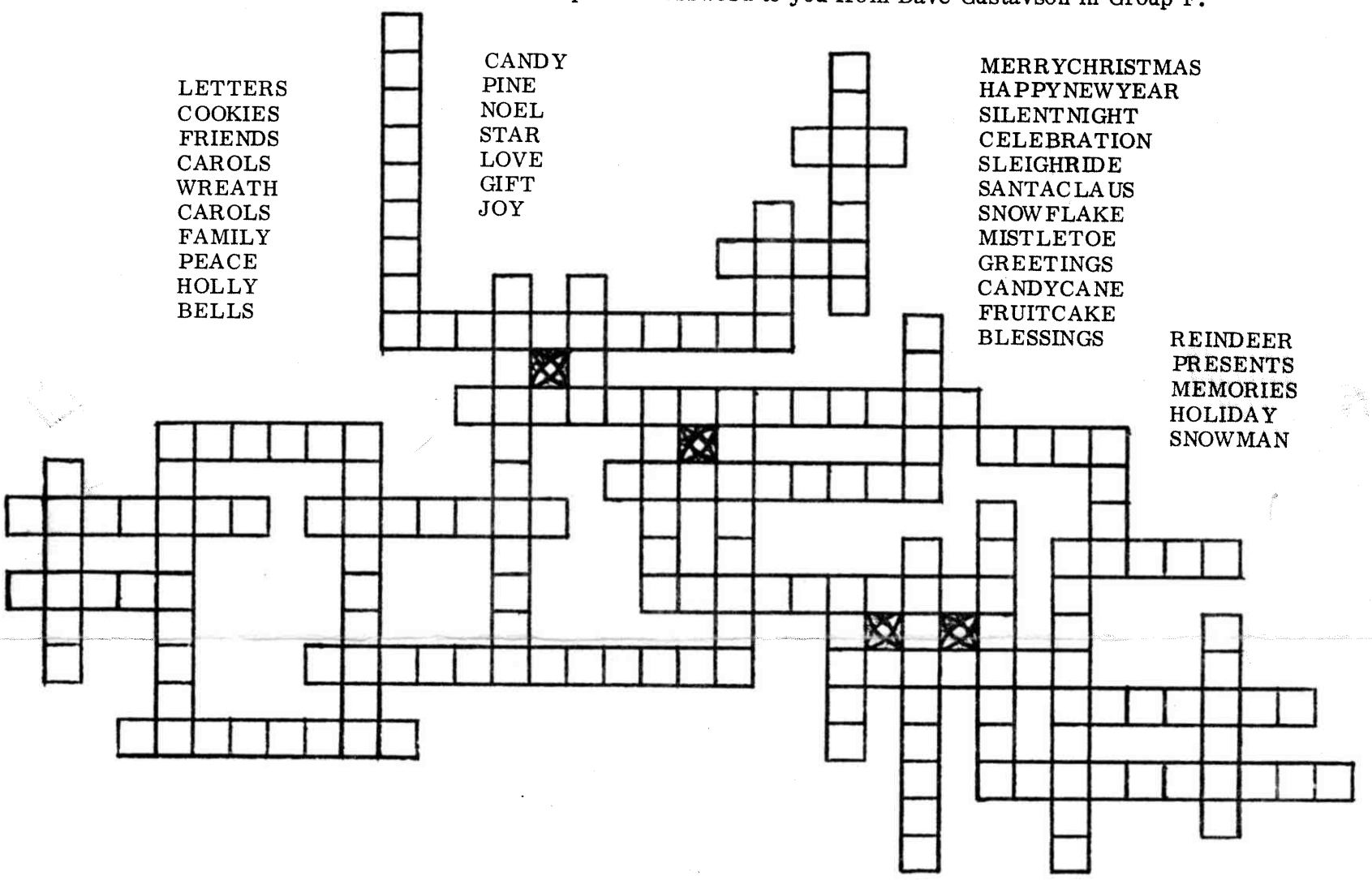
SEASON'S GREETINGS -- A computer crossword to you from Dave Gustavson in Group F.

LETTERS
COOKIES
FRIENDS
CAROLS
WREATH
CAROLS
FAMILY
PEACE
HOLLY
BELLS

CANDY
PINE
NOEL
STAR
LOVE
GIFT
JOY

MERRYCHRISTMAS
HAPPYNEWYEAR
SILENTNIGHT
CELEBRATION
SLEIGHRIDE
SANTACLAUS
SNOWFLAKE
MISTLETOE
GREETINGS
CANDYCANE
FRUITCAKE
BLESSINGS

REINDEER
PRESENTS
MEMORIES
HOLIDAY
SNOWMAN



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HOLIDAY GREETINGS!

COME TO OUR SPECIAL LUNCHEON AND PARTY

Thursday December 20, 1973

11:30-12:30 Luncheon - In SLAC Cafeteria, $1.50 per person
Menu - Turkey with dressing and cranberry sauce -or- Roast beef
plus
Salad, mashed potatoes, vegetable, roll & butter, coffee, and
Cake - or - mince or pumpkin pie

The Palo Alto High School Madrigal singing group will be in the cafeteria singing Christmas selections from about 11:45 to 12:15.

12:30-1:00 Christmas caroling and special songs for all (who fit) in the SLAC Auditorium. The "Madrigals" will sing special numbers, followed by a soprano duet of Henry Purcell's "Sound the Trumpet." Then the whole SLAC chorus (everyone in audience) are invited to join in singing favorite Christmas carols.

1:00-1:30 Cookies and punch in the Breezeway --
Christmas greetings from Sid Drell
Drawing and prizes --

DETACH HERE FOR SLAC DRAWING

(PLEASE PRINT)

NAME _____

DEPARTMENT _____