



HOSTESSES who will greet visitors at Sandia during Family Day activities tomorrow include, first row, Alicia Gamberale (3734), Joy Lutheran (4451), Virginia Padilla (3163) and Lorraine Segovia (4424). In the second row are Judy Baca (1530), Sally Frew (4516), Nancy Barr (3145), Jerri Dye (3410), Lola Orr (5621) and Yolanda Reyes (4242). In the back row are Cecilia Andersen (4550), Francine Singleton (2515), Norma Carrier (2360), Pauline Parra (5110) and Lisa Polito (3434).

## ***Family Day '81***

**Saturday, Oct. 17  
9 a.m. - 4 p.m.  
Exhibits - Demonstrations**

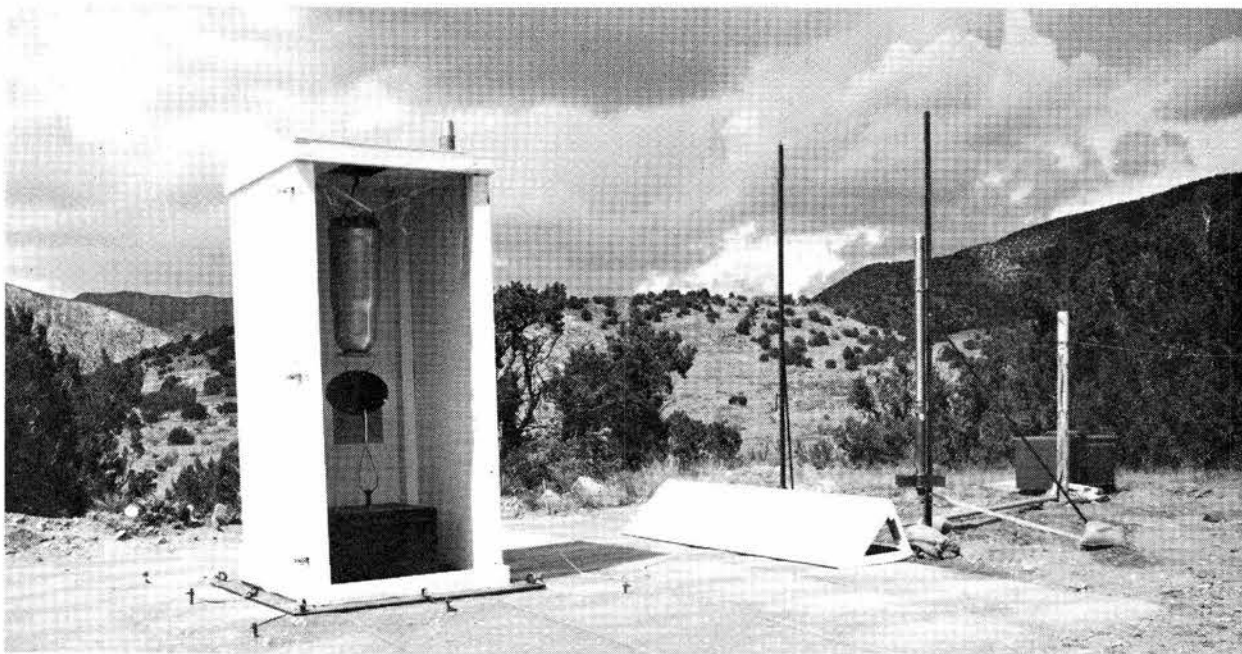
**Families and friends  
of Sandia National  
Laboratories employees  
are cordially invited  
to visit our Tech Areas**

# LAB NEWS

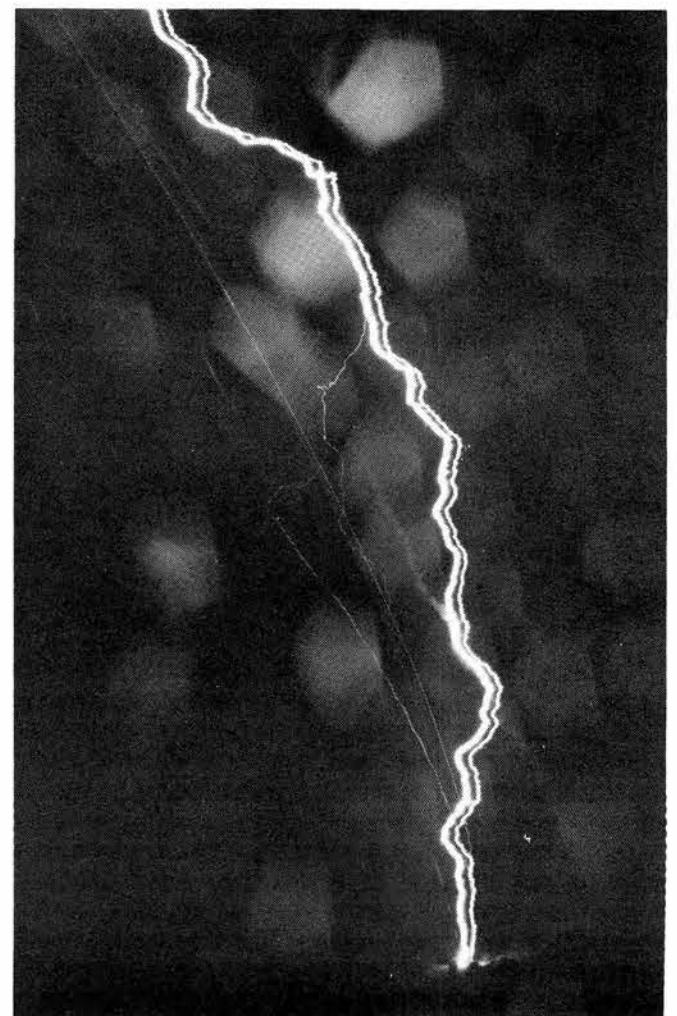
VOL. 33, NO. 21

OCTOBER 16, 1981

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



WHEN you need a large economy size bundle of electricity, here's an ingenious way to get it, devised by John Duncan's W80 Test Division 4343, Jim Renken's Hostile Environments Division 4365, and carried out by Dave Bickel's Track and Cable Division 1535. In an experiment designed to test the MC 3080 lightning arrester connector, a major safety element in modern warheads such as the W80, the warhead with its connector was suspended in an enclosure in Coyote Canyon. At right, a small rocket trails a steel wire which leads to a spool of wire atop the enclosure. After launch, the rocket attracts the lightning strike which then travels down the trailing wire to the warhead and connector. When the experimenters noted storm clouds were gathering and conditions were right, they launched the rocket and, when it reached 2500 feet, ZAP! Actually, multiple strikes occurred. Duncan and Renken report that the lightning arrester connector worked as intended as some 6000 amperes of current was diverted from the warhead electrical system circuits to ground. The MC3080 was developed in George Donaldson's Interconnections Division 2154.



## Polish Refugees Need A Little Help

Martha Todd, a systems analyst in Div. 3416, was struck by the account in the *Albuquerque Journal*. It said that some two dozen Polish refugees, recently arrived in Albuquerque, were having a difficult time, what with finding a job, learning the language and coming to grips with a new culture.

Martha did a little checking on her own and learned that there are actually 27 Poles, including four couples, ages 21 to 45, most of them skilled in a craft or other occupation, and all anxious to work and to get going in their new lives. Aside from the couples, the others are men who, Martha reports, live with one another in bare apartments off Zuni.

"They're so lonely, so my husband and I had several to dinner. Even that small gesture meant a great deal to them—they don't speak English and we know no Polish but we managed to communicate. They loved our collection of Beatles records . . ."

Martha has an idea. How about establishing a one-on-one friendship between an Pole and an American, i.e., a Sandian? The American friend would touch base with the Pole once or twice a week, have him to dinner occasionally, take him shopping, show him around town, maybe do a little coaching in English. "I don't have a list of things that the American friend would do—that would be up to the individual. I think Sandians who would be interested in this could figure out some reasonable arrangement."

Martha emphasizes that this is in no way a sponsorship—only a friendly point of contact for a person abroad in a strange land. An immediate need is transportation to and from English classes.

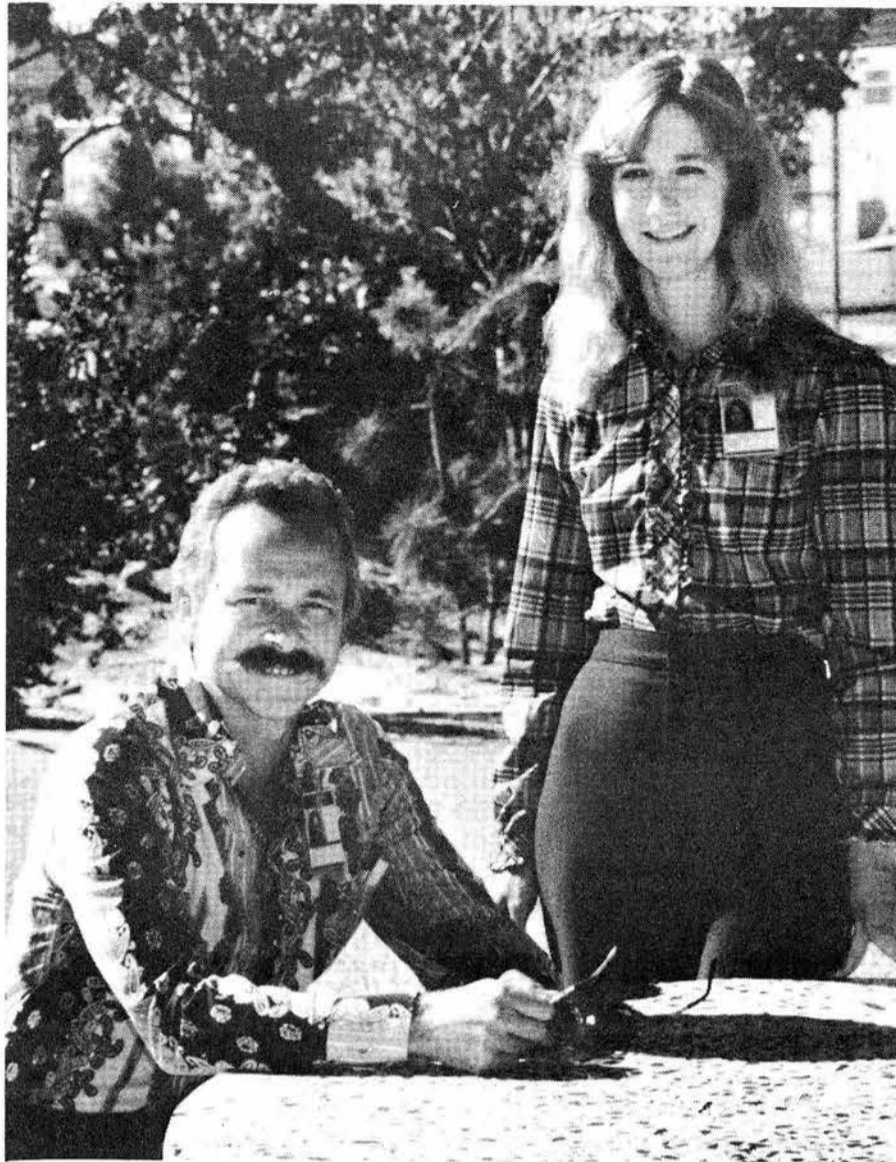
If you're interested, call Martha on 4-2888.

### Sympathy

To Robert Foster (2551) on the death of his mother in Albuquerque, Oct. 3.

To Paul Kind (3618) on the death of his sister-in-law in Little Rock, Sept. 24.

To Sam Espinoza (1543) on the death of his mother in Alamosa, Colo., Sept. 24.



NEW SUPERVISORS — Don Davis (2141-2) and Melanie Tuck (2141-1).

## Supervisory Appointments

MELANIE TUCK to supervisor of Process Operations Section 2141-1, effective Oct. 1.

Joining Sandia's semiconductor lab staff in June 1974 as a process technologist, Melanie has also worked in process development and participated in the semiconductor lab's training program. Melanie's section is responsible for all silicon wafer processing.

Following graduation from UNM with a BS in biology, Melanie worked at the Lovelace Inhalation Toxicology Lab. She lives in the NE heights.

\* \* \*

DON DAVIS to supervisor of Process Support Section 2141-2, effective Oct. 1.

Don joined the Labs in 1965, and has worked chiefly with a satellite sensor development group and on a project to develop an unattended seismic observatory. For the past seven years he has worked with the semiconductor group on microlithography for fabrication of integrated circuits. In his new position, Don's responsibilities include microlithography development, photomask procurement and process support.

Don earned an associate degree in electronics technology from DeVry Institute of Technology in Chicago. His hobbies include fishing, hunting and cooking. Don and his wife Clarene have three sons and live in NE Albuquerque.

## LAB NEWS

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aided by gerse martinez

barry schrader reports livermore.

## Last Minute Reminders for Family Day Visitors

1. All main gates to KAFB will be open (Eubank gate 8:30 to 4:30) and traffic lights should be operating in work-day mode on Base. The South Valley gate will be closed.

2. Employees should park near their usual parking place and enter the Tech Area where they usually do; however, those going to Bldgs. 805-6-7 should enter through Gate 1, as Gate 11 will be closed.

3. Those who planned their walking tour from the list of exhibits in the last issue of the LAB NEWS should cross-check with the list in the Family Day Tour Route folder, to be handed out at hospitality booths near Tech Area gates, as there are several changes in the list of Class A exhibits. (The Family Day folder is believed to be accurate.)

4. Most of the exhibits are aimed at the high school level of interest and understanding. Very few of the exhibits will be of particular interest to younger age groups, although they will enjoy the sled shots, the solar demonstrations and various computer games.

## Winemaking—a Rewarding Hobby

Living in one of the more famous wine regions of the nation, Livermore Sandians have taken to the hobby of winemaking in considerable numbers.

Two Sandians, Ken Tschritter (8412) and Jack Hubner (8264), are probably typical of the hobbyist who has begun growing grapes and acquiring equipment to make the processing more scientific and reliable.

Ken began crushing grapes about nine years ago and his backyard is lined with varieties of grape vines, most notably a Ruby Cabernet, a hybrid varietal first grown in the '30s by UC Davis viticulturists. He works with a neighbor who owns a crusher-destemmer device to speed up work at harvest time, but Ken has his own pumps, filtration system and oak barrels. His storage vats are 15- and 30-gallon oak barrels in which he ages his red wines and an old refrigerator for the containers he uses for fermenting his whites.

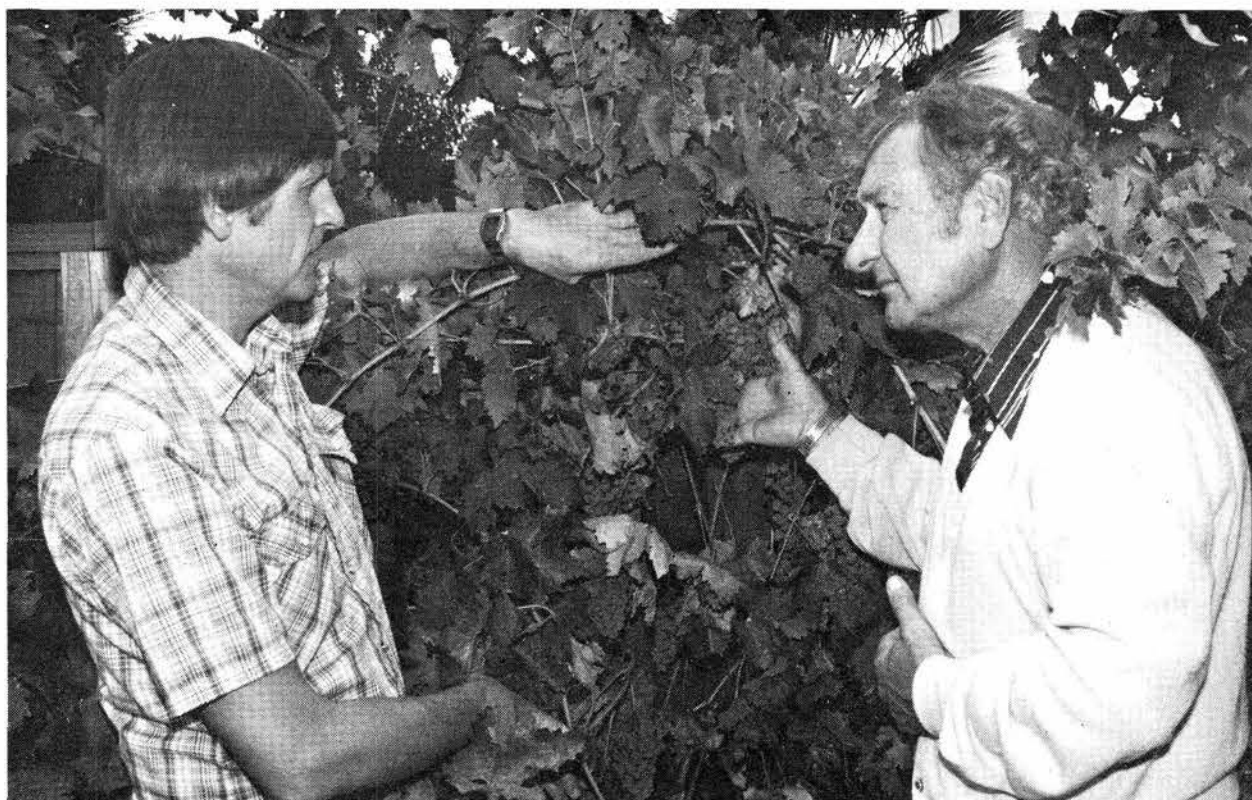
This year he again purchased some Johannisberg Riesling grapes in Lake County. In addition to this white wine, he has also made French Colombard. On the red side, Ken plans on 25 gallons from his Ruby Cabernet stock.

Jack first got his taste of winemaking when his daughter had to make wine in her fifth grade science project. In 1968, he planted his own vines and has been crushing and bottling every season since. He recommends making red wines as a starter because "they tend to be more forgiving, are typically less delicate in flavor and with a heavier taste so, therefore, mask any mistakes you've made." He suggests that wine novices drink white wines first because they are lighter and have a more delicate flavor.

Jack explains how to make a white wine from a red grape: "You must crush the grapes and get the juice off the skins very quickly, pressing and separating them immediately. If you leave the juice in contact with the skins for a few hours, you end up with a rosé." To produce red wine you let the juice, skins and seeds ferment together in what is called a "mast." After a yeast culture is added, fermentation starts in 12 to 24 hours. In four to eight days, the sugar in the juice is converted to alcohol and CO<sub>2</sub>. Then you press it, siphon off the pure wine, and store it in an oak barrel for six months or more. Next, it is drawn out and bottled in gallon jugs or in fifths, and corked. Then you wait another year or two while the wine reaches its peak in the aging process.

There are other details a hobbyist learns—like racking, which is siphoning off the juice from barrel to barrel and leaving the sediment behind, understanding malolactic fermentation, and knowing how much a tank may be filled so that it won't overflow when gases are created.

For the novice, Jack recommends a place like Wine and The People in Berkeley which provides everything needed to get started, including the processed juice if you want to skip picking, crushing and



KEN TSCHITTER (8412) shows his Ruby Cabernet grapes to Jack Hubner (8264) at right.



## SANDIA LIVERMORE NEWS

VOL. 33, NO. 21

OCTOBER 16, 1981

pressing. For under \$50 a person can begin. Some hobbyists never do plant their own vines, preferring to go out and pick or purchase them from grape growers.

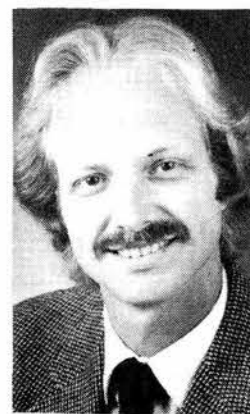
Both Jack and Ken agree that you don't make your own wine to get it cheaply. It is more economical to buy a case at the liquor store—then the only equipment needed is a corkscrew.

But there is great pleasure in the hands-on experience of winemaking, a process that dates back thousands of years. And it's rewarding to uncork a bottle from your own wine cellar and share it with friends.

### Take Note

Priya Basu (8315), a work experience student from Livermore High, was employed here the past two years and was recently awarded the American Business Woman's Association scholarship. Priya is now attending the University of Santa Clara, majoring in engineering.

### Supervisory Appointment



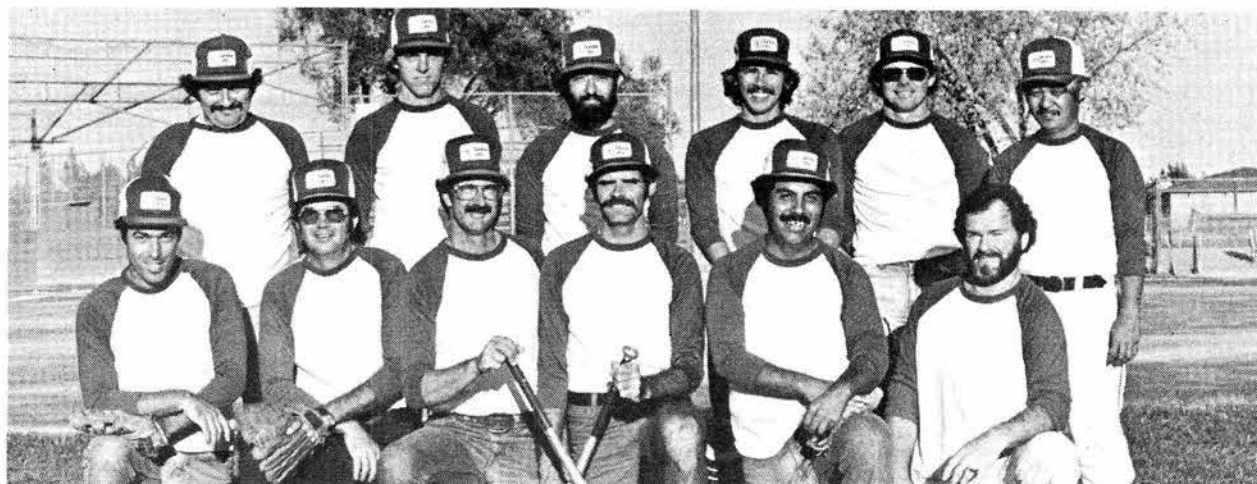
MIKE DYER to supervisor of Combustion Applications Division 8522, effective Sept. 1.

Mike began at Sandia Livermore six years ago after an Air Force tour at Kirtland Air Force Base in Albuquerque, working in the Air Force Weapons Lab.

He has been associated with combustion research at SNLL since coming here.

His educational background includes a bachelor's degree in aerospace engineering from Georgia Tech and a PhD from Princeton in aerospace and mechanical sciences.

Mike and his wife Polly have two sons, ages 8 and 10, and reside in Pleasanton. Mike's free-time activities include woodworking, camping and youth soccer which he coaches and referees.



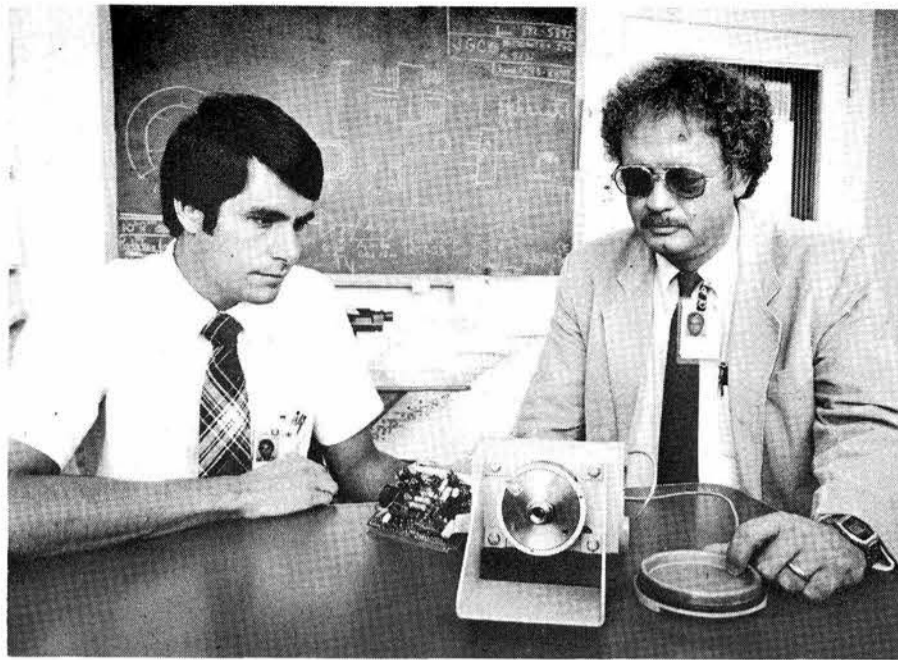
SANDIA LIVERMORE'S D-2 softball team took part in the Livermore Area Recreation and Park District summer league coached by Terry Bersie (8274). Left to right, top row are Danny Mitchell (8111), John Wheeler (8451), Bersie, John Smith (8271), Don Osbourn (8271), and Tabo Hisaoka (8274). In front, Mark Mickelsen (8271), Al Riechmuth (8442), Steve Schwegel (8271), Joel Groskopf (8272), Ray Baldonado (8271) and Gale Hudson (8111). Bersie had "no comment" on the team's win-loss record for the season.

# feed back

*Q. Why can't we cash U.S. Savings Bonds at the Credit Union?*

A. The Credit Union is not authorized by the Treasury Dept. to cash Savings Bonds. The Board of Directors has considered the possibility of obtaining authorization; however, until the Treasury changes the present rather involved reporting and reimbursement procedures for Bonds, we would prefer not to undertake the job. If the procedures are simplified, we'll take another look at this proposal.

C. L. Turner, General Manager  
SLFCU



EXAMINING a commercial pressure transmitter with an eye to developing radiation- and temperature-resistant units for nuclear power plant instrumentation are Keifer Elliott and Jim Gover of Energy Subsystems Division 2362. Sandia is developing several new systems for reactor use.

## Retiree Deaths

[July—Sept.]

Philip Jockle, Jr. (57)	July 2
Elmo Whitmore (71)	July 7
Jack Redburn (85)	July 16
Ramon Martinez (87)	Aug. 1
Robert Neighbors (67)	Aug. 2
Rosemary Morrissey (72)	Aug. 3
Quirino Carrillo (52)	Aug. 8
Edith Knight (69)	Aug. 8
Nemesio Martinez (68)	Aug. 11
Richard Carlisle (63)	Aug. 14
Clarence Sandin (64)	Aug. 15
Erwin Brokowski (65)	Aug. 15
Ralph Ambrose (67)	Aug. 18
Wilfred Bacchus (73)	Aug. 20
William Kingsley (59)	Aug. 24
Walter Martin (74)	Sept. 4
Robert Little (70)	Sept. 5
Raymond Wason (64)	Sept. 11
Howard Thomas (70)	Sept. 30

## Authors

R. L. Iman (1223), J. C. Helton (4413) and J. E. Campbell (Intera), "An Approach to Sensitivity Analysis of Computer Modes: Part I - Introduction, Input Variable Selection and Preliminary Variable Assessment," JOURNAL OF QUALITY TECHNOLOGY, July 1981.

W. J. Conover (Texas Tech) and R. L. Iman (1223), "Rank Transformations as a Bridge Between Parametric and Nonparametric Statistics," THE AMERICAN STATISTICIAN, August 1981.

## Nuclear Power Plant Instrumentation Development Projects Under Way

DOE is funding several new development programs at Sandia (\$750K in FY82) for new radiation-resistant and temperature-resistant instrumentation subsystems for commercial nuclear reactors. The programs are managed in Glen Otey's Light Water Reactor Safety Department 4440 with technology development activities centered in Energy Subsystems Division 2362 under Jim Gover.

The projects stem from investigations and recommendations for improved instrumentation made after the Three-Mile Island accident in March 1979.

"After reading the reports of studies related to Three-Mile Island," Jim Gover says, "it was clear that Sandia experience in designing systems that use specialized technology—advanced temperature-resistant and radiation-resistant microelectronics—could be of benefit to the nuclear power industry. We visited several nuclear utility sites and the reactor manufacturers to get their view of instrumentation needs. Then we sponsored a 'Technology Workshop for Improved Nuclear Power Plant Instrumentation' for industry representatives here last May and discussed the areas where Sandia could make contributions. The response was enthusiastic."

DOE is sponsoring Sandia's development of "smart" instruments—those which perform their own calibration, detect functional errors and correct them and transmit failure information. And the

instruments will be rugged enough to withstand the high-temperature and radiation environments of nuclear reactor accidents.

The three major instruments under development are pressure transmitters under the project leadership of Kiefer Elliott (2362); multiplexers for multiple applications, including in-core self-powered neutron detectors, hydrogen detectors, thermocouples, and control-rod position sensors; and an *in-situ* hydrogen detector system under the project leadership of Jack Castle (2362). Jeff Harrell (2362) is providing electronics design support and Bruce Draper (2151) is developing high-temperature, radiation-hardened electronics technology for these projects.

These instruments are required to function in temperatures up to 250°C and survive radiation environments to 2x10<sup>8</sup> rads. Both Tennessee Valley Authority and Duke Power Company are eager to participate in demonstrations of these instruments at their plants.

Division 2362 is also conducting a study of control system electronics for the fuel manipulator system in a new nuclear fuel reprocessing demonstration pilot plant planned by Oak Ridge National Laboratory. Sandia is preparing system definition, development plans and cost estimates for development of the control and data-acquisition electronics that must survive a gamma radiation dose of 10<sup>8</sup> rads. The project is led by Pat Manke (2364).

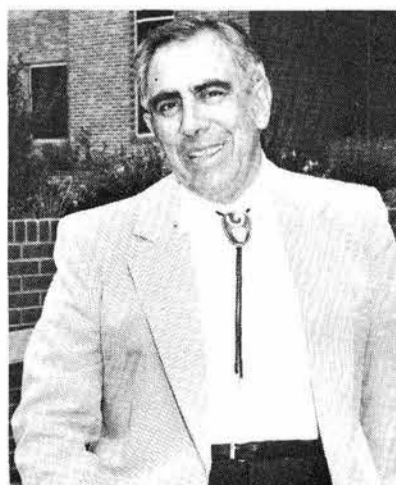
Both the DOE and Oak Ridge projects will employ operational and instrumentation amplifiers, logic circuits including microprocessors, analog-to-digital converters, transmission gates and regulated power sources.

Division 2362 has been working on nuclear power plant instrumentation evaluation and assessment programs for the Nuclear Regulatory Commission for the past two years. Otmar Stuetzer (2362) has been studying the effects of steam, high temperature and radiation on data and power transmission systems. Jack Castle (2362) and Ed Neidel (2363) recently completed a study of commercial hydrogen sensor technology for the NRC.



Will Fribley (3436)

## Retiring



Tony Chaves (3411)



Emily Young (2454)

## Fun & Games

**Triathlon**—The 5th annual Triathlon of Albuquerque, the Jay Benson Memorial, will be held on Sunday, Nov. 15, on KAFB. This year's contest, sponsored by the Coronado Club, has a small alteration: the sequence of events will be run, bike, swim (instead of bike, run, swim). The change was made for reasons of safety—with the run first, contestants will be pretty well spread out during the biking phase, thus avoiding the traffic problems of a hundred or more bikers starting off together. In case you're new to the Triathlon, it's five miles running, ten miles biking and a quarter-mile swim, all back-to-back without pause. Entry forms are available at the LAB NEWS trailer next to Bldg. 814 or at the Coronado Club.

\* \* \*

**Skiing**—The New Mexico Ski Touring Club is maintaining a ski touring trail up in the Sandias (the Survey Trail) and this Sunday, Oct. 18, those interested will meet at the Aladin Motel at 9 a.m. to spend the day clearing deadfall, branches and the like from the trail. Contact: Tom Mayer, 294-3368.

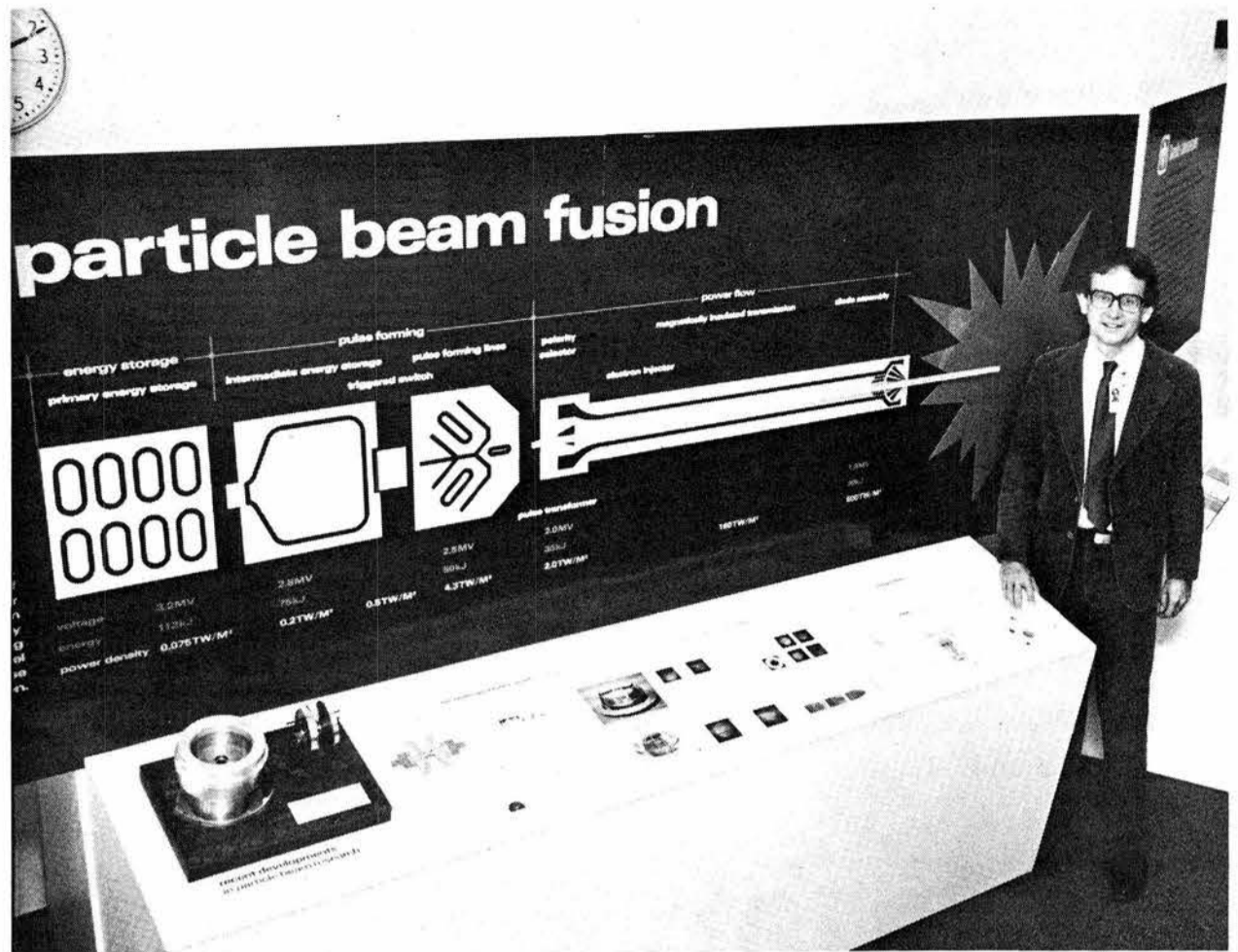
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**Que Pasa Rec Center**—The Center has tickets for Lobo football games played at home. End zone seats are \$3, while a seat on the 25-yard line goes for \$8.

A bus tour to Bosque del Apache Refuge near San Antonio has been set for Saturday, Dec. 12, leaving at 10 a.m. The refuge is the habitat for thousands of ducks, geese and cranes. Cost of the tour is \$13. Bring a sack lunch. Reservations should be made by Dec. 2. Contact for this and Lobo tickets: 4-5420.



SIGN posted inside small utility addition being built on the northeast side of Bldg. 880—maybe they'll shrink them to Goldfinger-type cubes for stacking?



GLENN KUSWA and his group in Department 4240 have prepared this display on particle beam fusion for the upcoming "Showcase for Technology." Sandia staff, tech artists, writers and graphics specialists are contributing 13 major exhibits to the conference-exposition.

### Sandia Participating

## 'Showcase for Technology' Opens Oct. 28 at Convention Center

With 30 speakers and 13 major displays, Sandia National Laboratories is helping sponsor the "Showcase for Technology," scheduled Oct. 28-30 at Albuquerque's Convention Center.

A conference-exposition conceived by U.S. Senator Harrison Schmitt of New Mexico, "Showcase" aims at speeding transfer of information to the private sector from government sponsored research in New Mexico laboratories and universities. Sponsors, in addition to Senator Schmitt and Sandia, are Los Alamos National Laboratory, U.S. Department of Energy and the Federal Laboratory Consortium.

Other participants include the University of New Mexico, New Mexico State University, New Mexico Institute of Mining and Technology, Air Force Weapons Laboratory and White Sands Missile Range.

Prime audience for the several hundred scientific presentations and exhibits will be directors of corporate technology, R&D managers, corporate planners, chief engineers, technology acquisition managers and high technology product developers.

"The federal government spends more than a billion dollars annually for R&D in New Mexico," Senator Schmitt says. "Expediting the flow of knowledge from this work to the private sector would give the taxpayer a bonus—in the form of new products and processes—on his original investment. That's what 'Showcase' is all about."

Panel presentations by approximately 100 scientists representing the various New Mexico institutions will occupy the first two days of the conference. The final day has

been reserved for tours of facilities at Los Alamos, Sandia and the Air Force Weapons Lab.

Sandians who are chairmen of various sessions include Glen Kepler (5810), Materials; Bob Gregory (2100), Electronics; Glen Brandvold (4710), Solar Energy; Gerry Yonas (4200), Fusion Energy; Gino Carli (2420), Computer Aided Design and Manufacture, and Jay Hughes (3731), Business Opportunities.

Sandia speakers and their subjects include Dick Claassen (5800), "A Perspective on Materials Research, Development and Graduate Education in New Mexico"; Frank Zanner (5836) "Process Metallurgy"; Bob Eagan (5845), "Ceramic and Glass Development at Sandia"; George Samara (5130), "Electronic Materials R&D in New Mexico"; John Curro (5813), "Polymer Development and Testing"; Frank Gerstle (5814), "Fiber-Reinforced Composites."

Don Mattox (5834), "Film and Coating Research in New Mexico"; James Gerado (4210), "Laser Technology Programs at Sandia"; Robert Gerber (4212), "Electron-Beam Technology for Advanced Lasers"; Wayne Johnson (4216), "Applied Laser Spectroscopy"; Jim Kennedy (2513), "Waveshaping and Its Utilization"; T. A. Allen (1473), "Novel Photochemical Fabrication Techniques"; Jack Sivinski (4545), "Atoms for Peace—Chapter II"; Dick Lynch (4530), "The Sludge Irradiation Program"; Dick Traeger (4740), "In-Situ Technology of Fossil Energy"; James Kelsey (4741), "Accessing the Geothermal Resource."

Jim Gover (2362), "Electronics for Severe Reactor Environments"; Bob Turman (4252), "Satellite-Borne Lightning Sensors"; Jim Leonard (4717), "Solar Thermal Electric and Process Heat Overview"; William Sullivan (4715), "Wind Energy Technology"; and Glen Brandvold (4710), "New Mexico Solar and Wind Energy Technology."



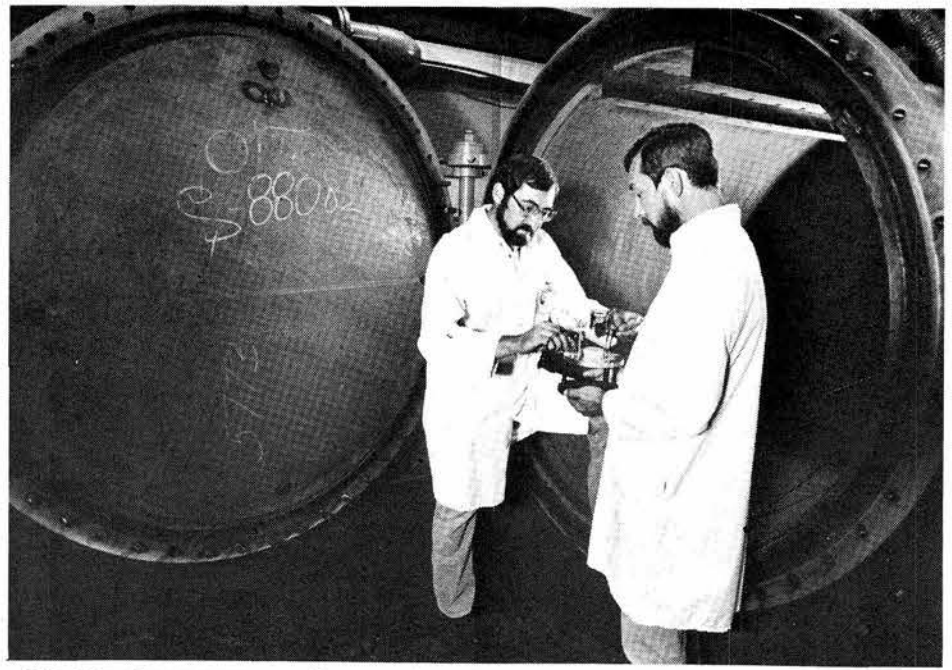
NEW THE **!!!** THINGS HAD TO BE GOOD FOR SOMETHING DEPT.

University of Arizona researchers have harvested and compressed their first crop of tumbleweeds. In their final form the logs look like—and burn about as well as—the compressed sawdust logs you can now buy from your local grocer. It's expected that it'll be one to three years before the logs will be marketed at a competitive price.

—Christian Science Monitor



IN CONTROL ROOM, Carl Konrad prepares to fire one of the research guns.



IMPACT CHAMBER—Carl Konrad and Dave Cox (both 5534) ready a test sample for a shock test. The chamber provides ports for instrumentation, protects the facility from debris.

## STAR: To Study Materials in Shock

Long a leader in advanced studies of materials undergoing extreme shock, Sandia National Labs consolidated several of its high-velocity gas- and propellant-driven research guns into a recently expanded facility in Bldg. 9956 called STAR—Shockwave Thermodynamic Applied Research.

"Shock-loading techniques provide valuable tools for studying the properties of materials under conditions of extreme stress, stress rate and temperature—conditions not achievable by other methods," says Jim Asay, supervisor of Thermo-mechanical and Physical Division 5534. "Sandia has combined development of

precision gun techniques for studying the response of materials under a variety of loading conditions with the development of advanced analytical models to describe these material responses in computer codes. The combination has made major contributions in both weapon and energy programs.

"For example, the data we acquired from shock wave experiments on iron indicate that a shock-induced crystallographic phase change is extremely important in accurately modeling the penetrability of armor. And, working with LLNL on the response of beryllium at high shock pressure, our laser interferometer experiments show that suspected shock-induced crystalline phase change does not occur, but that the mechanical strength of beryllium increases under shock loading at a much more rapid rate than earlier predicted. These observations have been extremely important in several different nuclear weapon applications.

"In the field of energy, we try to determine the material properties and loading conditions that produce dynamic fracture so that we obtain a better understanding of how to prepare oil shale for underground—*in situ*—processing," Jim continues. "Other recent work has provided information important to the design of targets in inertial confinement fusion experiments."

The division's work focuses on the shocking of instrumented test specimens with high-speed projectiles fired from special guns. Impact velocities between 15 m/s and 8 Km/s (about 50-25,000 ft/s) are typically achieved, and impact pressures range from less than 1 Kbar to over 7 Mbar (about 10,000-100 million psi).

Experiments are completed on a micro-second time scale, and data collected include information on compressive and fracture strengths, as well as on the electrical, physical, chemical, and optical properties of shocked materials. Extremely accurate time-resolved instrumentation, such as Sandia-developed laser

interferometers and piezoelectric gauges, is used to obtain the data.

The guns use high-pressure helium, hydrogen or solid propellants to accelerate projectiles 25 mm to 1 m in length to controlled speeds through barrels ranging in length from 8 to 18 m. The fastest gun gives projectile velocities nearly 10 times higher than those achieved in a conventional rifle.

The special laser technique for data acquisition used at the facility was developed at Sandia in the early 1970s by Lynn Barker and Red Hollenbach. Called VISAR (Velocity Interferometer System for Any Reflector), it uses a laser beam to precisely measure the shock-induced motion of a test specimen.

Piezoelectric gauges, also developed at Sandia by Bob Graham and others in Division 5131, use quartz or lithium niobate crystals which generate pulses of electrical current when subjected to shock loading. Attached to the test specimen, they provide stress measurements with nanosecond resolution.

Also vital to data gathering are the high-speed, electronic framing cameras, capable of recording pictures of shocked specimens at rates up to millions of frames per second.

"Using the STAR facility," Jim says, "we emphasize investigation of physical mechanisms important in dynamic processes, then follow by applying the results to the development of advanced computer models which can be used for weapons simulations. Future studies will continue the investigation of mechanical and physical properties which are important to the shock loading of materials. In addition, collaborative efforts with other divisions at Sandia are planned to study several anomalous electrical and optical properties—electrical breakdown and shock-induced luminescence, for example—under intense shock loading."

In addition to the STAR facility in Division 5534, other gas gun facilities at Sandia are in Division 5131.

### Events Calendar

Oct. 16-18—NM Symphony Orchestra and American Ballet Theater II; 16th-17th, 8 p.m.; 18th, 2 p.m.; Popejoy, 842-8565.

Oct. 17—Laguna Pueblo: St. Mary Margaret's Day, harvest & social dances, Paraje Village.

Oct. 23-26—World premier play by Jim Galloway, U of A, 8 p.m., candlelight dinner for opening night only, 831-1111.

Through Oct. 25—An Evening of One-Act Plays, Fri. & Sat., 8 p.m., Sun., 2:30 p.m., The Vortex Theatre, Central at Buena Vista, 247-8600.

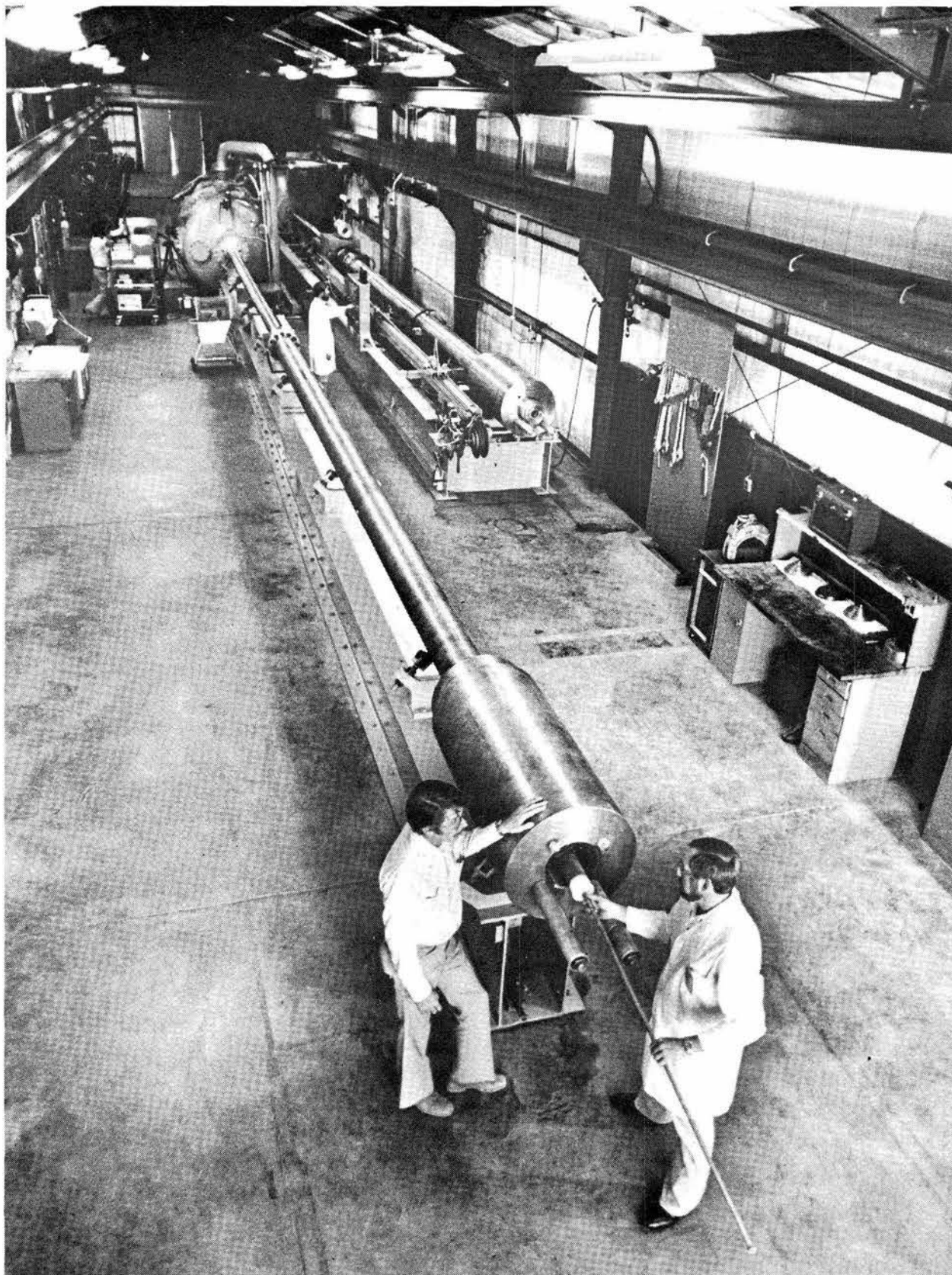
Oct. 25—The Maracaibo Symphony, classic and Latin American selections from Venezuela, 8:15 p.m., Popejoy.

Oct. 25—Fall Flower Show, Chrysanthemum Society, Albuquerque Garden Center, 884-8578.

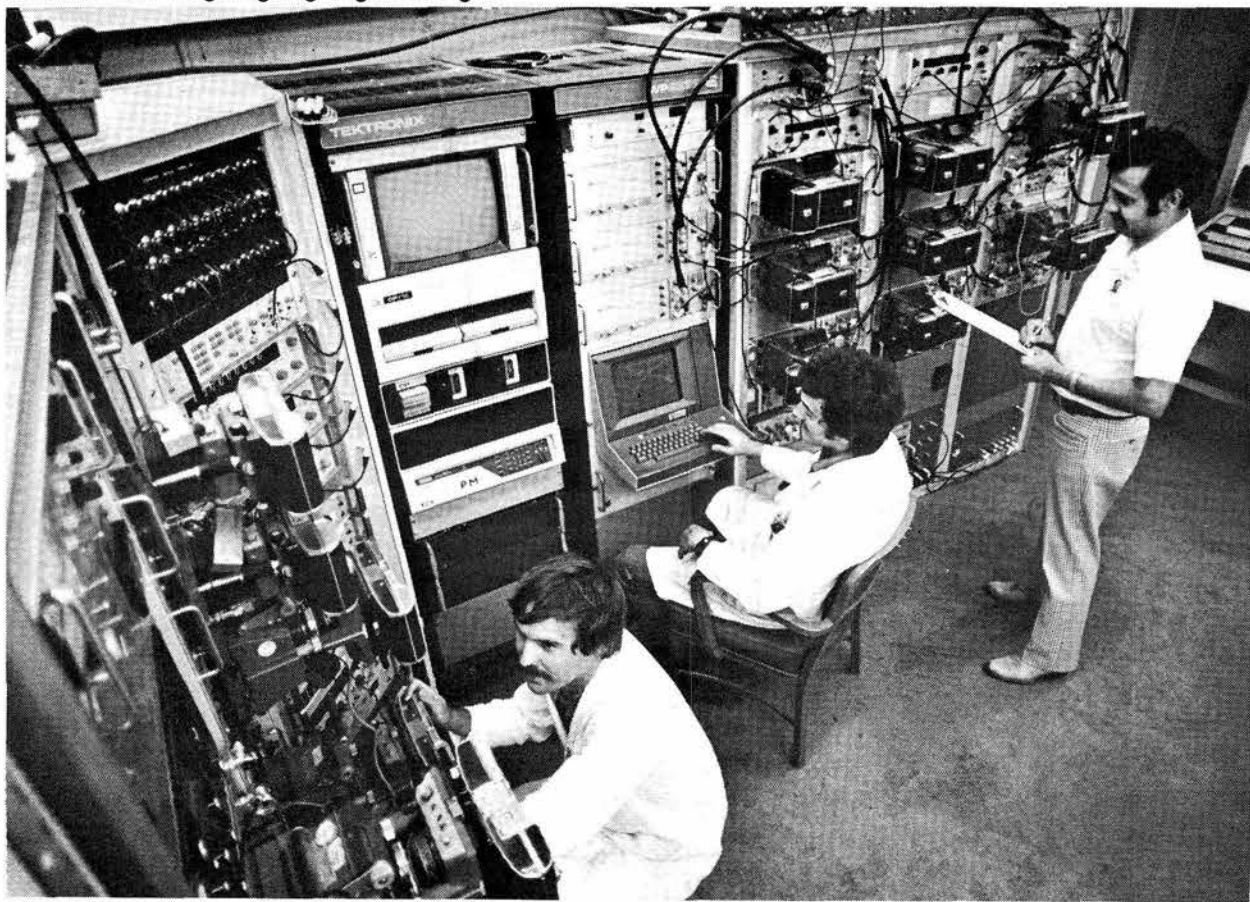
Oct. 25—Fine Arts Music Series, San Francisco Guitar Quartet, 4 p.m., First United Methodist Church, 4th & Lead SW, 243-5646.

Oct. 26—UNM Speaker's Committee presents Ralph Nader, 8 p.m., Popejoy.

Oct. 27—The Best in 20th Century Music, 8:15 p.m., Keller Hall, UNM.



STAR FACILITY—Jim Asay and Carl Konrad (both 5534) load a projectile into the powder gun in preparation for the high-impact test. Velocities up to 2.3 km per second (7500 feet per second) are possible with this gun while velocities up to 8 km per second (about 25,000 feet per second) are possible with the two-stage light gas gun at right.



INSTRUMENTATION for all STAR facilities is consolidated in a central control room where Ron Moody, John Nevers and Lalit Chhabildas prepare for a test.

## Take Note

Last-minute notes on Family Day: two rocket sled firings are planned at Area III, one at 10 a.m., the other at 3 p.m. Bleachers have been set up for viewing the event on the west side of Area III, outside the fence.

\* \* \*

Owning a chain saw is like joining a club to promote self-inflicted amputations, so Sandia members of the club may be interested in a program of the city's Parks & Recreation Dept. It takes place tomorrow, Oct. 17, and is entitled "Chain Saw Safety Workshop." The workshop runs from 1 to 3 p.m. at the Heights Community Center, 823 Buena Vista SE. Call Mickey Chirigos at 766-7138 to register.

\* \* \*

The Vortex Theatre is holding auditions for its January production of *Diversions and Delights*; a one-man show by John Gay based on the life of Oscar Wilde. Auditions are tomorrow, Oct. 17, at 1 p.m. at the theater. Contact: Peter, 299-7121, or Phyllis, 243-3300.

\* \* \*

Can you ride a bus and find true happiness? Consider this. When about-to-retire Al Gower (3642) got on the Comanche special the other morning he found it festooned in his honor with balloons, greeting cards and the like, provided by Mary Winter (3252) and the other regulars. Al was so touched he plans to continue riding even after retiring.

\* \* \*

Bob Scharrer (1584) was a big winner at the State Fair. Bob had 72 entries, primarily roses, in flower shows and was awarded 66 ribbons, including two State Fair Special Awards. In addition to 36 first-place blue ribbons, Bob was awarded three American Rose Society Certificates. Another Sandian, Clay Henderson (1768), took a prize in one of the horse events. Clay and C. Jay Walker (that's the horse) were highest in points in the Tennessee Walker competition.

\* \* \*

Many Sandians will recall Paul Callies and his untimely death at age 54 on the ski slopes at Vail in 1975. His wife Awana writes that a memorial has now been built on Eagle's Nest Ridge at Vail in the form of an amphitheater with benches, which is used chiefly for religious services and weddings. The view from the ridge includes the 14,000-foot Mt. of the Holy Cross with its cross of snow. The plaque on the lectern reads: "Eagle's Nest Amphitheater, to the glory of God and in memory of Paul W. Callies, 1920-1975."

\* \* \*

Book fans, attention: UNM's Zimmerman Library is selling 12,000 books (or at least hopes to) today, Oct. 16, from 1 to 8 p.m., and tomorrow from 10 to 4 p.m. The release says, ". . . new, old and rare books, children's books, fiction, literature, foreign language material, sheet music, dictionaries, encyclopedias and magazines." You pay to get in today. Saturday is free.

## Sandians Work With International Agency

*Stadt der Lieder* it's called—"city of song." But Vienna is also much more than a music center. The old Hapsburg hub of the defunct Austro-Hungarian empire continues its important historic role as a meeting place between East and West. As such, the Austrian capital today is home to a wide assortment of international organizations.

The International Atomic Energy Agency, or IAEA, is one of the Vienna-based organizations with which Sandia works closely. Established in 1957, the Agency's main objectives are, in the words of its charter, to "seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world" and to "ensure so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose."

Although autonomous, the IAEA and its 1500 international civil servants come under the United Nations, and the Agency regularly sends reports on its work to the General Assembly and other UN organs. The IAEA operates on contributions from member countries and its staff is recruited from 60 member states.

Recently, we spoke to two Sandians who are veterans of the Agency, Cecil Sonnier and Bob Holt (both 1754):

"My involvement with IAEA began in March 1978 when I was on loan to the International Safeguards Project Office at Brookhaven National Lab," says Cecil, "And, from August of that year, I was assigned as their liaison officer at the U.S. mission in Vienna. In December of 1979, I took a leave of absence from Sandia and signed on directly with the Agency for a two-year tour. During these two years, I was a 'cost-free expert' supplied by the U.S. Technical Support Program, and I worked on containment and surveillance activities. Our salaries didn't come out of the Agency's operating funds so, in effect, Bob Holt and I were consultants supplied by the U.S."

"Besides the U.S., technical support programs are currently provided to the Agency by Canada, the Federal Republic of Germany, Japan, and the U.S.S.R. It's interesting to note that in spite of our many differences, we have few disagreements with the Soviets in the area of safeguards. Every day I met people from all parts of the world—a most rewarding experience. Although the Agency has five official languages—French, German, Russian, Spanish, and English—the daily working language is English."

In 1979, the Austrian government opened the Vienna International Center—a complex of modern buildings for both IAEA and UN agencies. "The new building is on the east bank of the Danube and offers a panoramic view of the old city and the Vienna Woods," says Cecil. "My wife and son accompanied me on my year's assignment to Vienna, and we thoroughly enjoyed it. Austria is a delightful place."

Bob Holt fills us in on life in Vienna. "I



THE NEW United Nations City building in Vienna where the offices of the International Atomic Energy Agency are located.

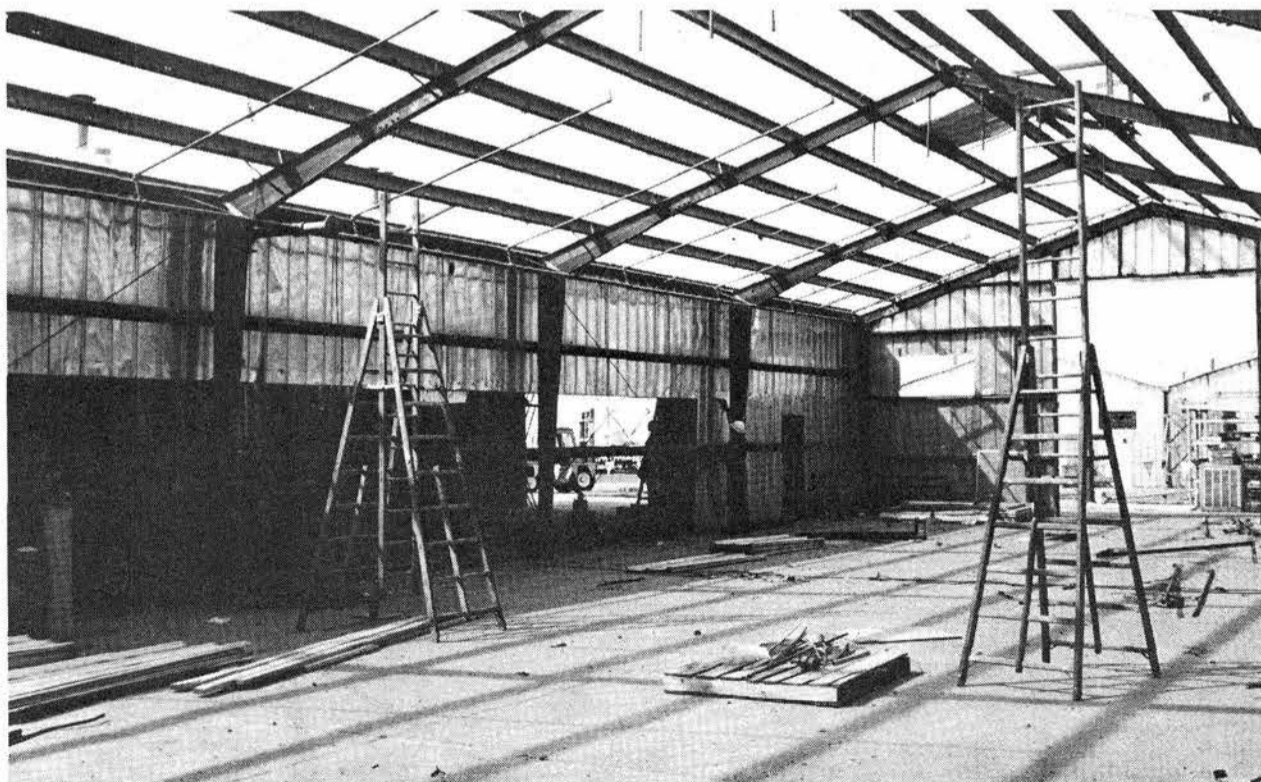
arrived there with my wife and son in May 1979 and stayed until October 1980. Vienna's endlessly fascinating, steeped in history and culture. There can be some cultural shock, especially the first time you go for a loaf of bread. But English is widely studied and you can usually find Austrians anxious to practice their English—once you break the ice by trying to speak some German.

"Along with Cecil's boy, my son attended the American International School, a private institution with a 70% American student body. It has students of many nationalities and he formed friendships with Austrian, Israeli, Iranian, and other young people. And Vienna's no problem for kids. The crime rate is one of the world's lowest and we didn't have to worry about our son traveling anywhere at any

hour. The public transportation system is excellent and cheap."

Bob reports that winters are hard in Vienna. Most houses have central hot-water heating, but backup heat is provided by coal-fired stoves. "And they use a brown coal with high sulfur content. So Vienna in the winter is usually smoggy. The Austrians get natural gas from Russia, which is expensive. But they also produce their own hydroelectric power, so electric heating is relatively cheap.

"Austrians are super people—except when driving," says Bob. "Then they display a Jekyll-Hyde personality, becoming rude and abusive. But once they're out of their cars, they're fine. In fact, at a party once an Austrian said to me, 'You Americans don't know how to make coffee, but you really know how to drive.'"



SO IT GOES—Bldg. 891, a hoary veteran of the Tech Area (vintage '48), is coming down. The series of five metal buildings has been used as a warehouse. Next to go is Bldg. 890. When both are gone, construction starts on a new Bldg. 891, slated to be a duplicate of the new four-story Bldg. 823 on the south edge of the Tech Area. The schedule calls for construction to begin in Feb. 1982 and to extend over two years.



# Ion Implantation Producing Tougher Alloys

Researchers at Sandia have implanted titanium and carbon ions into iron and stainless steel, producing alloy surfaces which are resistant to wear.

An iron-titanium-carbon alloy was initially formed upon a crystalline iron surface but, more recently, titanium-carbon alloys have been formed on several kinds of stainless steels.

The titanium-carbon implants into iron represent the first time that three-element (ternary) amorphous alloys have been formed by ion implantation. The implants in stainless steel represent formation of even more complex alloys.

The ions are implanted in a vacuum using a Lintott filament type implanter. In the implantation process, the titanium ions are accelerated to 90 to 180 kilovolts and carbon ions to 30 kilovolts; these form alloy surfaces 500 to 1000 angstroms thick with some five to 20 atom percent of each implanted element.

Friction and wear tests of these surfaces show that implantation can reduce the coefficient of friction significantly, although the effect is material and load dependent.

Implants into iron and Nitronic 60 stainless steel reduced friction 25 to 45 percent for light loads, with no reduction for heavy loads. For the other three steels tested, no load dependence was observed but friction was reduced significantly, from 45 to 65 percent. Other tests of relatively soft steels showed that wear was reduced up to 95 percent, with low loads producing the greatest improvement. The wear in harder steels was more variable and showed less reduction.

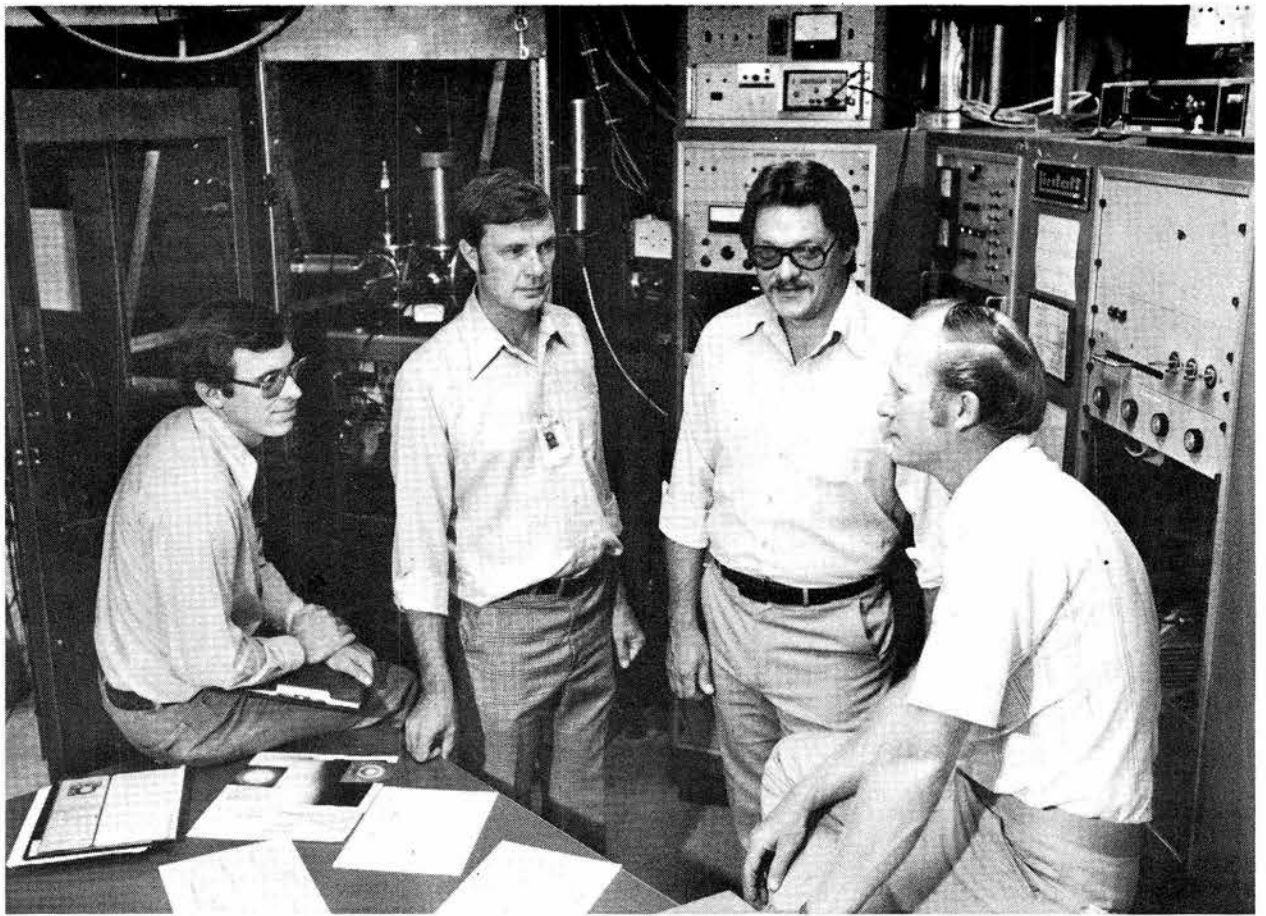
Evidence also suggests that the iron-titanium-carbon alloy may be resistant to corrosion. During electropolishing of an implanted iron substrate with a jet of methanol, water and nitric acid, the substrate was etched away, leaving the amorphous surface layer intact.

More recent corrosion studies tend to confirm this observation, revealing, for example, that initial corrosion rates for ion-implanted iron in dilute sulfuric acid were about five times less than for unimplanted iron surfaces.

The alloys are not well understood, and Sandia researchers are continuing their study. The improved properties likely stem from the glasslike structure, which is devoid of crystalline defects which can lead to more rapid wear and corrosion in crystalline materials.

The alloys are formed by repeatedly sweeping an ion beam—typically several centimeters high by a few millimeters wide—across the substrate until a homogeneous surface layer is formed as a result of ions displacing atoms and coming to rest in the crystal lattice.

Time required for alloy formation depends on the current of the ion beam. With ion fluxes of about  $3 \times 10^{13}/\text{cm}^2\text{-sec}$ ,



DISCUSSING PUBLICATION of their work with ion implantation techniques and the creation of wear-resistant iron-titanium-carbon alloy are Jim Knapp (5111), David Follstaedt (5111), Fred Yost (5832) and Larry Pope (5833).

a section of Fe-Ti-C alloy one centimeter square can be formed in three hours with present research equipment which operates at low implantation rates.

The titanium and carbon are applied in separate steps. The titanium, which requires the greatest time and energy to implant, is obtained by sputtering atoms from metallic titanium into an ion source plasma, while carbon is obtained by introducing carbon dioxide gas into the plasma.

Carbon was initially incorporated into the alloy in a thin surface layer during titanium implantation as the result of hydrocarbon contaminants on the surface of the substrate. However, when a thicker layer of alloy containing five to 20 percent of carbon is required, the carbon is implanted separately. Carbon is an essential ingredient in forming the amorphous alloy with the titanium concen-

trations which have been studied (up to 30 atomic percent); without it, the crystalline structure of the iron and titanium is retained.

While the implantation process is slow and requires a vacuum (approximately  $10^{-6}$  Torr), the new alloys appear to have potential application in surfacing critical parts such as tool bits, bearings, etc., where failure or replacement has expensive consequences.

The iron-titanium-carbon alloy was originally produced in Ion-Solid Interactions Division 5111 by David Follstaedt, James Knapp, and Tom Picraux. They also contributed to the recent friction and wear experiments conducted by Fred Yost, Physical Metallurgy Division 5832, and Larry Pope, Process Metallurgy Division 5833, and to corrosion tests by William Smyrl, Corrosion Division 5841.

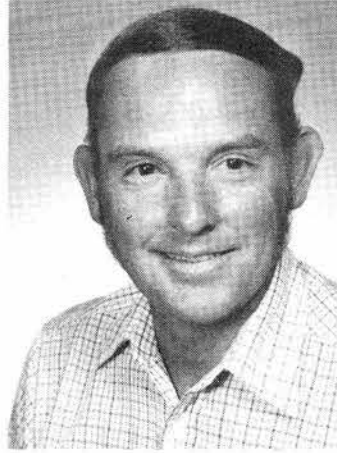


WHO has the best view from his/her office window? The LAB NEWS editor claims he does—the pleasant sward of the Parade Grounds, surrounded by trees and leading up to the Sandias. And where else can you lean back and note the landing of a hot air balloon?

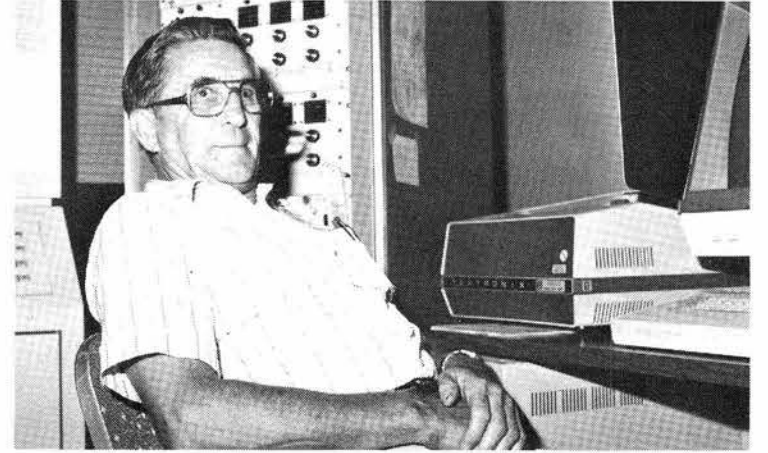
# MILEPOSTS

## LAB NEWS

OCTOBER 1981



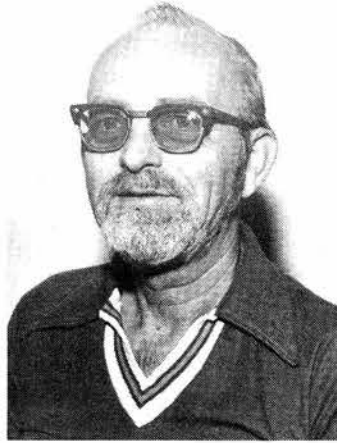
Sonny Holland - 1556 20



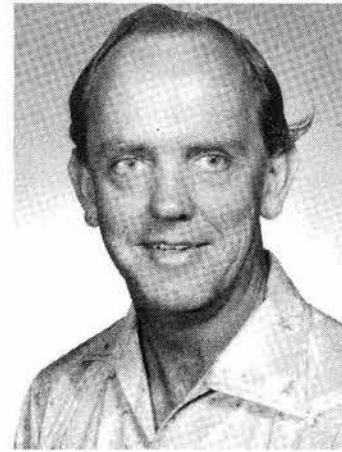
Lloyd Young - 1173 25



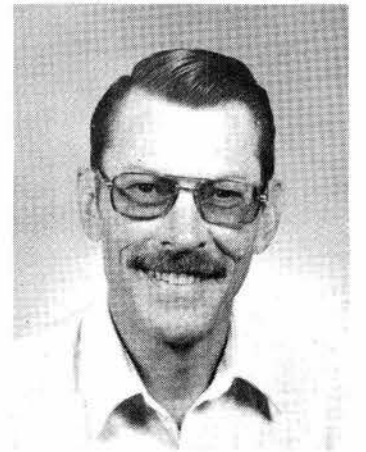
Dave Salas - 2611 25



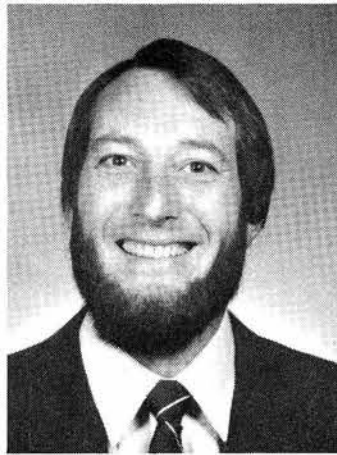
Lloyd Sandgren - 1124 25



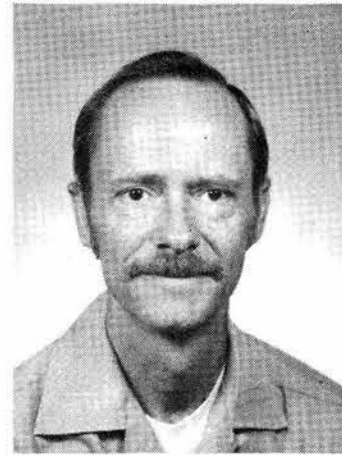
David Williams - 4424 15



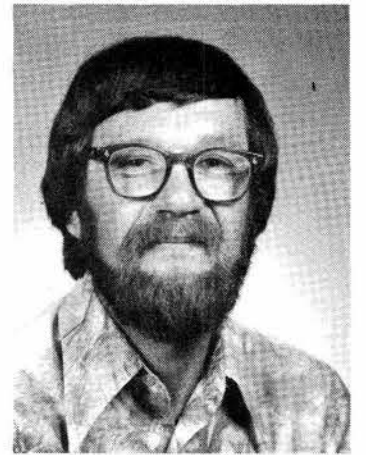
Bob Ledgerwood - 1713 25



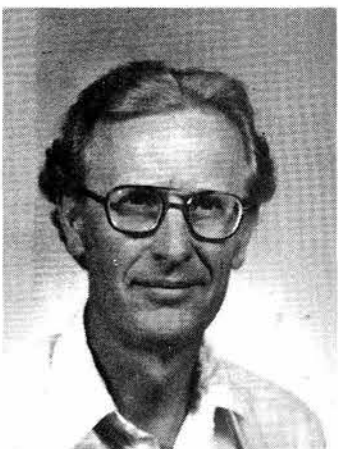
Rick Davis - 2424 15



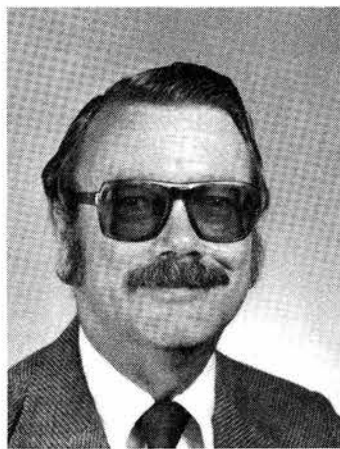
Larry Gillette - 1587 20



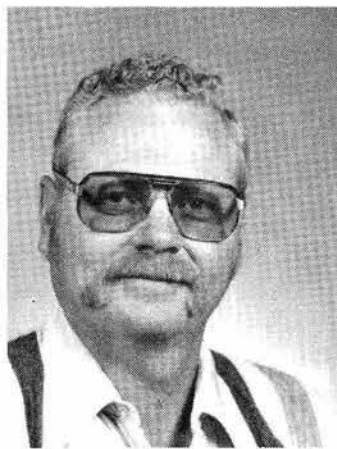
Terry Leighley - 1556 20



John Kinney - 2331 25



Darrell Munson - 4512 20



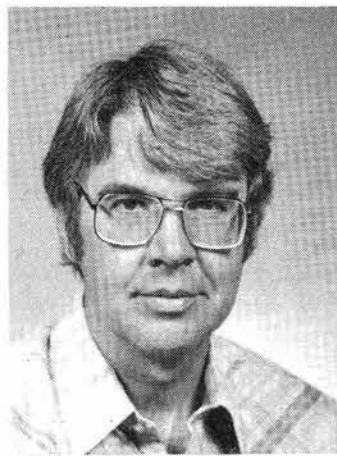
Leo Doyal - 2112 20



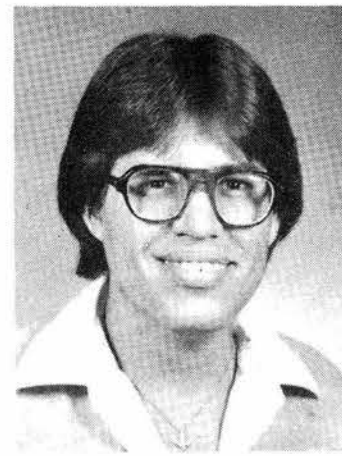
Jim Tichenor - 2521 25



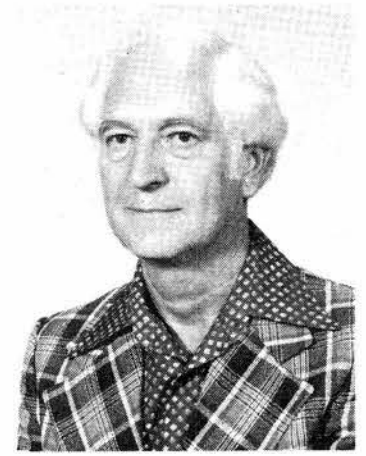
Angie Granger - 3253 25



Keith Brower - 5112 15



Gary Romero - 4542 10



Richard Terwilliger - 1424 25

# My Favorite Old Photo

[Got an old photo that means a lot to you? Bring it over to LAB NEWS and tell us about it.]



It was the fall of 1904 and the St. Louis World's Fair was under way. From their farm in Kansas, my wife's grandparents, John and Minnie Pritchard, and Great-Grandpa Graves (the three seated on chairs) arrived in town to find all the hotels filled. No matter, the Fair had set up a tent city with, if not all, at least a few frills—note the tablecloths. Today's fair goer is likely to wear a T-shirt and shorts—a little different from the formal garb of yesterday. (David Barham—1763)

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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

LONG COUCH, \$70. Tripp, 266-4626.  
 USED CARPET, up to 1100 sq. ft. avail. in room-sized pieces, price negotiable. Searls, 268-2946.  
 '70 FORD 302 PARTS: complete instrument panel, \$25; fuel pump, \$8; oil pump, \$10; 10" pressure plate + disc, \$40; dist., \$20; LH door hinges, \$5, etc. Brion, 298-1761.  
 OLYMPIA port. typewriter, nearly new, \$45. Cockletras, 256-7570.  
 MAPLE bunk beds & mattresses, \$50; lg. canvas tent, poles & stakes, \$10. Houston, 255-4658.  
 KENMORE port. washer, dryer & steel stacking stand, avocado, \$350; dbl. laundry tub, 45 1/2" wide, \$75 including faucet. Berman, 296-5640.  
 AKAI GX-370D reel-to-reel tape deck, \$300; Kelvinator refrig., \$40; 3-piece wet suit, fits tall, slender. Chappell, 268-9952.  
 2400 CFM Champion evaporative cooler, hardly used, best offer over \$100; tortillas, \$11.50/case; tamales, \$15/case. Tolman, 296-8239.  
 PIANO, Gulbransen upright, \$600; clarinet, Bundy, \$150; equalizer trailer hitch, tongue weight 450 lbs., \$75. Rogers, 298-7907.  
 GARDEN TRACTOR: 8 hp, elec. start, dozer blade, cultivator, disc harrow, mold board, 40" plows, trailer, pto tiller, weights, \$795. Elskes, 255-5361.  
 ACME juicer, \$125; tank type vacuum cleaner, \$75; elec. typewriter, port., \$75; crib & mattress, \$25; high chair, \$5. Pope, 255-6702.  
 NEW metronome, Super Mini Taktell, \$20; old wooden teacart on casters, w/drawer, \$50. Gregory, 268-2022.  
 WHEELS, Dodge 16", 5-hole; bongos, tunable. Bertram, 294-8350.

TOOL BOX for pickup, \$75; gun cabinet, \$50; violin, 3/4 size w/bow & case, \$150. Karnes, 884-8674.  
 TWO TIRES, B.F. Goodrich radial T.A.'s new 60-15, \$130. Marquez, 344-8455.  
 WINDJAMMER lowers, luggage rack & travel trunks for Kawasaki KZ650; University Society encyclopedias, w/child resistant finish. Barnard, 831-4114.  
 NORELCO rechargeable shaver, new, never used, \$45. Rimbart, 877-1576.  
 SMALL secretary desk, hardwood, glass paned upper section, \$250; ex. conf. desk w/upholstered chair, walnut, \$300. Neuhauser, 898-1697 after 6.  
 .303 BRITISH Enfield rifle, reloading press, dies, powder scales, powder, cases, 100 rounds ammo, reloading manual, \$120. Hughes, 881-7632.  
 LOVESEAT, brown leather, \$150. Shapiro, 821-2936.  
 APACHE Mesa trailer, 1979, solid-state, sleeps 6, sink, stove, icebox, \$3950. Dalphin, 265-4029.  
 THREE MUSICAL INSTRUMENTS: violin; Buescher trumpet; student 3/4 violin. Boes, 268-4481.  
 BUNNIES, \$3 ea. Windenhoefer, 298-2510.  
 TRACTOR, 1966 John Deere backhoe/loader, JD-300, 3-cyl. gasoline driven, 8-spd. gearbox, 24" bucket, new tires, seals, \$7000. Hesch, 881-9874.  
 8' BROWN davenport, \$100; maple dinette table, 4 new chairs, 1 leaf, \$100; dbl. 8-dwr. chest, \$40; solid ash dresser & mirror, \$15. McCammon, 255-6125.  
 VIVITAR wide angle lens, 28mm/f2.8, screw or bayonet mount, auto., \$40; exercycle, \$10. Norwood, 292-0072.  
 TWO EA. CHAIN SAWS: McCulloch, Mini Mac, 14" bars, new chains, case included, \$100 ea. Martin, 869-2049.  
 AIREQUIPT slide cartridges, each holds 36 slides, \$1.50 ea. Moyer, 881-3879.  
 PIONEER KP500 FM supertuner/cassette, low hours, \$100; aquarium, 10-gal. w/accessories, new, never used, \$30. Campbell, 294-6000.  
 RAPID-READING program, Columbia Univ., 13 portfolios w/line pacer & timer, \$20; Frider Model ST mech. calculator, \$5. Madden, 296-1082.  
 REGULATION volleyball & net; glass top, modern coffee table; black ballet slippers, 6D; Brownie uniform; lg. aluminum walker. Waite, 867-5953.  
 7MM MAGNUM, custom stock, case, 3X-9X Bushnell scope; snow tires, A78-13, used 1 mo.; ski boots & poles for adults & young 18-12 yrs. Arana, 299-1214.  
 HIGH CHAIR, folding, metal, \$15; deluxe child's bike seat, \$8; brass fp screen w/tools, \$25; fp grates, \$5-10. Crowther, 821-0172.

CHURCH RUMMAGE SALE: Oct. 16 & 17, Sombra Del Monte Christian Church, 2528 Utah NE. Beasley, 298-3398.  
 HALLOWEEN COSTUMES: store bought, Chew-Bacca (12-14), \$6 million man (8-10), Spock (8-10), no masks. O'Bryant, 268-9049.  
 CHILDREN'S SKIS; redwood picnic tables; guitars; games; Scotts' spreader; golf clubs; cart; new coffee table; Instapure water filters. Atkins, 298-5762.  
 DRESSER, 1920's walnut w/mirror & brass pulls, \$250; 5 tires on rims, E-78-14 bias belted, for Luv or other small truck, 6-hole, \$75. Errett, 292-4885.  
 SCHWINN 20" men's 5-spd., \$55; black recliner, \$20. Scott, 294-8627.  
 SECRETARIAL CHAIR in black vinyl w/chrome pedestal/frame, adjustable height, casters, \$20. Robinson, 255-0114 after 5.  
 MOTOROLA solid state floor model stereo/radio, maple colonial cabinet, stereo needs repair, make offer. Kolaczowski, 821-4950.  
 5' MAGNAVOX contemporary HiFi; AM&FM radio; recorder w/record storage; & other furniture. Daniel, 268-8335.  
 TENNIS RACKET, Wilson Pro-Staff 4 5/8"L, never used, \$35. Chiang, 265-5490.  
 KITCHENAID dishwasher, under-counter mounting, \$25. Glass, 884-4415 after 5.  
 BICYCLE PARTS: 27" alloy wheel, Eng. thread, \$15; 27" alloy wheel, Ultra-6 free-wheel & chain, \$30; derailleur, \$30; Avocet shoes, 9 1/2, \$15. Hufnagel, 294-5949.  
 CONTEMPORARY cocktail table, round glass, Nambu-type base, \$150; Decorion modular chair & table in brown/beige, \$75. Feibelman, 242-1946.  
 MUZZLE loader, .58 cap lock 22" barrel, \$120. Vanderburg, 296-1624 after 5.  
 COUCH, 7' sculptured burgundy nylon, \$30; CB antenna, AS Starduster, \$20; custom-made filing cabinet for 3x5 cards & legal. VanDeusen, 299-4328.  
 KOEHRING kerosene reflection heater, 9300 BTU w/built-in elec. fan, model KRF9, \$150. Fisher, 268-6633.  
 UPRIGHT FREEZER, 16' self-defrost, lock, \$175. Garner, 298-2562.  
 TELEPHONE ANSWERER/recorder, \$90; refrigerator, no freezer, \$35; water skis, \$10; 18x68 mirror, \$30; couch, \$15; convertible pump, \$20. Falacy, 293-2517.  
 DOOR AWNING, alum, 4x5, 2 wrought iron posts w/scroll. Pineau, 821-1628 after 5.  
 RADIAL DRILL PRESS, 16" reach, 1/2" chuck, 3-spd., Sears brand, \$90. Coleman, 884-5009.  
 TWIN BED w/headboard, springs & mattress, \$20. Benton, 877-2473.

SOCCER TEAM garage sale: lots of kids' items, Oct. 24, 8 a.m.-4:30 p.m., 1005 Fostoria NE. Kuswa.  
 BLOODHOUND PUPPIES, AKC reg., have shots, 12 wks. old. Sallach, 344-4712.  
 ELECTRIC RANGE, dbl. oven, one self-cleaning, \$100; PU toolbox for LWB, \$50. Luikens, 881-1382.

swimming platform, 2 tops, cover, tandem trailer, \$11,500. Falacy, 293-2517.  
 '76 FORD pickup, V8, green, some dents. Sallach, 344-4712.

### TRANSPORTATION

'75 TOYOTA Corolla, 5-spd., new tires. Padilla, 266-4713.  
 '66 CHRYSLER stn. wgn., \$395. Ellison, 296-6645.  
 '80 YAMAHA IT425 Enduro, alum. swingarm, H-D-monoshock, ported & polished, \$1200; '79 Yamaha IT250, \$1000. Quintana, 268-2513.  
 '80 OLDS Toronado, take over payment & \$900 down. Waddles, 298-3370.  
 '78 VW pop-top camper w/deluxe camping equip. Parsons, 298-3053.  
 '74 BMW motorcycle, 900cc, w/complete touring accessories, many extras, 50+ mpg on reg. Barnard, 831-4114.  
 '76 ALFA ROMEO Spider convert., 43,000, reg. gas, 27 mpg, \$5800 or best offer. Chapman, 846-5228 or 296-4321.  
 25' MOTOR HOME, self-contained, w/Mercury engine (rebuilt), rebuilt generator. Gunter or Campbell, 298-7783 or 296-6613.  
 '80 SUZUKI GN 400T, street bike, mag wheels, step seat, 75 mpg city, \$1200. Lavasek, 292-7820.  
 '77 DATSUN 280Z, new paint, top comes out. Lattanza, 873-3408.  
 '76 HONDA Super Sport, 400cc, 4-cyl., \$850. Marder, 268-9643.  
 '78 CR250R Elsinore, performance shocks, air forks, new tires, \$750. Mason, 266-4038 after 5.  
 '65 MERCEDES BENZ 220SE, 4-dr. sedan, AC, PB, continuous repair record since delivery, 150K miles, \$1500. Caffey, 296-3320.  
 '78 YAMAHA XS400E, Quicksilver fairing, luggage rack, trunk, 7800M. Stiegler, 883-0112.  
 '78 VW Rabbit, 4-wd., sunroof, 49,000 miles. Trebilcock, 296-1418.  
 '77 SUZUKI GS750, Futura sport fairing, low handle bars, Lester wheels, Perrelli tires, Dan Gurney/Samsonite luggage. Draper, 877-2802 after 5.  
 '64 EUROPEAN type III Karman Ghia, \$1000 as is. Barnaby, 265-4353.  
 '72 Travelall, 4-wd., PS, PB, AC, Jackman wheels, luggage rack, Jones, 865-5484 after 4:30.  
 '72 PONTIAC Catalina, rebuilt trans., needs seatcovers & heater repair. Anderson, 865-5976 or 266-6020.  
 '75 CORVETTE convert., 2 tops, 4-spd., PB, PS, new custom paint, turbine wheels, \$8700. Perryman, 294-6113.  
 21' REINELL BOAT, galley, toilet,

### REAL ESTATE

4-BDR. HOUSE, great room concept, 1800 sq. ft., NE hts. location, schools, energy pkg., security system, extras. Szenasi, 299-1495.  
 LOT, NE location, ideal for passive solar, terms. Kaushal, 821-2584.  
 3 LOTS in Bluewater Acres overlooking the lake, sell all or part. Heidrich, 345-7653.  
 MOBILE HOME, 14 x 72, 2-bdr., 2 bath, set up adult section near Base, all appliances, avail. now, assumable 12 1/2% loan. Conrad, 299-5316.  
 CEDAR CREST: 3-bdr., 1 1/2 bath, formal DR, study, 2150 sq. ft., 2-car garage, screened patio, 7/10 acre, 7/10 & 1/2 acres also avail. Wheeler, 281-2216.  
 '77 66 x 14' NOBILITY mobile home, 2-bdr., 1 bath, fp, \$3000 down, mortgage assumable at \$166/mo. Dietz, 262-0123.  
 1900 SQ. FT., 3-bdr., great room, fp, utility, garage, custom drapes, decorator wallpaper, 15x30 covered patio, barbeque, high 70s, non-escalating REC, 7304 Winans NE. Spradling, 821-4777.

### WANTED

SINGER sewing machine, feather-weight, in repairable condition. Gregory, 268-2022.  
 DOG KENNEL: to rent or buy, large, for air travel. Olmstead, 897-4532.  
 TIRES, used 750x17. Heuter, 242-1620.  
 DEEP SEA fishing rod-reel, purchase or rent Nov. 1. Vandi, 255-0685.  
 DEER & ELK hides, suitable for tanning. Marrs, 822-0367.  
 FREEZER, reasonable; piece of carpet suitable for 3/4 ton pickup bed. O'Neil, 892-6754.  
 CHILD'S wood table & chairs. Noel, 884-4491.  
 CAST IRON Dutch oven, must be at least 12 qt. w/legs, rimmed lid; wanted for Boy Scout troop. Tessler, 255-0108.  
 6:70x15 good used tire. Harris, 255-6577.  
 WOODEN DESK suitable for high school student. Schimmel, 296-2295.  
 OLYMPIA RC-35 35mm rangefinder camera. VanDenAvyle, 898-6474.  
 DRAFTING BOARD & TEE, etc. Doggett, 293-6210.  
 PHOTOGRAPHIC enlarger, 35mm. Lucas, 844-8866.

## Oktoberfest Tonight

*TONIGHT* is more than Happy Hour at ye olde Coronado Club. Manager Tom Ross has gone all out in preparation of Oktoberfest, a one-of-a-kind event. To begin with, about 15 fun-loving musicians called Die Polka Schlingels will be on the bandstand who will also present an intermission show of singing and dancing. You pay \$4.50 admission at the door to the ballroom and receive a bag of goodies, including an Alpine hat and a Coronado Club beer mug. The mug comes filled with beer. Then, inside, there's various food booths with an outstanding selection of bratwurst, knockwurst and like that available. It starts at 7 p.m. and all you need is a party attitude.

*IN THE MEANTIME*, standard Happy Hour prices are in effect starting today at 4:30 in the lounge. Next Friday's Happy Hour features Marci and the Talkabouts on the bandstand and *a la carte* dining.

*ON THURSDAYS*, try the Beef n' Burgundy buffet. The steamship round of beef is generously served, the burgundy is hearty and the salad bar is spectacular. The tab is \$6.75 for adults, \$3.25 for kids and that includes the wine. On Saturdays, the dining is *a la carte*.

*DURING THE WEEK*, try the Tuesday evening Happy Hour from 4:30 to 8:30 with a free spread of goodies and munchies. On Wednesdays, it's three for one for draft beer and bar drinks from 4:30 to 6:30.

*THE HALLOWEEN PARTY* for the kids is scheduled Thursday, Oct. 29 (no buffet this night), and, as in years past, the event features a House of Horror with assorted monsters, spooks, goblins, witches and deranged characters trying to scare the socks off everybody. There are lots of games, goodies, prizes and a movie. Admission is \$1 per kid. The fun starts at 6 p.m.



AT OKTOBERFEST TONIGHT you'll meet two new Coronado Club employees—Jeri Brane and Nancy Farnsworth. The Coronado Club beer mugs are part of the door favor package. The WWI leftover is quoted as saying, "Ve haf vays to see that you vill enjoy Oktoberfest."

**COMMITTEE ASSIGNMENTS** for the Club's board of directors were announced this week by Adele Caldwell (3241), president. Bob Manhart (3151) will handle publicity; Dick Shepardson (3251), special events; Sharon Kurtz (3142), interest groups; Bob Banks (5000), pool/patio/tennis; Frank Biggs (4231), travel; Rick Sneddon (DOE), capital improvements; Eddie Gallegos (3223), finance; Ron Ward (1481), bar; Keith Mote (1483), recreation; Nick Magnani (5840), restaurant/entertainment; and Jack Mortley (1521), membership.

**TRAVEL DIRECTOR** Frank Biggs (4231) reports a few spaces left on the charter bus to Canyon de Chelly Oct. 24-25 for \$78. The pre-trip meeting for this

group is set for 7 p.m. Wednesday, Oct. 21.

The Mazatlan travelers will be departing Nov. 2 and Nov. 9 for one week at the luxurious Playa Mazatlan. Some last-minute space may be left, Frank says, so check with the Club office or see him in the lobby tonight between 5 and 6.

Also coming up are a Caribbean cruise Dec. 13-20 for \$1031; trips to Carlsbad Caverns Nov. 7-8, \$65, Dallas Cowboys-Six Flags Over Texas Nov. 24-29, \$226; Las Vegas Dec. 27-30, \$137; and Disneyland-Rose Bowl Parade Dec. 26-Jan. 2, \$368.

If anyone is interested in a "Real Mexico" tour escorted by Lyle Thompson of UNM, see Frank in the lobby tonight. On this tour, a small group experiences the culture, language and art of Mexico away from the major tourist attractions.

### Congratulations

Wayne (3651) and Joan Shirley, a son, Kevin, Sept. 4.

Don (4442) and Marianna Dube, a daughter, Kasia Koziol, July 31.

John (1473) and Michelle Murray, a son, Sean Aaron, Oct. 2.

Robert (1482) and Angela Vargas, a son, Oct. 7.

Stephen (1471) and Connie McFarland, a daughter, Rebecca Lynn, Sept. 14.

"Well, you're not the best-looking princess I've ever seen either."

