

INVENTORS Ralston Barnard and Dal Jensen of Special Applications Division 2565 prepare a uranium mineral deposit assay from data obtained from a neutron generator borehole logging instrument. Their method of assaying the uranium content within 0.01 percent accuracy was recently awarded a patent.

New Glass Seal Key to Long-Lived Battery

This is a success story. It illustrates a couple of points about the way problems are solved at Sandia, and it has a happy ending. The solution to a weapons problem has helped solve a medical problem and is becoming a standard item in U.S. industry.

The story began with a battery development group headed at the time by Rod Quinn, now supervisor of Inorganic Materials Chemistry Division 1846. The group was analyzing a new class of lithium/sulfur dioxide energy cells. The cells promised high density storage and long life—perhaps five or more years. This would be ideal for weapons applications and also as a power source for the human-implantable insulin delivery system.

There was one problem, and it was a big one. In extended life tests, the lithium cells failed.

Initial tests suggested that corrosion and cracking of the glass-to-metal seal that insulated the cathode from the anode was a major problem leading to long-term failure. Lithium corrosion and the oxide formed on the glass seal allowed current leakage, and minute cracks allowed sulfur dioxide gas to escape.

When a Sandia development group has a problem, it's taken to the experts. In this case, it went to Bob Eagan, supervisor of Ceramics Development Division 1845.

"We had two ways to go," Bob says, "so we pursued both paths. First, Bruce Bunker (1846) launched an investigation into the corrosive properties and mechanisms involved—a little basic research, if

[Continued on Page Three]

Uranium Deposits Assaying Method Awarded Patent

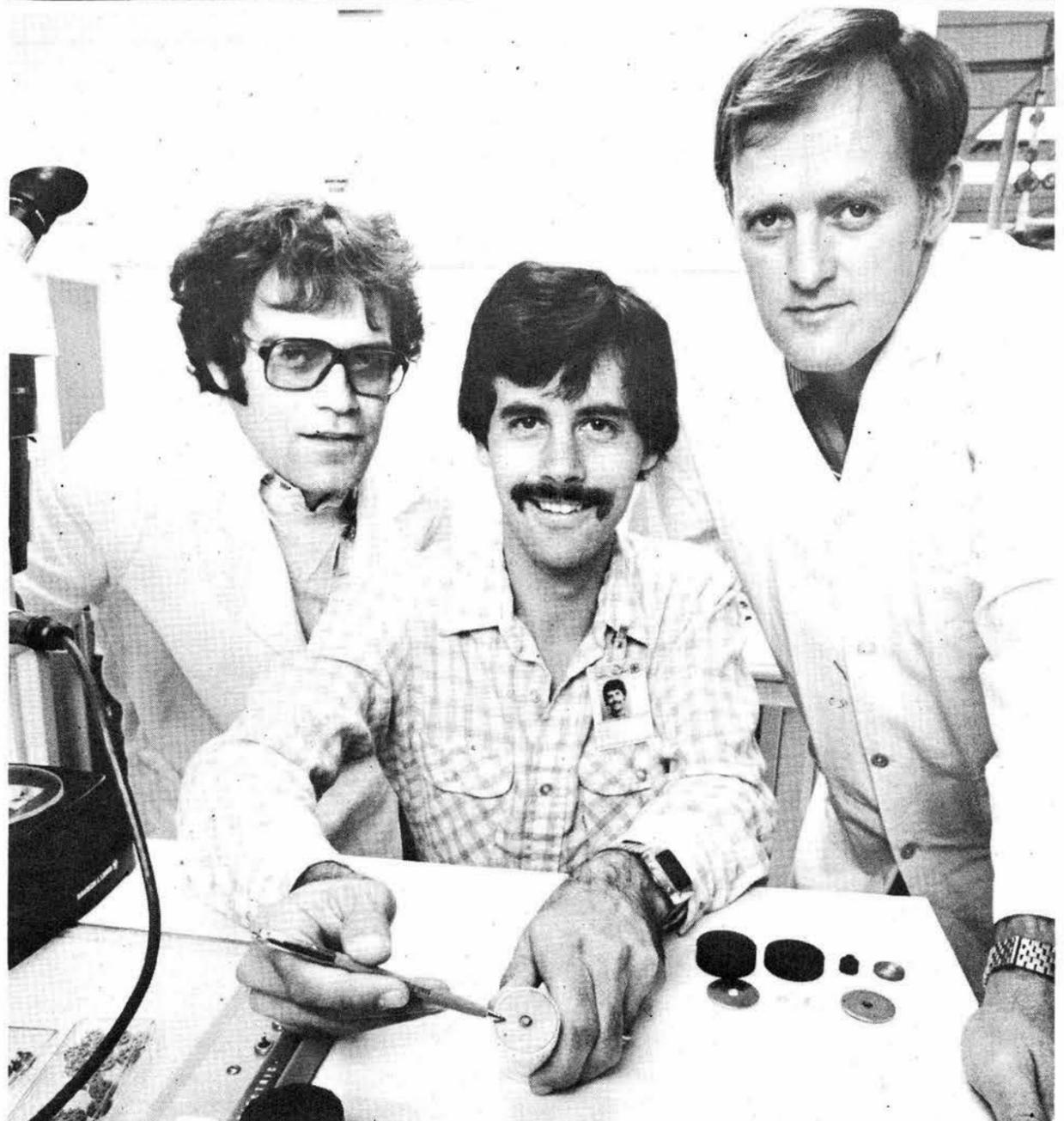
Since 1976, Sandia has developed and fielded a borehole logging instrumentation package incorporating a neutron generator for use in exploration for uranium mineral deposits. Advances in hardware and equipment have resulted in fairly reliable logging probes which produce easily acquired logging data. But log interpretation is at a less-developed stage.

Recently, a patent for a "method of assaying uranium with prompt fission and neutron borehole logging adjusted by borehole physical characteristics" was awarded to DOE. Inventors are Ralston Barnard and Dal Jensen of Special Applications Division 2565, Neutron Devices and Technology Department.

"Essentially," Dal explains, "the neutron generator forces bursts of high energy neutrons—about 100 bursts per second—into the formation surrounding the borehole as the instrumented logging probe is

drawn up the hole. The prompt fission neutrons created in the epithermal energy range—a function of the original burst interacting with uranium deposits—are detected and counted by the instrument. Several factors influence the count, including borehole diameter, water content of the surrounding earth formation, formation density, and formation porosity.

"Our formula for computing the amount of uranium present in the formation compensates for these factors by assigning them values resulting from empirical testing and analyses. The assay is based primarily on the 'die-away' time of the epithermal neutrons created by the original burst of prompt fission neutrons. The method can accurately assay deposits containing as little as 0.01 percent uranium. It is receiving wide interest in the uranium industry."



DISPLAYING new glass-to-metal seal that resists lithium corrosion in a five-year battery are Chris Craft (2523), Bruce Bunker (1846), and Carl Pennington (7472). The Sandia-developed glass seal and accompanying process technology are being transferred to industry. The five-year lithium/sulfur dioxide energy cell is now part of Sandia weapons components and the power source for the human-implantable insulin delivery system.

Supervisory Appointments

PAUL PEERCY to manager of Ion Implantation and Radiation Physics Department 1110, effective Nov. 16.

Joining the Labs in August 1968 as a staff member in the laser physics group, Paul later transferred to a solid state physics research group. For the next several years, his work pertained to research on Raman scattering, Brillouin scattering, and phase transition in solids. Since 1976 he has supervised the Ion Implantation Physics Division 1112.

Paul earned a BA in physics from Berea College (Ky.) and his MS in physics and PhD in solid state physics from the University of Wisconsin, Madison. A member of the Materials Research Society, Paul serves on the membership committee and next year will become a member of the program committee. He is also a member of the American Physical Society and the American Association for the Advancement of Science.

An active member of his church, Paul also enjoys tennis, photography, and rock hounding. He and his wife Cathy have two sons in high school. They live in the NE heights.

* * *

DENNIS REYNOLDS to supervisor of Data Systems Division 7241, effective Nov. 1.

Following graduation from the University of Arkansas with a BS in EE, Dennis came to Sandia in the summer of 1969. That fall, he became a member of the Labs' One-Year-On-Campus program, earning his MS in EE from the University of Illinois. Returning to Sandia, Dennis worked in the rocket program, on high-speed analog-to-digital converters, on television camera systems, and on the unattended seismic observatory. He was selected for the Doctoral Study Program in 1974; he received his PhD, also from the University of Illinois, in EE with a specialty in self-checking digital systems. From 1976 until his recent promotion, Dennis has

Antojitos

East of Eden-by-the-Bay--Yes, of course, Sandia is one company/organization/laboratories, no matter how non-grammatical the latter may sound. But Sandians still find it necessary, on occasion, to differentiate among our three geographical locations. So, like the people and facilities themselves, the term "Sandia Livermore" is not likely to go away.

Sandia Livermore is a unique place--small enough that people there can know most of the other people there by name, large enough to work with Lawrence Livermore in much the same way that Sandia Albuquerque works with Los Alamos.

Yes, it is small--about 1000 people. With 7000 or more at each of the other three places mentioned, Sandia Livermore can seldom throw its weight around; working there, you soon learn the true nature of what it's like to be the perpetual baby brother, in terms of your relations with the folks across East Avenue (the place too many citizens of Livermore still call "The Lab," as if it were the only one in existence). You're also the baby brother of Sandia Albuquerque, dependent on the headquarters lab for policies, procedures, and services that don't always quite fit the needs of a smaller lab in another place.

Another place--ah, yes, the Bay Area! Magnificent country, with the ocean, the bay, golden hills, green valleys, real cities with nationally prominent cultural groups and major league athletic teams. It's such a nice place to live that everyone wants to live there--so it's not such a nice place to live (the quintessential California conundrum).

It's true that Livermore is near the eastern edge of the metropolitan morass, so perhaps its residents have the best of both worlds. (Oh to live in New Mexico and work in Livermore--or vice versa!)

The point of all this? Just that, on a per capita basis, there's every bit as much talent and dedication in Sandia Livermore as there is in Sandia Albuquerque--maybe more, for one of them often performs the functions that it takes two or three of us here to perform. It follows, then, that our Livermore brethren/sisteren should never need to plead for our respect and cooperation, much less our attention. ●BH

worked in the nuclear safeguards programs.

Off-the-job interests include playing

basketball, soaring, camping, and hiking. Dennis, his wife Bev, and their five children live in the Sandia Mountains.



NEW SUPERVISORS—Dennis Reynolds (7241) and Paul Peercy (1110).

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FOUND—This large still life painting was one of three turned into Marlene Smith (3543) who handles Sandia's Lost and Found in Bldg. 832. The three rolled-up canvases were left in the bed of the wrong pickup. To claim the paintings, call Marlene on 4-5677.

Poster Contest Open On Anti-Drinking, Driving Subject

In an effort to increase public awareness of problems associated with drinking and driving, the city is sponsoring a poster contest with Dec. 15 as the entry deadline.

The grim New Mexico statistics: one alcohol-related road death every 24 hours; 66 percent of all 1981 traffic fatalities involved alcohol; more than 21 percent of all DWI traffic accidents in the state involve drivers under 20 years old.

Poster contest entries will be judged on simplicity, impact, and creativity in presenting the concept that drinking and driving don't mix. The winning poster will receive wide distribution, and a grand prize as yet unannounced.

The poster board must be 22x28 inches, a maximum of three colors may be used, and no more than five words may appear. Submit entries to Safer New Mexico, 1820 Lomas NE.

Rod Waller of the Lovelace Medical Center CAREUNIT, one of the poster contest sponsors, has free poster board. Call 242-7252.

Sympathy

To Bob Chavez (3615) on the death of his sister, Nov. 17, in Albuquerque.

To Al Maes (3615) on the death of his brother, Oct. 31, in Santa Fe.

To Wayne (3521) and Doug (2452) Trump on the death of their mother and grandmother, respectively, in Nebraska Oct. 29.

To Bob Gardner (3153) on the death of his father, Nov. 27, in Albuquerque.

Congratulations

Martin Imbert (7583) and Beverly Caster, married in Albuquerque, Nov. 6.

Continued from Page One

New Glass Seal

you will, with the hope of achieving a thorough understanding of what we were up against.

"But we didn't have time to wait for a long-term solution. The battery group had a deadline—18 months to go before production units were scheduled."

Charles Leedecke (formerly 1845) was assigned the task of synthesizing all of Sandia's past experience in formulating special glass-to-metal seals and attacking the lithium corrosion problem. His job was to find a quick solution—a new glass to meet the long-term requirements of the lithium/sulfur dioxide energy cell.

"Since Sandia had previously developed a glass ceramic and special facilities to form steel-glass-molybdenum seals," Bob says, "it seemed a good idea to change the positive terminal to a refractory molybdenum material."

With the battery group's concurrence, Charles formulated a number of candidate materials containing carbonates, boric acid, and oxides. About 1000 grams of glass were produced by melting the batch materials in a platinum crucible at 1550° for 24 hours. To ensure homogeneity, the melt was stirred continuously for 18 hours. The molten glass was cast into a mold coated with graphite and then transferred to a belt furnace to be annealed at the temperature suggested by the results of a differential thermal analysis.

The batches of new glass materials were subjected to a number of tests and analyses to determine corrosion characteristics in a lithium environment and the thermal expansion coefficients. To make the seal, the thermal expansion coefficients had to precisely match those of molybdenum.

A number of seals were fabricated—a complicated process performed by Carl Pennington of the Glass Laboratory (7472-3). Preforms were made in a sequential heating process to temperatures reaching 1025°C with annealing at 702°C.

The process was performed in various hydrogen-nitrogen atmospheres and in an inert argon atmosphere.

As the program progressed, it became a joint coordinated effort of the battery group and materials development group working with the shops and the engineering staff of GE Neutron Devices Department at Pinellas, Fla., a DOE integrated contractor that fabricated the first production units under short deadlines.

More testing followed, including an investigation of the cleaning processes involved in fabrication. These resulted in cleaning procedure and solution changes.

Although a number of candidate materials were fabricated, the process was not a hit-or-miss proposition. The glass group was working with an accumulated expertise in glass formation, composition, and fabrication processes. They kept in mind constantly that the goal was to prevent lithium corrosion.

The successful glass seal, selected after passing all tests and requirements, was a composition of aluminoborosilicate containing alkaline-earth oxides. It is now used (well within schedule) in Sandia battery components, and in the implantable insulin pump developed by Sandia and the UNM Medical School. Tests indicate it will meet the five-year life requirement.

In the meantime, the basic studies of lithium corrosion mechanisms are paying off.

"We're now looking for a 10-year battery," Rod Quinn says. "With the data accumulated, we feel that such an energy cell is feasible, at least from the glass-to-metal seal point of view."

The new glass and fabrication technology is being transferred to commercial suppliers. It's currently finding its way into a new generation of long-lived, powerful energy cells.

Events Calendar

Dec. 3—Chamber Orchestra of Albuquerque, 8:15 p.m., Albuquerque Little Theater.

Dec. 4—The Broadway Jazz Club presents The Planets in concert, free album at concert with every ticket, 8 p.m., KiMo.

Dec. 4-5—Christmas in Madrid, annual arts & crafts festival in ghost town/artists colony of Madrid. Studio open houses, refreshments, displays of giant nursery rhyme and Christmas figures, free, 10 a.m. to 5 p.m., N NM-14, 471-3450.

Dec. 4-5—Albuquerque Children's Theater, "Cinderella," \$3, 1:30 & 3:30 p.m., Popejoy, 277-3121.

Dec. 5—Holiday Buffet and Art Auction by NM Ballet Co., buffet at 6 p.m., \$6 adult, \$4 under 12; auction and exhibition at 6:30, free. Woman's Club of Albuquerque, 4600 Copper NE. Tickets or information, 299-3663.

Dec. 5—Annual Hanging of the Greens, Sangre de Cristo Chorale, free, 1 p.m., The Regent of Albuquerque.

Dec. 9-12, 16-19—Los Pastores, presented by La Compañía under the title, "El

Sueño de Navidad del Santero," 8 p.m., Sun., 2 p.m. only, Nuestro Teatro, 256-7164.

Dec. 10-12—3rd Annual NMSO Beethoven Festival. Beethoven's 9th Symphony, Dec. 10; the Beaux Arts Trio, 11th; Triple Concerto and Symphony No. 2, 12th; 8:15 p.m., Popejoy, 842-8565.

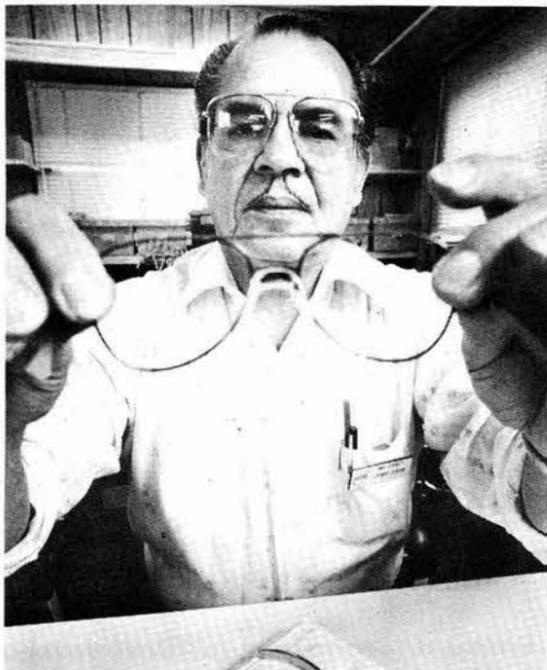
Dec. 12—Jemez, Nambe, Pojoaque, and Tesuque Pueblos: Annual Our Lady of Guadalupe Feast Day. Spanish dance/drama Los Matachines at Jemez; Deer dance at Nambe; Bow & Arrow, Buffalo, and Comanche dances at Pojoaque. Contact pueblos.

Dec. 12—Albuquerque Civic Chorus Christmas concert, 7:30 p.m., St. John's Episcopal Cathedral, 4th & Silver SW, no admission.

Dec. 13—Audubon Wildlife Film, "Hawaii," 7:30 p.m., Popejoy.

Dec. 13, 20, Jan 3, 10—Bereavement Group counseling, 5-6:15 p.m., \$5/session, counseling Dept., Presbyterian Hospital Center, Woodham Room (dining room), basement of Presbyterian Hospital.

Take Note



HENRY DURAN of Sunbelt Optical Company is the new Sandia contract optician. A 30-year veteran of the optical business in Albuquerque, Henry offers safety lenses and a wide selection of frames. See him in M092 (south of Bldg. 832). For a Sandia form to obtain prescription safety glasses, see your department secretary.



WRITER ADDRESSES TEACHERS—Lee Garner, supervisor of Technical Writing Division 3151, spoke to over 60 elementary and secondary school teachers at the New Mexico Institute of Mining and Technology's scientific and technical communications seminar last month. Lee led a discussion on how teachers in all disciplines could help students become effective writers. It's a big task, but, no, Lee is not throwing up his hands in despair. (New Mexico Tech photo)



A SANDIA SUMMER EMPLOYEE, Diane Peebles (center), was recently presented the Anna Louise Hoffman Award as the outstanding woman chemistry graduate student in the country. The award was sponsored by the Iota Sigma Pi, a National Honorary Society for Women in Chemistry. Last summer Diane worked under the direction of Wayne Goodman (1134). She will be receiving her PhD in physical chemistry (surface science) from the University of Texas next August. Presenting the award were Doris Warren, National President of Iota Sigma Pi, and J.M. White, Diane's supervising professor.

The Colorado State University College of Engineering recently honored an outstanding alumnus—Orval Jones, Vice President 7000. Orval was presented with CSU Engineering's 1982 Individual Achievement Award in recognition of his contributions in the areas of shock-wave phenomena in solids, nuclear safeguards and security, nuclear waste management, and large-scale field engineering and testing.

He graduated from CSU in 1956 with a BS degree in ME; he was a Boettcher Scholar and valedictorian of his class. Subsequently, he attended the California Institute of Technology and earned his MS and PhD in ME and physics. Orval has been at the Labs since 1961. He was named vice-president last June.

His "long-standing dedication and commitment to minority business development" was the reason that Jay Hughes (3731) recently received the first distinguished service award ever presented to an individual by the National Minority Supplier Development Council. The award confirms Jay's national reputation in the field.

Another "Solar Retrofit: Solar for Existing Homes" workshop will be held at T-VI auditorium on Dec. 11. It's sponsored by the NM Solar Energy Institute, T-VI, and the Albuquerque Home Builders Assoc. Fee is \$15. Contact Rosella or Virginia in T-VI's Day Division (848-1602) for registration info.

A further clarification to the item in the last issue on withholding of retirement incomes: Prudential will begin withholding taxes on retirement incomes above \$450 per month on Jan. 1, 1983, unless the retiree declines in writing.

For the first time, two international symposiums, the seventh on Ion Sources and Ion-Assisted Technology and the fourth on Ion and Plasma-Assisted Techniques, will be held jointly: in Kyoto, Japan, on Sept. 12-16, 1983. Abstracts of papers to be considered for inclusion in either symposium are due by Dec. 31. LAB NEWS has copies of a brochure describing the event and of the form to accompany abstract submissions.

Sun-Tran luminaria tour tickets go on sale at 8 a.m. tomorrow at 601 Yale SE. Each ticket is \$3 (with a maximum of 10 tickets per person). Tours begin from the Civic Auditorium parking lot and run every 15 minutes from 6 to 8:30 p.m. on Christmas Eve.

A "Madrigal Yuletide Feaste" is being sponsored by the Student Union at UNM on Dec. 16, 17, and 18 at 6:30 p.m. Described as "an evening of music, magic,

and merrymaking," patrons will enjoy the cuisine of Elizabethan England, the amusing diversions of Michael Anthony and the Lovely Leslee, and appropriate music by the Masterchorale. Advance tickets are \$15. More info on 277-2331.

Bill Snyder, director of Nuclear Fuel Cycle Programs 9400, will address the American Society of Mechanical Engineers on the topic "Enhancing New Mexico's Participation in a High Technology Future" at the Dec. 9 meeting at the Black Angus. Price, with dinner, is \$10; time is 6 p.m. The public is invited.

Coaches and judges are needed for the Olympics of the Mind problem-solving contests to be held in several Albuquerque elementary, middle, and high schools in late February. Coaches are needed for the next three months for one hour twice a week during non-school hours, judges for the contest itself. Contact for the Jefferson Middle School is Amy Larson (255-8691). If you'd like to work with students from another school, call the school.

The Venadas Chapter of International Toastmistress Clubs invites all Sandians interested in improving their speaking skills to attend its meetings. Venadas meets the first and third Wednesday of each month at 11:30 a.m. in the KAFB Enlisted Club. Venadas members and visitors may go through the regular food line, then join the group in the east meeting room.

A special holiday meeting is scheduled Dec. 15. Refreshments will be served. For more information, call Dora Fisher (SAO) on 4-7873 or Berweida Learson (3522) on 6-0426.

The Bumblebee Toastmaster Club meets on Mondays at noon at the Enlisted Club. Call Yolanda Padilla-Vigil for info on that one; she's at 6-0015.

The Health Physics Society will hold its 16th Midyear Topical Meeting in Albuquerque, Jan. 9-13. The meeting, hosted by the Rio Grande Chapter, is co-sponsored by Sandia, Los Alamos National Laboratory, Lovelace Inhalation Toxicology Research Institute, and DOE. Theme of the meeting is "Epidemiology Applied to Health Physics." Invited papers, contributed papers, a keynote address, exhibits, and technical tours of laboratory sponsors make up the program. The meeting will be held at the Albuquerque Convention Center.

Sandians working on meeting preparations include Bill Burnett (3310), Mel Merritt (9733), George Tucker (3312), Dan Thompson (3313), Gloria Millard (3313), Gene Runkle (9413), George Kaye (9351), and Ted Simmons (3312). For registration information, contact Gloria Millard, 4-7086.

Fun & Games



SENATOR-ELECT Jeff Bingaman (right) visited Sandia Laboratories recently for technical briefings. He is shown with President George Dacey in an unclassified corner of the weapons briefing room in Bldg. 892.

A holiday program for children aged 5-12 is offered by Tierra del Sol Council of Camp Fire during the public school winter recess.

The program, called "Winter Festivals," will include visits to Old Town, Albuquerque Museum, Rio Grande Zoo, and other activities. It will be based at St. Marks on the Mesa Episcopal Church, 431 Richmond NE.

Two five-day sessions are offered: Dec. 20-24 and Dec. 27-31 from 7 a.m. until 6 p.m. each day. For more information, contact the Camp Fire Service Center, 265-8786.

* * *

Steven Bardwell, editor-in-chief of *Fusion Magazine*, will discuss "Scientific Feasibility of Development and Deployment of Anti-ballistic Beam Weapons" at the Convention Center's Taos Room on Tuesday, Dec. 8, at 7:30 p.m. Sponsored by the local chapter of the National Democratic Policy Committee, the meeting is open to the public. For more information, call Maurice Gilmer (7126), 299-2533, after 5.

* * *

Retiring this month and not shown in LAB NEWS photos are Bernice Sanders (3533), Jerry Wallace (3151), Clara Taylor (3000), Ernest Gurule (3423), Bernadine Ross (3141), and Benjamin Sandoval (3618).

* * *

The Gold Wing Road Riders Association is sponsoring a "Christmas Luminaria" for Los Lunas Hospital and Training School. Donations of candles to light up grounds and cottages are needed as well as learning toys, stuffed toys, transistor radios, records, etc. Donations may be brought to The Royal Fork, 1551 Eubank NE, on Sunday, Dec. 12, from 9 a.m. to 2:30 p.m. Call Jerry Brock (7481), 4-2635, for more information.

* * *

The Singles Fellowship is meeting tomorrow at 6 p.m. at Pistol Pete's Pizza for a party. The group meets again on New Year's Eve. For location and other details, call Patty Gonzales on 298-6752.

Golf—The Sandia Employees Golf Association would up the '82 season Nov. 10 with a fun tournament at Tijeras Arroyo course followed by the annual award banquet at the Coronado Club. About 130 enjoyed videotaped highlights of the afternoon's tourney. Major association awards went to Leon Chapman (9416), SEGA championship; Darrel Dew (DOE), president's cup; and Jim Buttz (9254), most improved golfer. Special trophies were presented to Hal Linker (9214) for the year's only hole-in-one in tournament play and to Larry Dyer (7524) for outstanding service to SEGA.

New SEGA board members elected for the 1983 season are Cece Johnson (ret.), president; Marty Gonzales (2551), vice president; Larry Seamons (1251), secretary-treasurer; Kevin Linker (3642), tournament director; Frank Sieradzki (2364), league director; and Gary Schuster (2123), handicap director.

* * *

Cross-Country Skiing—The Sandia Employee Recreation Program is offering cross-country ski lessons starting Dec. 18. Open to all Sandians, spouses and dependents, the lessons consist of an indoor session and a full day on the snow with instructor Klaus Weber. Cost is \$12 to enroll and another \$5 for ski rentals, if needed. Here is the schedule:

Dec. 18, 19—Chama—beginners both days

Jan. 16—Sandias, intermediates

Jan. 23—Sandias, beginners

Jan. 30—Sandias, intermediates

Feb. 6—Sandias, beginners

Feb. 12—Sandias, intermediates

Feb. 19—Chama, telemark clinic (cost is \$10)

All participants may enter the Chama Chili Classic, Feb. 20, free.

In addition, full-moon ski treks in the Jemez Mountains are planned—one in January and another in February—as well as a weekend winter camping trip on skis March 26-27.

For more information, call Tom Lenz, recreation manager, 4-8486.



JERRY SMITH (2564) is the latest Sandian to shoot a hole-in-one. It happened on the UNM South Course's 184-yard, par 3 number 11 hole. A 20-year golfer, Jerry shoots with a five handicap. Although not currently active in tournament play, he won the SEGA Association championship in 1970. This was his first hole-in-one.



GOOD IDEA—except for the running. This photo comes from Tonopah Test Range. It shows Wayne Lathrop (7173) and Gary Martinez (7170) modeling T-shirts collected in the "First Annual Beerathon" in Las Vegas. They completed the eight-mile run with six mandatory stops where runners were required to consume five ounces of beer.

Deaths

John Lewis of Process/Fabrication Labs Support Division 7485 died Nov. 9 after a long illness. He was 62.

He had worked at the Labs since May 1957.

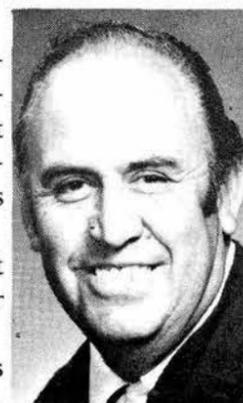
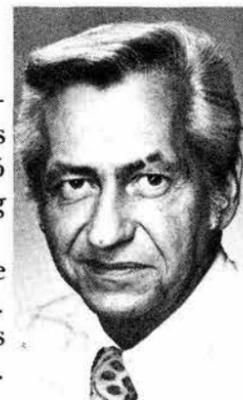
Survivors include his widow and three sons.

* * *

Trinidad Salas of Remote Areas Maintenance and Test Support Division 3618 died suddenly Nov. 15. He was 58.

He had worked at Sandia since October 1970.

Survivors include his widow and five sons.



NEW MEMBER of the board of directors of the National Safety Council is Jerry Jercinovic (right) manager of Safety Department 3440. Jerry will represent the Council's industrial division on the board. Vincent Tofany, president of the Council, announced Jerry's election in Chicago, headquarters of the group, which aims to prevent accidents and occupational illnesses.

LEAP Breaks Records Again

Sandia Livermore employees once again broke all previous records in the amount pledged during the annual LEAP (Livermore Employees Assistance Plan) campaign in October.

The amount pledged in the charity drive this year was \$90,387, more than in any other year, and considerably higher than the \$85,000 goal set by the LEAP committee. Some 873 employees (81 percent of the total on-roll staff) gave this year. The average gift this time was \$103, also up from the \$92 last year.

LEAP chairman Mike Gusinow (8512) says he is "... most pleased to see how generously Sandians responded to the increasing needs of local charities and the United Way in these difficult economic times." Mike also thanked his committee for outstanding work, as well as all those who contributed during the drive.

With the greater flexibility provided through the "donor option" plan, the employees responded by increased giving to local agencies plus more than 20 other non-United Way charities around the state. One in seven people chose to designate their gift to a specific agency.

Local groups that are major recipients of LEAP funds will be Hope Hospice, Horizons Youth and Family Services, Buenas Vidas Youth Ranch, The Center, Good Samaritan Home, Hope Education Center, Livermore-Amador Valley Emergency Center, New Directions, Nursery School Scholarship Fund, Twin Valley Learning Center, Valley Community Health Center, and Valley Connection.

United Way of the Bay Area will receive about 60 percent of the undesignated pledge monies.

Take Note

Scot Marburger (8415) and a fellow student at UC Berkeley received national recognition recently for a course project. Scot and Ken Wada were awarded the James F. Lincoln Arc Welding Foundation first place of \$1000 in the 1982 College Student Engineering Design Competition. They were recognized for a report on their project entitled "Dedicated Microcomputer Control of Gas Tungsten Arc Voltage." The award was one of 66 made to students this year at 29 colleges throughout the country.

Sympathy

To Nancy Hunt (8330) on the death of her mother in Nashville, Tenn., Oct. 17.

To Don Wagner (8212) on the death of his father in Lodi, Oct. 16.

To Perry Lovell (8275) on the death of his father in Idaho Falls, Oct. 11.

Congratulations

Dana and Beth Coleman (8161), a son, Bryan Joseph, Oct. 31.

Connie Clark and John Becker (8465), married in Oakland, Oct. 30.



SANDIA LIVERMORE NEWS

VOL. 34, NO. 24 SANDIA NATIONAL LABORATORIES DECEMBER 3, 1982



MARY O'SHEA discusses a Sandia technical report with reference librarians Susan Coniglio (center) and Michael Schalit.

Tech Library Upgrades Services

If you haven't visited the Sandia Technical Library in Bldg. 921 or called the staff there to seek information lately, you should know about an outreach program, sponsored by Education Division 8214, to acquaint more people with the library's newest technical capabilities and to encourage increased use of this resource.

What kind of help can the library provide? On-line data bases for information retrieval can access hundreds of data files nationwide. In a matter of seconds, librarians can dial up and connect to a computer system to do a subject, name, citation, or abstract number search, particularly in the scientific disciplines in which Sandia is involved.

There are also many nontechnical applications that can be helpful. If someone needs to know the name of a manufacturer, a trade name, or even a specific part, and doesn't have the full company name or address, the library can usually track down that information. Reference librarians Susan Coniglio and Michael Schalit can also provide a current awareness service called Selected Dissemination of Information (SDI) when a requester states an area of interest or wants to know what an individual is publishing currently and in the future. The library can now maintain computer-stored access to that request and keep the person informed for as long as the interest is indicated.

For those who just want to browse or find out what titles are available in either the Sandia Livermore or Albuquerque libraries, there is a Read Only Memory Computer Output on Microfilm (ROM-COM) unit for self service. It includes monthly updates that (along with the Library News Bulletin mailed out to employees) have the latest listings of available materials. Any book or periodical in Albuquerque can be requested by Livermore staffers as well. For questions concerning book circulation, interlibrary loans, and quick reference, contact Doris Pouard on 2-2526.

The Technical Library at Livermore subscribes to 200 periodicals and maintains an inventory of 8000 book titles and another 8000 bound periodicals. Special requests for new subscriptions or books can be made to the library; if it is not considered useful for general library acquisition, the employee may still order it through his or her division for permanent retention there. Book orders go to Jackie Garrett on 2-2423; technical report requests for outside documents should be directed to Marcy Noble on 2-3034, and in-house technical reports may be obtained through Mary O'Shea on 2-2422.

Summing up, reference librarian Michael Schalit said, "We have the staff and the latest in computer-assisted technology. We encourage all Sandians who have a need for information to come in and take advantage of this fine resource."



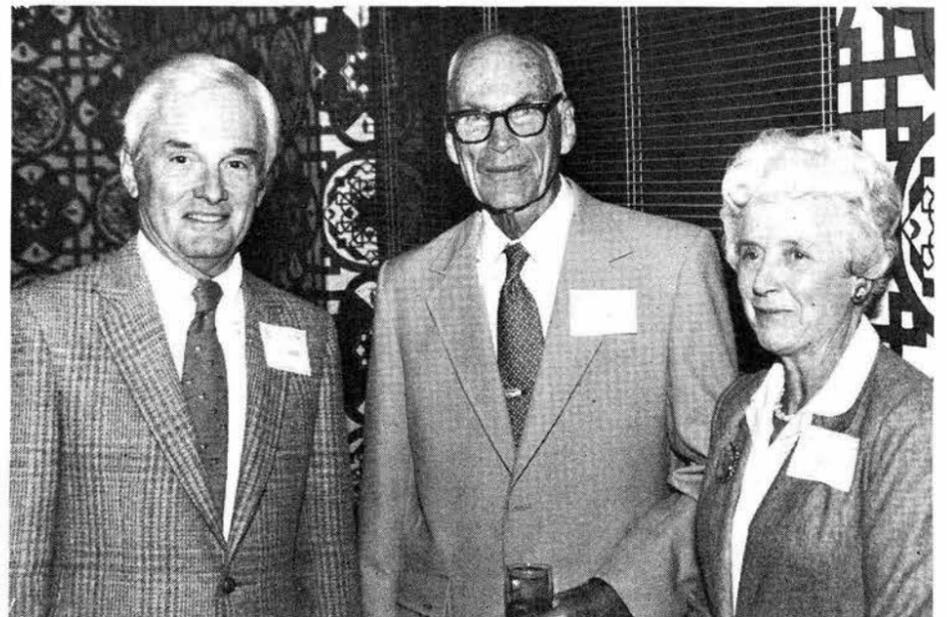
SOME 160 retired Sandians and spouses attended Livermore's 17th annual retirement dinner Nov. 3 at Castlewood County Club. Following a buffet dinner they were greeted by Dick Claassen (8000). Recognized for coming the farthest

were Joyce Willford of Tacoma, Wash., Dan Dewhirst of Lake Isabella, Calif., and John and Florence Lenz from Lake Havasu City, Ariz. Photos by Elliott Dopking.

Livermore Retirement Dinner



Helen Bond, Jake Ludington, Gordon Vangundia, John and Trudy Martin



Dick Claassen, Bernie Biggs, Mrs. Claassen



George Dawson, Fred Hohmann, Ollie Olivotti



T.K. O'Kelley, Jim and Helen Wimbrough, Jerry Ward.

Paul Brannan Sings Through The Holidays

Paul Brannan (9251) doesn't usually sing for his supper, but give him an excuse and he'll sing for just about any reason.

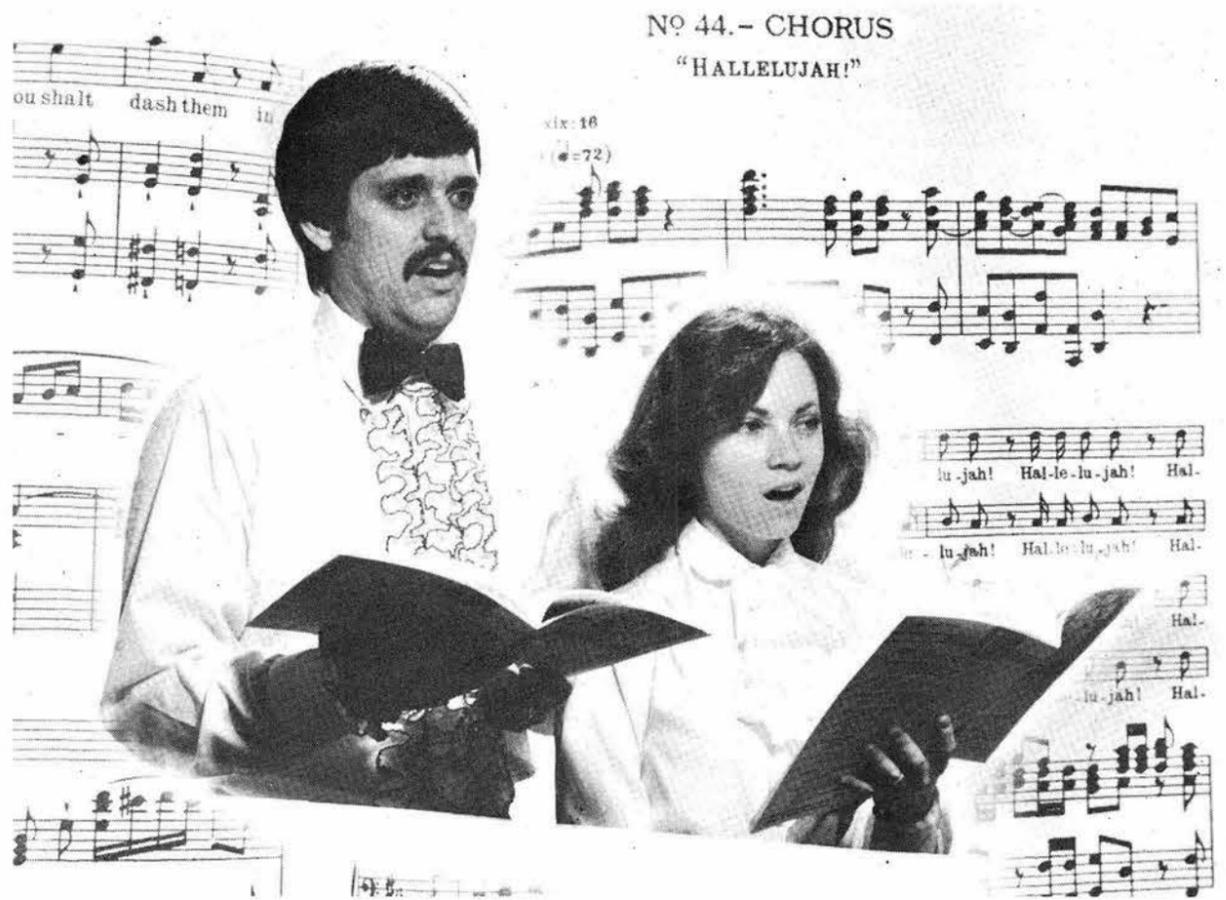
Paul is vice-president of the Albuquerque Civic Chorus, and has been with the group three years. His wife, Jody, has been a member for five years, and his brother and sister-in-law are also members. As a youngster, Paul sang in church and with his family and, later, with high school and college choirs. Currently, he is song leader at Montgomery Church of Christ.

"I've always enjoyed singing," Paul says, "and the Civic Chorus is a great group to sing with."

Sponsored by the Albuquerque Parks and Recreation Department, the Civic Chorus has almost 100 members, and is rehearsing for a Christmas concert.

The chorus is partially funded by the Parks Department, but fund raising is an ever-present problem. "We are not allowed to charge admission," Paul says, "so our Christmas concert is free. Members pay dues that help us operate, and we will take a 'free will' offering at the concert. We'll have 80 to 90 singers for our Christmas concert, but we're looking for new members to participate in two spring concerts. We don't hold auditions because we sing for pleasure, so anyone who likes to sing can join us."

The Christmas concert will be held Dec. 12, 7:30 p.m. at St. John's Episcopal Cathedral at Fourth and Silver SW. Director of the Civic Chorus is Michael Cocke, Del Norte High School choir



THE ALBUQUERQUE CIVIC CHORUS Christmas concert will be held at St. John's Episcopal Cathedral on Dec. 12. Paul (9251) and Jody Brannan are members of the chorus; Paul is vice president of the group.

director. The program includes "The Misa Criolla," "The Infant Jesus," and "Festival Te Deum." In addition, the ACCents, a group of 25 members of the chorus, will perform several unusual Christmas carols. Paul, a tenor, also sings with the ACCents.

Paul is a member of another singing group, the Ensemble pro Musica, Robert

Place, director. This group of 40 singers will perform the first part of the "Messiah" on Dec. 4 at the St. Thomas Aquinas Church in Rio Rancho.

Other Sandians who are members of the Civic Chorus include: Pauline Ho (1126), Charlene Peck (7124), and Bob Durkee (7132).

Retiring



Nena Brannan (3152)



Marjorie Geisler (6021)



Ziggy Shelton (3511)



George Uszuko, Charles Farmer, and Hugo Koski (all 3435)



Dick Eifert (9741)



Walter Henderson (9238)



Joanna West (2631)



Thelma (2431) and Neal (2524) Carpenter

Bob Harnar Builds Solar House

Surrounded by piñons on a hillside on the east side of the Sandias, the new passive solar adobe home of Bob (7417) and Betty Harnar combines a number of conventional features into a striking and attractive structure, comfortable in winter and summer without furnace or air conditioner.

Designed by their son Jeff, an architect specializing in solar design, the house contains 1875 sq. ft. of living area on two floor levels, plus another 1000 sq. ft. of garage/workshop area. A contractor erected the adobe shell and heavy timbers in September 1981, and the Harnars moved in in November. Bob did the wiring, plumbing, and all interior finishing. Betty laid the tight-fitting brick floors on both first and second levels.

"We're going into our second winter now," Bob says, "and there's no more than a five-degree night-to-day swing in temperature in the house interior at any time."

A solar greenhouse, a large clerestory which allows the winter sun to warm the north wall, partially underground walls on three sides, large areas of brick and adobe thermal mass, heavy insulation, and tight construction are the methods used to trap and hold the collected warmth from the low-on-the-horizon winter sun.

In the summer, the house is vented while the cool mountain breezes circulate, and more cool air is drawn through the two underground, 50-foot-long, 12-inch ducts from the tree-shaded arroyo down the hill from the house. Earth temperature is about 55 degrees.

From the horseshoe-shaped entryway with its spiral steps leading to the second floor, through the living room/dining/kitchen area separated by curving bancos (adobe benches adjacent to the three sculptured fireplaces), the design concept is a sinuous flow from one area to another. The heavy wooden steps to the second floor are cantilevered through the adobe wall, providing both an interior and exterior design element.

To the left of the entryway is the solar greenhouse with its two stories of double-glazed windows. A decorative pool fills the area beneath the spiral steps.

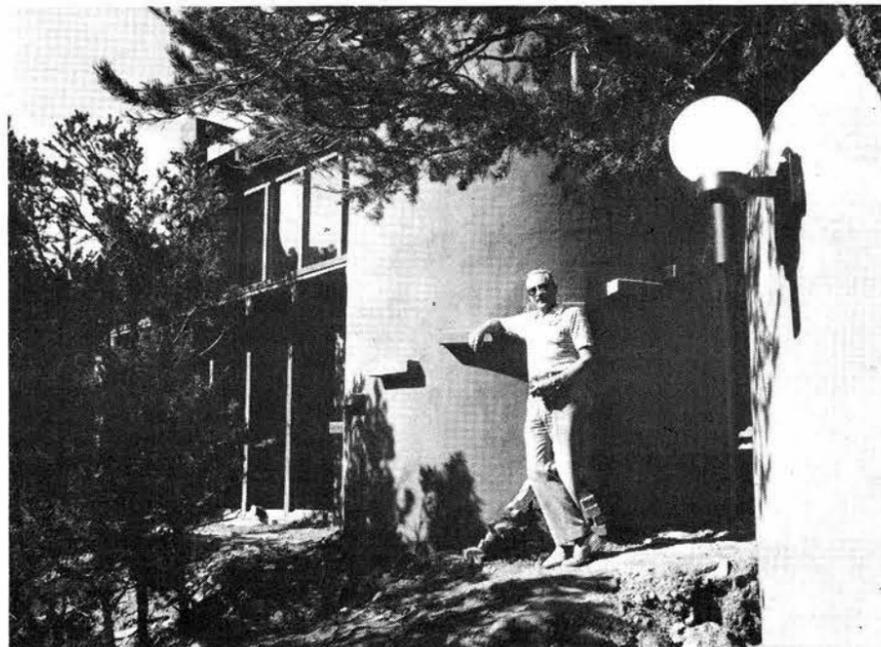
The roof of the living area on the lower floor is 20 feet overhead; the open space is surrounded by the curving edge of the second floor deck with its three bedrooms.

To the right is the kitchen, not finished yet—Bob is building cherry cabinets in his garage workshop. The shelf-lined pantry, adjacent to the kitchen, is completely underground; its walls (except those adjoining the living area) are not insulated—it remains cool year 'round.

"The insulation, two inches of foam on the outside east and west wall and three inches on the north wall, gives us an air-tight envelope," Bob says. "Next project is to install 'window quilt' material on the floor-to-ceiling interior greenhouse walls, the family room, and on the three upstairs windows. This product, which functions as an attractive window blind,



BOB HARNAR (7417) took this picture of his passive solar adobe house in the Sandias after a snowfall last winter. A large clerestory and solar greenhouse are features of the south-facing facade. Note horseshoe-shaped entryway, which holds a solar collector for the hot water system on the roof. Garage workshop extends to the right behind the trees.



AT ENTRYWAY, Bob Harnar (7417) greets guests. Protruding through the adobe wall are ends of heavy wooden steps which form a spiral stairway inside over an indoor decorative pool. Bob did wiring, plumbing, and interior finishing after a contractor completed the adobe shell.

goes up and down on rails and will provide more insulation during the cold nights."

The three fireplaces draw outside air for combustion, provide more thermal storage, and radiate heat from the thick adobe chimneys. Even the chimney from the wood-burning iron stove that heats the garage workshop extends through the upstairs master bedroom to add more radiant heat.

Bob has paneled the interior walls with 1x6-inch aspen, lightly varnished. The upstairs bathroom off the master bedroom features a tiled sunken tub. There are two other bathrooms and an upstairs utility room for laundry.

A solar collector on the roof over the entryway circulates an oil fluid through a heat exchanger inside a large hot water storage tank that, in turn, feeds a standard electric water heater. The roof-line of the entryway horseshoe completely masks the collector from view.

"In the summer," Bob says, "we get temperatures around 120-130 degrees in the heat storage tank. The system automatically shuts off when the collector fluid temperature drops below the storage tank temperature. The heater takes over when

the water temperature drops below 120 degrees."

Bob has built several pressed-cedar-lined closets in the house. Ample storage is another design feature. In addition, Bob had a sunken pit installed in the garage floor to provide easy access to the underside of vehicles needing repair.

"The place is tailor-made to our needs," Bob says. "But we have to talk about what moving up here was all about—we like the mountains, the trees, the birds, and the wildlife. It's all here, and we're part of it."

Medical Schedules Talk on Aging

"The Aging Cell" is the title of a talk scheduled Thursday, Dec. 16, from 12 to 12:30 p.m. in Theater Bldg. 815, outside the Tech Area.

Robert Kelley, chairman of UNM's Anatomy and Biology Department, will discuss alterations in the external surface and membranes of cells that occur as people age. The talk is part of Sandia Medical's ongoing program on aging.

MILEPOSTS

LAB NEWS

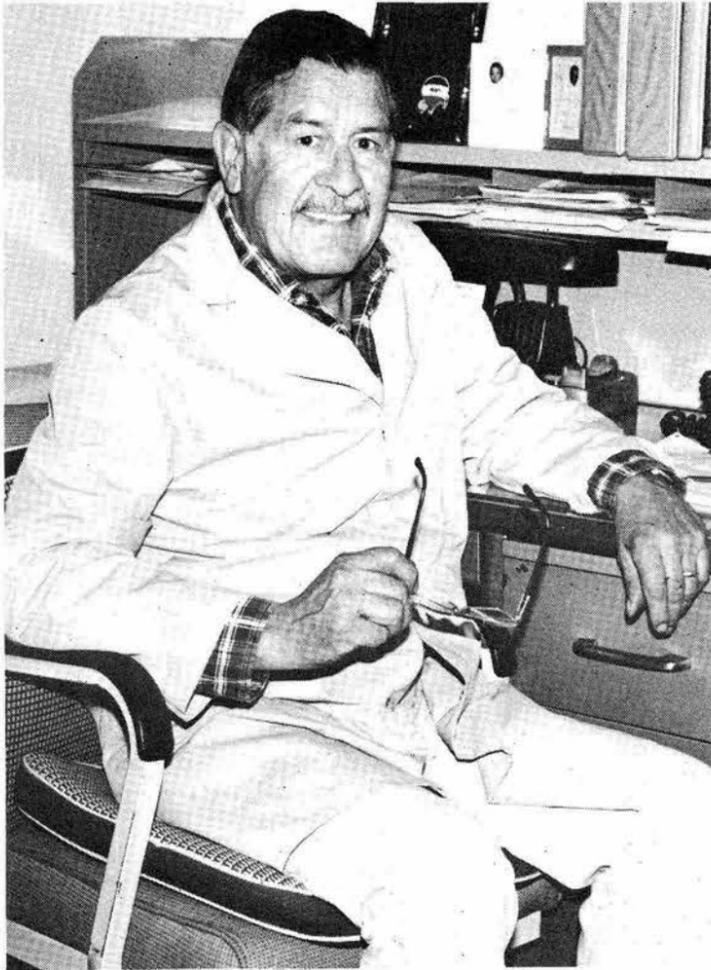
DECEMBER 1982



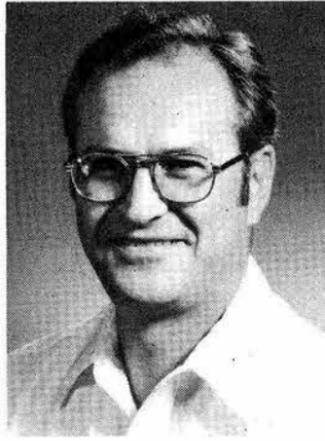
Allen Thornton - 2524 30



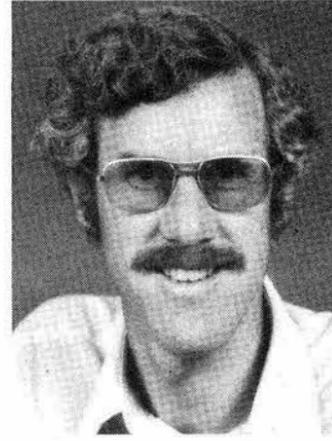
John Talbutt - 7173 25



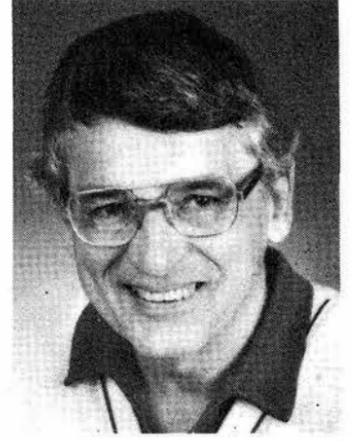
Gilbert Ramirez - 3423 30



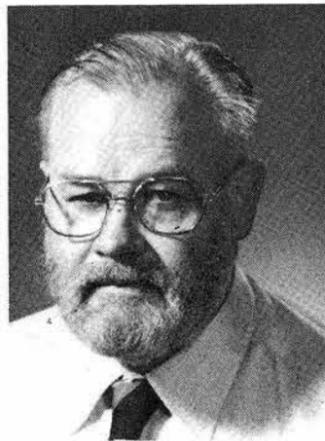
Bob Simpson - 2116 20



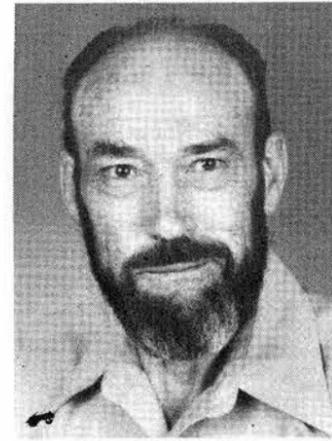
Carl Melius - 8343 10



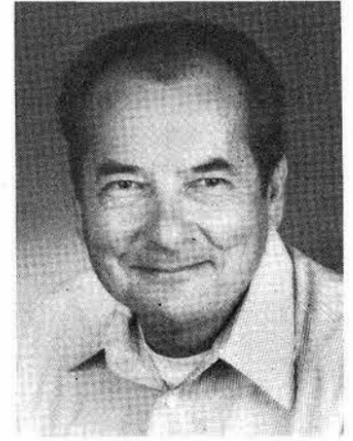
John Brengle - 8466 30



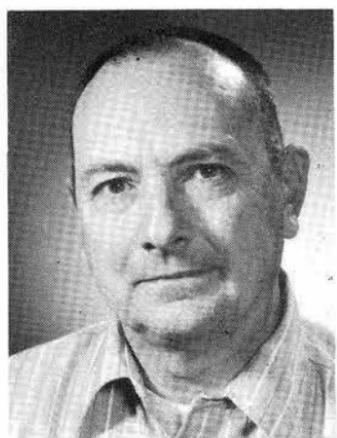
Bob Cranfill - 9213 25



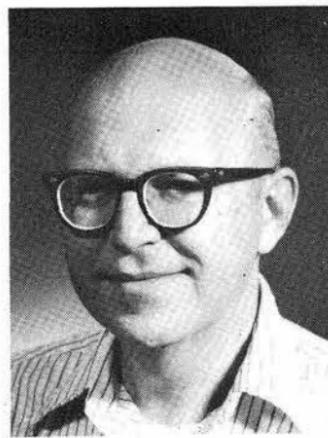
James Gruver - 8271 25



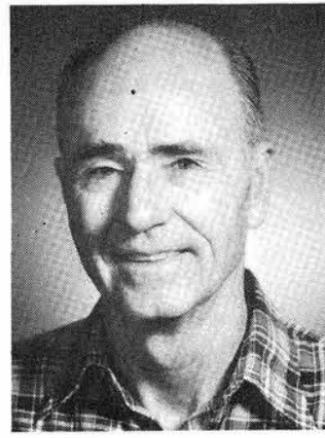
Don DuBose - 8415 20



David Braudaway - 2551 25



John Brammer - 2561 15



Merle Alexander - 7473 30



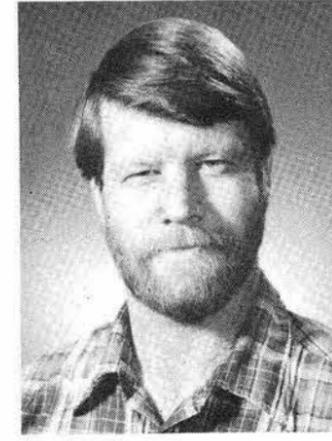
Horace Montoya - 7485 35



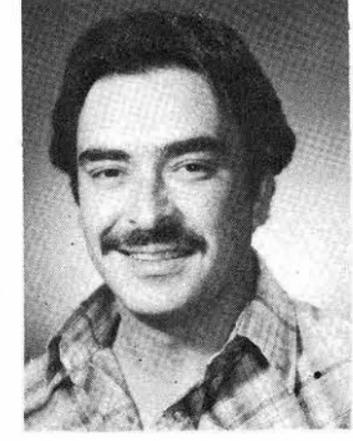
Larry Wilhelm - 2631 25



Jack Cannon - 9721 25



Dave Baldwin - 0313 10



Jim Salas - 2514 10

Feedback

Q. Why does it take six weeks to get the videotape copies of colloquiums to the Library?

A. Division 3153, which has the responsibility for videotaping the Sandia colloquia, was not aware that anyone was being inconvenienced by the delay in forwarding these colloquium tapes to the library. The practice has been to hold the tapes for an average of five weeks to be sure that any requests (usually from Livermore or Tonopah) for copies of these tapes have been received before the tapes are released to the library. While the tapes are being held by Division 3153, they are available upon request for viewing in Bldg. 863. However, since this may be inconveniencing some Sandia personnel, the colloquium tapes will now be forwarded to the library one week after they are recorded—unless they are scheduled for playback in Bldg. 815 or if it is necessary to insert visuals that could not be effectively recorded when shown during the colloquium.

H. M. Willis—3100



NOT YOUR ORDINARY COMMUTER AUTOMOBILE, but we found it in the Bldg. 823 parking lot. Nancy Nelson (2454) got to drive her husband's 1980 Silver Shadow II Rolls Royce to work recently when her car was in the shop. When asked how she felt about driving the precision machine, she replied, "Nervous."

Q. Why can't the Feedback coordinator be included in the COMET [COMputer MESSAGE Transmission] system so those of us on the system could use it for Feedback queries?

A. Though access to Feedback through COMET would certainly speed up message transmission and might possibly result in higher volume, I have one serious misgiving: As a current COMET user, I have been repeatedly cautioned that COMET is an open resource and should not be used to

handle classified, private, or sensitive messages; certainly, many FEEDBACK queries fall into the latter two categories.

Through the last nine years, one of my top priorities as Feedback coordinator has been to preserve the anonymity of employees who choose to use Feedback as a way to communicate their feelings about the company. I would feel more comfortable if Feedback messages, along with their authors' names, were not included in the COMET network for the above reasons.

Phyllis Wilson—3161

JUNK•GOODIES•TRASH•ANTIQUES•KLUNKERS•CREAM PUFFS•HOUSES•HOVELS•LOST•FOUND•WANTED•& THINGS

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (MO125).

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and DOE employees.
6. No commercial ads, please.
7. No more than two insertions of same ad.
8. Include name & organization.
9. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

PORTABLE jewelry display case, orig. \$70, sell for \$35. Schalles, 243-7131.
 STAMP COLLECTORS: commemorative blocks & singles, common & rare. Smith, 255-5662.
 FIREPLACE SCREEN, 40"x32" high, tile frame, drawstring mesh curtain, \$20. Benderman, 298-7354.
 ANTIQUE BEDS: dbl., dark wood, w/springs, \$25; single, metal with mattress & springs, \$50; ladies ski boots, size 6½-7, \$20. Harris, 268-7648.
 TEKTRONIX oscilloscope, model 531, w/dual channel plug-in, \$210. Kraft, 299-2157.
 FREEZER, 9 cu. ft., white, upright, GE, \$65. van Berkel, 897-2541.
 CAR RADIO, Fujitsu, mini-chassis, AM/FM w/push buttons to pre set 5 stations, from '81 Mazda GLC, \$40. Harris, 256-1642.
 CUSTOM Spring Crest drape for 6' patio door, gold tones, hardware included, \$65. Burgess, 296-4254.
 CHINA CABINET, round table, six chairs. Miller, 881-2963.
 EXERCYLE w/speedometer, \$45; Sears 10-spd. bicycle for repair or parts, \$20. Worth, 299-1032.
 TIRES, P215(G1)/75R15 Sears Weather Handler SBR, wsw, about 10K left, \$10 ea. Baxter, 344-7601.
 CLARINET, Yamaha, w/case, music stand & other accessories, \$135. Trump, 299-5162.
 SCHWINN coaster brake bike; carpet, 12 x 14, beige, all wool, bound on all sides, \$60 ea. Ricker, 298-9128.
 CHRISTMAS tree stands, metal, new in cartons, small, med. & lg., \$1, \$2, & \$3 ea.; Christmas cards, \$1/box of 18. Freyermuth, 299-2053.

DAHLQUIST DQ-10A speakers w/KEF T27 tweeters; Yashica 35mm camera, best offers. Booth, 296-3955
 BANJO, Wildwood Paragon Bluegrass, fancy curly maple, vine inlay, \$600; Guild Mark 5 Classic guitar, \$450. Downs, 268-7392.
 GREENBRIAR regulation 8' pool table, all accessories, will store till Christmas. Nowicki, 296-2209.
 STEREO 35-w amplifier & AM-FM tuner, both Heathkit solid state in wood cabinets, \$30 ea. or \$50 for both. Stearns, 298-0444.
 GAS STOVE; hide-a-bed; dining table, 4 chairs; refrig.; air cooler, window type swamp cooler; wardrobe closet, metal w/mirror. Metoyer, 877-1893.
 ½ CORD Pinon firewood, you pick up, \$30. Patrick, 822-0703.
 CARPET, \$1/yd.; Hotpoint oven, \$25; dbl. ss sink, \$10; GE stereo, \$30; range hood, \$25; Henke ski boots, 7½ N, \$15. Ferguson, 881-7590 after 5.
 BLUE WILLOW CHINA: teapot, platters, bowls, plates, shaker, others; Allertons & Ridgway, England, sell separately. Dalphin, 265-4029.
 AKC German Shepherd puppies, males & females, whelped 10/22. Kramm, 281-5379.
 SMITTY camper shell, 8x4x4, ladder, top luggage area, storage, vented, windows, \$295. Foster, 265-0069.
 AQUARIUM, 15-gal. w/stand & light, \$20. James, 294-6837.
 SEARS Craftsman woodlathe, never used; Sears Craftsman 4hp air compressor/paint sprayer, used twice; '58 hardrock maple drop leaf dinette, 4 chairs. Marlman, 883-8660.
 REGISTERED Black Angus bull, \$1200; breeder cows, \$550; will trade for calves; 30' wood trusses, 4 for \$50; fat hens, \$1. Lackey, 898-6638.
 KING SIZE waterbed, Captain's design in distressed wood w/ig. headboard w/mirror, heater thermostat, used less than 1 yr., \$300. Pafford, 298-8913 after 5.
 COMPRESSOR/SANDBLASTER, 4HP gasoline powered; weight bench; girls' 20" bike; glass fp screen; Dome climber, jumping horse & misc. toys. Kromer, 298-3073.
 SKI BOOTS, Trappeur, sizes 11 & 6, \$10/pr. Shunny, 265-1620.
 SKI RACK for Opel GT, \$25. Brandon, 892-6068.
 ATARI, almost new, 2 cartridges, \$125; stereo & speakers, \$40. Widner, 294-2014.
 VACUUM CLEANER, upright GE, \$25. Arnold, 898-1467.
 CONVERTIBLE sofa/sleeper, beige/cranberry plaid, \$125; port. dish-washer, \$30. Clay, 294-8557.
 MARKER M-20 bindings, new, \$35; size 8½ Nordica boots, \$25; A/T ski rack, \$30; console stereo minus cabinet, AM/FM/8-TK recorder, \$30. Fine, 266-8339.

DESK, oak built-in w/upper cabinet, nearly new, \$250; woman's Frye boots, new, size 9, \$70; camera, 35mm SLR, \$40. Errett, 292-4885.
 CARPET & PAD 18'x21', \$100. Jankowski, 299-7268.
 12 GA. H&R, single shot w/polychoke, 3 boxes shells, \$100. Constantineau, 298-6166.
 WASTEKING dishwasher, needs new motor, has recently rebuilt timer, \$25. Folkins, 345-2801.
 THREE Lennox Blue M1st hand-blown crystal water goblets, orig. \$15/ea., sell \$10/ea. or best offer. Blanford, 292-6494.
 SOFA, 82" Thomasville, country French style, \$400; upright antique piano, reconditioned, \$875; Sears color TV, 19", \$100. Adams, 881-6836.
 GIRL'S 16" sidewalk bike w/training wheels; girls' 20" Huffy hi-rise bike; fencing, 2"x4" 14 ga. wire mesh, 48"x27". Wentz, 299-5274.
 CHESS SETS, from collection, different types & sizes, \$5 to \$15; chess books, 50 cents. Madrid, 294-5780.
 BICYCLE TUBES, thornproof, new, 26x1.75, 24x1.75, \$3 ea.; gas water heater, 40 gal., American Standard, \$50. Stang, 256-7793.
 TWIN BED w/mattress & springs; used carpet & pad, tan, approx. 12'x18', plus pieces. Brooks, 299-1884.
 SHORT WAVE RADIO, Radio Shack Realistic DX-160, \$100 or best offer. Oborny, 299-8509.
 HIKING BOOTS, German made, Dachstein, leather w/Vibram soles, worn once, size 8-8½, \$29; Radio Shack Lamborghini radio control car model, \$15. DeLollis, 299-5384.
 MATCHING couch & chair, \$125; coffee table, \$15; small end table, \$10. Galloway, 268-0463.
 BELL & HOWELL 16mm turret film, case, filters, meter; Rolleiflex twin lens miniature; Nikon 28mm wide angle lens. Laskar, 299-1024.
 DINETTE SET, Kay's Dinette City, 48x60 table, 6 swivel chairs; 26" 3-spd. Columbia girls' bicycle. Seltzer, 299-0284.
 AKC reg. Labrador pups, 2 black, 3 yellow, whelped 9/30, have shots. Robinson, 296-2753.
 MAMIYA C330 complete outfit: prism finder, WL finder, 55mm, 80mm, 135mm, 250mm lenses, current retail \$2530, sell all for \$950. Benson, 884-5059.
 YOUTH SKIS, 130cm Elan Blueflex, Geze plate bindings, Tomic poles, \$65. Holmes, 292-0898.
 WHIRLPOOL range w/dbl. oven & filter fan, avocado, \$225. Burchett, 299-1689.

TRANSPORTATION

'81 ITASCA motorhome, self con-

tained, generator, AC, reg. & propane gas powered, full awning; '74 Opel ready to tow. Bernyk, 897-1624.
 '77 OLDS Cutlass Supreme, PS, PB, AC, AM-FM. Romero, 293-8611 after 5.
 '78 KZ1000, Kerker exhaust, Pirelli tires, K&N filters, case savers, more, best offer over \$1600. Rein, 293-6539.
 '69 VOLKSWAGEN bug, rebuilt engine, new clutch, brakes, \$1795 or best offer. Morris, 242-0009 after 5.
 '73 HONDA SL-70, adult ridden, 1800 miles. Hymer, 293-6029.
 '73 VW BUG, rebuilt engine, new shocks, recent upholstery, \$1600. Morrison, 877-7425.
 '80 DATSUN 280ZX, rebuilt wreck, \$7900. Robertson, 299-7561.
 '73 MAZDA RX2, new tires & battery, low mileage. Gabaldon, 268-8679.
 '73 MERCURY Marquis Brougham, AC, all power, Sears Michelin tires, garaged, \$1400 or best offer. Hall, 299-0009 after 5.
 '73 NOVA 6-cyl. 4-dr., AT, 55K miles, \$600. Luna, 884-5023.
 '69 CHEVROLET stn. wgn., AT, PS, PB, AC, V-8, orig. owner, \$850. Graham, 865-9427.
 HONDA 350SL trail/street bike, 5000 miles, \$390. Shunny, 265-1620.
 '80 FORD garden tractor, 16HP, hydrostatic trans., 50" mower, HD stainless steel cart, used 120 hrs., \$2900. Larsen, 281-2454.
 '76 HUSQVARNA, 360cc, extras, \$750. Kelsey, 266-6460.
 '81 HONDA XR500R, 4-stroke Enduro, licensed, shop manual, 1000 miles, \$1295. Stronach, 294-5271.
 '72 VW bus, \$2100 or best offer. Martin, 884-4178.
 '74 PLYMOUTH Gold Duster, 37,500 miles, new radials, lt. blue/white top hatchback, 6' flat space, \$1800. Andersen, 294-8624.
 '79 KAWASAKI K7-400, low mileage, service records, Bates luggage, \$975 or best offer. Furaus, 822-0146.
 '80 MUSTANG, 4-cyl., 2.3L, AT, AM-FM cassette, 19,200 miles, \$4100. Stang, 256-7793.
 '78 MAZDA GLC, 58K miles, 30 mpg, sunroof, new seat covers, 5-spd., below NADA average at \$2600. Bleck, 298-0504.
 '73 FORD Galaxie, low mileage, AC, PS, PB, one owner, V8, reg. gas. Schamaun, 298-5192.
 '76 TOYOTA Corolla SR-5, 5-spd., AC, AM radio, tachometer, gauges, radials, \$2000. Reineke, 898-2106.
 '69 KARMANN-GHIA, \$2800. Wischmann, 821-2966.

REAL ESTATE

BOSQUE FARMS, 3-bdr., 2 full baths, fp in great room, 1 acre, 2 wells, orchard, horses allowed. Perrette, 869-6931.

3-BDR., 2 bath, 1850 sq. ft., NE (Eastridge), end of cul-de-sac, RV parking, landscaped w/sprinklers, 8¼% assumable, financing available, low \$80s. Reif, 299-2665.
 DUPLEX, assume 11½% loan, on Kentucky between La. & San Mateo. Altwies, 292-3884 after 5.
 3-BDR., 2 acres, Fisher stove, custom drapes, insulated, GE elec. appliances, Skyland, South 14, sell \$74,900. Dumke, 281-2209 after 6.
 MOBILE HOME, 14x80' Marshfield, 2-bdr., 2 baths, lg. kitchen w/washer/dryer hookups, near Base, \$18,000. Bentz, 765-8015.
 3-BDR., 1½ baths, pitched roof, fp, \$62,500. Olson, 268-2227.
 TWO ACRES, irrigated farmland, power & phone lines in area, located in Los Chavez (between Los Lunas & Belen). Archibeque, 865-6548.
 3-BDR., 2 baths, fp in great room, no qualifying, \$60s, Taylor Ranch. Corcoran, 255-0577 after 5.

WANTED

FRANCISCAN Sierra Sand pottery. Merritt, 884-8487.
 WHEELS for small toys, ½" dia. to 1½" dia. Coalson, 298-0061.
 BEER CAN COLLECTORS who are interested in trading. Have about 3-400 traders mostly from last 6 years. Leonard, 884-8566.
 KODAK slide projector carousels in working order, especially 140-slide trays, but 80-slide capacity trays also of interest. Carnicom, 281-3421.
 CHAINS, 7:50-16 or trade for chains that will fit 14 or 15" tires. Buraus, 822-0146.
 ROOMMATE wanted: close to work, own room(s) & bath, no pets/1 child OK*, \$175/\$225* rent + ½ utilities. Levin, 299-0891.
 WILL THE party who bought our pet exercise pen please contact me? Romine, 281-5682.
 WATER HEATER & fluorescent lights needed for a church. Mitchell, 865-7941, or Seeley, 865-6663.
 GOODYEAR TIRE(S), 7.75x15, 8-ply, to fit Airstream trailer. VanDen-Avyle, 898-6474.
 MOVIE projector, reg. 8mm. Tjeltweed, 299-0032.
 BIRD CAGE. Shunny, 265-1620.

WORK WANTED

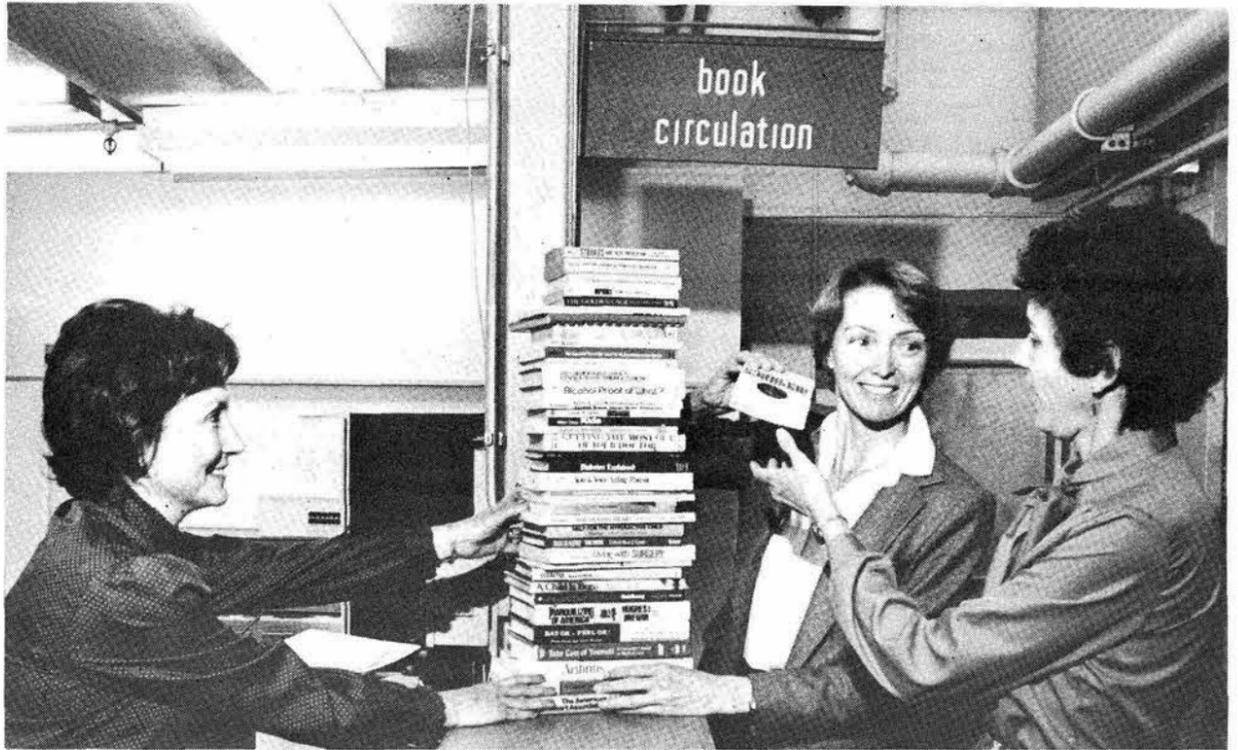
HOUSE & apartment painting, UNM Student Paintshop, estimates, references. Peter Shunny, 266-0266.
 TWO students will do raking, clean-up, light hauling, misc. jobs, have pickup. Bryan Fisher, 298-0526.

Semi-Formal Dinner Dance Tomorrow

CALL THE CLUB office, 265-6791, right now if you haven't made reservations for the Holiday Ball scheduled tomorrow. This semi-formal affair featuring a served dinner that's outstanding, a show of fashions that are elegant, and the music of Phil Lenk headlines the coming holiday season. Dinner tomorrow is your choice of Beef Wellington or Coquilles St. Jacques Mornay (baby scallops and lobster in white wine sauce). The fashion show, presented by Kistler-Collister, features elegant furs and evening wear. Phil Lenk plays the old danceable tunes and the new danceable tunes with old-fashioned instruments like saxophones and trumpets.

CLUB FACILITIES are traditionally booked for private and organizational parties during December, but Happy Hours continue in the main lounge and lobby areas. Stop by tonight or any Tuesday, Wednesday or Friday for the best Happy Hour prices in town. The board of directors reluctantly ended the three-for-one Wednesday Happy Hours and the free goodies on Tuesdays. Inflation, higher wages, and high wholesale prices finally took their toll. The losses were out of hand. Still, the Coronado Club's Happy Hour prices remain the best deal in town, even though there has been a slight (10 cents) increase in prices.

ANNUAL KIDS CHRISTMAS PARTY is set for Saturday, Dec. 11, starting at 10 a.m. with a performance by the El Dorado "Gold Rush" choral group. The puppets and music of Ron and Mary Kay Day will continue the entertainment; then Santa Claus makes an appearance with goodies for all the little ones. Admission is 50 cents per child.



STEADYING THE STACK is Connie Souza (3144) as Susan Harris (3330) presents one of 40 books purchased by Medical to the Library's Linda Erickson (3141). The books include such health topics as health promotion, physical fitness, nutrition, smoking cessation, diabetes, cancer, heart disease, alcohol, and drugs. The books will be on display in the new book area for one week beginning Dec. 6. After the display week, the books will be shelved with the regular collection. To help you locate the health books more easily, a list of all of them will be available in the new book area. The books will be ready to be checked out on Dec. 13. Be healthy by Christmas—read!

CORONADO GRAND SQUARES meets Dec. 6 for squaredancing and on the 13th for a party. The regular Monday night schedule resumes on Jan. 3. A new series of lessons, called Plus Dancing, will start Jan. 10. For details call Ed Ehrman (2154), Grand Squares president, 4-2816.

CORONADO SKI CLUB journeys to Wolf Creek to ski Dec. 10-12. Space is still open. Call Oscar George, 4-9159, for details. On Dec. 17-18, the group travels to Arizona to ski the Sunrise area. Kaz Oishi, 6-0511, is in charge. On Dec. 27-Jan 1, the group heads for Utah snow. Joel Miller, 4-1775, has information.

Coronado Ski Club's annual "Snowball" is set for Tuesday, Dec. 21. The Watermelon Mountain Jug Band plays for dancing, a ski apparel style show is planned, Happy Hour prices are in effect,

and door prizes will be awarded. Make reservations now with Pat Cox (3734), 6-0160.

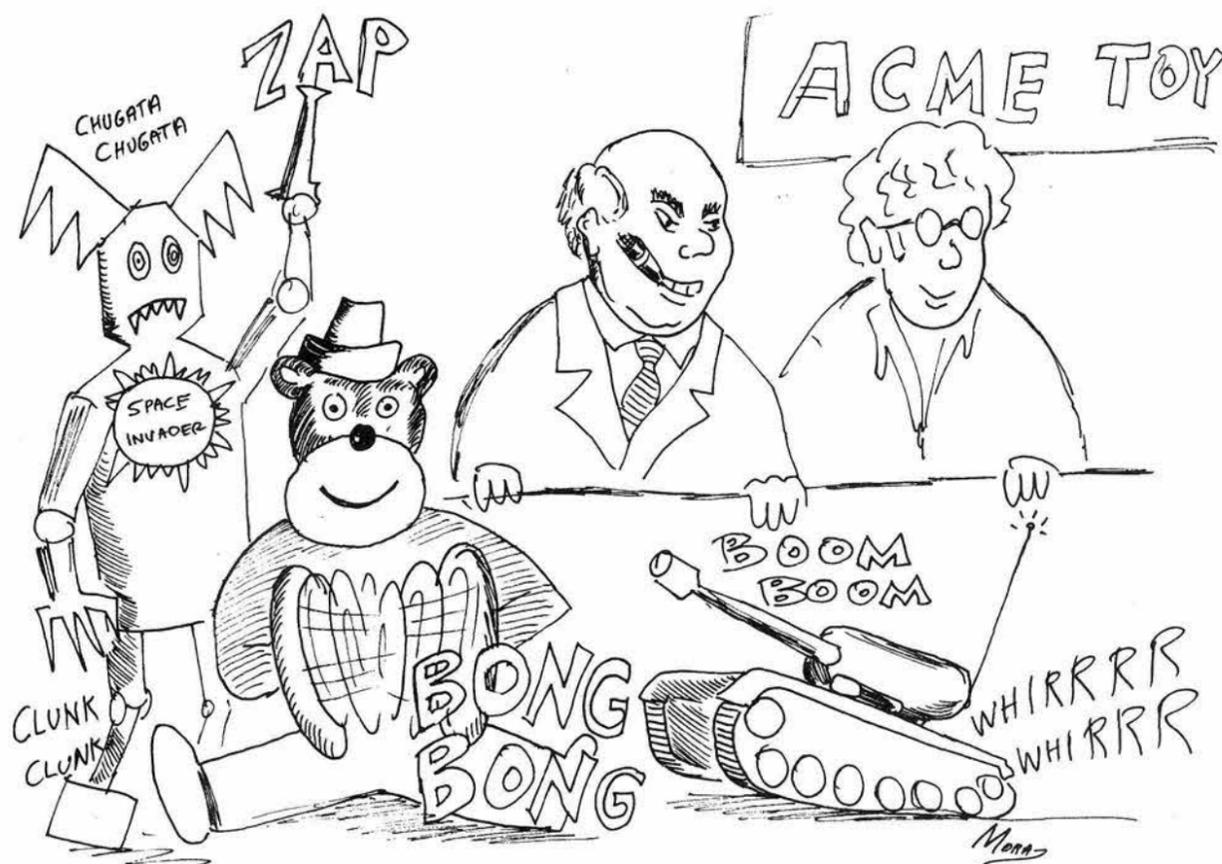
THE REDONDO DANCERS meet Thursdays at 8 p.m. for round dancing in the ballroom. Beginning Jan. 6, the group will offer a series of lessons for beginners. Call Charlie Clendenin (2611), 4-2119, for more information.

LUNCH at the Coronado Club continues as a popular break from the brown bag routine. Open to anyone on Base, the Club's "Triple S" luncheon is served from 11:30 to 1 Mondays through Fridays.

TRAVEL DIRECTOR Shirley McKenzie (2432) announced a Disneyland/San Diego package available during the school spring break period either March 28-April 2 or April 4-8. Visit Disneyland, Knott's Berry Farm, Universal Studios, and the Wax Museum while in Los Angeles, then travel to San Diego for visits to the city's famous zoo and Sea World attractions. The package includes transportation, lodging, transfers, and all admissions for \$328 for adults.

See Shirley in the lobby tonight for trip literature and talk about an upcoming Hawaiian trip and a Caribbean cruise.

NEW YEAR'S EVE will close out 1982 in grand style with a blast upstairs and downstairs at the Club. Frankie and the Corvettes hold the bandstand in the main ballroom playing a variety of styles while Bob Banks and the Trio raise the roof downstairs. The evening includes dancing, partying (with an open bar all night), favors, noisemakers, champagne, and a super breakfast to top it off. Make your reservations now and pick up tickets before the end of the day Dec. 23. It's a package deal—member couples pay \$37 and guest couples \$40. Single members pay \$18.50. Last year, tickets closed out early.



"Good work, Smedley. With those new long-life batteries, these toys can run for years."