More Diversification

State of the Labs, 1975 to 1981, Subject of Study

Long range plans, essential for any enterprise, are presented for Sandia Labs in a detailed study prepared by the 4010 Management Staff under Charlie Winter. Among the forecasts in *Sandia Laboratories Long-Range Plan (FY '75-'81):* "This plan projects a significant increase in the diversification of Sandia Laboratories for the period FY 1975 through 1981."

Though greater diversification is predicted, the study emphasizes that Sandia's principal task will remain that of developing nuclear weapons. The advanced technology now evident at the Labs is, in fact, an outgrowth of weapons work, and it is this technology which now finds application to other tasks. An example of technology transfer, cited in the study, is Labs development of sensor devices which were widely used in Vietnam to detect troop movements and which are now being considered for a number of other applications. The sensors are an outgrowth of earlier weapons-related work involving instrumentation in satellites and seismic devices to detect clandestine nuclear tests.

Following a look at Labs resources, the study addresses itself to Labs goals through FY '81. Diversification is already seen in the amount of funding which Sandia derives today from AEC Divisions not concerned with weapons — almost three times greater than what it was two years ago. For our principal effort, that of weapon development and production, the study looks at the last 10 years and projects a small (2½% per year) decline in this work through FY '80. It notes that forecasts about new weapon systems are particularly difficult to make because of détente, the SALT talks, and other negotiations.

Weapon safeguards, the program to maintain security of weapons and weapon materials against sabotage and theft, is considered separately from weapons development. Sandia has been assigned the lead role in the program, and our earlier work on coded switches for weapons (to prevent unauthorized arming) was a major factor in gaining this assignment. The Labs has, since 1970, been developing transportation security measures for weapons and recently has undertaken programs to improve the security of fixed sites where weapons or weapon material is stored.

Labs activity in weapon security and in the related program of nuclear materials security is expected to increase slowly through FY '78 and to stay constant thereafter. In the short run, a rapid expansion is foreseen in activities to enhance the security of nuclear materials during manufacture and reprocessing, and at the reactor sites.

Laser and electron beam fusion programs at Sandia give promise of thermonuclear burn, i.e., fusion and, if successful, benefits include power generation relatively free of the problems associated with present nuclear power. This significant payoff is the basis for Labs support of steady growth in both programs through FY '81. The projection calls for the assignment of nearly 400 people to these programs by that date.

Other energy related programs over and above the laser/E-Beam fusion effort are expected to require 340 people in FY '76, and this number is predicted to increase to about 1200 in FY '81. Projects here include, among others, reactor safety research, radioactive waste management, transportation of spent fuel from breeder reactors, measurement of pollutants in the troposphere and stratosphere, the solar community, oil well drilling technology, magma taps, and analysis of combustion in auto engines.

Reimbursable programs at Sandia have been chiefly funded by the Department of Defense, and, because of general budgetary pressure on defense expenditures, these programs may experience a slight reduction. However, the proposed Sandia/NASA Mars Penetrator Program represents a major new reimbursable activity, if given the go-ahead.

The plan concludes with a discussion of anticipated staff levels and new construction. Projections here are especially tentative because of inflation and other imponderables, but if planned diversification takes place, total staff in FY '81 would be 7100 (vs the present 6450). A number of new laboratory buildings will be needed, both in Albuquerque and Livermore, and computing facilities will also be augmented. In addition, range facilities at TTR and NTS are slated for updating and improvement.

LAB NEWS

VOL. 26, NO. 24 NOVEMBER 22, 1974

SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

Tom Cutchen (left) and Jim Harris (both 2521) demonstrate high light transmission properties of an aircraft window segment developed for the Air Force to protect cockpit crews from burns and flashblindness. Segment can be switched from transparent (20% light transmission) to opaque (0.01% transmission) in 50 microseconds.

Ceramic Aircraft Window Prevents Flashblindness

Tom Cutchen and Jim Harris of Active Ceramic Materials Division (2521) have completed development of the first laboratory prototype of an aircraft window segment which uses the electrooptic properties of PLZT ceramic to protect a cockpit crew from thermal burns and flashblindness.

The window segment, which can be switched from transparent to opaque within 50 microseconds, was developed for the Air Force Materials Laboratory, Wright Patterson AFB. It is anticipated that similar segments will ultimately be installed in advanced aircraft to protect crews from injury from the intense light emitted by a nuclear burst.

The prototype window measures 6x8 inches and is composed of four pieces of PLZT, each 3x4 inches. (The remainder of the aircraft window is screened.) PLZT is a transparent lanthanum-modified lead zirconate titanate ceramic whose optical properties can be controlled by application of a voltage to a thin plate of the material. The material was invented in 1970 by former Sandia ceramist Gene Haertling.

In the window segment, a 15-mil-thick wafer of PLZT is sandwiched between crossed polarizers — an arrangement which allows virtually no light to pass through the segment until a voltage is applied to metallic interleaved electrodes on the surface of the ceramic. The chromium-gold electrode lines are three mils wide and separated by 60 mil gaps.

A voltage applied to the electrodes alters

(Continued on Page Two)

Sandian Elected to County Commission

Bob Hawk is a systems and procedures analyst for Engineering Information Systems Division 9623 and a 25-year plus Sandian. He is also the winner of the District 3 seat on the Bernalillo County Commission. The county has been governed by a three-member commission, elected at large; the change to the present five-member structure was, by constitutional amendment, approved last year.

County government, according to Bob, looks at two areas: (1) routine government administration — fire and police protection, parks and recreation, finance — for the 50 to 60 thousand county residents living outside the city; and (2) administration of mental and physical health programs for the entire county.

"I'm interested in both areas," Bob says. "On the financial side I think we should develop a good, solid budget, hold public hearings on that budget, set it down in black and white and then stick to it! In the area of physical and mental health I feel that I have something to offer the public. In fact, that's why I decided to seek this office."

Bob's 12-year-background with health programs is impressive: he recently resigned as chairman of the board of the State Department of Hospitals and Institutions; he is a member of the advisory board of Odyssey House (a drug abuse center), the Association for Retarded Citizens, and the Mental Health Association. Currently he is president of the Mid-Rio Grande Health Planning Council.

"A trend to county involvement in health is developing across the nation," Bob continues. "County government is in the position of working from a firm financial base, because of tax structures and revenue sharing funds. My associations with many different people in the health field will be helpful here."

The five commissioners were elected to staggered terms — Bob's is for two years — to provide continuity. Beginning in 1976, all candidates will be elected to four-year terms.

"I enjoyed campaigning," Bob says. "I knocked on doors and met lots of interesting people — I found that stating my honest opinion on practically any subject prompted comments and questions from most voters. Also met lots of interesting dogs — I found that the canine population in the SE heights is large and that an aura of unconcern does not always evoke a similar response."

LAB NEWS

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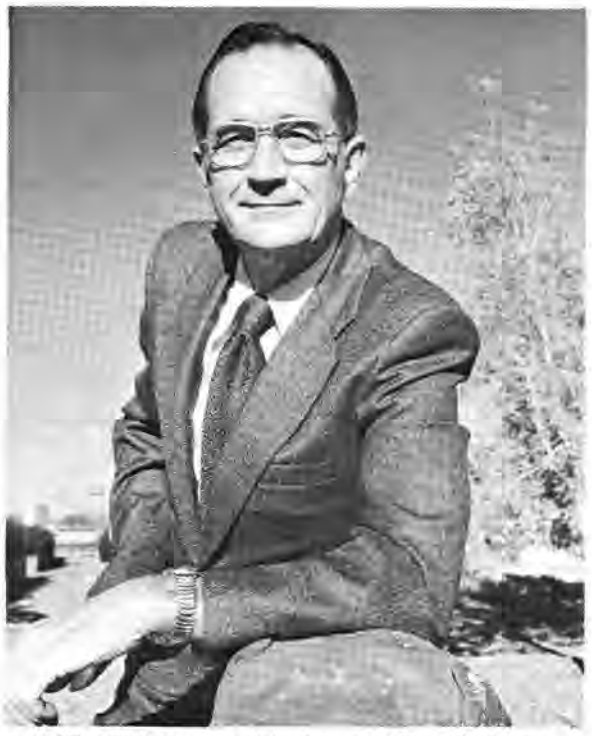


BOB HAWK, Bernalillo County Commissioner

Continued from Page One

Ceramic Window

the atomic dipole alignment of microscopic areas in the ceramic, causing it to become birefringent. The birefringent PLZT acts as a retarder or half-wave plate which effectively "twists" or rotates incoming polarized light so that it passes through the second crossed polarizer.

When the voltage across the electrodes is removed, the ceramic returns to its normal unswitched state within a few microseconds, and no longer exhibits birefringence. Light passage is again prevented because of the crossed polarizers.

Light transmission through the window is about 20 percent in the "on" state; by comparison, transmission through U.S. Air Force regulation sunglasses is about 15 percent. Transmission through the window in the "off" state is less than 0.01%. Flash hazard is detected by an array of photodiodes, which activates a silicon controlled rectifier that discharges the window segment, switching it to the "off" state before the incoming light reaches sufficient intensity to burn skin or damage eyes.

The power supply, which has not yet been fully miniaturized, displaces approximately two cubic inches and weighs about two ounces, exclusive of the battery. The unit draws about 1 milliamp in the "on" state, permitting about 200 hours of operation from the 5.4-volt battery.

Cutchen and Harris are also working on flashblindness goggles for both the Air Force and the U.S. Army Natick Laboratories. The goggles, for use by pilots or personnel operating military motor vehicles, have the same operating characteristics as the window segment. They will use four pieces of PLZT — two lens pieces with a maximum diagonal measurement of 3½ inches, and two side pieces with a diagonal measurement of two inches.

Variable Annuity Unit Value

December	1.149
November	1.005
Average 1973	1.752

Take Note

WE is co-sponsoring *The Wild Places*, a television special to be broadcast over NBC on Monday evening, Dec. 2. The special stresses the importance of unspoiled lands, taking viewers to some of the nation's most majestic natural regions — from the icy peaks of Alaska to New Hampshire's White Mountain National Forest. Guides for *The Wild Places* are Paul Newman and Joanne Woodward. Other areas filmed for this special include the canyonland and desert regions of Utah; the lakes and canoeing areas of Minnesota; and the swamplands of South Carolina.

* * *

Sandians who want to converse in German are invited to meet for lunch at the German Table every Tuesday at 11:30 a.m. in the Tech Area cafeteria, Bldg. 839. Fluency is not required, only a willingness to participate in the conversation. Pat Newman (3144) is the arranger.

A Russian Table meets in the Base cafeteria every Thursday at 11:30 a.m. Persons interested in a Spanish Table should call Dodie (4-3638); in a French Table, Berweida (4-7092).

* * *

"Prolonging 'Life' by Machines — A Dilemma for Physicians and Families" is the title of a discussion scheduled Monday, Dec. 2 at 7:30 p.m. at the UNM Law School, 1117 Stanford NE. Sponsored by the Memorial Society of Central New Mexico, speakers will be Mark Lane, MD, Albuquerque neurologist, and Henry Wiehofen, UNM Law School professor emeritus. Additional information from Gene Copeland (9343), ext. 7909.

* * *

Give your regards to Braudaway. In Bucharest in September, Dave (9532) was elected to a seven-year term as chairman of an international committee charged with setting standards for electrical measuring instruments and associated apparatus. The committee is a part of the International Electro-Technical Commission and includes representation from 42 nations — each of which (including Russia, China, Egypt, and Israel) had to approve the election. Dave is also a member of the Pilot Secretariat which oversees the work of the five committees that make up the measurement part of the International Organization for Legal Metrology (OIML).

* * * *

"Implantation Metallurgy: Some Characteristics and Applications" will be presented at the 5100 Seminar Dec. 3 by Sam Myers (5111). The Seminar meets Tuesday mornings at 8:30 in room 201, building 836.

Death

Andrew Massick of Facilities Test Equipment Design and Development Division 9344 died Nov. 11 after an extended illness. He was 44.

He had worked at Sandia Laboratories since December 1968.

Survivors include his widow, three daughters and a son.

LIVERMORE NEWS

VOL. 26, NO. 24 LIVERMORE LABORATORIES NOVEMBER 22, 1974

Employees Top LEAP Goal

Results of the 1974 Livermore Employees' Assistance Plan (LEAP) campaign show that Sandians contributed a total of $42,500, well over the goal of $41,000. The figure represents an increase of 12 percent over last year's contributions of $37,900.

The average gift per contributor was $57.50, with employees participation at 85 percent, up from 83 percent last year. Of those participating, 36 gave a Fair Share or one percent of their annual salary and 106 contributed a LEAP share (one hour's pay per month).

"The response was great; we topped our goal" comments LEAP chairman John Marion (8332). "The increase both in contributions and participation shows Sandians continue to approve of the Plan."

Take Note

Rudy Johnson of Metallurgy and Electroplating Division 8312 received an award for the best technical paper presentation in the Printed Circuit and Connectors Session at the Seventh Annual Electronic Connector Symposium this fall. Title of his paper was "Plating Problems Associated with Aluminum Circuitry."

* * * *

Twenty-eight players competed during Sandia's recent duplicate bridge tournament held at the Sun Valley Mobile Estates recreation center in Livermore. Trophies were awarded to Bob (8163) and Nancy Frost, the east/west winning pair, and Hilary (8322) and Susan Jones, north/south pair winners. Door prizes were won by Gabe Gabrielson (8322), Ron Musket (8334), Jim Rogers (8322) and Bonnie Smith (wife of Ray Smith, 8365). Results of the tournament are being submitted for competition in the National Industrial Recreation Association's annual Postal Duplicate Bridge Tournament.

Speakers

Bob Schmieder (8342), "A New Technique for Producing Highly Ionized Atoms," Max-Planck Institute for Plasma Physics, Garching, Germany, July 19; "Auger Effects in Multiple Successive Ionization by Relativistic Electrons," Fourth International Conference on Atomic Physics, Heidelberg, Germany, July 26; "Multiple Successive Ionization by Impact of Relativistic Electrons," Free University of Berlin, Berlin, Germany, July 29; "Neutral Beam Sources and Their Possible Applications in Science and Technology," Institute for Plasma Physics, Julich, Germany, Aug. 1; and "Production of Ultrahigh Charge States," Culham Laboratory, England, Aug. 7.

Ron Musket (8334), Invited Presentation, "Studies of Solid Surfaces Using Proton Beams," Seminar, U.S. Army Ballistic Research Labs, Aberdeen Proving Ground, Maryland, Sept. 13.

Sympathy

To Gerry Nerton (8323) on the death of her husband in Livermore, Oct. 14.

To Ken Bennett (8261) on the death of his mother in Pueblo, Colo., Oct. 7.

To Elmer Smith (8166) on the death of his mother-in-law in Oakland, Oct. 10.

To Cliff Selvage (8180) on the death of his stepfather in San Luis Obispo, Oct. 28.

To Don Beard (8312) on the death of his father in Livermore, Oct. 23.

To Joe Vanderpoorten (8412) on the death of his mother in Menen, Belgium, Oct. 19.

DEPRESSION GLASS COLLECTORS (from right) Pat Childers (8261), Helen Bond (8412), Lollie Short (8264), and Bess Roach (8266) enjoy Joan Kerns' (8413) account of finding her green Princess candy dish.

Collecting Depression Glass Brings Back the Bad Old Days

Considered one of today's hottest collectibles, depression glass has come a long way. All the way from the late Twenties and Thirties when the relatively inexpensive glassware was molded into over 300 different patterns by Eastern and Midwest companies who set up production to keep people employed.

Sandians Helen Bond (8412), Pat Childers (8261), Joan Kerns (8413), Bess Roach (8266), and Lollie Short (8264) are among those who have become hooked on collecting depression-era glass as a hobby, although they more commonly refer to it as a "disease." Some of their pieces were on display when the local club, "Nostaglia, Etc.," took a special blue ribbon award at this year's Alameda County Fair.

"Back in the 'Great Depression' days, you could buy a 32-piece table setting for a few dollars," says Helen, who has been collecting about three years. "If you still had that complete set, it could well be worth hundreds today — and there are collectors who'd pay that."

The glassware was also given away a piece at a time as premiums at movie theaters and gas stations and in oatmeal and soap boxes, and people would try to collect complete sets. Though filled with bubbles and mold marks, it was colorful and brightened the tables of families living in bleak circumstances. Now, over 40 years later, people are still trying to accumulate sets.

The Sandia collectors feel much of the intrigue is in the hunt. Most of their sets have been built up by finding a piece or two at a time in favorite patterns. A few patterns were hand molded, but most were manufactured by machine — either by chipped-mold, paste-mold or cut-mold methods, or the widely used mold-etched technique. "Mold-etched" is the process by which a pattern is etched with acid into the iron mold itself, rather than directly into the glass, leaving the pattern in relief on the glass surface.

Some collectors specialize in individual pieces. Joan, for instance, has 35 different candy dishes and over 10 cracker or cookie jars. She notes that "although prices are up, the average person can still collect at a reasonable cost, depending, of course, on the pattern. Pretty colored glassware is just not easy to come by these days, even in our better department stores, which is one reason younger girls are fascinated by 'dee-gee'."

Pat comments that she's been lucky in finding several good buys. "One of my first was at a flea mart where I spotted a pink bowl sitting in the middle of some old garage parts. I gave the seller the two dollars he was asking, clutched the bowl and left, knowing it was a Miss America fruit bowl — value in the price guide at $30."

Depression glass as an investment is what attracted Bess, who plans to open a small antique and gift shop in Alabama when she retires. "The past five years I've been having a ball collecting for my shop. I now have a garage full, including a good bit of the clear crystal which is starting to come into its own. Prices might level off for a while, but I predict that in another 10 years or so they'll be on up there."

Lollie has turned collecting into a family project. "While I hunt for depression glass and bric-a-brac, my husband looks for antique wooden furniture and old guns. Out driving, we stop at every antique shop, flea market and garage sale."

Grandma's attic and basement are other likely sources for finding the glassware, but collectors are complaining it is becoming more and more elusive — in fact, downright scarce. Much they feel is disappearing into private collections that will be passed down within families and never again will be available. •ls

Joe Abbott & The Albuquerque Symphony

Joe Abbott of Integrated Circuits Division 2112 started violin lessons when he was six years old. When he was 10, his instructor told his mother that he was a "lost cause." That was a long time ago.

Joe has played violin with the Albuquerque Symphony Orchestra for 25 years. He was in high school in 1949 when he played his first concert with the state's most distinguished musical organization. Twenty-five years is a long time, but Joe is more excited about music than ever before.

"The Orchestra is doing fantastic things," Joe says. "Musically, we've expanded our scope and advanced tremendously under the baton of Yoshimi Takeda. Our programs feature a wide variety of outstanding selections. We're working harder than ever before."

Much of Joe's enthusiasm stems from the success the orchestra is currently enjoying — all of the tickets for the current season were sold out in advance. Ticket sales account for half of the orchestra's budget. The other 50 percent comes from grants and contributions.

"This is considered success in the Orchestra business," Joe says. "Other metropolitan orchestras average from 30 to 40 percent of their budget from ticket sales. We're fortunate in Albuquerque to enjoy wide community support."

JOE ABBOTT (2112) has played violin with the Albuquerque Symphony Orchestra for 25 years.

With 85 musicians, conductor and professional staff, the Orchestra takes considerable funding. Annual budget is more than $100,000.

Having just presented a concert this week, the musicians are already rehearsing for the next one — a special Christmas presentation of "Hansel and Gretel," Dec. 13 at 7:30 p.m. and Dec. 14 at 1:30 p.m. at Popejoy Hall. Tickets are available for this one as well as for the Popejoy concerts in January and February.

Also coming up are concerts in Santa Fe, Taos, Silver City, Hobbs, Carlsbad, Socorro and Window Rock. And a special concert for schoolchildren will be held in the University Arena next spring.

"The Symphony Orchestra has a special obligation and responsibility," Joe says, "since we are the only such group in the state. We feel that it's our job to bring the experiences of live music to some of the smaller communities. We're not trying to recruit converts for symphonic music (I like to listen to country and western myself) but a concert by a full symphony orchestra is special. Words can't really describe the experience. There is this huge soaring sound . . . "

A number of special events sponsored by the Albuquerque Symphony Women's Association are held each year to help the Orchestra raise funds. Other groups contribute — the Orchestra's Advisory Council and its Board of Directors which holds financial responsibility for the organization. Morgan Sparks, Sandia president, and Bob Henderson, retired Sandia VP, are members of the board.

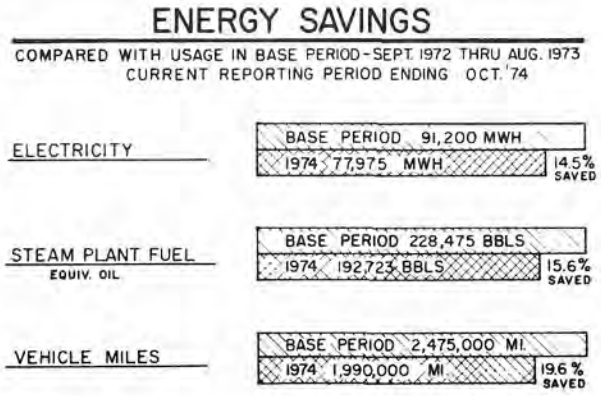
As a musician, Joe keeps practicing and working at it. "You see," he says, "I had to prove that my old instructor was wrong."

CU Bulletin Board

Cold-Water Laundering — The average washing machine uses 20 to 25 gallons of hot water. It takes energy to heat the water and, of course, costs money. Yet a study of cold-water laundering, reported in the October issue of *Consumer Reports*, concludes: "Hot water has always been expected to wash better, but we could only prove it with our instruments in most cases. Instruments showed only a slight percentage difference between hot-and cold-water washings — a difference you probably wouldn't be able to see." No doubt legions of housewives (& househusbands) look upon hot-water laundering as an eternal verity, but this study strongly supports their giving cold water a try. After all, we did give up beating the laundry on a rock by the creek; maybe we're ready to move on to the next breakthrough in laundry technology.

Congratulations

Mr. and Mrs. John Ledman (5833), a daughter, Holly Alicia, Nov. 14.



FUN & GAMES

Sandia Bicycle Ass'n. Most of us weren't too enthusiastic about putting the Base decal on our bikes, but there are some benefits. Last week our Security people got a call from the Albuquerque Police Dept. — they'd recovered a 10-speed with a Base decal and could Sandia Security identify the owner from the decal's number? Answer: yes, Don Stuart (5113). It turns out Don sold this bike, a Nishiki, about a year ago but has forgotten the new owner's name. If you're out there, get in touch with Don.

Are you getting cold feet these frosty mornings? Try after-ski boots and heavier socks, and keep a spare pair of shoes in the office.

* * * *

Mountain Rescue — Not really Fun & Games, but the activities of the Mountain Rescue Council occupy many hours, and many Sandians are involved. Don Mattox (5834) sent us a summary of the group's '74 missions to date. They've been called out 13 times thus far. A sample from Don's report: "Winter-fallen climber, Needle (a rock formation in Sandias), back injury and evacuation; Winter-plane crash, Pecos, helicopter evacuation; Overdue hiker, went to Texas; Camper, fell off Crest, night, drunk, back injury (bad), evacuation; Stranded hiker, boy climbed up, couldn't get down, La Cueva Canyon, technical." In the last item "technical" means that the Rescue Council had to employ special mountain climbing techniques — ropes, pitons, and the like — to get the boy down. The Council brings high competency to far-out rescue situations, and their presence on the scene has saved many lives.

* * * *

Coronado Ski Club — Walt Westman (9513) has been out again twisting arms, and, as spokesman for some 2500 skiers from five clubs, he's enjoyed success in getting discounts on ski related activities. Lift ticket discounts will be available to members at Wolf Creek, Angel Fire and Telluride, and at virtually all of the big Colorado areas. Lodging discounts are lined up at Durango and Pagosa Springs. If you'll join RMD (cost five bucks), you'll get various discounts on things ranging from lift tickets to dry cleaning. And there's a "Ski Sampler" (cost 10 bucks), that offers many two-for-one deals, e.g., lodging for two people for the price of one. Members will soon be getting Walt's flyer that tells all about the coming season.

Arthritis Agency Seeking Volunteers With Mechanical Talent

John Ingram (3617), newly elected chairman of the Bernalillo County unit of The Arthritis Foundation, is seeking volunteers with mechanical ability. The problem, John says, is that some of the more handicapped victims of arthritis could use some special mechanical devices to help them perform household chores or give them more mobility. These would be one-of-a-kind devices tailored to fit an individual need. If you would like to help, call the agency's office, 265-2545.

feedback

To get a response to your comments and questions about Sandia Labs, complete a Feedback form (available near bulletin boards) and return it to the Feedback administrator. The substance of questions and responses of wide interest is published in LAB NEWS.

Q. The Accutron watch given as the 25-year service award is an outmoded concept in personal timekeeping. Today's watch technology is based on the fast moving developments in microelectronics and offers all-electronic (no moving parts) systems with digital readout.

It seems that such a watch would be particularly meaningful to an Electrical Engineer with 25 years experience who took his college training in vacuum tubes, adapted to the changes resulting from the transistor, and is currently engaged in some aspect of microelectronics. Other employees probably would appreciate a modern digital watch as opposed to an old-fashioned Accutron.

Can we get an update in the 25-year service award?

A. The awards program has been recently reviewed and revised. The addition of a digital watch was considered; however, the present price of the digital watch exceeds the expenditure limits allocated for an anniversary award. We contract with the Bulova Company and the Hamilton Company for our watches and neither has such a watch available in their awards program. Companies get special pricing on those watches in their awards programs because of volume. Both companies test their product in the retail market for a period of time before including them in the awards program.

A Hamilton Quartz watch, several new types of the Bulova Accutrons, and a mantle clock have been added to the 25-year Sandia Anniversary Program. The brochure with the new awards is presently being prepared.

R. J. Edelman - 4200

* * * *

Q. With regard to the Bldg. 880 vending machines, I realize that a particular item may be sold out. But quite frequently half the slots are empty and show evidence of not being serviced. What's happening?

A. Vending service has deteriorated recently, not only in Building 880 but in other vending areas. This has been discussed with the officials of Szabo and changes to bring about improvements have been promised.

Szabo has informed us that their investment in the vending services at Sandia is very unprofitable and have asked for some relief under our contract with them. Profitable or not, they are not relieved of their responsibility to provide our employees with good service during the term of our contract with them and we certainly intend to hold them to that responsibility.

We appreciate your comments. It is hoped that the condition you mentioned will be corrected soon. A tour of the vending machines on Wednesday disclosed that there were few empty slots in the machines, so possibly the condition has been corrected.

R. J. Edelman - 4200

* * * *

Q. According to SLI 1030 dated March 26, 1973 Sandia has 10 official committees dealing with everything from employee benefits to nuclear criticality. Of the 10 only one appears to deal with employee contributed funds; this is the Employee Contributions Plan Committee. However, there is another area where millions of dollars of employee funds are administered by the Laboratories without any employee representation. This is the pension plan.

Certainly there are employees in the management area who make studies and recommendations to management, but this appears to be done on the basis of "we know what is best for you."

Why not a representative group of employees and management that would meet on a regular basis and examine all facets of the program? With so many employee dollars at stake it seems only fair that they should have a voice in the administration of a plan which so vitally affects their future.

A. Thank you for your Feedback question concerning employee representation in connection with the Pension Plan.

The Feedback program itself has shown that a broad spectrum of employees have questions and suggestions pertaining to the Pension Plan that get to the top management levels of the Laboratories for consideration.

It certainly has not been the intent of "the Benefits people" to convey the impression that "we know what is best for you." We endeavor to be knowledgeable about all aspects of our own — and Pension plans in general — but we don't presume to be all-knowing. When one looks at all aspects of Sandia's Pension Plan — the Disability Retirement feature; Spouse's Benefit; the improved early retirement feature (55 years of age, 20 years of service); and others — the thought naturally arises: does this plan meet the needs and desires of the participants? We feel that for Sandians as a whole it does.

Proper administration of a Pension plan requires an expertise probably not available on a broad basis within any company. Periodically we enlist the services of a nationally recognized expert (by both management and labor) in the field of pensions to review our plan and make recommendations that would update and improve it.

Our pension plan is audited annually by Sandia, the AEC, and Western Electric auditors.

R. J. Edelman - 4200

* * * *

Q. I would like to know why Area V doesn't have a fully paved parking area. I noticed the re-working of the lot by gate 10 and it seems to me that Area V should be taken out of the mud.

A. The resurfacing of existing paved parking lots is done with "operating" funds while new paving requires "construction" funds. In the latter part of FY 1974 we had adequate operating funds to refurbish some of our existing parking lots. We have not had sufficient construction funds to add to the Area V lot. We do have a request for this work and will increase the lot size when and if funds become available.

R. E. Hopper - 9700

Supervisory Appointment

ARTHUR KEY to supervisor of Production Control and Operations Support Section 2632-5, effective Nov. 1.

After working two summers at the Labs, Art joined the Community Relations Division in September 1964. During the past 10 years he has been an analyst with the administrative systems group, a computer training consultant, project leader for Sandia Information Management Systems and, since 1973, has been project leader of production control in the computer operations group. In his new position Art will continue the work of implementing standards and controls to create a controlled environment for data processing.

Before coming to Sandia, Art taught chemistry, physics and math at Highland High School. He earned an AB degree from Indiana Central College in 1958 and a Master's in education and science from UNM in 1963. Art has taught a number of math and computer courses for Sandia, UNM's college of business and the APS community school. He is a member of ACM, president of the Eldorado Boosters, and active in parent's councils, little league and scouts. Art and Jean have three sons; family interests include travel, outdoor activities and Lobo basketball. The Keys live at 11509 Bar Harbor Pl. NE.

Energy Steps Planned

Energy monitors will shortly take steps to achieve reductions in the Labs' energy consumption.

On weekends, and on the Thanksgiving and Christmas holiday periods, monitors will lower thermostat settings to a coolish 55°, turn off exhaust fans and lights, and generally insure that any item that draws current is either turned off or has a legitimate reason for not being turned off. All continuous test permits will be double checked for currency. Areas that are temperature critical, e.g., the standards lab, or that are continuously manned/womaned, are not affected.

Big energy savings are anticipated. When a similar program was followed last year at Livermore over the Thanksgiving period, it was found that the level of energy consumption never did return to its pre-Thanksgiving high. Probable explanation: people found they could get along with far fewer power-consuming items operating on a continuous basis.

Cooperate with your energy monitor — he'll help you turn off.

Authors

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Winter deliveries to villages on South 10 sometimes find road conditions uncertain.

Paint, Ax Handles & Pinto Beans on South 10

A coat of paint brightens a home, and Sandians working on the South 10 project had reached that conclusion earlier this year when they decided to buy a few gallons for a few poor families in the village of Manzano. The results were even brighter than anticipated. In short order other villagers from Manzano, and from Tajique and Torreon as well, were asking for paint and by summer's end volunteers had delivered 175 gallons to 99 families. Cost averaged out to six dollars per family, a modest amount considering the high efficacy of a coat of paint.

The South 10 project is more properly called the South Highway 10/14 Village Project (a higher wisdom in the highway department decided Rt. 10 should be renamed Rt. 14), and money for the project comes chiefly from a source familiar to most Sandians — the book stands in Bldgs. 802, 892 and 880. You can buy a paperback for 25¢ or 35¢ at the stand, read it, and then donate it back to the project. Some of the books have made this circuit half a dozen times.

Villages in the project are (proceeding southward): Escabosa, Chilili, Tajique, Torreon, Manzano and Punta. A sociologist would note that the villagers are Spanish, either very young or old, and poor beyond the comprehension of most of us. Those who aren't very young or old have picked up stakes to find employment in the city. The old-timers have deep ties to the land; in any event, most do not speak English and have no skill with which they might gain employment. The scene is a microcosm of rural America and of the forces that suggest that much of rural America will disappear.

Currently the South 10 project is getting set for the Christmas season. For the last 10 years, project people have made purchases of food, footwear, toys, hardware (ax handles), medicines, even a little wine and tobacco, and delivered Christmas packages to families on the weekend before the holiday. Last year the volunteers went south with 150 pairs of shoes and spent a long day matching shoes to feet. Donated clothing and some donated appliances were also distributed.

Between book sales and bake sales in orgs. 3151, -52, and 3162, the project aims at a budget of $1000 for Christmas '74. Inflation has seriously undermined the food stamp program and with a staple such as pinto beans selling for 50¢/lb. it is likely that most of the funds this year will be spent on food.

Project helps the young and the old.

Delivery of paint was occasion for smiles.

Books and phonograph records are a continuing need. These volunteers oversee the book stands: in 880, Yolanda Adent (9426); in 892, Abbie Williams (3151); and in 802, Mac Groll (4152). Books and records can also be dropped at the LAB NEWS office in Bldg. 832.

HAVING YOUR CAKE — and beating it too. Beating it to Mazatlan (hence the burro) is Flo Burch (left). Leaving for Hawaii (hence the hula girls) is Sally Dyer (right); husband Richard, ex-Sandia guard, won the trip for two from KOB radio. Willa Urbanoski did the cake for the leave-taking ceremonies; all are in Payroll 4152.

J.M. Hueter (3131), "Creativity In Education," Faculty In Service Training Conference, Oct. 24, Albuquerque TVI.

R.T. Dillon (5251), "Rates of Mutant Production in *Bacillus subtilis* by Dry Heat and Gamma Irradiation," Sixth International Spore Conference, Oct. 10-13, East Lansing, Mich.

P.M. Richards (5132), "Consequences of Exchange in Low-Dimensional Compounds," NATO Adv. Study Inst. on Low Dimensional Physics, Sept. 3-14, Starnberg, West Germany.

J.E. Kennedy (5131), "Laser Velocity Interferometry Applied to Explosives Research and Development," WX-7 Group Seminar, Oct. 18, LASL.

A.J. Toepfer (5242), "Recent Progress in Electron Beam Fusion"; L.P. Mix and Toepfer (both 5242), "Interaction of Superpinched Electron Beams with Hemishell Targets"; J.E. Powell (5243), et al, "Multiple Beam Laser Irradiation Studies of Solid Spherical Targets"; G.L. Cano, P.J. Brannon, J.E. Powell (all 5243), "Spectral Measurements of Hot Electrons From Laser-Produced Plasmas"; M.J. Clauser (5241), "Electron Beam Fusion Targets"; G.W. Kuswa, J. Chang (both 5242), and M.M. Widner (5241), "Nanosecond Pulse Radiography for e-Beam Fusion Pellets"; C.W. Mendel and J.N. Olsen (both 5243), "Laser Plasma Electric Field Measurements"; Olsen and Mendel, "Laser Plasma Expansion Studies"; P.J. Brannon, J.P. Anthes, and G.L. Cano (all 5243), "Power Density Measurements and their Relevance to Laser Fusion Experiments"; P.E. Bolduc (5226), "Generation and Propagation of 100kA, 1 MV Sheet Beams"; M.A. Sweeney and M.J. Clauser (both 5241), "Simple Model for Electron Beam Driven Projectiles"; D.W. Swain (5242) and C.L. Olson (5241), "The Heating of the Tokamak Plasma by Relativistic Electron Beam Injection"; J. Chang (5242), "Time Resolved X-Ray Pinhole Photography of Superpinched Relativistic Electron Beams"; M. Widner (5241), "Tokamak Response to Relativistic Electron Beam Heating"; J.G. Kelly (5242), "Guidance of Super Pinched Beams by Control of the Anode Return Current"; T.P. Wright, G.R. Hadley, and A.J. Toepfer (all 5241), "Relativistic Distribution Functions, Moments and Applications"; C.L. Olson (5241), "Limitations on Collective Ion Acceleration Including the Effects of Gas Pressure Gradients and Guide Tube Radium Gradients"; F.C. Perry (5242) and M.M. Widner (5241), "Megabar Pressures in Aluminum Targets from the Hydra Electron Beam"; C.L. Olson and J.W. Poukey (both 5241), "Numerical Simulation of Collective Ion Acceleration"; G.R. Hadley (5241), "Anode Plasma Production Mechanisms in High Current Vacuum Diodes"; P.A. Miller (5242), "Heating of a Mirror Confined Plasma by A 15 kJ Electron Beam"; J.W. Poukey (5241), "Models for E-Beam Flow in Diodes"; K.M. Gilbert (1112), J. Chang and L.P. Mix (both 5242), "The Dynamic Behavior of Superpinched Relativistic Electron Beams in the Diode Region"; American Physical Society Meeting, Oct. 28-31, Albuquerque.

G. Yonas (5240), J.W. Poukey and J.R. Freeman (both 5241), "Diode Theory for Electron Beam Fusion," The Second International Conference on Plasma Theory, Oct. 28-Nov. 1, Kiev, USSR.

R.E. Cuthrell (5114), "Initiation of Electrical Contact Arcing Observed at Potentials Down to the Melting Voltage"; T.V. Nordstrom (5832), "The Microplastic Behavior of Several Precious Metal Electrical Contact Alloys," 20th Annual Holm Seminar on Electrical Contacts, Oct. 29-31, Chicago.

A.R. DuCharme (5154), "Studies of Defect Formation and Migration in Metals and Semiconductors," Seminar at BYU, Provo, Utah, Oct. 30; and Argonne National Labs, Oct. 31, Idaho Falls.

R.J. Chaffin (2125), "Radiation Effects on Microwave Devices and Circuits," Technical Colloquium, Westinghouse Research Center, Oct. 31, Baltimore, MD.

R.B. Foster (9531), "Use of Standard Reference Materials for Temperature Standards," Symposium on Standard Reference Materials, Nov. 1974, Washington, D.C.

L.D. Chapman (4734), "A Descriptive Structure for Modeling Transportation, Energy, and Societal Interactions," American Institute for Decision Sciences Conference, Nov. 1, Atlanta, Ga.

D.N. Harstad (2342), "Vidicon Digitizer Uses Computer for Calibration and Control," Fall DECUS Symposium, Nov. 5-8, San Diego.

D. Emin (5155), "Small-Polaron Formation and Motion in Ordered and Disordered Semiconductors," Cornell Univ. Solid-State Theory Seminar, Nov. 7 Ithaca, N.Y.

K.R. Prestwich (5245), "A 2 MV, Multichannel, Oil-Dielectric, Triggered Spark Gap"; D.L. Johnson (5245), "Untriggered Multichannel Oil Switching"; T.H. Martin and Prestwich (both 5245), "EBFA, A High Power Electron Beam Accelerator," International Conference on Energy Storage, Compression and Switching, Nov. 5-7, Torino, Italy.

J.A. Borders (5111), "The Use of Energetic Ion Beam Analysis in Applied Solid State Research," Gould Laboratories, Oct. 28, Rolling Meadows, Ill., and Dept. of Physics, Univ. of Ill., Nov. 1, Urbana.

G. Yonas (5240), "Electron Beam Induced Pellet Fusion," IV National School on Plasma Physics, July 29 - Aug. 7, Novosibirsk, Russia.

J.A. Cooper (2131), "Location and Guidance Using Wide-Beam Radar Imagery," IEEE Electronics and Aerospace Systems Convention, Oct. 7-9, Washington, D.C.

Speakers

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MISCELLANEOUS

WARDS SIGNATURE frostless refrigerator/freezer, 10 cu. ft. plus 3 cu. ft. freezer, recent model, white, $135. McCampbell, 292-2762.

MAG RIMS, steel slotted, 15 x 7, 5-hole, $65. Blea, 268-5216.

FURNACE, 40,000 BTU w/blower & motor, 15" x 20" x 5' high, $60. Suknot, 256-3985.

SKIS & BOOTS, 185cm skis w/step-in bindings, $10; Koflach buckle boots, man's 11-1/2, $8. Duliere, 296-4785.

GE REFRIGERATOR, $125; table lamps, end tables; 2 snow sleds, $8 & $9; Easy-Bake oven, $4.50; Hot Wheel set, $8. Shipley, 298-2433.

BABY STUFF: Crib w/mattress, bumper pads, playpen, infant seat, walker, busy box, toys, clothes; little boys' clothes. James, 344-7854.

GARCIA SEMI-AUTOMATIC pistol, .380; Crosman 761XL 177 cal pellet rifle; gun cabinet; Royal portable typewriter. Wolf, 298-4746.

WOOD LATHE, bench, Craftsman, 1/3 hp motor, faceplace, spur & ball bearing centers, turning chisels, $85. Eckelmeyer, 296-2148.

METAL LATHE, Craftsman, 6" swing, 13" between centers, w/thread cutting gears, $75. Coalson, 298-0061.

SOFA, red velvet, 76", $100. Carlson, 821-0724.

TYPEWRITER, Royal std w/table, $50; lounge chair & ottoman, $35; Natl. Geogs., '53-'74, $50; 21" B&W console TV, $20; toaster; etc. Davies, 299-2115.

DINETTE TABLE w/leaf, four chairs, brown & tan, $30; upholstered rocking chair, brown tweed, $25. Duvall, 255-3326.

ACCORDION w/carrying case, Enrico Roselli custom 205, intermediate size, $50. Sherwood, 299-2169.

SKI BOOTS, lady's 7C, Raichle brand, $20. Fenimore, 298-8052.

SQUARE DANCE CLOTHES, fiesta-type skirt, 2 blouses, 1 pr. pantaloons, petticoat, size 14. Eckart, 299-3888.

FURNACE, Carrier downdraft, 137,000 BTU, $60. Sullivan, 298-0148.

SEVERAL 5-GAL. cans w/pour spout, $2.50 each. Stuart, 299-9190.

DISHWASHER, built-in, Waste King model 950, 2 yrs. old, stainless steel, $175. Barnaby, 265-4353.

CHILD'S pedal John Deere tractor, $15. Peters, 299-4327.

SKIS, Lund Topflight, adult size, $9; want Japanese swords and daggers, will pay cash. Smitha, 293-1177.

MOTORCYCLE HELMET, $10. White, 299-6411.

KING-SIZE headboard, $20; youth bed side guard rail, $2.50; power mower, reel type, $75; Coleman ice chest, $10. Barnard, 256-7772.

CRIB & MATTRESS, $25; newborn-toddler size clothing; woman's sizes 6-10; bowling ball w/bag, $10. Shead, 292-2420.

STEREO AM/FM radio-phono console; gerbil cage; vanity chair; walnut chifferobe & prism mirror. Porter, 298-3623.

GARAGE SALE — beds, tables, chairs, mowers, lamps, recorders, toys, etc. Nov. 23 & Dec. 14. Overton, 312 Carlisle SE.

TURKEYS & RABBITS, alive or dressed. Holloway, 898-2110.

SNOW TIRES, studded, G78-14 mounted on Ford rims, $50; tire chains for 8:25-14, $8. Estes, 299-3881.

NEW TWIN MATTRESS, $20, 2 used mattresses, $9 ea. Lutheran, 293-8364.

BABY FURNITURE, crib, $25; stroller, $15; 4-compartment dressing table, $10. Chinn, 296-5172.

VACUUM CLEANER, Hoover upright, green & white, $50 or best offer. Mayhew, 294-3761.

MAGNAVOX color TV, console model, 23" screen, $175. Marks, 266-1581.

SILVER DOLLARS, 7 Carson City uncirculated from government sale, 1879 thru 1885, $825. O'Bryant, 268-9049.

44 S&W M29, 4", old model, Herret grips, carrying case, $400. Snodgrass, 268-8820.

BABY BED, playpen, high chair, woman's golf shoes, golf bag, misc. Cash, 266-1375.

AURORA HO road race set, mounted on 4x5 board, wall hardware included, needs new cars, $7. Esterly, 881-1973.

GREASE GUN, Sears, Balkamp seat belt. Edenburn, 265-5184.

SNOW TIRES, E-78-14, white sidewalls, mounted on Mustang wheels, 4-hole pattern, $35 pair. Church, 281-5215.

BARITONE HORN, Reynolds, gold finish, Conn trombone. Rose, 298-4849.

TRANSPORTATION

'63 PLYMOUTH VALIANT, 6 cyl., 20 mpg, new paint. McKelvey, 293-7948.

BIKE, boy's, 20" 5-spd. Schwinn "Apple Crate." Siska, 298-5756.

'70 FORD LTD, 4-dr., AC, PS, PB, $1050. Hendrix, 299-8872.

'66 CHEV. PICKUP, 6 cyl., 250 CID, positraction, extras, $575. Walter, 296-7062.

'72 VEGA HATCHBACK, GT, 4 spd., 24 mpg, $1625. Baczek, 255-3429.

18' BOAT, deep hull, 80 hp Mercury outboard, tilt trailer, $1295. Sillivan, 298-0017.

VEHICLES: '67 T-Bird Landau, 2-dr.; '66 Chev. Van, 6 cyl, $300; '72 Harley Davidson 74 w/chrome. Johnson, 296-7210.

26" BIKE, man's, Murray, maroon, 3-spd., hand brakes, $32; Fender elec. guitar w/case. Romero, 299-5189.

'65 CHEV. SPORTSVAN Deluxe, new shocks, gages, radio, $400. Ruminski, 256-0770.

'71 SUBARU Bug, 2 cyl., 45 mpg, $200 or best offer. Morris, 255-9464.

'61 CHEV. CARRYALL, 283 CID, V8, positrac, 1 owner. Houghton, 299-6230.

'70 HONDA SL 100, 2800 miles, new rear tire, $250. Hawn, 299-7835.

CAMPER, Dodge Sportsman van, converts quickly to utility vehicle, elevating top, sleeps 2 adults, 2 children, 318 cu. in. V-8, AT, 53,000 miles, $1850. Reed, 298-1126.

'69 DODGE SPORTSMAN Van, factory fiberglass standup bubble roof, 318 V8, AT, partially converted to camper, $1650 firm. Kromer, 255-5013.

WON'T RUN: '64 Pontiac sta. wagon, all power, AM/FM, AC, 4-bbl. carb., mag wheels, new tires, $200. Colgan, 344-3776.

GIRL'S BIKE, Sears Spyder, 20", banana seat, $30. McEwen, 881-3913.

2 BIKES, girls' 24", 3 spd., Schwinn, $25 each. Miller, 268-5992.

'73 OPEL GT, yellow, mag wheels, $500 below book. Barton, 281-3349.

DIRT BIKE, '71 Suzuki TM 400 Cyclone, stored since Oct. '73, make offer. Dougherty, 298-6043.

'72 SUZUKI 750, liquid cooled, $1095. Jordan, 255-7000.

REAL ESTATE

3-BDR, den, 1 & 3/4 baths, 1505 Willys Knight NE, $28,750, $1200 down including closing costs. Cotton, 299-2237.

36 ACRES near Heron Lake, 100 yards from Chama River, trees, $1000/acre, terms. Baack, 296-2312.

UNM AREA, residential lot, by owner, Carlisle/Constitution loc., 3510 La Hacienda Pl. NE. Bland, 265-6286.

3-BDRM, 1 bath, Princess Jeanne Park, 1117 Dorothy NE. Patterson, 877-6037 after 5.

2-1/2 ACRES (approx.) in Sandias near La Madeira, home or cabin site, pinon & juniper, $1500/acre, terms. Summers, 881-7765.

WANTED

PLAYMATE & DOG home: playmate for 3-1/2 year old, full or part-time babysitting; home for 2-1/2 year old St. Bernard, AKC, gentle. Goodwin, 294-3343.

BOAT, 15'-17' open bow, inboard/outdrive, prefer 140 or 165 Mercruiser. Meikle, 299-4640.

OSCILLOSCOPES, 1 or 2 year old gen. purpose. Falacy, 821-7338, or Peppers, 881-1802.

HOME for grown, housetrained, female, spayed Basset, all shots, free. Field, 345-1470.

SPRING HORSE, medium size. Larson, 299-2384.

SLR CAMERA, 135mm, reasonable. Houghton, 299-3386.

SHOP MANUAL for '56 Plymouth or Dodge. Stuart, 299-9190.

FOR RENT

UNFURNISHED APARTMENT, 3 months left on lease, Sandia Shadows, will pay Dec. rent. Birdseye, 255-2894.

ALFALFA PASTURE, 8 acres, $25/month per horse or cow. Shock, 877-3728.

• AEGEAN • C-CLUB • SLIDES • SUPERHAPPY • THOMAS & MARSHA • HAM •

FRIDAY	SATURDAY
22 — HAPPY HOUR MEXICAN BUFFET Adults $2.25 Under 12 1.25 Thomas & Marsha On Stage *THE NIGHT LIGHTERS*	23 — SOUL SESSION 8:30 - 12:30 *TRUCKIN* Members Free Guests $1.00
29 — HAPPY HOUR In Bar Only No Buffet	30 — TEEN DANCE 7:30 - 10:30 *GHOST ROSE*

APRIL — isn't the cruelest month: November is — for skiers. It's wintry but not snowy. So get in shape — dance the evening away; get inspired — enjoy Bob Connelly's fantastic slide/sound show on ski touring; and get fed — coq au vin, etc. It's all at the Ski Club's Dinner Dance on the 17th. $3.25 members, $4.15 guests with *reservations* to Gerry Barr (4-3836) *by Dec. 3.*

SHOWERS — of sound surround you at the Soul Session tomorrow night. "Keep on, Truckin" will again be the roar of the crowd.

BRING — your mate/friend/ whomever to Happy Hour tonight. It's a Mexican buffet for eating plus Marsha and Thomas for listening plus the Night Lighters for dancing.

MAY — your teeners find post-Thanksgiving happiness at the Teen Dance on the 30th. Pick up tickets early; members 25¢, guests 50¢.

FLOWERS — of spring, blooming in Athens; the waters of the Aegean, lapping at your cruise ship. It's the Grecian Vacation April 23-May 6, with pretrip meeting on the 26th at 7:30. Bring expectations and checkbook.

WHICH — group decorates the Club for the Holidays? Sanado, of course. They (and spouses) will be among the first to enjoy "Christmas in Disneyland" at the Sanado Christmas Ball. Dining of course, dancing of course, even a wassail bowl. But not you — unless you get *reservations* to Ann Tapp (821-0644) *by Dec. 5.*

BRING — the crowd from work or the bunch from home to Superhappy Hour on the 6th. Shrimp and lobster thermidor, round of roast beef, stuffed chicken breasts, baked ham, and more for $2.75 ($1.75 for kids). Background music, then dancing, too — plus Mr. FreeBee.

PILGRIMS — would envy the spread Szabo has in store (i.e., cafeteria) for us on the 26th. Roast turkey, cornbread dressing, giblet gravy, pumpkin pie, and more — all for $1.25 — at the Club, 839, and AEC cafeterias.

MORE INFO — 265-6791.

• MEXICAN • TRUCKIN • TURKEY • NIGHT LIGHTERS • LOBSTER • DISNEYLAND •

Used Textbook Listing Available

Used textbooks — Education and Training Division 3131 will maintain a listing of used textbooks for sale for use in various university courses. To buy or to sell, get in touch with that organization.

Sympathy

To Emilio Lopez (3612) on the death of his brother in Utah, Oct. 31.

To Ken Dickerson (3647) on the death of his wife in Albuquerque, Nov. 4.

To Jean Langston (4210) on the death of her husband in Albuquerque, Nov. 12.

AFTER SEVERAL DELAYS, the Project da Vinci manned scientific balloon flight for studying the lower atmosphere was launched at Las Cruces November 2. The 70-foot-diameter balloon carried a crew of four and a 5000-pound payload to a landing 11 hours and 40 minutes later near Wagon Mound. Twenty of the 25 experiments were conducted and all but two of the 40 instruments functioned properly. Sandia did systems engineering and recorded data telemetered from onboard instruments to Sandia-equipped chase vehicles and a base station at White Sands Missile Range. The flight was sponsored by the AEC, National Geographic Society and the Army's Atmospheric Sciences Laboratory.

Events Calendar

Nov. 22 — "When You Comin' Back, Red Ryder?", Rodey, 8:30 p.m.

Nov. 22 — Los Angeles Philharmonic, Sidney Harth, Soloist, Popejoy, 8:15 p.m.

Nov. 22 — Museum of Albuquerque, Robert Reines describes Integrated Life Support Systems Lab, 7 p.m., Old Airport Bldg.

Nov. 23 — NM Mt. Club, bike tour, class easy, Gulf Mart, 8 a.m.

Nov. 23-24 — "The Torch Bearers," Rodey, 8:30 and 3 p.m.

Nov. 28 et seq — Albuquerque Little Theater, "The Snow Job"

Nov. 28 — Thanksgiving Day

Nov. 28 — NM Mt. Club, Thanksgiving morning hike in 3-Gun Canyon, 5 miles, Western Skies, 9 a.m.

Nov. 29-30 — Houston Ballet and ASO. "The Nutcracker," Popejoy, 8:15 p.m. plus Saturday at 2 p.m.

Dec. 1 — NM Mt. Club, Juan Tabo basin, 6 miles, Eastdale, 9 a.m.

Dec. 4 — Martha Graham Dance Co., Popejoy, 8:15 p.m.