



# LAB NEWS

VOL. 28, NO. 22

OCTOBER 29, 1976

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

## 5 Year Plan: Weapons Work Will Dominate

In a major study prepared by the Labs for ERDA's AA for National Security, weapons work is seen as dominating the Sandia effort over the next five years (through FY '81). Entitled *Sandia Laboratories Long Range Plan [FY 1976-1981]*, the study was compiled by Vic Engel of the 4010 Management Staff following extensive discussions with the Labs' higher management. "It's a projection," says Vic, "and thus may change. But it does represent the collective estimate of our top people on where we're going."

President Sparks has endorsed the *Long Range Plan* and, in a letter of transmittal to General Starbird (AA for National Security), makes this statement about our next five years: "The real increase in our weapon work, reflected in the budget for FY 77, reverses the long erosion of our capabilities; and the plan projects a return to a well balanced weapon program. Growth in our energy efforts is moderate and consistent with dedicating our resources principally to projects where energy and weapon technologies mutually support each other."

Highlights of the Plan follow.

### Manpower & Funding

The Plan details manpower and funding projections in specific areas in each of the five years. Noteworthy is an expected 8% growth in on-roll strength:

	FY 77		FY 81	
	People	\$M	People	\$M
National Security (1)	5560	248	5930	327
Solar, Geothermal & Adv. Energy	350	22	400	25
Environment & Safety	50	4	84	8
Fossil Energy	170	7	225	10
Conservation	60	4	130	8
Nuclear Energy	150	10	260	18
Other Federal Agencies (2)	860	57	770	52
Lab Total	7200	\$352	7800	\$448

(1) Includes military applications, laser fusion and Safeguards.

(2) Reimbursable work, principally for DOD and NRC.

### Capital Equipment & Construction

Inflation and other forces make it difficult to project expenditures over a five

year period for capital equipment and construction. (Capital equipment generally refers to machinery and equipment used in support of a project.) Since the degree of inflation is an imponderable, study planners have made no allowance for whatever inflation may occur after FY 78.

A total of \$191 million is projected for capital equipment through FY 81. A considerable number of construction projects, i.e. new facilities, are contemplated. Early on and fairly firm are the 5 MW solar thermal test facility and the electron beam fusion facility. Further into the five-year period, and thus less certain, are a number of major facilities, including a radioactive waste pilot plant, combustion research facility, systems R&D lab, advanced laser development lab, SLL lab building, E-beam fusion facility (Phase 2), and SLA lab/office building (Phase 1). Total expenditures for new construction through FY '81 are estimated to be in excess of \$300 million.

Future LAB NEWS articles will deal with specifics of the *Long Range Plan*, especially with reference to the Labs work effort in the present fiscal year.

# Sandia Research May Help Cancer Fight

Treatment of cancer may improve through a new Sandia research program involving neutron generators. Funded at \$500,000 by the National Cancer Institute, the new program will explore the upper limits of neutron production using solid target neutron generators. The work is centered in Vacuum Tube Department 2350 under John Crawford.

Exposing cancer cells to x-rays is a widespread method of current treatment. Recently, clinical trials using beams of high energy neutrons have been started both in the U.S. and Europe for treating selected types of tumors. Although it will be several years before definitive conclusions may be made, there is cautious optimism that neutron radiation may provide an additional treatment method. However, existing neutron sources in the U.S. are large, immobile, highly complex and expensive laboratory instruments. The patient, rather than the machine, must be rotated, and highly trained people, usually physicists, must operate existing neutron sources such as the fast-neutron beam facility at Fermi National Acceleration Laboratory near Chicago.

"What's needed," John Crawford says, "is a mobile, reliable and powerful neutron generator designed specifically for clinical use. The most promising approach is to develop the deuterium-tritium (D-T) neutron generator. Sandia has used pulsed D-T neutron generators in weapons applications for years, and we have a special expertise in this area."

In D-T neutron generators, neutrons are produced when a high-energy ion beam strikes a solid target of deuterium/tritium. To be clinically useful, the neutron flux should be  $5 \times 10^{12}$  neutrons per second, and  $5 \times 10^{13}$  neutrons per second is highly desirable. Current D-T neutron generator technology cannot produce these levels, but theoretical calculations indicate they are feasible.

"Basic limitations of present D-T neutron generators lie in the physics of the deuterium or tritium loaded target materials," John says. "The upper limit of

neutron production is determined by the ability of the solid target to dissipate high power density (and accompanying high temperatures), and its ability to withstand intense ion beam bombardment."

Sandia will design, build and operate an experimental target test facility to evaluate empirically the dynamic response of various target materials and structures under realistic operating conditions. First targets to be evaluated will be scandium and erbium hydride films, since these hydrides are capable of retaining their dihydride stoichiometry (two hydrogen atoms per metal atom) at temperatures up to 450°C.

"These materials have been used for several years by Sandia in weapons systems applications," John says. "A significant amount of processing technology already exists."

A new underground laboratory is near completion in the basement of Bldg. 807 to house a 250 kV deuterium ion accelerator which will be used to bombard various target materials. Initial tests of the accelerator begin next month. Only deuterium will be used in this accelerator because of health physics problems associated with tritium.

"If the initial calculations and assumptions are confirmed experimentally by this program, then it should be technically feasible to design a high output, long-lived D-T neutron generator for medical use," John says.

Tube Development Division 2354 under Bruce Barnaby is the responsible organization. Frank Bacon (2354) is project leader of the program; Don Cowgill (2353) is performing experimental and theoretical target analysis; Jack Boers (2352), electric field and ion optics calculations; and Robert Bickes, Jr. (2352) and Gordon McClure (2352), ion source development.

## Retiring



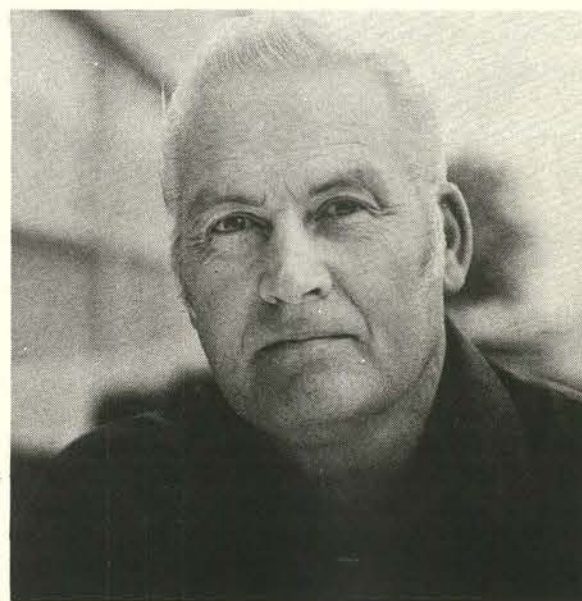
Max Gonzales (3422)



Bea Haines (3425)



Lillian Bowers (3254)



John Hiller (2131)

## Events Calendar

- Oct. 29-30 — Ski Swap, Ag Exhibit Hall, N.M. State Fairgrounds.
- Oct. 29, Nov. 9 — Chaparrals home games, 255-7581.
- Oct. 31 — N.M. Mt. Club, Tree Springs Trail, Western Skies, 9:15, 881-6823.
- Oct. 31 — The Polish Radio Symphony Orchestra, Popejoy Hall, 277-3121.
- Nov. 4 — "Comic Books and the World Around Us," by speaker Stan Lee, UNM SUB Ballroom, 8 p.m.
- Nov. 5,6 — "Holiday Idea Show," Council of Albuquerque Garden Clubs, Garden Center, 10-7.
- Nov. 6 — "Alpha Phi Crafts for Christmas," charity, Four Seasons, 10-3.
- Nov. 6 — "Mostly Folk Concert," Albuquerque Civic Chorus, Albuquerque High School Auditorium, 8:15 p.m.
- Nov. 7 — "The Barber of Seville," Albuquerque Opera Theater, Popejoy Hall, 243-0591.
- Nov. 8 — Dimitri, world famous clown, Popejoy Hall, 8:15, 277-3121.

### LAB NEWS

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&

lorena schneider reports on livermore

## Dinner Dance Set Nov. 20

"20 Going On 21" is the theme for Sandia/Livermore's pre-holiday dinner dance to be held Saturday, Nov. 20, at Castlewood Country Club. The event marks SLL's birthday.

Co-chairing the dinner dance are Mrs. Joanne Pound (Marlin, 8214) and Mrs. Sally Tockey (Bob, 8181), assisted by Mrs. Judy Bohrer (Don, 8167), Mrs. Glennie Norris (Hal, 8362), Sandi Chrisman (8181), Janet Fachner (8167), Barbara Carter and Jim Henderson (both 8214). The committee has selected a prime rib dinner with wine menu, to be followed by dancing to the Seagram 7.

Invitations are being mailed to all employees, with ticket purchases to begin Nov. 1 in all departments. After buying tickets, contact Barbara (ext. 2254) for table reservations.

### Sympathy

To Iona Ratcliff (8433) on the death of her husband in Walnut Creek, Calif., Sept. 19.

To Curtis Specht (8431) on the death of his father in Stockton, Calif., Sept. 7.

To Joyce Willford (8432) on the death of her mother-in-law in Cirtus, Neb., Sept. 23.

### Congratulations

Darlene Mate (8212-1) and Jim Baumgartner, married in Pleasanton, Sept. 4.

Mr. and Mrs. Cory Coll (8321), a son, Matthew Wiley, Aug. 23.

Anne Crow (8323) and Bill French, married in South Lake Tahoe, Nev., Oct. 16.

Johnny Allen (8213) and Terri Rasmussen, married in South Lake Tahoe, Nev., Oct. 9.

## Speakers

Tom Brumleve (8184), guest lecturer, "A Case Study: Solar Thermal Conversion," University of California's Continuing Education Program in Engineering and Mathematics, Solar Energy Systems Applications course, July 26-30, Los Angeles, Calif.

Carl Hiller (8321), "Detailed Modelling in Computer Simulation of Reciprocating Refrigeration Compressors" and "Compressor Capacity Control via Early Suction-Valve Closing," 1976 Purdue University Compressor Technology Conference, July 6-9, W. Lafayette, Ind.

Marty Abrams (8111), "The Effective Absorptance of a Semi-Transparent Layer on a Diffuse, Opaque Substrate," 16th National Heat Transfer Conference sponsored by American Society of Mechanical Engineers, Aug. 8-11, St. Louis, Mo.

Carl Melius (8341), "A Theoretical Comparison of Hydrogen Chemisorption on Flat and Stepped Surfaces," 37th Annual Conference on Physical Electronics University of Wisconsin, June 7-9, Madison, Wisc.

Jim Rogers (8322) and Jim Struve (8324), "The Use of the Division Wargame to Investigate Critical Issues in Tactical Nuclear Weapons Employment," Military Operations Research Society, June 23, Ft. Bliss, Tex.

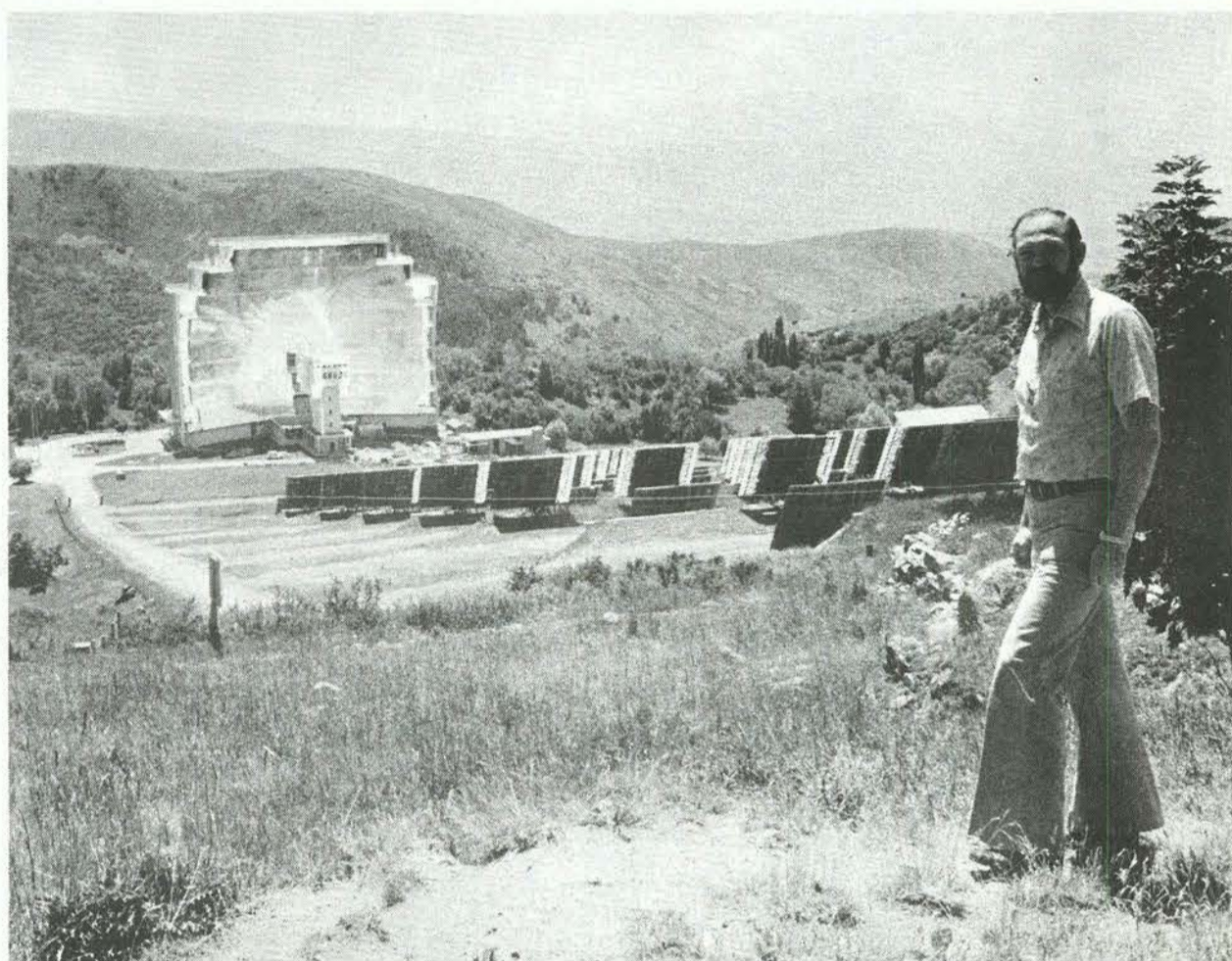
Rudy Johnson and Jack Dini (both 8312), "Electroformed Channeled Nozzle Structures, Procedures and Property Data," American Electroplaters' Society 63rd Technical Conference, June 30, Denver, Colo.

# LIVERMORE NEWS

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FRENCH SOLAR FURNACE FACILITY—Grand parabola, focal building and heliostats in Odeillo, France, where this summer a one-megawatt steam-generating receiver was tested under ERDA's Solar Central Receiver Program. Size of facility can be judged by autos parked in front of parabolic reflector. Bill Moore (8184) was test director for the project.

### FRENCH TEST

## Solar Generator Gets High Marks

During the past summer, Sandia directed testing of a one-megawatt steam-generating solar receiver in a solar furnace facility in France. The world's largest solar-powered facility, the furnace is operated by Centre National de la Recherche Scientifique (CNRS). Bill Moore of Sandia Livermore's Solar Energy Technology Division 8184 was test director for ERDA and was present throughout testing during July and August. The solar receiver was developed by Martin Marietta.

Purpose was to compare performance of the steam-generating receiver in the solar environment to its prior performance in a simulated solar environment created by radiant heat. The radiant heat testing was performed at Sandia Albuquerque's Radiant Heat Facility (operated by Paul Adams of 9331 and Ned Keltner of 9337). Claude Royere, director of the French CNRS solar furnace, assisted in these radiant heat tests.

Following its arrival at LeHavre, the receiver was trucked to Font Romeu in the Pyrenees Mountains. Bill recalls that local citizens along the route had apparently heard of the oversize load because many lined the mountain roads to view its passing.

The CNRS furnace was originally

designed for and is used as a high temperature materials facility. It utilizes 63 heliostats (six- by seven-metre arrays of mirrors mounted on movable frames) to reflect the sun's energy upon the huge (54-metres high) parabolic reflector. The parabolic reflector, in turn, concentrates the radiant energy upon the focal point in front of the big mirror.

For testing the ERDA receiver, the concentrated solar energy was directed through a one-metre square opening into the interior of the focal building where it heated the tube-lined walls. A total of 161 hours of solar testing was conducted on the receiver, which generated steam at 8900 kilopascals and 515°C.

"Test results were excellent and showed that stable boiler operation was possible in the solar environment," reports Bill. "Rated output was never achieved because of less-than-maximum mirror performance in the solar furnace, and losses in the boiler under test were slightly higher than expected. Nevertheless, efficiency was still good."

A comparison of the solar and the radiant heat test results will be made, and tests in Sandia's five-megawatt Solar Thermal Test Facility are planned for next spring.



They hung the tags everywhere.



Rocket sled always wows 'em.



Thoughtful young scientist.



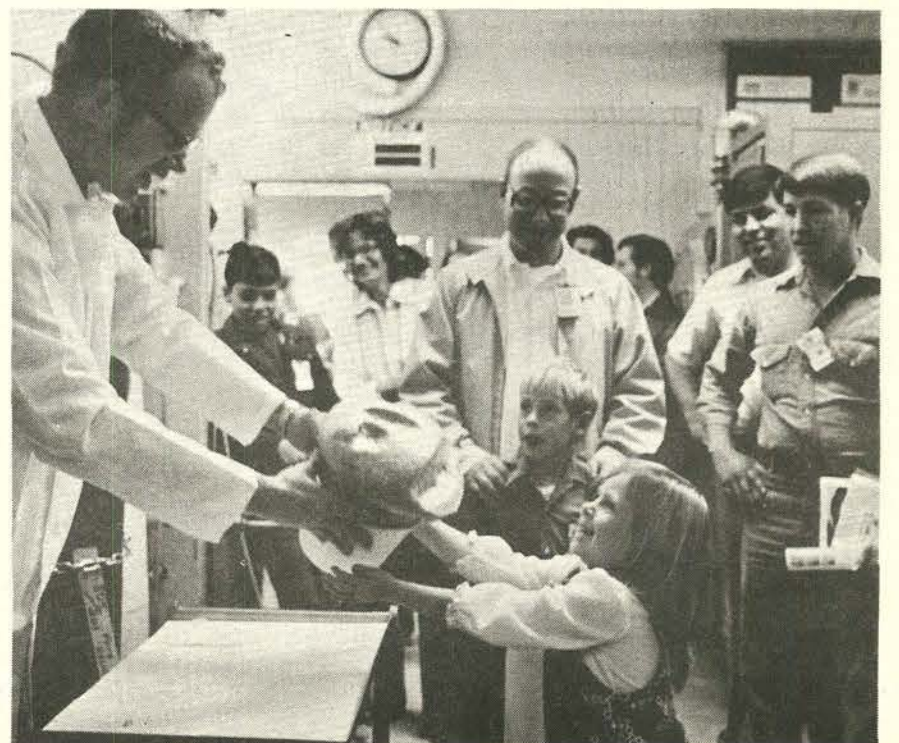
Riding sure beats walking.

## FAMILY DAY '76

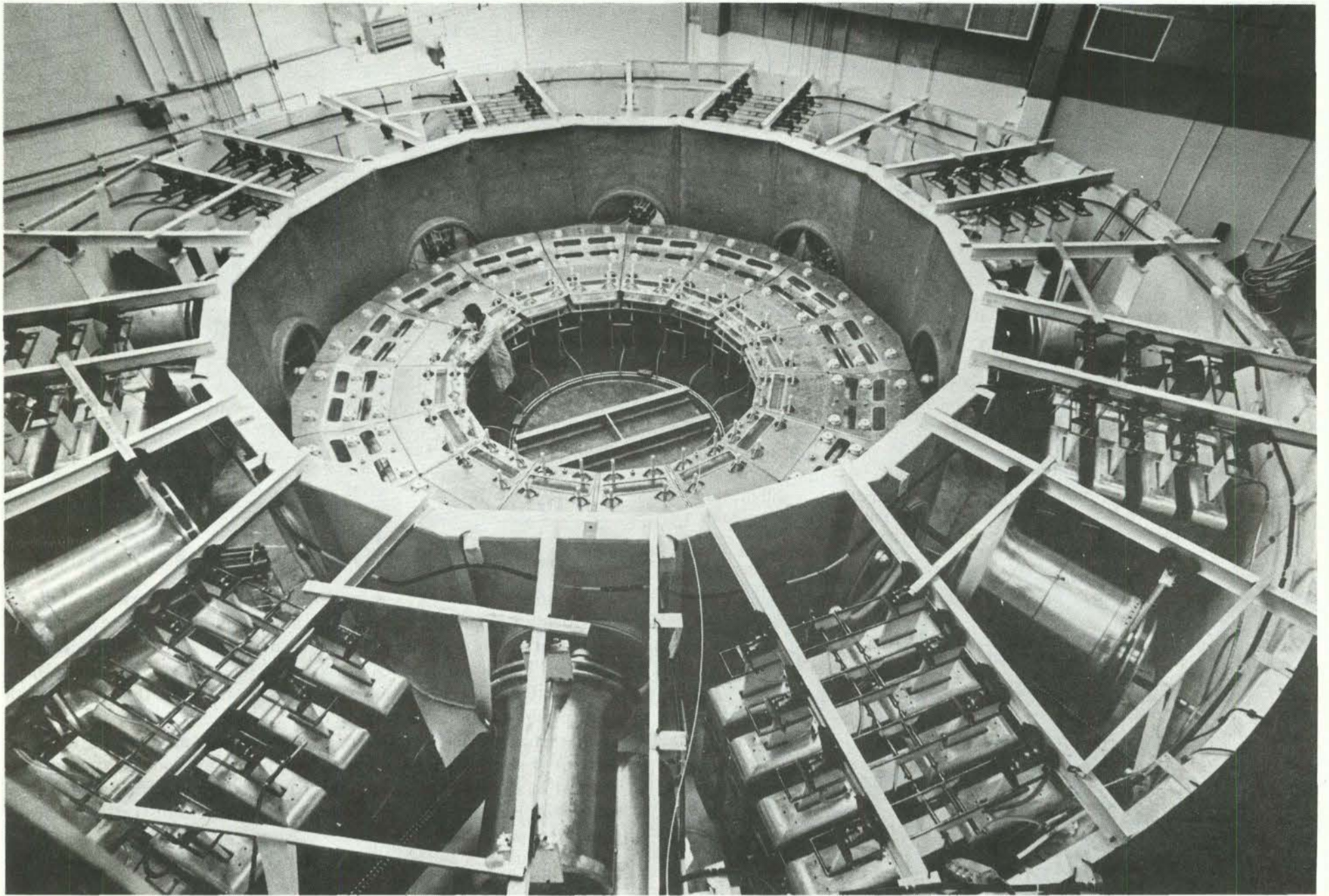
On Friday the wind blew as only it can here, and the Family Day Committee held its collective head. But Saturday dawned clear and still, and by nine o'clock the lines at the Tech Area gates were gratifyingly long. In fact, we had 16,000 visitors. It was a good show. Here's some of it in Bill Laskar's pictures.



From the community: Ed Jory, Bill Gross, and Mayor Harry Kinney.



Her very own foam plastic thingamajig.



PROTO II, now under construction in Area V, is impressive on several counts. The size of the accelerator is commensurate with its power levels: 8 terawatts (that's an 8 followed by 12 zeros). Tom Martin's Pulsed Power Research &

Technology Division 5245 is supervising its construction. The accelerator, expected to be operational early next year, will be used in studies of the feasibility of electron beam fusion.

## Take Note

Ron Hayenga (2532) has sent LAB NEWS a supply of Tel-Med brochures, and he reports that over 70,000 calls have been made to listen to tapes on a wide variety of medical conditions. The service is sponsored by the Presbyterian Hospital Auxiliary. The brochures carry an index of all the tapes; call LAB NEWS on 4-1053 if you want one.

\* \* \*

Trinity Section of the American Nuclear Society is sponsoring a field trip through the Kerr-McGee uranium mine in Grants on Thursday, Nov. 4. Also, the group's second meeting of the year will be held at the Sheraton Hotel in Santa Fe on Nov. 5. LASL's James McNally will talk about laser fusion research. Social hour begins at 6:30, dinner at 7:30. For reservations, call Joy on 4-6855 by Nov. 2.

\* \* \*

Corry McDonald (9623) has been selected by ASME's Metric Study Committee for a Certificate of Award. The Committee advises ASME on metric policy, activity and education. Corry was cited for his "leadership, drive and dedication" during his tenure as chairman of the Committee.

\* \* \*

Engineering alumni of UNM are getting together tomorrow, Oct. 30, at the Stadium Club from 4 to 6:30 p.m. for

cocktails and hors d'oeuvres. The gathering is a preliminary to the Lobo/Aggie football game which starts at 7 in University Stadium. Spouses and friends are invited too.

\* \* \*

A limited number of copies of *Sandia — looking back* (distributed earlier this month to all employees) is available. Call LAB NEWS on 4-7841 if you wish one.

\* \* \*

Betty Jo Hawkens, New York Theatre Guild favorite, will present a bicentennial program, "Women of the American Revolution," as the concluding lecture of the 1976 YWCA Town Hall Lecture Series, Wednesday, Nov. 10, 11 a.m., at the Fox Winrock Theatre. Open to the public, program tickets are \$5. For reservations to a luncheon following the lecture, call the YWCA, 247-8841.

\* \* \*

The Mardix booths can save you the time it would take to enter or exit the Tech Area through a manned gate. But be patient — with one guard remotely checking three or four booths, it can take a few moments for the door to open after you press the button. Beating on the door or muttering imprecations won't help. Console yourself with thoughts of how far it is to a non-Mardix gate.

\* \* \*

The Sandia Gun Club sponsors a hunter's sighting-in shoot from 9 to noon tomorrow (Oct. 30), says Dick Vivian (1211). No charge, but bring your own gun and ammo. Targets will be furnished. The range is next to Bldg. 707 on the south side of the east-west runway near the control tower on KAFB-West.

\* \* \*

Retiree Bea Allen invites Sandians to the annual bazaar put on by the Community Church of the Sandias on Nov. 5 from 9 a.m. to 7:30 p.m. Says Bea, "We'll have home-baked goodies, a fantastic selection of potted plants, arts and crafts, a coffee shop, and a taco supper from 5:30 to 7:30." Babysitting is provided too. The church is located on Hiway 44 just east of Hiway 14 North so it's a handy place to stop if you're viewing fall foliage in the mountains next Friday.





A PORTION of the "One With The Earth" collection, a Bureau of Indian Affairs and Institute of American Indian Arts international exhibit. This show, which has been traveling in Europe for the past 10 years, contains traditional and contemporary art of North American Indians.



THE PLAZA, with its bare earth dance area, is often used in conjunction with the Center's Living Arts Program. During night-time activities the area is illuminated with floodlights and a bonfire.

## OUR TOWN

# Indian Pueblo Cultural Center

One giant complex — The Indian Pueblo Cultural Center — provides an opportunity to learn about pueblo culture and life, past and present, from the Indians themselves. Owned and operated by the 19 pueblos in New Mexico, the center is governed by a board of directors whose membership includes the governor of each pueblo. The center opened in August.

The three-level, semi-circular structure, modeled after the ancient D-shaped Pueblo Bonito at Chaco Canyon, is constructed around a central plaza. The upper level contains office space — a source of income for the center — and administrative offices. Ground level facilities include:

The Museum — highlight exhibits of each pueblo. The inaugural exhibit features contemporary pueblo artists and craftspeople. A "single artist" area currently exhibits paintings by Pablita Velarde (Santa Clara Pueblo). On Nov. 5, this area will show Lucy Lowden's (Jemez Pueblo) weaving and tiny, costumed pueblo figures.

The Arts and Crafts Market — sales rooms offering hand-crafted Indian jewelry, ceramics, paintings and other art and craft items. A registered hallmark guarantees the authenticity and quality of each purchase.

The Theater — core of the Living Arts Program, featuring pueblo daily life; craftsmen at work; pueblo interiors; programs of dance, drama and film; lectures and classes.

The Indian Oven — restaurant serving typical Indian meals. Menu highlights — mutton, rabbit or green chile stew; oven burger or Indian taco (both use fried bread), lamb chops, fried rabbit, freshly baked Indian bread, and varieties of squash, corn and green chile.

The lower level contains additional office space, dressing rooms for dancers performing in the plaza, a large exhibit hall to house permanent collections, and a research library. Officials hope to obtain collections for the library that will provide authentic information to the public and that will serve as a research source for scholars, artists and writers.

The center is located on 12 acres at Menaul and 12th St. and is open 9 - 6 Tuesday through Saturday and 12-6 on Sunday. Admission is \$1. Special events will be advertised. •nt



PUEBLO EXHIBITS — These rotating exhibits emphasize the Center's role as an educational resource.



UNUSUAL black and white pot in the Zia Pueblo exhibit. Rafael Medina, potter.



LYNDA TOLEDO (Jemez Pueblo) is a clerk in the Pueblo Room.



SILVER AND TURQUOISE GOBLETs. Tom Weah-kee (Cochiti Pueblo) is the jeweler.



THE ARTS AND CRAFTS MARKET encompasses four large rooms — Collector's Room, Pueblo Room, Weaving and Jewelry rooms. Pueblo Indian arts and crafts are featured. Handicrafts of other Indian tribes are also on display.

## Retiree Willard McCormick Has Unique New Career

When he retired in May 1970, Willard McCormick had a large project to work on — a 2500 sq. ft. adobe home in Española. After two years the place was complete. What to do then?

"I can't loaf," Willard says. "That's not my idea of fun. I need something to do or I don't feel right."

Willard found his latest career by accident — literally. He severed a finger while working in his shop. The surgeon who attended the wound complained about the instruments he was using.

While convalescing, Willard discussed the situation with the doctor and found himself with a contract to maintain and repair the hospital's surgical instruments and microscopes.

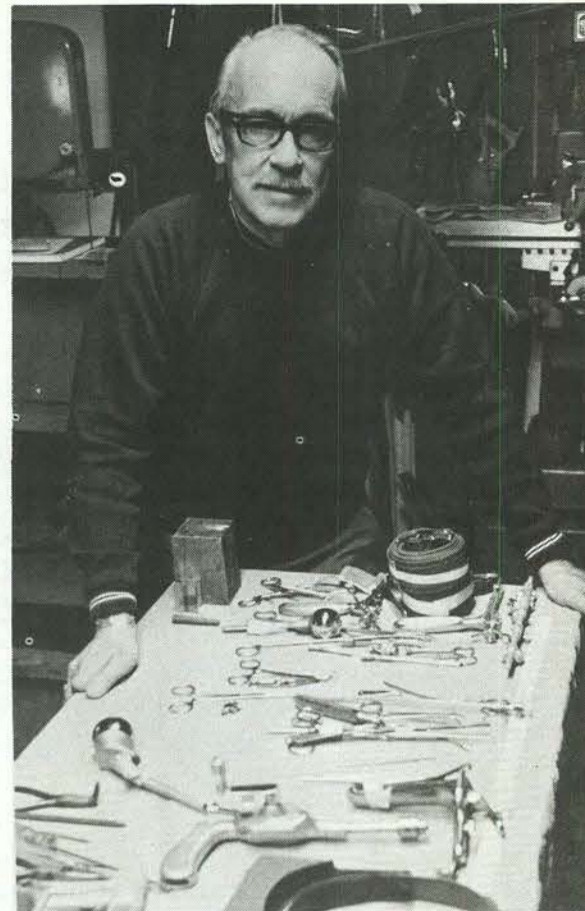
Soon he had contracts with 15 hospitals in New Mexico and Arizona. He sold his

house in Española and moved back to Albuquerque, the center of his travels.

The work led to requests from surgeons for special equipment. Willard has observed many operations and built a number of devices to precisely locate pins for artificial knee caps, closure devices for open heart surgery and positioning fixtures for bone implants. He has filed patent applications for two of the devices.

"Not too many people are in the surgical instrument repair business," Willard says. "They're expensive and they have to be perfect. The hospitals feel that my work is saving them money. I've never been busier or felt better."

Willard worked 11 years at Sandia, primarily as a tool and instrument maker. His latest assignment was in the rolamite lab.



RETIREE WILLARD McCORMICK has found a new career maintaining and repairing hospital surgical instruments.

## Soccer is Big League Here

Soccer in the Southwest? Definitely! There aren't many adult teams, but consider the future. Albuquerque has 1100 youngsters, boys and girls age 7-17, enrolled in the Albuquerque Youth Soccer Association (AYSA). "That number represents 72 teams. Thirty-six intra-league games are played every weekend during our fall season," says Chris Olson (1311), a member of the board of directors of AYSA. "The membership is limited by the number of volunteer coaches and referees. We've got 200 kids on a waiting list because we don't have enough people to coach and referee games. Some of our 15-year-olds who have been playing for a few years are having to officiate in the pee-wee league games."

More than 20 Sandians are active in AYSA. Among them is Heinz Schmitt (4340) who played semi-pro soccer in New York before coming here. Soccer has been played in the eastern U.S. Since colonial days, usually by recently-arrived immigrants. Even today more foreign students are found on college soccer teams than on other sports teams.

In 1960 Heinz found this to be true in Albuquerque. The only soccer team he could find was at UNM. The training of Peace Corps recruits helped the situation, however, because a Peace Corps trainee had to learn to play soccer.

"In 1972, a teacher at Albuquerque Academy organized a league for kids with 100 players," Heinz says. "We've evolved into our present 1100 membership and are now affiliated with the national American Youth Soccer Organization. Growth has been phenomenal."

"Soccer is a contact sport, but there are few injuries — the player goes after the ball, not after the other player. The player may have immense skill, but the game can be played and enjoyed by people with hardly any skill. And participation doesn't depend on a youngster's height or weight. All it takes is a T-shirt, shorts, shoes and a desire to play. Equipping a team is also inexpensive."

Heinz and John Souza (4335), a former college soccer player, coach a team of 11 and 12-year-olds, the "Badgers." They practice twice a week and play Saturdays during the fall (Sept. & Oct.) and spring (March & April) seasons. "We play our games and practice at city parks where goal posts are installed," says Heinz. "The league supplies the nets and balls and marks the field."

"A couple of dozen Sandians work with AYSA as coaches, referees and administrators. We can use more volunteers. We want to develop community soccer players and we're well on the way."



JOHN SOUZA (4335) and HEINZ SCHMITT (4340) coach a Badger practice session. Heinz notes that newcomers tend to pick up the ball and run. Players soon develop good anticipation of movement of ball.

## Authors

G.E. Pike (5155), H.O. Pierson (5834), A.W. Mullendore (5825) and J.E. Schirber (5150), "Superconducting Thin Film Niobium Carbonitrides on Carbon Fibers," No. 29, p. 71, APPLIED POLYMER SYMPOSIUM.

E. Gorham-Bergeron (5151), "Quantum Mechanical Theory of Hydrogen Diffusion," Vol. 37, No. 3, PHYSICAL REVIEW LETTERS.

T.J. Headley (5832), "Characterization and Mechanism of Repeated Precipitation on Dislocations in an Al-Cu Alloy," Vol. 34, No. 1 THE PHILOSOPHICAL MAGAZINE.

L.F. Shampine (5133), H.A. Watts (2642) and S.M. Davenport (former Sandian) "Solving Non-stiff Ordinary Differential Equations — The State of the Art," Vol. 18, No. 3, SIAM REVIEW.

J.R. Adams (2141), "Complex Refractive Index and Phosphorus Concentration Profiles in P+31 Ion Implanted Silicon by Ellipsometry and Auger Electron Spectroscopy," and J.R. Adams and D.K. Kramer (5825), "A Study of the Oxidation of Tantalum Nitride by Ellipsometry and Auger Electron Spectroscopy," Vol. 56, No. 1, SURFACE SCIENCE.

J.E. Kennedy and J.W. Nunziato (both 5131), "Shock-Wave Evolution in a Chemically Reacting Solid," Vol. 24, No. 2-3, JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS.

H.H. Mabie (former Sandian), and C.B. Rogers (9424), "Technology Transfer in the Vibration Analysis of Linearly Tapered Cantilever Beams," July 1976, Transactions of the ASME.

G.J. Kominiak (5834), "Metallization Adhesion Layer Formed by Backscattering During DC Sputter Etching," Communication, Vol. 13, No. 5, THE JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY.

P.J. Chen (5131), "One-Dimensional Shock and Acceleration Waves in Deformable Dielectric Materials with Memory," Vol. 62, No. 2, ARCHIVE FOR RATIONAL MECHANICS AND ANALYSIS.

G.A. Fisk (5215) and G.N. Hays (5212), "Control of HF Laser Output Spectrum Using Selective Intracavity Loss," Vol. 47, No. 9, JOURNAL OF APPLIED PHYSICS.

R.A. Hill (5262) and C.W. Peterson (1334), "Enhanced Raman-Scattering Measurements in Low-Density Supersonic Flows," Vol. 16, No. 11, JOURNAL OF QUANTITATIVE SPECTROSCOPY AND RADIATIVE TRANSFER.

P.H. Holloway (5825), D.E. Amos (5122) and G.C. Nelson (5825), "Analysis of Grain-Boundary Diffusion in Thin Films: Chromium in Gold," Vol. 47, No. 9, JOURNAL OF APPLIED PHYSICS.

B.M. Marder (2642), "Straight  $l=1$  Equilibrium and Stability," Vol. 19, No. 9, THE PHYSICS OF FLUIDS.

M.G. Marietta (1281), "Particle Diffusion in Electrostatic Precipitators," Vol. 31, No. 9, CHEMICAL ENGINEERING SCIENCE.



THE AIR FORCE has dropped a lot of stuff from airplanes, but this is likely a first: a 12-inch diameter, 14-foot length of pipe weighing 743 pounds. The pipe is here being slung under the chopper by Al Stephenson and other people in Tonopah Test Range Division 9473. Purpose is to learn aerodynamic characteristics of the pipe so that calculations can be made of behavior of pipe under tornado conditions. Work is part of a study being done for Nuclear Regulatory Commission to evaluate ability of reactor structure to withstand effects of a tornado. Previous work at TTR of wind-borne missiles posing potential threat to reactors has provided experimental data permitting significant reduction of reactor wall thickness — from 27



down to 18 inches — with significant savings in costs as well. Instrumentation photo, at right, shows pipe shortly after release.

## At Tonopah Test Range



NEW SURFACE for the air strip at Tonopah Test Range was recently completed. Cost for the project was \$540,000. During construction, the F-27 carrying Sandians from Las Vegas to the range landed and departed from a dry lake bed. Road improvements are also planned for TTR.

A.J. Toepfer and L.P. Mix (both 5242), "Electron Beam Pinch Formation in High Current Diodes," and "Enhanced X-Ray Emission from Focused High Nu/Gamma Electron Beams"; C.L. Olson (5241), "Ion Acceleration by Electron Beams," II Symposium on Collective Methods of Acceleration, Academy of Science of USSR, Sept. 29-Oct. 2, Dubna, USSR.

D.A. Powers (5831), "Molten Core - Concrete Interactions Study"; L.S. Buxton (5412) and L.S. Nelson (5443), "Steam Explosion Phenomena," 4th International Light-Water Reactor Safety Information Meeting, Sept. 30, Gaithersburg, Md.

L.C. Bartel, L.W. Beckham, S.G. Beard (all 5732), R.P. Reed (1116), and R.W. Seavey (5733), "Instrumentation Results from an In Situ Coal Gasification Experiment"; L.C. Bartel (5732), R.P. McCann and L.J. Keck (both 5733), "Use of Potential Gradients in Massive Hydraulic Fracture Mapping and Characterization," SPE 51st Annual Fall Meeting, Oct. 4-6, New Orleans.

C.L. Olson (5241), "Pulsed Power Ion Acceleration for Inertially Confined Fusion," Tbilisi School on Plasma Physics and Controlled Thermonuclear Fusion, Sept. 29-Oct. 9, Tbilisi, Georgia, USSR.

R.J. Eagan (5846), "Glass Ceramics Review," JUWOG5 meeting, Oct. 4-13, Aldermaston, England.

J.A. Borders (5111), "Ion Backscattering-Channelling Studies of Metastable Alloy Formation in Metals Using Ion Implantation, Invited Presentation, Dept. of Physics, Lehigh University, Oct. 6, Bethlehem, Pa.

R.H. Marion, C.H. Karnes (both 5847), F.M. Morris and J.A. Reuscher (both 5421), "High Enthalpy Fuels for Pulsed Reactors Used in Fast Reactor Safety Experiments"; J.A. Reuscher and P.S. Packard (both 5424), "Performance Improvement of the Annular Core Pulse Reactor for Reactor Safety Experiments"; G.A. Carlson (5423), "Advanced Diagnostic Techniques for Post-Accident Heat Removal Experiments"; T.R. Schmidt (5422), "LMFBR Prompt Burst Experiments in the ACPR"; J.F. Muir (5412), "Response of Concrete Exposed to a High Heat Flux on One Surface"; H.J. Sutherland and L.A. Kent (both 5167), "Erosion Rate Measurements Using an Acoustic Imaging Technique"; J.G. Kelly (5423), W.H. Buckalew and L.D. Posey (5232), "Coded Source X-Radiography for Fuel Motion Studies Using the HERMES II Accelerator"; D.A. Powers (5831), "Experimental Investigation of the Response of Concrete to High-Temperature Melts"; S.A. Wright (5423), "Sodium Boiling Detection by Acoustic-Neutronic Cross-Correlation"; J.G. Kelly (5423) and K.T. Stalker (2541), "The ACPR Coded Aperture Fuel Motion Detection System," International Meeting on Fast Reactor Safety and Related Physics, Oct. 5-8, Chicago.

G. Yonas (5240), "Sandia Laboratories' Particle Beam Fusion Research," Physics and Controlled Nuclear Fusion Research, Oct. 6-13, Berchtesgaden, Federal Republic of Germany.

L.D. Posey, H.N. Woodall (both 5232), P.B. Tollesrud (5230A), D.H. McDaniel (5245) and R.E. Allred (5844), "X-Ray Simulation Development," Fifth Symposium on Nuclear Survivability of Propulsion & Ordnance Systems, Oct. 7-9, Stanford Research Institute, Menlo Park, Calif.

B. Morosin (5154) and L. Harrah (5811), "Two Forms of 1, 6 Diphenoxy 2,4 Hexadiyne," American Crystallographic Association meeting, Oct. 8-12, Evanston, Ill.

W.D. Brown (1351), "A Model for the Refractive Index Structure Constant at Microwave Frequencies"; and, "Ionospheric Scintillation at GHz Frequencies and Its Effect on the Seasat-A Synthetic Aperture Radar," 1976 AP-S Symposium and USNC/URSI meeting, Oct. 10-15, University of Mass., Amherst Campus, Mass.

D.W. Bushmire (2152), "Resistance Increases in Gold Aluminum Interconnects with Time and Temperature"; F.G. Yost (2151), "Aspects of Pb-In Solder Technology"; C.H. Seager and G.E. Pike (both 5155), "Electric Field Induced Changes in Thick Film Resistors"; G.E. Pike and C.H. Seager, "Electrical Conduction Mechanism in Thick Film Resistors"; D.W. Bushmire (2152), A.R. Stemm (9512) and R.L. Iman (1223), "Five-Year Life Stability Study of Aluminum - 1% Si Wire Bonds and Gold Wire Bonds to Four Types of Metalization"; T.V. Nordstrom (5832), "Firing Behavior of Thick-Film Ruthenium Base Resistor Inks"; R.K. Traeger (2151), "Adhesives in Hybrid Microcircuits"; D.R. Johnson and E.L. Chavez (both 2152), "Characterization of the Thermosonic Wire Bonding Technique," 1976 International Microelectronics Symposium, Oct. 11-13, Vancouver, B.C., Canada.

C.E. Land (5133) and P.S. Percy (5112), "New Image Storage Mechanisms in PLZT Ceramics Using Near Ultraviolet Light," IEEE-SID Biannual Display Conference, Oct. 12-14, New York.

R.J. Eagan (5846) and J.W. Swearingen (5847), "Glass and Glass Ceramic Research," Seminar, University of Sheffield, Oct. 13, Sheffield, England.

C.P. Ballard (5846), Properties of Synthesized Interface Glasses"; G.J. Jones (2531) and C.P. Ballard, "Hydrogen Release from Oxidized Alloy Substrates

During Glassing," American Ceramic Society Meeting, Oct. 13-15, Bedford Springs, Pa.

L.W. Brewer (3311), "Status of the AIHA Hygienic Guides," Rocky Mountain Section of American Industrial Hygiene Assoc. Meeting, Oct. 14-15, Denver.

C.S. Johnson (9421), "Just a Galaxy Away," Los Altos Civitan Club, Sept. 9, Albuquerque.

W.D. Weart (1140), "Nuclear Waste Isolation Pilot Project," Audubon Society, Sept. 16, Albuquerque.

J.T. Holmes (5713), "Solar Thermal Test Facility," UNM Civil Engineering Club, Sept. 22.

G.W. Hughes (1243), "The Metric System and the Citizen," Los Altos Civitan Club, Sept. 23, Albuquerque.

J.C. Crawford (2350) and R.C. Dougherty (2351) will present the following Sandia papers at the 9th US/UK Neutron Generator Symposium, Oct. 5-8, Aldermaston, England; J.C. Crawford, "U.S. Neutron Generator Program"; W.E. Newman, "C.M. Percival (2351) and R.K. Treece (2314), "Long Life Neutron Generators — Electronic and Ferroelectric"; C.E. Spencer (2351), "Miniature Neutron Generator"; H.T. Weaver (2354), "Long Life Tube (MC2980) Development Status"; G.W. McClure and J.C. Newton (both 2352), "NB Ion Source Characteristics"; R.W. Gray (2355) and R.C. Dougherty (2351), "Formal Shelf Life Program — Stockpile Restructure"; R.C. Dougherty (2351), "Data Acquisition Techniques." The papers listed above and the following papers will all be included in the Proceedings of the Symposium: P.C. Lysne (5131), "Analysis of Multi-Element, Regulated Ferroelectric Power Supplies"; R.C. Dougherty, "Neutron Generator Vulnerability Evaluation"; J.E. Boers and R.J. Walko (both 2352), "Ion Beam Design"; J.P. Brainard (2351) and A.A. Riedel (2354), "A Simple Technique for Preventing High-Voltage Breakdown Due to Dielectric Particles"; R.J. Walko, G.W. McClure and J.W. Hubbs (all 2352), "Plasma Flow in the Long-Life Tube Geometry"; G.E. Boettcher and L.A. Shope (both 2354), "Vacuum Switch Tubes"; W.G. Perkins, W.J. Kass and L.C. Beavis (all 2353), "Update of the US Helium Release Program"; D.R. Begeal (2353) and R.J. Eagan (5846), "Helium Permeation Through Molybdenum Sealing Glass Ceramics"; W.J. Kass, L.C. Beavis and D.R. Begeal (all 2353), "Thermal Desorption of Gases From Vacuum Tube Materials and Vacuum Tubes."

D.B. Hayes (2513), "A P<sub>0</sub>t Detonation Criterion from Thermal Explosion Theory"; A.B. Donaldson and D.B. Hayes (both 2513), "Deflagration to Detonation Transition in Systems with Initial Free Volume"; S.A. Sheffield, D.E. Mitchell and D.B. Hayes (all 2513), "The Equation of State and Chemical Kinetics for Hexanitrostilbene (HNS Explosive)"; J.E. Kennedy (5131), "Critical Conditions for Shock Initiation of Detonation in Real Systems"; W.B. Leslie, R.W. Dietzel (both 2514), and J.Q. Searcy (2515), "A New Inherently Safe Explosive for Low Voltage Detonator Applications"; J.Q. Searcy and A.C. Schwarz (2513), "Geothermal Shock Focusing and Flying Plate Initiation of Solid Explosives"; P.J. Chen and J.E. Kennedy (both 5131), "Chemical Kinetic and Curvature Effects on Shock Wave Evolution in Explosives"; R.A. Lederer (1754), S.A. Sheffield, A.C. Schwarz and D.B. Hayes (all 2513), "The Use of a Dual-Delay-Leg Velocity Interferometer with Automatic Data Reduction in a High Explosive Facility"; J.W. Nunziato, J.E. Kennedy (both 5131), and D.R. Hardesty (8115), "Modes of Shock Wave Growth in the Initiation of Explosives," Sixth International Symposium of Detonation, Aug. 24-27, San Diego.

M.A. Duguay, M.A. Palmer (both 5214), and R.E. Palmer (5216), invited presentation, "Laser Driven Subnanosecond Blast Shutter"; J.O. Harris, J.T. Cutchen and G. Laguna (all 2521), "Recent Developments in PLZT Electrooptic Shutters"; E.L. Burgess (5133), invited presentation, "Photovoltaic Energy Conversion Using Concentrated Sunlight"; C.E. Land (5133), invited presentation, "Information Storage and Display Techniques Using PLZT Ceramics," 20th Anniversary Technical Symposium of the Society of Photo-Optical Instrumentation Engineers, Aug. 23-27, San Diego.

D.S. Ginley (5154), "Photoelectrolysis of Water Using Polycrystalline Iron Titanate Anodes"; M.A. Butler (5154), "Tungsten Trioxide as an Electrode for Photoelectrolysis of Water," International Conference on the Photochemical Conversion and Storage of Solar Energy, Aug. 24-28, London, Ontario, Canada.

W.R. Wawersik (5163), "Preliminary Determination of Mechanical Properties on Rock Salt From South-eastern New Mexico"; R.A. Schmidt and C.W. Huddle (both 5163), "Effect of Confining Pressure on Fracture Toughness of Indiana Limestone," 17th U.S. Symposium

H.M. Bivens, G.W. Smith and D. Jensen (all 2355), "The Prompt Fission Neutron Method of Uranium Borehole Logging with a Pulsed Neutron Generator," Uranium Geophysical Technology Symposium, Sept. 14-16, Grand Junction, Colo.

C.W. Gwyn (2142), "Use of DA in Integrated Circuit Design," SCIE Technical Meeting, Sept. 30, Denver, Colo.

W.B. Gauster (5111), "Positron Annihilation Defect Signatures in Irradiated Metals," Fourth International Conference on Positron Annihilation, Aug. 23-26, Helsingor, Denmark.

I.J. Hall (1223), "A Statistical Problem Dealing with Retrieving Oil from Oil Shale"; R.L. Iman (1223), "A Comparison of Several Rank Tests for the Two-Way Layout," 1976 Annual Meeting of American Statistical Association, Aug. 23-26, Boston.

J.W. Nunziato (5131) and J.G. Curro (5811), "Thermochemical Stress Relaxation in Nonlinear Viscoelastic Solids," Seventh International Congress of Rheology, Aug. 23-27, Gothenburg, Sweden.

L. Bonzon (5432), "High-Speed Impact Tests of Plutonium Shipping Containers"; L. Bonzon and J.T. Schamaun (1218), "Container Damage Correlation with Impact Velocity and Target Hardness"; L. Bonzon and J.V. Otts (5713), "Special Closures for Steel Drum Shipping Containers"; L. Bonzon and M. McWhirter (9332), "Special Tests for Plutonium Shipping Containers"; D.R. Smith, R.E. Luna (both 5443), A.R. DuCharme (5143) and J.M. Taylor (1233), "A Risk Assessment for the Transportation of Radioactive Materials in the U.S.A."; R.B. Pope (5431), "A Program for the Development of Technology for Safe Shipment of Spent Fuel from Commercial Liquid Metal Fast Breeder Reactors in the United States"; R.B. Pope, "Problems of Heat Transfer Within the Containing Vessel of High Performance LMFBR Spent Fuel Shipping Casks"; H.R. Yoshimura (5432), to be presented by R.M. Jefferson (5430), "Full Scale Vehicle Tests"; H.R. Yoshimura and M. Huerta (1282), to be presented by R.M. Jefferson, "Adequacy of Scale Modeling of Large Casks," International Seminar on Design, Construction and Testing of Packaging for the Safe Transport of Radioactive Material, Aug. 23-27, Vienna, Austria.

W.D. Weart (1140), "New Mexico Waste Isolation Pilot Plant - A Status Report," Waste Management 1976 Symposium, Oct. 3-6, Tucson, Ariz.

H.J. Sutherland (5167), G.A. Carlson (5423) and L.A. Kent (5167), "Acoustic Diagnostic Techniques for Post-Accident Heat Removal Experiments"; J.A. Reuscher (5424), "Capabilities of the Annular Core Pulse Reactor for Safety Experiments"; S.A. Wright (5423), "Designs for In-Reactors Sodium Boiling Detection and Generation"; T.R. Schmidt (5421), "LMFBR Prompt Burst Experiments in the ACPR"; J.F. Muir (5412), D.A. Powers (5831) and D.H. Dahlgren (5411), "Studies on Molten Fuel - Concrete Interactions"; J.G. Kelly (5423) and K.T. Stalker (2541), "ACPR Upgrade Fuel Motion Detection System"; J.G. Kelly, "Coded Source X-Radi-

ography"; D.C. Williams (5425), "A Critique of the Board-Hall Model for Thermal Detonations in UO<sub>2</sub>-Na Systems," International Meeting on Fast Reactor Safety and Related Physics, Oct. 6-8, Chicago.

G.A. Samara (5130), "Solar Electric Research and Development," Colloquium at University of Illinois, Oct. 12.

G.R. Elliott (1734), "The Adaptive Digital Filter," engineering faculty meeting, KSU, Oct. 14, Manhattan, Kans.

W.E. Stocum (3311), "A Risk Analysis of Exposure to High Concentrations of Zinc Chloride Smoke," Regional meeting of the Rocky Mountain Section of AIHA, Oct. 14-15, Denver.

J.P. Brainard (2352), "Electron Trajectory Calculations in the Avalanche Process on Vacuum Insulators," 1976 Conference on Electrical Insulation & Dielectric Phenomena, Oct. 17-21, Buck Hill Falls, Pa.

C.E. Barnes (5133), "The Effect of Gamma Irradiation on the Low Temperature Properties of GaAs:Si LEDs," Electrochemical Society meeting, Oct. 17-22, Las Vegas, Nev.

R.J. Eagan (5846), "Glass Ceramics for Vacuum Tube Envelopes," Seminar, Alfred University, Oct. 18, Alfred, N.Y.

P.B. Bailey (5121), "A Code for the Computation of Eigenvalues and Eigenfunctions of Singular (or Nonsingular) Sturm-Liouville Eigenvalue Problems"; L. Romero and L.A. Bertram (both 2642), "A Non-Sturmian Eigenvalue Program"; M.R. Scott and H.A. Watts (both 2642), "A Discussion of the Stability of Riccati Equations"; R. J. Thompson (5121), "Functional Differential Equations with Infinite Memory: Existence, Uniqueness and Numerical Solution"; R.J. Detry (2641), "Computing Practices at Sandia," SIAM 1976 Fall Meeting, Oct. 18-20, Atlanta, Ga.

E. Randich (5834) and K.H. Eckelmeier (5832), "Habit Plane Determination of Plate Rhadrites in Hexahedrites," the Meteoritical Society Annual meeting, Oct. 18-21, Bethlehem, Pa.

A.K. Hays (5215), G.C. Tison and J.M. Hoffman (both 5212), "High Pulsed Power and High Average Power Rare-Gas-Halogen Lasers"; M.A. Duguay and R.M. Edgar (both 5214), "Lighting with Concentrated Beams of Sunlight"; A. Ouyoung (5214), "An Interferometric Study of the Third-Order Nonlinear Susceptibility of Benzene," Optical Society of American Annual Meeting, Oct. 18-22, Tucson, Ariz.

W.B. Gauster, et al (5111), "The Study of Defects in Metals with Positive Muons"; J.P. Van Dyke (5151), "SCF-X<sub>2</sub>-MS Calculations for H in Metal Clusters," International Conference on the Properties of Atomic Defects Metals, Oct. 18-22, Argonne, Ill.

K.L. Wilson (8334), L.G. Haggmark (8341) and R.A. Langley (5111), "Blister Formation in Multiple Energy He<sup>+</sup> Implanted Metals," International Symposium on Plasma Wall Interactions, Oct. 18-22, Juelich, Western Germany.

S.G. Varnado (5742), "The Particle Beam Fusion Program at Sandia Laboratories," and "Reactor Implications of Particle Beam Fusion," Workshop on Systems Studies of Fast Pulse Reactors, Oct. 18-22, Siberian Physical Institute, Novosibirsk, USSR.

M.E. Morris (5442), "Using the Hewlett-Packard 9830 Calculator as a Batch Terminal for a CDC 6600 Computer with the NOS Operation System," Hewlett-Packard's Albuquerque Office, Oct. 19.

R.W. Weaver (3622), "Fire, Plastics, and the Modern Home," National Safety Congress, Oct. 19-21, Chicago.

J.C. Bushnell (9352) and B. Stiefeld (5712), "Overview: Automated NDE - A Look Ahead," Second Automated Inspection and Product Control Conference, Oct. 19-21, Chicago.

R.A. Benham, F.H. Mathews and P.B. Higgins (all 9355), "Application of Light-Initiated Explosive for Simulating X-Ray Blowoff Impulse Effects on a Full Scale Reentry Vehicle"; C.W. Bert (5844), "Dynamics Problems in Composite-Materials Flywheels for Energy Storage in Hybrid Vehicles"; D.O. Smallwood and D.L. Gregory (both 9332), "Evaluation of an Adaptive Filter as a Digital Tracking Filter"; F.H. Mathews and B.W. Duggin (5233), "Barrel-Tamped, Explosively Propelled Plates for Oblique Impact Experiments," 47th Shock and Vibration Symposium, Oct. 19-21, Albuquerque.

F.C. Perry (5242), "Dynamic Response Experiments with Super-Pinched Relativistic Electron Beams"; L.P. Mix (5242), "Time Resolved Optical Holography"; J. Chang (5242), "X-Ray Imaging Devices for REB Driven Pellet Implosion Studies"; J.R. Asay (5167), "Mass Ejection from Shocked Surfaces of Aluminum and Lead," Hydrodiagnostic Exchange Meeting, Oct. 19-21, LLL.

J.K. Rice (5216), "Gain Versus Wavelength Near 5577 Å in Electron-Beam-Excited Kr/O<sub>2</sub> Mixtures," Gaseous Electronics Conference, Oct. 19-22, Cleveland, Ohio.

H.W. Church (5443), "The Atmospheric Turbulence, Diffusion and Air Safety Study, Wash-1400," Symposium on Atmospheric Turbulence, Diffusion and Air Quality, Oct. 19-22, Raleigh, N.C.

H.M. Bivens, G.W. Smith and D. Jensen (all 2355), "The Prompt Fission Neutron Method of Uranium Borehole Logging with a Pulsed Neutron Generator," Uranium Geophysical Technology Symposium, Sept. 14-16, Grand Junction, Colo.

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## Fun & Games

**Ski Swap** — The Swap is this weekend, Agriculture Bldg. of the State Fair. Ski equipment should be registered for sale today, the 29th, before 8 p.m. The sale runs tomorrow from 9 to 4. On Sunday, persons selling equipment may pick up payment (or the unsold equipment) between 2 and 4 p.m. The Ski Swap is sponsored by the Sandia Peak Ski Patrol, an all-volunteer group.

\* \* \*

**Sandia Horseshoe Assn.** — Bill Sweatman (retired) again captured the Sandia Labs Horseshoe A singles championship, his third consecutive title. Bill recently placed third in the state competition at the State Fair. Curly Saxton (9412) was runner-up. Class B was won by Dan Padilla (1247), with Ernie Mares (3645) as runner-up. Class C was won by Pete Shaw (9723), with Jim Fisher (2635) as runner-up. In doubles, Leo Bressan (2552) and Ernie Mares (3645) were champions, while Bob Schuch (5232) and Pete Shaw (9723) were runners-up.

The Association holds its annual meeting at the Coronado Club on Wednesday, Nov. 3 at 5 p.m. Besides election of officers, prizes will be awarded to winners. Refreshments will be served. All interested persons are urged to attend.

\* \* \*

**Sandia Runners** — Six Sandians competed in the Albuquerque Marathon, held two weeks ago, and two of them were first in their divisions. Irv Hall (1223) was first in Masters I with 3:07, while Larry Johnson (4323) was first in Masters IV with 3:48. Other Sandians competing the 26-miler: Jim Hickerson (5832), Phil Walkington (9335), Joe Abbott (2112) and Stewart Kohler (2326).

The Base military have suggested a few safety precautions for runners: Run against the traffic flow; wear light-colored clothing; run in single file; don't quibble about right-of-way with an oncoming vehicle; and run beside the Tijeras arroyo bridge — not over it.

\* \* \*

**Winter Schedule at the Gym** — Base gym is now open Monday to Friday from 8 a.m. to 8 p.m., Saturdays 9 to 5 and Sundays and holidays from 1 to 5.

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**Sandia Bowling Assn.** — Mary Ward (9622) announces the following tournaments: Scotch doubles - Nov. 6-7; singles & mixed doubles - Dec. 18-19; four-man team, doubles and singles - Feb. 12-13; and 13th Annual Sandia Tourney - April 23-24.

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**Radio controlled model airplanes** will dot the sky over the West Mesa this weekend as the Albuquerque Radio Control Club holds its annual Fun Fly. Flyers from the Southwest will compete for prizes. The two-day meet is open to the public and is held at Boca Negra Park on the mesa near Volcano Cliffs. Activities start at 10 a.m. each day.



HIGH HONOR in the field of engineering came for Dick Bice, VP-9000, when the American Society of Mechanical Engineers elected him a Fellow of the Society. Ralph Wilson (3620) made the presentation during recent meeting of local ASME Chapter.

## OK Bikers, Use Those Bikeways

Can you average 38 mph on Montgomery? Eastbound?? Or 32 on Candelaria? If not, try the bikeways that parallel those major arterials: Comanche for Montgomery, Claremont for Candelaria.

Why? Don't bikes have the same right to any street as cars? Yes — with exceptions. One of those exceptions is that any vehicle, including a bike, impeding the flow of traffic on any major arterial between 7 and 9 a.m. and 4 and 6 p.m. can be — and may, in the case of Montgomery and Candelaria, now expect to be — cited by the police. (Not cited for valor either, however appropriate that may be.) Re-

minders, in the form of NO SLOW VEHICLES signs or some such, will soon appear along these streets.

Even if you can maintain the speed necessary to keep traffic flowing smoothly through the timed signals, the Albuquerque/Bernalillo County Bikeway Committee urges bikers to use the alternate routes provided for every major arterial and specifically for Montgomery and Candelaria. The Claremont bikeway is currently getting its stop signs rearranged to facilitate bike traffic (Comanche is already pretty good), and both routes will soon display BIKE ROUTE signs.

## C-Club Tennis Shaping Up

We have a good opportunity to have one of the finest tennis complexes in the city, according to Ed Leeman (2315) who, with Phil Stanton (5131) and Joe Tillerson (5162), is heading the campaign for new courts at the Coronado Club.

Four courts are planned (five if response is great enough); they'll be located north of the concrete wall west of the swimming pool entrance to the patio. Court surface will be LayKold, the most satisfactory for the local climate.

Courts are expensive — probably around \$35,000 for all four. Already the Club has earmarked \$15,000 for construction, and 45 families and individuals have signed up for a three-year tennis membership. A three-year family membership costs \$225 (\$180 individual) with \$150 due by Nov. 5. The money will be held in escrow until the courts are actually underway; the remainder will be due on completion.

A check of tennis club memberships

indicates that \$75 per family per year (including swimming!) is a real bargain: the Albuquerque Academy costs \$150 per year; the Albuquerque Tennis Club and the Sierra Vista Club \$300 per year plus \$500 initiation fee; the Albuquerque Tennis Complex \$1 per hour, which translates to \$100 a year if a family averages two hours a week. If you're not a Coronado Club member, figure on \$30 per year for Club dues.

The first hundred people to submit application blanks will elect a committee to define the regulations on reservations, C-Club member and non-C-Club member guests, lessons, schedules, priorities, etc. If you're interested in tennis, fill out the application blank and get it to the Club with \$150 (refundable if the courts are not built) as soon as possible, certainly by Nov. 5. More info from Phil Stanton (4-1097), Joe Tillerson (4-3306), or Lewis Sisneros (4-4426).

### CORONADO CLUB TENNIS APPLICATION

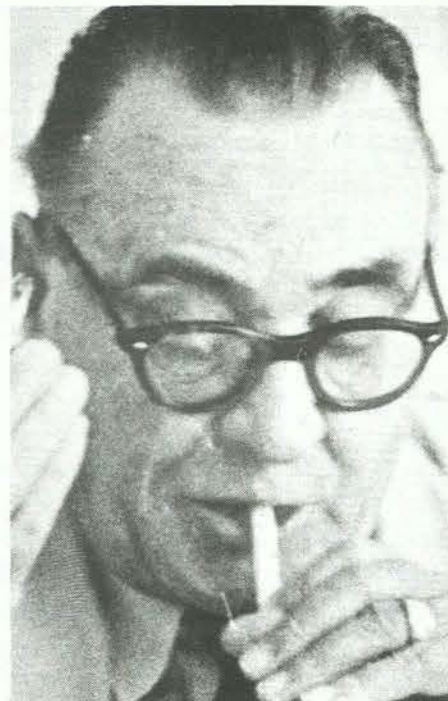
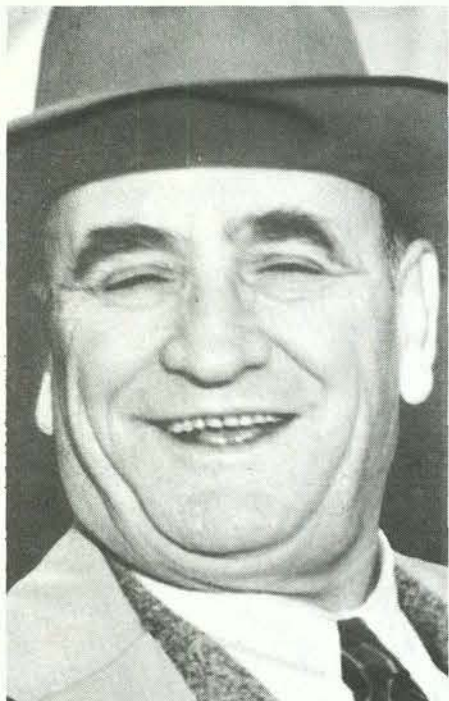
Name \_\_\_\_\_ Org. \_\_\_\_\_ Phone 4- \_\_\_\_\_

Address \_\_\_\_\_ ZIP \_\_\_\_\_

Enclosed is \$150 check made out to C-Club-Tennis for 3-year membership.

Check one: \_\_\_\_\_ Family membership (\$225 total) \_\_\_\_\_ Individual membership (\$180 total)

Check one: \_\_\_\_\_ Coronado Club member \_\_\_\_\_ Willing to join Coronado Club (\$30/year)



## Albuquerque's Clyde Tingley Yelled a Lot

If anything, a politician today must project an aura of gravity. We like our candidates polished, urbane, solemn. John Lindsay of New York is this sort of a paradigm politician — smooth good looks, a disciplined and informed mind, always good manners. If there's passion in politicians these days it's controlled — the fixed smile from Mr. Carter, the cool stare from Mr. Ford. The post-Watergate era is not the time for flamboyant and colorful politicians. Elections these days are much too serious to be much fun.

People had a lot of laughs in the old days when Clyde Tingley was "mayor" of Albuquerque and twice governor of New Mexico (1933, 1936). Old Clyde was tough, energetic, fun-loving, colorful and earthy. His language was atrocious. ("I ain't never gonna stop saying ain't.")

He made many enemies in his time and crowds of friends. The people who disliked him, however, would grant that he was honest and dedicated. They objected to his manner and style more than anything. Old Clyde yelled a lot when something or someone interfered with his personal vision of progress.

Albuquerque owes a lot to Clyde — Tingley Beach, the zoo, the parks, the State Fair, the first airport, the first modern water system, the establishment of military bases here, even the Chinese elm trees. Old Clyde had the city grow thousands of trees in a nursery near Rio Grande Zoo so that property owners could pick up free trees — three to a customer.

Old Clyde was FDR's buddy. During the New Deal Governor Tingley is credited with bringing \$100 million in federal projects to New Mexico.

No one ever questioned Clyde's honesty. He was loud, uneducated and impatient, but he was honest. Besides, his wife Carrie had money inherited from her wealthy family back in Ohio.

That's where Clyde met Carrie. He was a laborer for the railroad and later a garage mechanic. She was the daughter of the town's richest family and suffered with tuberculosis. Her doctor recommended the climate of the Southwest so the family decided to send her to Phoenix. She

became too ill on the train to continue beyond Albuquerque, so here is where she stayed. That was in 1910. In 1911 Clyde came to claim her and they were married. He went to work as a machinist in the Santa Fe railroad shops here. She called him "Buster" and thought he was the greatest thing in brogans. Later on, she made him wear fancy shoes but he always complained about that and took them off whenever he could.

In 1916 he won his first race for a seat on the City Commission. He conducted a door-banging campaign promising to "buy the water works." At the time a private company supplied water to city residents. It cost the city \$400,000 — big money in those days — but it proved to be a bargain in the long run.

From then on Clyde was "Mr. Mayor," claiming that people didn't understand the title "Chairman of the City Commission."

When Tingley Beach was completed in the 30's and its success assured, the commissioners thought that adding gondolas to the lagoon would be a nice touch. A dozen gondolas should do.

"What do these gondolas cost?" Clyde asked.

About \$1000 each was the estimate.

"Why don't we just buy a pair of 'em and let nature take its course?" Clyde proposed.

They bought row boats instead. They were never sure that Old Clyde wasn't pulling their leg.

Clyde "retired" from the railroad and spent his entire time working for the city. He held court downtown in the lobby of the old Hilton Hotel. He was on top of all city activities — sometimes he personally supervised city maintenance crews and work in City Hall. Still, he never fixed a traffic ticket. He refused to interfere with the police department. "It would destroy the force," he said.

When Clyde noticed waste paper in Robinson Park at Eighth and Central, he asked the owner of a nearby hamburger stand to stop paper-wrapping the hamburgers. People were littering the park with the wrappers.

The operator refused, pointing out that the city should buy trash baskets for the park.

The newspapers picked it up — they loved to pick on Clyde. The headline read, "Mayor Advocates Nude Hamburgers." Eventually the city bought litter baskets.

Clyde made the front page of the JOURNAL or TRIBUNE about every day. One story describes his actions at a commission meeting: "He frowns like a thundercloud at the opposition, gestures constantly with his hands, waves his lighted cigaret to emphasize a point, grins broadly when scoring a point, and rarely relaxes."

Although his years in office were marked by controversy and running battles with the press, the JOURNAL editorial of Oct. 9, 1951 said, "Voters of Albuquerque exercised exceptionally good judgement in returning veteran community and state builder Clyde Tingley to the City Commission. Throughout the years that man without doubt has contributed more to the progress and upbuilding of his city than any other person. During the many years he has served on the commission and during the four years of his governorship nothing of a beneficial nature to Albuquerque has been overlooked. . . . There are scores of admirers of dynamic Clyde Tingley. . . ."

Albuquerque was entering the era of its greatest growth. Old Clyde had guided his poor town in a poor state through the depression years into the explosive growth of the early 1950's. Thousands of new homes were springing up and with them came new people, new streets, new schools, new shopping centers and problems. The population doubled and then tripled. City services were severely strained. The new people, better educated and more sophisticated, demanded new leadership. Boisterous Clyde Tingley with his ungrammatical speech was an embarrassment, and he was in poor health and getting old.

Clyde resigned quietly from the City Commission in 1955. He died in Albuquerque at the age of 79 on Christmas Eve 1960. Carrie died the following November. There were no children. Their estate went to various charities.

An uneducated statesman, Clyde had an unerring instinct for that which was humanitarian. •dg

# feed<sup>back</sup>

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

*Q. Has Sandia considered a voluntary program of weight reduction or stop smoking for better health? As an incentive, LAB NEWS could publish the picture each quarter of the individual in the program who best exemplifies BHIL [better health I Lost] or BHIQ [better health I quit].*

A. The Laboratories did sponsor a clinic for those who needed professional guidance in their attempt to cease smoking. The Medical Department feels that over-eating and smoking are a form of addiction. In order to safely overcome these dependencies, one needs professional help. Any recognition rewards would result only in temporary change and, without other controls, could be detrimental physically and emotionally. To change deep-seated habits such as these requires total and permanent change of life. We feel these changes could not be accomplished by this method.

S.P. Bliss - 3300

*Q. Why aren't parking violations enforced? Why are employees allowed to continuously park in illegal areas and especially in visitor slots? The visitor slots in front [north] of Personnel continually have employee cars in them.*

*I hope this isn't something we should kind of ignore like bicyclists running stop signs.*

A. Very definitely someone cares about illegal parking. Not only are members of the Security Department concerned with this problem, but also members of top management.

In the recent past, we patrolled the parking lots on a "hit or miss" basis, but beginning in May we made a concerted effort to remedy the situation. In the May 28 issue of the Lab News, we ran an article dealing with a number of parking considerations, i.e., illegal parking and several car pool problems. We also assigned a full-time Security Inspector to patrol the lots for a period of 7 days. In 7 days he issued 161 parking tickets.

In addition to citing the driver when violations occur, a letter is sent to the violator's supervision. Currently, four directors are considering appropriate action concerning employees in their organizations who have three or more violations.

As pointed out in the Lab News article, we are still dependent on cooperation by Sandians who park properly. Should you note illegal parking, please report it to the Security Desk Lieutenant on 4-3155.

Incidentally, concerning bicycles and stop signs, base regulations permit bicyclists to treat "STOP" signs as "YIELD" signs.

David Tarbox - 3400

*Q. While traveling on Sandia business I have noticed that more and more hotels and motels request a credit card at the time of check-in. They then use the credit card on a blank credit card statement and sometimes request your signature and sometimes do not on the statement.*

*In the past, hotels have attempted to charge me for meals I did not put on the bill and long distance phone calls I didn't make. I feel I have a better position to argue from if I haven't given them a blank check ahead of time.*

*Can Sandia's travel department do anything to discourage this increasingly common hotel policy?*

A. We appreciate your concern regarding the practice adopted by the majority of hotel/motel chains which now requires the guest to produce a major credit card to ensure payment. This demand is made in spite of the fact that the reservation has been guaranteed, the Sandia account number with the hotel chain has been given, and that hotel already knows what form of payment will be made.

Unfortunately, the hotel/motel industry began instituting this practice a few years ago in an attempt to reduce the losses which resulted from those who registered at a hotel, took advantage of the services, and then departed without paying the bill. One Sheraton Inn, for example, lost \$80,000 in one year because of bad debts. Since Sheraton has 304 hotels scattered around the world, one can, to some degree, sympathize with their problem.

A check with the major hotel chains shows that, with some variations, the credit card requirements is standard practice. In some instances, it is a Corporate policy that all individual hotels must adhere to, and in others, the local management can institute the practice if they believe it is warranted.

Since we realistically have to accept as an unpleasant fact of traveling nowadays that such a practice is common, I can only offer suggestions that might be of help. If the hotel insists on imprinting a credit card on a credit card charge form be sure to demand to see the form destroyed at the time you check out. If you do not wish to use either your personal credit card or the Sandia Air Travel card and you are asked to pay in advance, demand that you be issued a receipt. Several travelers have found that hotel clerks are loathe to issue receipts and will often drop the pay-in-advance requirement. In any event, always check your bill for any improper charges before paying your bill.

L.S. Conterno - 3700

*Q. It appears that more government agencies, including the military, are*

*adopting ANSI [American National Standards Institute] standards for use in place of MIL specs. In addition ANSI specs are used by most industries. At present our Information Centers have very few ANSI specs on hand and none on VSMF. I suggest we investigate the possibility of obtaining at least the Y-series of ANSI on VSMF.*

A. Your suggestion is very timely. The recent update of MIL-STD-100 calls out many ANSI specifications in place of military specifications. We have several ANSI Y-series specifications in our Design Information Centers and have ordered the rest of the pertinent ones. The ANSI specifications will be available in the Design Information Centers in Buildings 836 and 892.

The VSMF ANSI file contains only those specifications originated by ANSI. Since most Y-series were originated by other organizations such as ASTM, IEEE, and ASME, it would be necessary to buy several VSMF files at a cost much greater than by hard copy files.

If you wish to be notified when the balance of the ANSI specifications on order are available in the Design Information Centers, you may call John Coleman at 264-2533.

C.F. Bild - 9600

*Q. It would appear that the better part of several redwood trees has gone into the latest structure in the park behind 802. I would call your attention to three facts: 1] Redwoods are virtually irreplaceable because logging destroys the conditions necessary for regrowth. 2] Even if replanting is successful, several hundred years are required to produce a mature tree. 3] Several state and national parks in California intended to preserve the remaining redwoods are under pressure from commercial logging interests. In view of this, I will not use redwood timber personally, and I suggest Sandia do the same. Ordinary fir is at least as weather-proof when sealed, and is cheaper as well.*

A. I certainly agree that the redwood forests should be preserved. At Sandia we don't use much wood of any kind and very little redwood.

Redwood is still commercially available and its characteristics of color, weathering qualities and decay resistance make it particularly attractive for uses such as the structure in the Bldg. 804 park. We have had quite a few compliments on this addition.

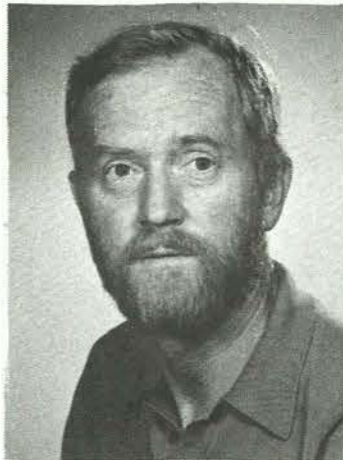
I am sympathetic to your viewpoint and we will use discretion in the selection of redwood in the future.

R.E. Hopper - 9700

# MILEPOSTS

## LAB NEWS

OCTOBER 1976

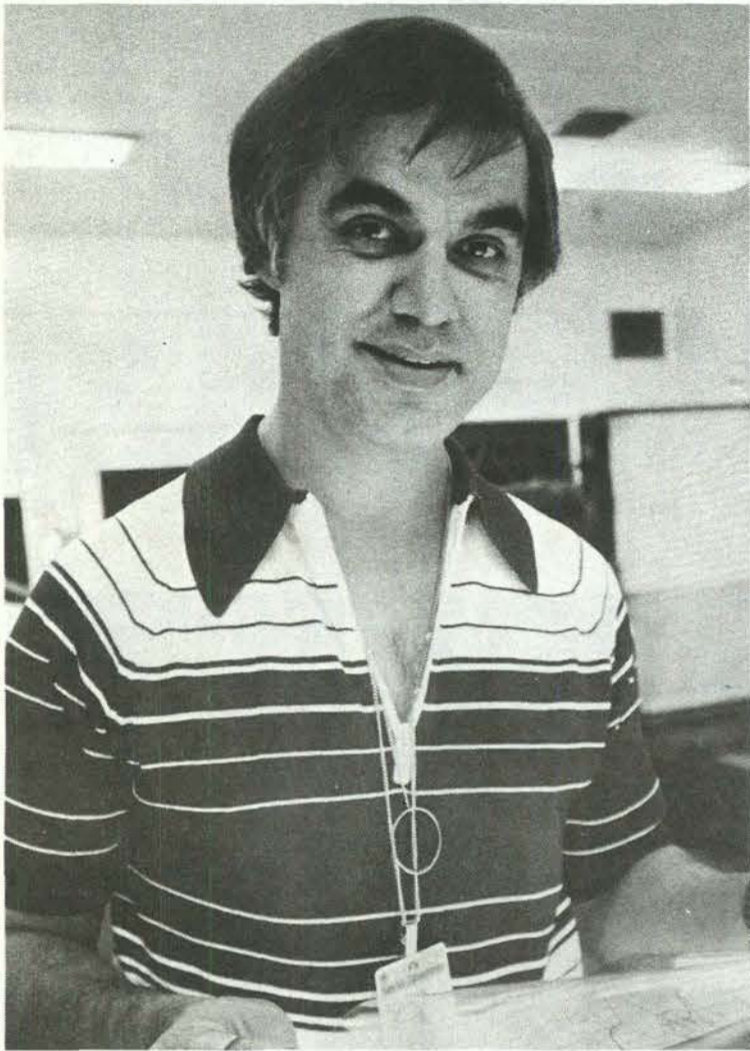


Willaim Vollendorf - 1133 10



Sue Tenbroeck - 3321

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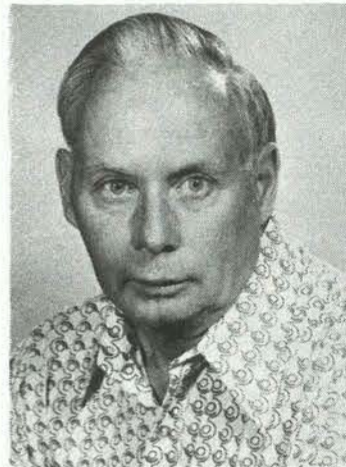


Cel Gabaldon - 3172

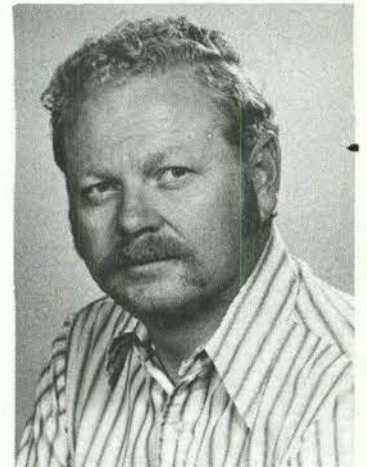
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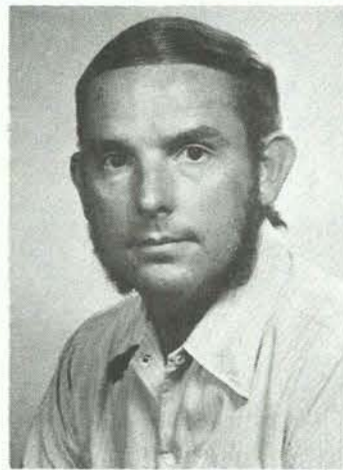
Jose Gutierrez - 3727 15



L.E. Williams - 3613 20



Leo Doyal - 2142 15



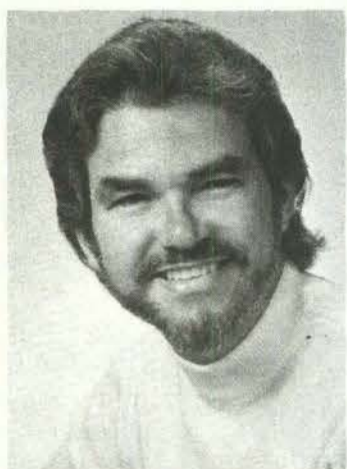
Clyde Holland - 9412 15



Jose Luna - 3622 15



James Mogford - 4010 15



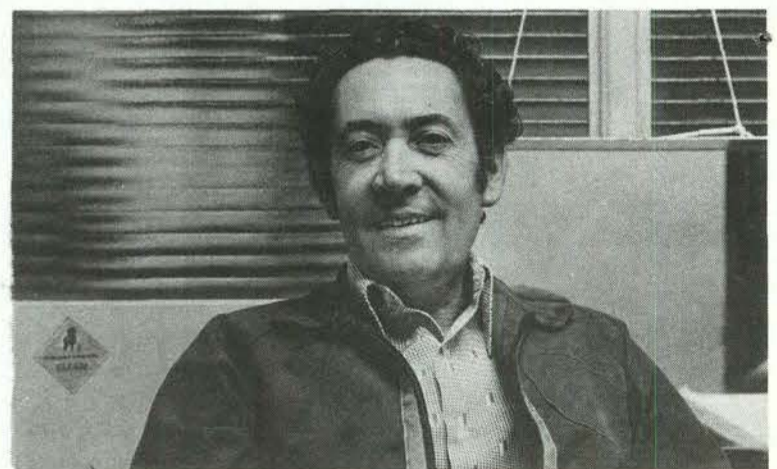
Don Veca - 8254 10



Chuck Sage - 8424 15

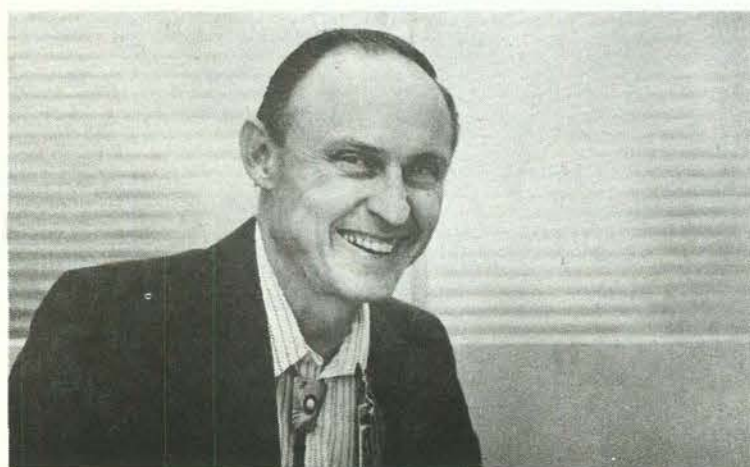


Verner Gibbs - 1213 15



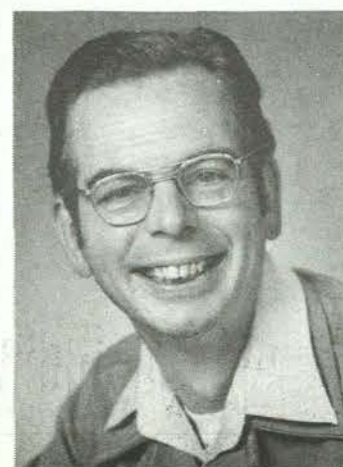
Tom Apodaca - 3727

25



Ralph Fox - 4311

25

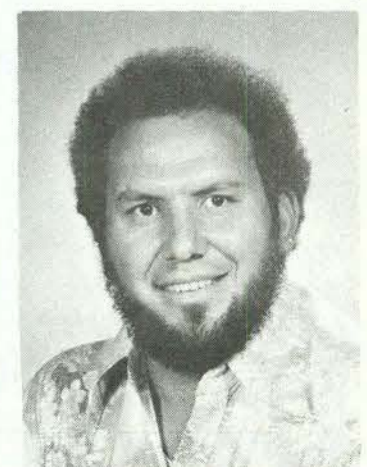


Bob Hargreaves - 8413 20



Phyl Munn - 8266

20



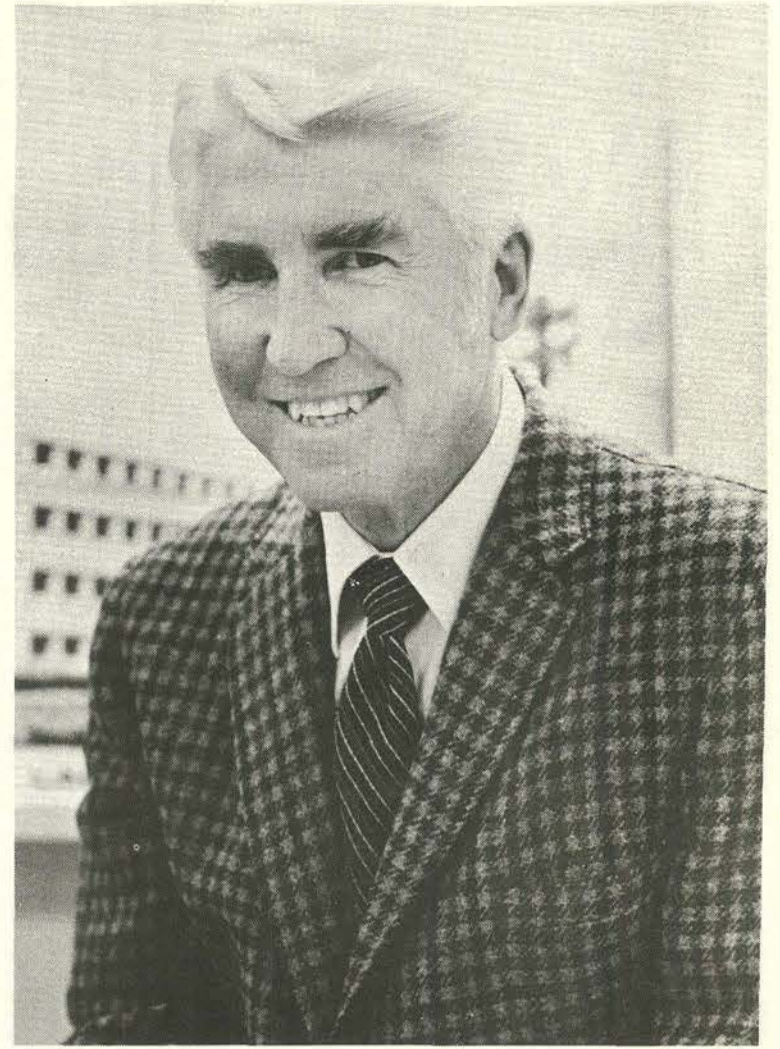
Denny Gallegos - 3735 10



Gladys Stumpf - 9511 25



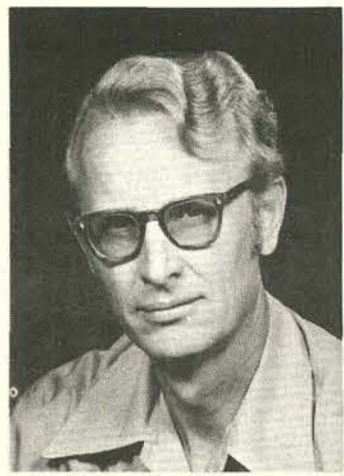
Daryl Orth - 3623 25



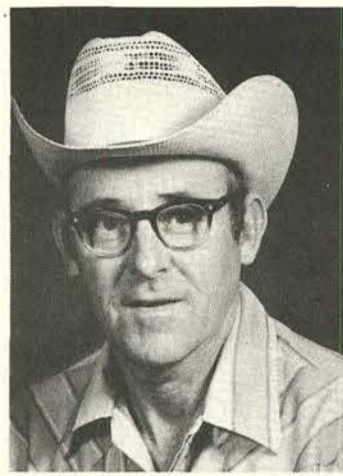
Sam Johnson - 9751 30



Morris Goebel - 1136 25



John Kinney - 2135 20



Oscar Berlier - 9713 25



Gregory Silva - 9742 15



Luther Horning - 2116 15



William Hahn - 3253 20



Dick Chapman - 3243 20



Hank Guttman - 1222 10



David Salas - 2633 20



Lee Adams - 3733 25



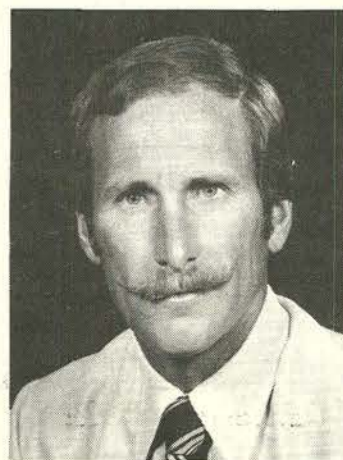
Barbara Ruminski - 3300 20



Anne Felsen - 3723 15



Eloy Sedillo 3413 25



Donald Johnson - 2152 20



Gary Reif - 2522 10



Norbert Martinez - 3616 10

## Film Will Be Shown

A screening of "Keep the Door Open" is set for next week. This Sandia-produced film deals with women pursuing successful careers in jobs traditionally filled by men. It is aimed at secondary school students and was developed to awaken interest in technical and scientific careers. Women in the film work in ERDA laboratories. It will be shown on Friday, Nov. 5, at 11:30 and 12:30, in Bldg. 815 (inside Tech Area). Running time is 25 minutes, and the film screenings are open to all interested employees.

## Congratulations

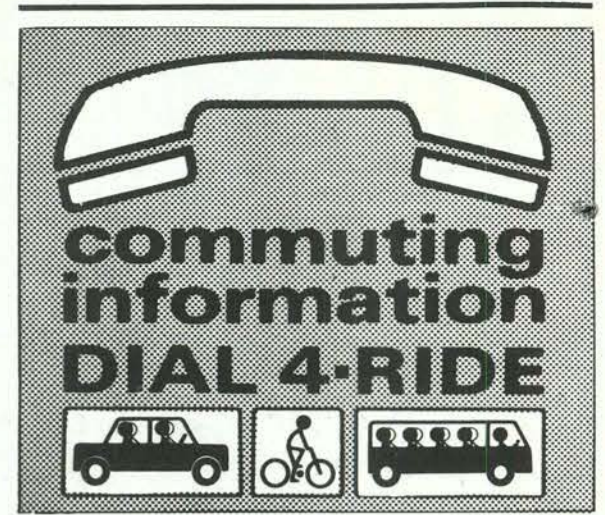
Mr. and Mrs. Dickie Glenn (2142), a son, Jeremiah Donald, Oct. 1.

Barry Seidner (2514) and Brenda Elmore, married on Oct. 9.

## Sympathy

To Bill Moore (9471) on the death of his mother in Storey, Wyoming, Oct. 6.

To John Patrick (9471) on the death of his mother-in-law in Indiana in September.



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.

**RULES**

1. Limit 20 words.
2. One ad per issue per category.
3. Must be submitted in writing.
4. Use home telephone numbers.
5. For Sandia Laboratories and ERDA employees only.
6. No commercial ads, please.
7. Include name and organization.
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

## MISCELLANEOUS

STEEL casement window, 38 1/4" w, 38 1/4" h, rh opening, 6 lite, no hardware, \$10. Denish, 256-1559.

RIFLE, Savage Model 110, caliber .270 Winchester, 4X Redfield scope, recoil pad, case; 6-bulb ceiling lamp, black, iron strap, approx. 30" h x 30" w. Collier, 265-6873.

COLOR TV, 25" Heathkit GR-25, modern walnut cabinet, \$125. Kepler, 298-5652.

LEWIS VIOLIN w/bow, new case, \$150. Jacobson, 898-1397.

MAG WHEELS: set of 4 U.S. Indy magwheels, size 14x6, 6 lugbolt hole pattern. Hinds, 869-2191.

LUG WRENCH, HD type for pickup or truck, 11/16", 13/16", 7/8", 15/16"; T-3000 Wilson racquet. Windham, 293-8107.

BLACK Great Dane puppies, AKC. Flora, 877-9135 after 5.

CLARINET, B-flat Bundy, music stand, \$75; alto saxophone, \$100; microscope kit, \$5. Dieter, 255-8056.

ECKERT'S 42" kitchen table & 4 swivel bucket chairs, dark woodgrain vinyl & formica. Shane, 296-4430.

2 CHESTS, 4 & 5 drawer, table, end table, bookcase. Rack, 296-2922.

SKI RACK, Barrecafter w/key locks, rain gutter mounts; used twice, \$25. Holmes, 292-0898.

'27 CHEVY PARTS, '63 Falcon wagon, '65 Olds F85, '65 Triumph Spitfire for parts, sportsman racecar. Lanoue, 877-7902.

AUTOMOBILE BATTERY, new, 60-mo. guarantee. Magee, 881-1544.

LOWA climbing boots, size 9M, medium weight, stiff sole, \$20. Kovacic, 268-6630.

METAL storage bldg., 12'x12', new, \$250. Dalby, 298-2403.

HEIRLOOM dining room table

& 6 chairs, Heritage Grand Tour. Hale, 821-8850.

FRIGIDAIRE auto. elec. built-in oven w/rotisserie & matching 4-burner cooktop range, black, \$85. Bear, 881-7128.

RABBITS, Dutch Miniature & mixed breed, \$1 ea. Schultz, 881-7588.

VACUUM CLEANER, Eureka upright, \$25. Kubiak, 265-6525.

ANTIQUÉ pressed glass goblets, compotes, serving pieces, Westward Ho pattern. Jefferson, 299-1125.

EXERCYCLE; portable typewriter; Hohner accordion (has everything but foot pedals); tent. Ward, 831-0393.

TIRES: 4 unused General Truck tires, 750-16, GLT, mud-snow, tube type, retail \$55, sell \$45. Northrup, 298-9933.

PRECISION TOOLS, Starrett dial test indicator; venier depth gage, bevel protractor; gage blocks; misc. gages, calipers, dividers, parallels. Easton, 256-7717.

TENT TRAILER, Sears Mk7, sleeps 8, w/Add-a-Room, '68 model, no reasonable offer refused. Harris, 299-6664.

DINING SET, 8 pieces; spring & mattress; solid mahogany end tables; 49" table lamp; lg. & small pictures; orange hassock, etc. Allen, 821-8533

8MM Keystone movie camera, \$25; kingsize bedspread; 5'x7' area rug; plaid drapes, 96"x60"; CO2 handgun; ski boots, 8 1/2. Chandler, 296-3323.

CANON camera, F1 SLR w/50mm F1.8 lens, \$350; Margay Go-Cart w/McCulloch engine, needs piston, \$200. Lucero, 836-5375.

MANUAL TURNTABLE, Thorens TD160C w/base, dust cover & Shure V15 type III stereo cartridge, \$200. Rogulich, 292-3815.

5-SPEED boys bike, \$15; panel of white sheer drapes, \$6; panel of green brocade drapes, \$10. Nelson, 881-0148.

BRAIDED RUG, 80 1/2"x119", brown-rust-green-orange, \$25; chest of drawers, \$40. Anastasio, 299-7012.

KAY elec. guitar & Silvertone 2-channel amplifier; many features; guitar, \$35; amp, \$85 or both for \$100. Gray, 265-1883.

MARLETTE mobile home, 12x65, 2-bdr., 1 1/4 bath, wsh/dr., china cabinet, carpeting, lg. covered patio, set up, \$7250. England, 898-2045 or 299-7849.

CABOVER CAMPER for pickup, 10 1/2', Winnebago, fully equipped. Hole, 255-1444.

2 BUCKET SEATS for car or truck, used 500 miles, \$30 ea. Magnani, 299-8693.

FLYING CLUB MEMBERSHIPS: Associate member flies C150; full member flies C150 & C182 w/AP, transponder, ELT, EGT, long large tanks, fresh major. Olman, 298-5024.

EKCO-Prudence-China, 45-piece set "Monique" pattern, service for eight, new, still in carton, \$65. Montoya, 883-9115.

HARD HAT w/chin strap, unused, suitable for bike riding, \$6. Moss, 298-2643.

GAS STOVE, O'Keefe & Merritt, \$150; carpet, 12'x12', \$75. Andrick, 268-1724.

HEATER for home, shop, office, 20,000 BTU/ft/min., \$40 or best offer. Rush, 265-5374.

FREE to good home: silver male French poodle, 2 yrs. old, small miniature, had shots, neutered, housebroken. Walters, 296-5803.

SECTIONAL SOFA; love seat; humidifier; GE refrigerator; garage vacuum cleaner; Sears sweeper; hair dryer. Parisi, 881-0181.

TYPEWRITER; snow tires for 3/4-ton Ford; 20 HP outboard motor; water skis; tow rope; baby items; Ruger 22 pistol. Falacy, 881-1802.

MARANTZ Model 2015 AM-FM stereo receiver w/matching speakers, less than 1 yr. old, original cost \$400, sell for \$300. Wood, 247-4566.

GAS CLOTHES DRYER, \$50; 4" foam mattress, \$5. Stewart, 265-0860.

## TRANSPORTATION

'70 GMC 3/4-ton, AT, PS, PB, camper shell, \$1100. Gonzales, 836-0224.

'68 2 DOOR, 327, 4 spd., new tires, carburetor and battery, \$800. Strascina, 4509 Skyline Ct. NE, 294-0305 after 5.

'74 VEGA Hatchback, GT pack, custom interior, AM-FM, positraction, 4 spd., 29,500 miles, priced below book at \$1975. Hart, 265-2221.

24" BICYCLE, girl's, Sears, single speed, \$20. Moss, 298-2643.

'74 HONDA 750, 7500 miles, sissy bar, luggage rack, \$1600 or best offer. Daut, 255-2529.

'75 BUICK Century, 350 V8, sky blue with white vinyl top, two door, AC, tilt wheel, radials, \$3980. Rios, 299-8188.

'73 CHEVY Station Wagon, 9 passenger, AC, PB, PS, 39,000 miles. Russell, 294-4417.

'64 DODGE Van, rebuilt engine, AM-FM stereo, Lewis, 296-7896.

'63 VW bus, new tires, camper accessories built in, \$650. Caruthers, 821-4035.

'74 PONTIAC LeMans Sport Coupe, PS, PB, AC, cruise control, 8 track, 2 snow tires. Mead, 255-3403.

'67 MERCURY SW with '70 engine, AC, loaded, \$575. Heuter, 242-1620.

'70 FIREBIRD Esprit, vinyl top, rallye wheels, steel belted radials, new battery, shocks, upholstery, extras. Atkins, 298-5762.

'72 CHEVELLE Super Sport, high performance engine, 4 spd., mag wheels, new tires. Prevender, 299-5253.

'64 FORD Econoline van, '69 V8 engine, bucket seats, \$650. Gallegos, 293-9545.

'71 SUZUKI TC120, trail plus street gear box, \$250. Brandvold, 296-4394.

'72 HONDA 500, saddle bags, fairing, make offer. Quant, 296-6826.

'66 PONTIAC 4 dr., PS, PB, hydromatic, AC, \$600. Puccini, 255-0568.

'70 TR GT6; '72 Chevy Vega GT. Long, 296-2590.

'76 CHEVY 1/2 ton pickup, 7200 miles, \$4100 or best offer. McConahy, 344-2003.

'69 CUTLASS Supreme, fully equipped, one owner, \$950. Eckhart, 881-8062.

'68 OLDS 98, full power, AC, 63,000 miles, new tires, shocks, carb. Williams, 255-4109 evenings.

'67 BUICK Special, 2 dr., AC, PS, AT, radio, radial tires, 58,000 miles. Pettit, 255-6786

**REAL ESTATE**

1 OR 2 ACRE LOT, South valley location, 7415 Coors SW (on Coors). Juskiewicz, 877-8705.

3-BDR. Roberson, hw floors, 1 1/4 bath, cul-de-sac, 1 1/2 garage, court yard, new drapes, carpets, near schools & shopping, low 30's. Marchi, 299-3653.

3-BDR. HOUSE, 1 1/4 bath, fp, den, pitched roof, fully carpeted, lg. landscaped lot, sprinklers, patios. Buza, 294-6514.

FORT WALTON BEACH, FLA., 3-bdr., 1 1/2 bath home, plus 2 bdr. apt., 2016 sq. ft., \$42,500, consider leasing. Smith, 298-7365.

## FOR RENT

APARTMENT, unfurnished, 3-bdr, 1 1/2 baths, garage, stove & refig., washer-dryer hookups, lg. patio, lease, \$235/mo. Erwin, 298-3082.

## WANTED

USE OF KILN for stoneware firing, will pay by load. Kiehl, 344-1457.

QUEEN ANNE-style coffee table & end tables. Owens, 268-9301.

MINI BIKE in good condition, Laskar, 299-1024.

VIDEO tape recorder to buy or rent, tape width not important. Seidner, 883-8421 after 5.

USED 5 to 15 HP outboard motor. Linn, 296-3176.

MEMORIES of Sandians at Pearl Harbor, Dec. 7, 1941, for LAB NEWS story. Call Hawkinson, 4-7841, by Nov. 10.

LIONEL 027 track, rolling stock, access'rs. Barnaby, 265-4353.

## LOST AND FOUND

LOST - Men's Rx safety glasses with smoke-colored rims; dark blue nylon jacket (medication in pocket); checkbook; large key chain with 20 keys; bus pass; tan and red wallet with "USA" on it; ladies' yellow-gold Bulova; girl's medium blue jacket with soft facing.

FOUND - Three pairs of men's glasses in black cases; silver ring "9" inscribed inside; Heishi earring; light green-lensed sunglasses (AO 6/4 1/2; with nose pieces; small Timex watch with leather strap. LOST AND FOUND, Bldg. 832, 4-1675.

FRIDAY	SATURDAY
<p>29—HAPPY HOUR BEEF BURGUNDY BUFFET</p> <p>Adults \$3.25 Under 12 1.92</p> <p>Tim &amp; Paul TOGETHER Singles Night</p>	<p>30-SINGALONG 9-1 LOBO BUS 6:15 FIFTH QUARTER Aggie Ambush</p>
<p>5—HAPPY HOUR ROAST BEEF BUFFET</p> <p>Adults \$3.25 Under 12 1.92</p> <p>Ben &amp; Joe JUG BAND</p>	<p>6—VARIETY NIGHT Desert Sounds Quartet SNOWBALL EXPRESS Daffy Duck, Porky Pig Food 6 Show 7 Free to Members</p>

I — am most pleased to announce a King Crab Feast for Nov. 13. Not only are these crabs succulent, sapid, and saporific, but they taste good too. Each ticketholder (by the 6th) gets a full 16-ounce (before cooking) serving. That's not all: drawn (and probably quartered) butter, potatoes with cheese, green beans with almonds, and lovely Salads Galore. *Bonny Rose* too — that's a dance band that plays crabby. Dinner served from 6 to 8 so you can make the game if you want to.

REALLY — a fantastic trip for the price. It's the Christmas trip to the original Christmas country — the Holy Land — and the all-inclusive price is only \$924 (dbl occ). That's for RT air fare, four-star hotels, three meals a day, guided bus tours, entrance fees — in short, the works. You have until Nov. 8 to make the decision to make Christmas '76 completely extraordinary.

DID — you remember to pick up a ticket for one of tomorrow night's Lobo buses? No? Then do it today. And remember: 1) the buses depart at 6:15, not 6:45, and 2) Fifth Quarter after the game featuring a



keep-the-glass special drink called an Aggie Ambush.

HAVE — a great time, singles, in the El Dorado Room after 4:30 this evening. Al Artiaga at the piano, Bart Ender at the Happy Hour counter, Pop Corn at the ready, singles and guests at their best TGIF behavior — well, pretty good. Non-C-Club member fees waived at the front door; 50¢ at the El Dorado Room entrance. The evening is hosted/hostessed by Beverly Williams, Joe Shelby, and Bruce Hawkinson. Absolutely no dates necessary.

IT — is nearly here, kids: the big Super Horrible Halloween Party begins at 6 on the 31st. Come on out for the Chamber of Horrors, games, movies, goodies. It's 50¢ per child. Parents are free — and encouraged to attend. (The Club will not be responsible for heart attacks, dropped dentures, or wet britches in the Horror Chamber.)

ALL — you lovers of Hawaii and/or Lobo basketball have until Nov. 4 to sign up for the 8-day, 7-night, 3-basketball game trip to the Islands sponsored by the Wolfpack but open to guests. Package price is under \$500 (but not very much under). Nancy Sanchez knows everything about the Dec. 7 - 14 trip. And she'll tell anything at the drop of a lei.

TOGETHER — is the name of the group that you'll dance to the tune of tonight at 8:30. Tim and Paul show up and sing out at 6:30. And beef burgundy, shrimp creole, many trimmings hit the buffet tables from 6 to 8.

BUT — when does the Watermelon Mountain Jug Band return? Next Friday, that's when, from 8:30 to 11:30 (i.e., grownup time). So scuff up your stomping shoes and prepare to make a night of it. Warm up earlier with a guitar-banjo duo called Ben and Joe (probably because they're named Ben and Joe). And scarf down a roast beef buffet earlier yet.

I — think you'll find that a good barbershop quartet (such as the Desert Sounds) harmonizes well with your Variety Night activities Nov. 6 — fits the tenor of the evening, so to speak. Then there's a Disney comedy, *Snowball Express*, a Daffy Duck comedy, and a Porky Pig epic.

HAVE — an uncontrollable urge to sing along with a rinky-tink piano tomorrow night? Repress not. Show up in the Lounge about 9 for some old-fashioned songs, old-fashioned piano, and old-fashioned good times.

FORGOTTEN — how to bid a bridge hand? Come out at 7 on Nov. 2, beginners and forgetters, for some gentle guidance in duplicate bridge. More advanced bridgers, note the 9th: it's the Annual Charity game with proceeds going to the Arthritis Foundation and bonus points going to winners. Last week's winners? Marshall Berman and Larry Lubar. Major prerequisite for being a winner? Be there.

WHERE — can you get the latest info on the tennis complex planned for the Club? Elsewhere in this issue — look for the application blank. What does it take to build tennis courts? Love and money — quite a bit of money because in tennis, love means nothing. To get in on the baseline, get your application in by Nov. 5 — it's a first come, first serve (literally) situation.

I — always think of the Sanadoes as exemplars of the latest in fashions. So it's a little like hauling dust to Area III to bring

HOT FLASH — Las Vegas Weekend: RT air, Flamingo-Capri hotel, other goodies like shows; leave after work Nov. 19, return late Sunday night; \$140\*3. More info — Ed Neidel in Lobby 6-7 Fridays or call the Office; members and guests.

fashions to a Sanado Club meeting on Nov. 9 at 1 p.m. Nevertheless, that's what Ann's Naturally is doing. Reserve with Vicky Clark by the 4th.

PUT — the 75¢ you save per Commonwealth discount ticket into the kitty each month and you'll likely be able to pay for your Club dues and popcorn too (if, of course, the kitty acquiesces during removal).

IT — is time to nail down plans for Christmas parties. Small, intimate office ones. Big, crowded, directorate ones. Whatever, the Club can accommodate. Call the Club and ask for Sandi Claus.

MORE INFO — 265-6791

AGGIE AMBUSH • SNOWBALL • ANN'S • SINGLES • HORRORS • HOLY LAND

Credit Union Bulletin Board

As part of its normal audit procedure, the Supervisory Committee recently mailed statements to members with account numbers from 6000 to 6999, 10,000 to 10,999 and 17,000 to 17,999. If your account number is in any one of these series and you have not received your statement, please notify Joe Ruggles (2625), committee chairman.

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD - JULY 1972 THRU JUNE 1973  
CURRENT REPORTING PERIOD ENDING SEP '76

