

CARRYING A SANDIA W80 WARHEAD, the Boeing Air Launched Cruise Missile is scheduled for first alert capability in the fall of 1981. Production W80

warheads will be made available to the Air Force next April and production Joint Test Assemblies in September. (See story on page Five).

# LAB NEWS

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

## Ion Implantation Boosts Photosensitivity of PLZT Ceramics

Scientists at Sandia have shown that ion implantation sharply increases photosensitivity and reduces exposure energy required to store photographic images in a transparent lead-lanthanum-zirconate-titanate (PLZT) ceramic device that had been earlier developed at the Labs.

The photoferroelectric image storage device has potential applications for non-volatile but erasable photographic storage and image contrast enhancement.

Implantation of hydrogen, helium, or argon ions, or co-implantation of argon and neon ions increases the photosensitivity of the ceramic and thus reduces by as much as 10,000 times the exposure energy required to store an image. A patent application has been filed on the new ion implantation concept.

The high resolution, high contrast images are formed in thin, flat plates of the ceramic sandwiched between two transparent indium-tin-oxide electrodes. Typical plates used in imaging experiments are 0.2 to 0.3 millimeters thick and four to six centimeters square, although PLZT plates as large as 150 square centimeters can be produced.

Maximum image contrast has been obtained with rhombohedral-phase PLZT consisting of seven atom percent lanthanum and 65/35 ratio of zirconium to titanium, with an average grain size of five microns. PLZT, invented at Sandia in 1970, has been used in flash blindness goggles developed for aircraft crews who may be exposed to the intense flash of light from a nuclear burst.

When voltage is applied to the electrodes of the PLZT device and near-ultra-violet (UV) light is used to project an image onto the ion-implanted surface of the plate, either a positive or negative of the image

can be stored in the ceramic. The stored image can be viewed directly or projected onto a screen using Schlieren optics.

Images stored in the prototype devices have a maximum resolution of 30 to 40 line pairs per millimeter and a maximum contrast of about 20 dB (100 to 1). Images are formed primarily by light scattering within the PLZT plate, although light diffraction resulting from deformation of the plate surface also contributes to image formation and resolution.

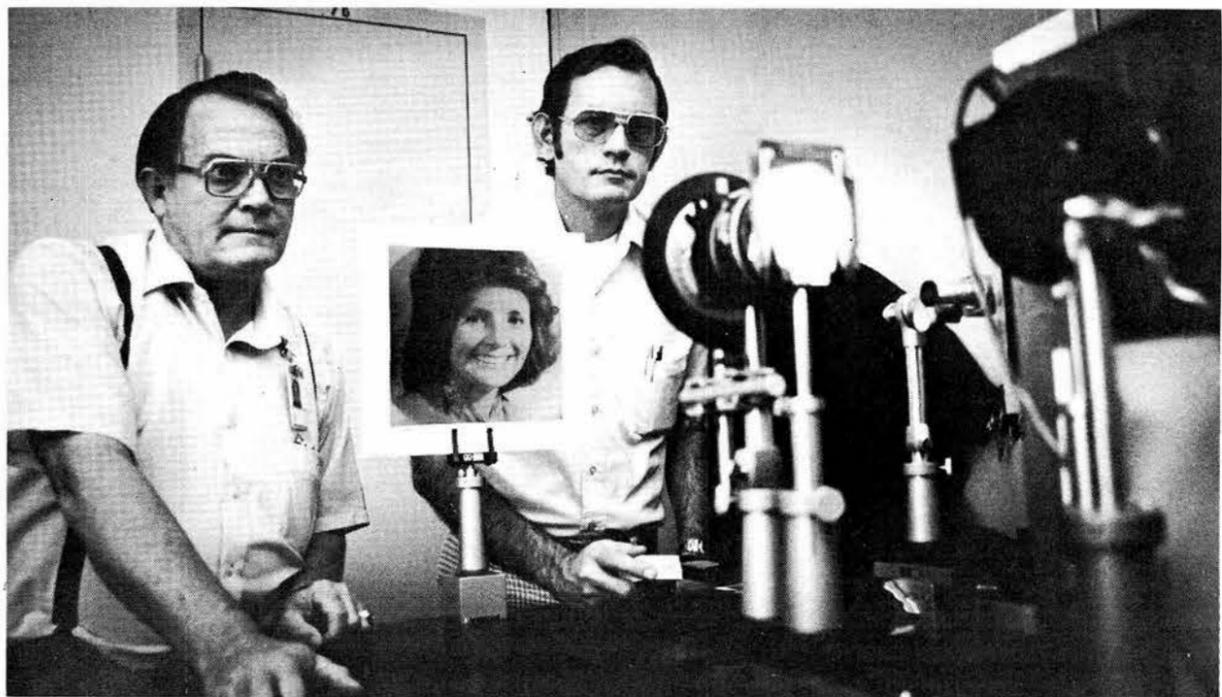
Images are stored using an intrinsic photoferroelectric effect, rather than a photochemical effect. Discovered at Sandia in 1976, the photoferroelectric effect causes variable switching of microscopic dipole areas—domains—in the ceramic.

When a voltage is applied between the

transparent electrodes while an image is exposed on the plate surface with near-UV light at the ceramic's bandgap energy of 3.35 electron volts, domains are reoriented to form the image as patterns of light-scattering centers in the ceramic.

The photons of the UV light are absorbed in the surface of the ceramic, exciting electrons to the conduction band of the material where they drift under the influence of the applied field toward the positive electrode. These charges are then trapped at new sites and build up space charge fields which are proportional to the UV light intensity and which either aid or oppose domain switching, depending on polarity of the applied voltage.

[Continued on Page Five]



RESEARCHERS Cecil Land (5133) and Paul Percy (5112) display a photographic image stored in a PLZT ceramic plate. The image has been magnified 10x in projection.

# Afterthoughts

**Crime & Punishment** -- The Maryland Poison Information Center reports a significant increase in incidents involving gasoline ingestion. It seems that the sucking instinct is aroused as gas prices climb and siphoning, if successful, sure beats paying.

There's an interesting moral aspect to this development. We generally agree that retribution for a crime, to be effective, should be swift, certain, and in proportion to the crime itself. Today our society more often than not achieves none of these in the aftermath of a crime, in fact, more often than not, fails even to apprehend the criminal. But consider now this character stretched out in the hospital emergency room who recently swallowed a mouthful of gasoline -- your gasoline. All manner of unpleasant things are about to happen to him (or her). A certain natural justice has prevailed: retribution was swift and in exquisite proportion to the crime itself. Will he siphon gas again? Probably not (at least for the remainder of the evening).

\* \* \*

**Miscellany** -- A fringe benefit of this job is that readers send me interesting items they've run across. Here are a few.

\* In Madison, Wisconsin, anti-nuke university students planned a rock concert powered by the sun but had to settle for three windmills. Alas, concert day came but no wind. But the windmills turned anyway because the generators were acting as motors and utility power made things go. There was one slight blemish upon the purity of the affair: 32% of Madison's power comes from nuclear plants so, in a sense, the students can now lay claim to having the world's first nuclear-powered windmill.

\* **Dept. of Pathos** -- From the **KAFB Bulletin**: "MISSING ITEM. If you borrowed an engraver from the Crime Prevention Office, please return it to Room 220, Bldg. 20203, Law Enforcement Desk."

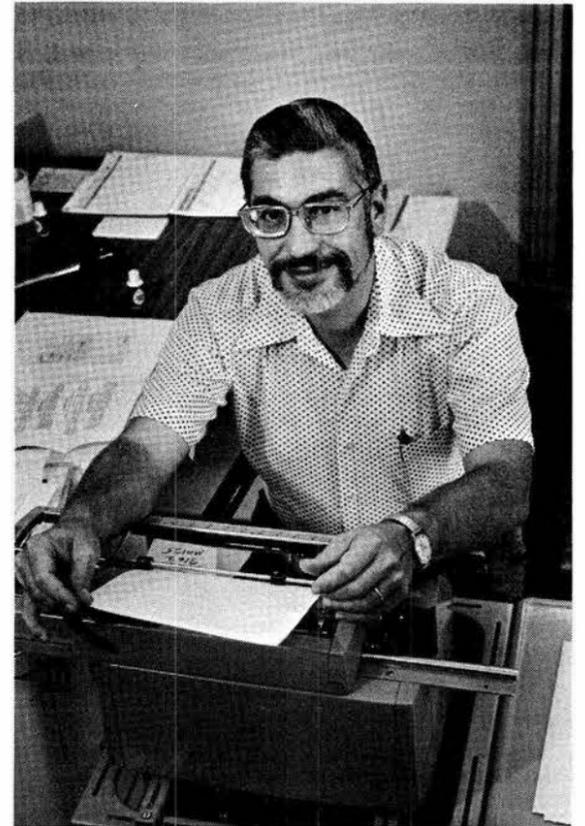
\* At GE they've found the answer to the lost badge problem. You get your first replacement of a lost badge for free. But after that it'll cost you a buck and you have to apply for the replacement on your time, not company time. The "donations" are then given to charity.

\* That fresh country air may not be all that great. A study in Vermont found that dairy farmers had more respiratory problems than a matched group of industrial workers. Pollens, molds, animal dander (sic) and farm chemicals are the culprits.

\* These days we must be mindful of slurs and, lest you perhaps harbor some confusion as to what is and what isn't when it comes to slurs, the San Francisco Civil Service Commission has recently cleared the air with a handy definition: "A slur is a word that by its very utterance inflicts injury, offers little opportunity for response, appeals not to rational faculties, or is an unessential or gratuitous part of any exposition of fact or opinion." Got it?

\* Finally, one more definition from a favorite author, Ambrose Bierce: "Politics -- A strife of interests masquerading as a contest of principles. The conduct of public affairs for private advantage." The Devil's Dictionary.

\*js



CARL MORA is a new staff writer for LAB NEWS, arriving here after two years with Technical Writing Division 3151. He succeeds Chuck Cockelreas, who is going into the brochure business in Public Information Division 3161. Carl has wide editorial experience with the Univ. of New Mexico Press and the Univ. of Alabama Press. He has his PhD, in history, from the Univ. of Alabama.

## Exhibits Show Work Of United Way

The 1980 Sandia Employee Contribution Plan (ECP) campaign features something new this year: "We're bringing the agencies to Sandia," says Jerry Hood (4360), ECP chairman. "Sandia has always been supportive of the ECP campaign -- in the last four years we've had over 80% participation. This year, 16 of the 35 organizations that benefit from United Way will set up booths in front of the cafeteria between 11:30 a.m. and 1:30 p.m. on Tuesday and Wednesday, Sept. 23 and 24. This exhibit gives us an opportunity to see the work of specific agencies."

Booth attendants will answer questions and, in some cases, demonstrate the activities of the agencies and their service to the community. For example, the Diabetes Association's display booth hopes to provide blood tests. Some booths will be attended by Sandians active in the agencies as volunteers or on its board of directors. "The booths will help Sandians become familiar with the services provided by the various agencies before the ECP campaign which will run from Oct. 3 to 10," says Jerry.

Arrangements for the exhibits were made by a committee, headed by Joe Calek (1412), that included Joe Dalporto (2145), Bobbi Williams (3510), Ozzie Tjeltweed (4344), Keith Tolk (4251), and Jerry Hochrein (5622).

### Congratulations

To Carl (5632) and Mrs. Peterson, a son, Brian Riley, Sept. 2.

To Terry (1472) and Mrs. Mason, a baby daughter born Aug. 26.

## Events Calendar

Sept. 19-21 -- "Deathtrap," Albuquerque Little Theater, Fri. & Sun., 8 p.m., Sat., 9 p.m.; matinees: Sat. 6 p.m., Sun., 2 p.m., 242-4750.

Sept. 25-28 -- Annual Aspencade Festival, Red River, NM.

Sept. 26-27 -- NM Symphony Orchestra, 8:15 p.m., Popejoy, 843-7657.

Sept. 27-Nov. 9 -- Hopi Tri-Centennial Traveling Exhibit, Indian Pueblo Cultural Center, 2401 12th NW, Mon.-Sat., 8-5, Sun., Noon-5.

Sept. 28 -- Broadway comedy "Da," 8:15 p.m., Popejoy.

Sept. 30 -- Travel-Adventure Film "America's Majestic National Parks," 7:30 p.m., Popejoy.

Oct. 3-4 -- National Sprint Car Short Track Championships, Speedway Park, 8:30 p.m.

Oct. 3-12 -- Ninth Annual International Hot Air Balloon Fiesta, Simms Field, Osuna & San Mateo NE.

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An Arizona State sociologist recently sent 500 students in his Courtship and Marriage course to the grocery store for an egg. "An egg is fragile like a newborn infant," he told them, "and you can't just stuff it in a pocket and forget it." The students were required to name their egg, assign it a gender, draw a face on it and care for it just like a baby. After a couple of weeks most of the students reported that they weren't ready yet for parenthood. Egg-sitters, they found, were almost non-existent and they were forced to take the egg with them wherever they went. Engaged couples fought over who had to take care of the egg. One student even admitted he had dropped his egg to a less-than-accidental death.

## Coal Combustion Researchers Report Progress

Coal accounts for nearly 90 percent of the energy reserves of the U.S., and its increased utilization as an industrial fuel is necessary to meet the nation's energy needs for years to come.

Researchers at Sandia Livermore are helping to advance coal combustion technology by providing information which will help equipment designers reduce pollutant formation and boiler fouling while maintaining high combustion efficiency.

At the recent 18th International Combustion Symposium, held at the University of Waterloo in Ontario, Canada, Sandians Bill McLean, Don Hardesty and John Pohl (all 8353) presented a paper, *Direct Observations of Devolatilizing Pulverized Coal Particles in a Combustion Environment*, that described differences between the behavior of bituminous coal and lignite during ignition and devolatilization.

"In recent years researchers have been trying to get a better understanding of what takes place during the first milliseconds of combustion and gasification of pulverized coals at high temperatures and high heating rates," Bill reports. "Earlier studies sought to describe the overall combustion process."

Two of the main problems arising from the industrial use of coal today are the emission of pollutants such as particulates, oxides of nitrogen and sulphur, carbon monoxide, partially oxidized hydrocarbons and soot and, secondly, fouling, slagging and corrosion in boilers and furnaces because of mineral matter residue from the coal.

To advance the combustion process, making it more environmentally acceptable and efficient, researchers seek ways to simultaneously predict ignition and burning rates, the formation rates of polluting,

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fouling, slagging and corrosive species, and the heat transfer properties of the solid material present during the burning.

McLean and Hardesty report that while current experiments have "improved our general understanding of these processes, details on the rates and mechanisms of ignition and devolatilization remain unknown."

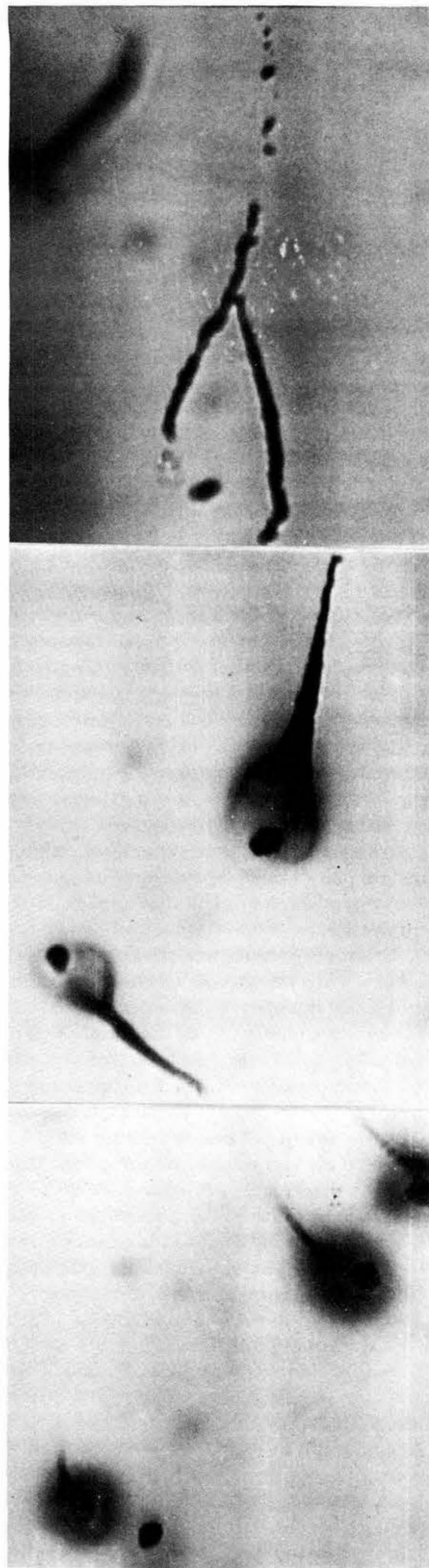
In a related project, John Pohl is working with industrial and research people worldwide toward a better understanding and control of the transformation of coal mineral matter into fly-ash. Employing chemical and physical analyses, John hopes to relate boiler performance and fly-ash properties to characteristics of the original mineral matter and to the method of firing.

The Sandia researchers have also placed instrumentation inside working furnaces to obtain detailed data on coal combustion. They will soon install a large optical probe within an industrial pulverized-coal boiler for direct observation of single and multi-burner flames. Boiler manufacturers and utility plant operators have emphasized the need for such real-time information, especially as existing practices are modified to accommodate new varieties of coal and new emissions constraints.

The instrumentation used for this purpose is an outgrowth of instrumentation technology developed in the nuclear weapons program; similarly, our understanding of chemical reaction rates during combustion is related to earlier work on nuclear weapon effects.



Bill McLean (8353) notes the evolution of the coal combustion process in a combustion-driven flow reactor.



Three shadowgraphs in this sequence show bituminous coal particles during early stages of combustion. At bottom, near ignition; middle, several milliseconds after ignition; at top, 10 milliseconds after ignition.

# Liz Likes Both Sides of Lights



TWO SIDES OF LIZ SCOTT (3153): At right, as a writer/director of films for Sandia, she directs the camerawork of cinematographer Wayne Gravning

(3153). At left, Liz portrays Simone D'Ervard in a production of *Marat Sade*.

When it comes to theater and film, Liz Scott has the rare ability of being able to work knowledgeably on either side of the bright lights. For Sandia, she makes films as a writer/director in Motion Picture Production Division 3153. Her avocation is acting—at the Adobe and Vortex Theaters.

We recently saw Liz at the Adobe in Corrales in a Neil Simon adaptation of several stories by Chekov called *The Good Doctor*. She played the part of Nina, the actress who walks all the way from Odessa to Moscow just to audition for a part in Chekov's play, *The Sisters*. Emotionally, the part ranges from broad humor reminiscent of Carol Burnett as the cleaning lady, to some touching, almost tearful moments at the end when Liz assumes in sequence the role of each of the three sisters.

To move an audience smoothly through such a wide emotional range takes talent and skill born of experience. Liz's first appearance before the cameras was a toddler-on at age three in one of the first TV shows produced for public television by KNME-TV. "I'd like to think I got the part on sheer talent," Liz says reflectively, "but it's hard to know for sure since my Mom was the director."

Liz is a native Albuquerquean. Her interest in acting began to bloom at Grant Jr. High and, by the time she graduated from Sandia High, she had appeared in a dozen or so plays presented by ACT (the Albuquerque Children's Theater) and by Crawford MacCallum's (4231) Old Town Theater. Among other parts, she played Mary Warren in Arthur Miller's *The Crucible* and an 80-year-old woman in Ionesco's *Le Chaise*, both challenging roles for a teenager.

At Northwestern University, Liz majored in theater—and like many young artists, she also did some soul searching: "It didn't take long to learn that professional theater is highly competitive," she explains, "nor that the average income for actors is low. When you couple that with the knowledge that there aren't many

modern plays written with strong roles for women, it really gives you pause. In my senior year, I decided, for my own peace of mind, that an acting career wasn't worth it."

*That must have left you at loose ends.*  
"It did, but I took a couple of film courses and fell in love with the medium." Liz laughed. "I didn't realize then that finding work in films was even more difficult than finding work in the theater."

After Northwestern, Liz completed MFA work at Southern Methodist in broadcast film, then worked five years as a technical director for Texas Instruments. She came to Sandia in late 1978.

"My film assignments at Sandia have included computer-aided design, training for apprentices and DOE couriers, recruiting and documentaries on Sandia's science and engineering projects."

*How about acting?*

"I didn't act for a long time after I left Northwestern—but I never stopped missing it. Now, like a lot of Sandians, I'm active in community theater. It makes a nice contrast to the technical material I deal with as a film maker."

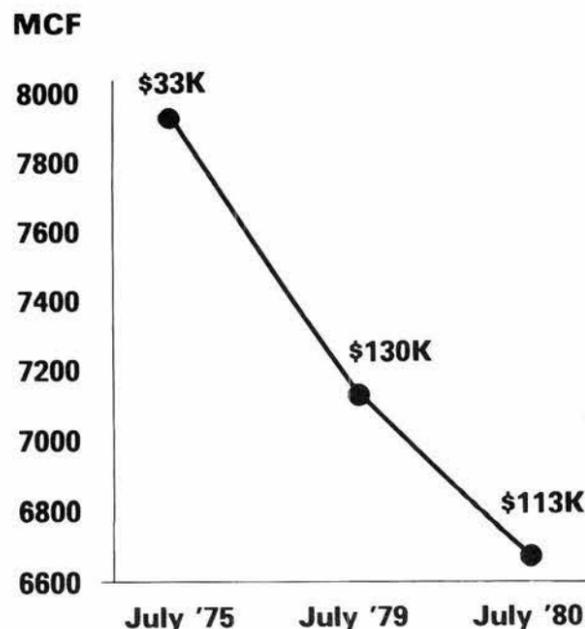
*How do you find time for all those rehearsals, all those performances?*

"Community theater isn't competitive," Liz explains, "so it's fun being part of it. A lot of my friends are theater people and rehearsing and performing are my social life. That's the way I spend my leisure time." •cec

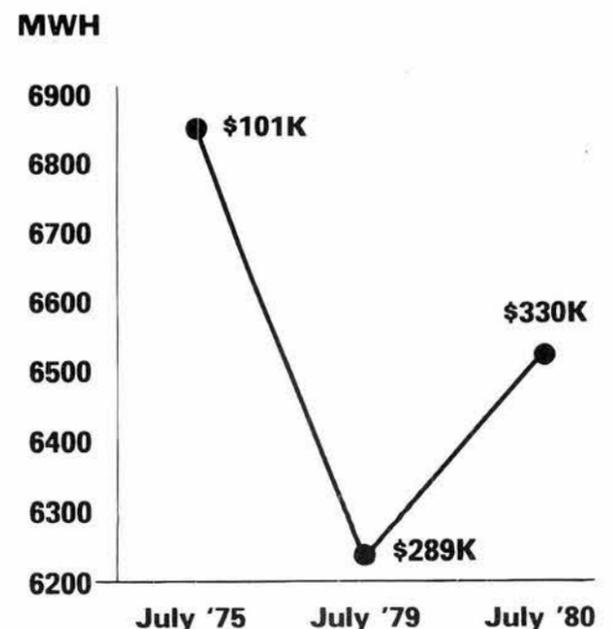
[Editor's Note: Liz Scott opens tonight at the Vortex Theater, playing Ellen in Murray Schiesgal's *LUV*. Showtime is 8 p.m. and the play runs for four weekends.]

## Energy Use At SNLA

NATURAL GAS CONSUMPTION (STEAM PLANT)



ELECTRICITY CONSUMPTION



FROM A CONSUMPTION VIEWPOINT, the record looks good. Between July 1975 and July 1980, consumption of natural gas at Sandia's steam plant dropped from nearly 8000 MCF to roughly 6650 MCF. During the same period, the consumption of electricity dropped from 6850 MWH to about 6550 MWH. A sign of the times: the price Sandia paid went up and up, over three times the cost in 1980 for significantly less natural gas and electricity than was used in 1975.

## Cruise Missile Goes Into Production With W80 Warhead

First alert capability of Air Launched Cruise Missiles (ALCM) equipped with W80 nuclear warheads is scheduled for the fall of 1981, according to Paul Longmire, who heads W80 Development Division 4341, and Bob Luikens (4343), Flight Test Project leader.

Built by Boeing, the ALCM is a subsonic, winged vehicle powered by a turbofan and designed to be carried internally and externally on a B-52 aircraft. The planned operational concept is to use the ALCM to complement the B-52 bomber in long-range strategic nuclear missions. Once launched, the ALCM's size and flight pattern help it penetrate enemy defenses. Guidance is inertial and a terrain correlation position-update system is used to achieve high terminal accuracy.

In addition to the ALCM, the cruise missile program includes versions for sea launch (SLCM) and ground launch (GLCM). The W80 nuclear warhead, designed and developed by Sandia Albuquerque and Los Alamos National Scientific Laboratory, is to be used in ALCM and General Dynamics' SLCM. The GLCM, also built by General Dynamics, will carry a W84 warhead, a joint product of Sandia Livermore and Lawrence Livermore National Laboratory (LAB NEWS, July 25, 1980).

"One of the significant factors in the air- and sea-launched programs," Paul told us, "is the use of a common warhead. That factor saved millions of dollars during development, and the savings will continue to accrue throughout the life of both systems." The W80 was chosen for these systems, Paul says, because of its modern nuclear safety features, insensitive high explosive, and modern command and control systems.

An extensive development test program involving joint flight and ground tests with LANSL, the Navy, and the Air Force is being directed by John Duncan's W80 Testing Division 4343. Support for this program is being provided by Robert Taylor in TM Development Division 1587

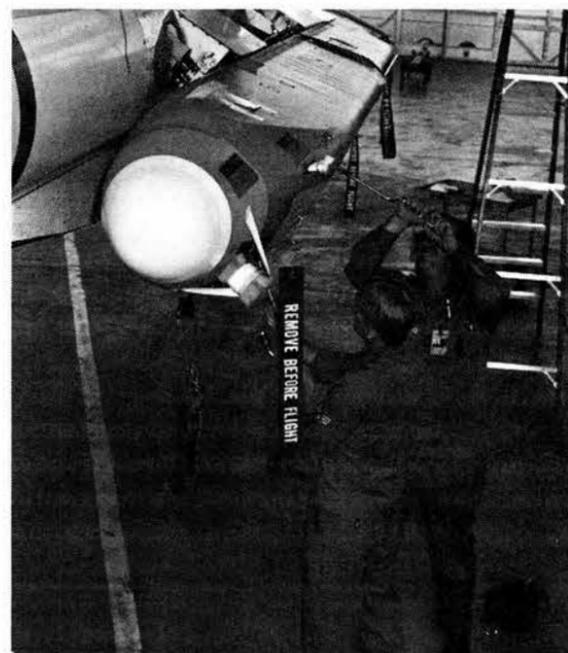


SIX AIR LAUNCHED CRUISE MISSILES, each armed with a Sandia W80 warhead, can be mounted under each wing of the B-52 aircraft. The ALCMs can also be carried internally in the B-52.

and Gordo Miller's Mobile Remote Ranges Division 1137.

Bob Luikens summarized the W80/ALCM joint testing to date that was staged from Edwards Air Force Base in California and terminated at Dugway Proving Ground, Utah. Bob stated that Sandia put W80 instrumented flight test units on both General Dynamics' and Boeing's versions of ALCM during the flyoff competition won by Boeing. "On June 12," Bob says, "the first post-competition joint flight test was successful. We have now had four successful joint flights." Five more flight tests using development and pilot production hardware are planned.

"The W80 design is firm," Paul Longmire added. "Most of the components have already been released for production." Production W80 warheads will be made available for the Air Force in April of next year, and production Joint Test Assemblies will be delivered to the Air Force in September.



AIR FORCE TECHNICIANS make final adjustments as they mount a Boeing-built Air Launch Cruise Missile under the wing of a B-52 aircraft. Production model ALCMs will carry Sandia-designed W80 nuclear warheads.

**Continued from Page One**

## Ion Implantation Boosts Photosensitivity of PLZT Ceramics

The electric field in illuminated areas of the ceramic plate is, therefore, different from that in dark areas, causing the domains to be selectively switched and forming the light-scattering centers which constitute the image.

Ions are implanted only in the surface of the ceramic plates (.5 to 1 micron deep) using a positive ion accelerator. Implantation energies range from 200 keV for hydrogen ions to 500 keV for argon ions.

The ions induce disorder into the near-surface structure, decreasing the dark conductivity and increasing the efficiency of the photoexcitation process and the density of trapping sites. The disorder increases with increasing mass of the ion;

hence, greater damage—more uniform in depth from the surface—is produced by argon than by helium or hydrogen ions.

It appears that the photoexcitation efficiency can be controlled by the damage produced. As damage is increased, space charge fields are produced at lower exposure energies (product of light intensity and exposure time).

The continuing research on multiple ion implants indicates that they produce damage uniform to greater depths from the surface than do single ion implants, resulting in the highest photosensitivity in PLZT thus far observed.

Images formed with the new device are

non-volatile, retaining maximum contrast and resolution after the applied voltage is removed. Either total or partial erasure of the image can be achieved by uniformly illuminating the area to be erased with UV light and simultaneously applying a voltage to switch the ceramic polarization to its initial polarization state.

Research on the device is being conducted by Cecil Land of Solid State Device Division 5133 and Paul Percy of Ion Implantation Physics Division 5112. A patent application on photosensitivity enhancement by positive ion implantation in PLZT ceramics has been filed in their names.

## 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.]



LAST SUMMER while on vacation, we dropped by the museum in Oak Harbor, Washington, and came across this photo. Dating back to 1912, it shows my Dad's blacksmith shop (at left), and that's my father standing just outside the

shop. He built a house just across the street, and we were pleased to find it still standing. Oak Harbor is on Whidby Island in Puget Sound—I spent my first three years there. (Pete Komen—2343)

## Fun & Games

**Biking**—Retiree Don Bliss has sent us a clipping from the *New York Times* relating to our earlier item about biking in New York during that city's transit strike. Seems that Mayor Koch is so impressed with the potential of bikes to reduce the Big Apple's traffic woes that he's ordered the construction of six-inch high barriers to create lanes for the exclusive use of bicycles on a route linking Central Park and Washington Square. The lanes will be six feet wide. If you're not familiar with the place, the bike lanes traverse the busiest section of Manhattan. Mayor Koch knows his subjects well; commenting on the reception of the bike lanes and other traffic measures, he stated: "None of this will be easy. There will be lots of yelling and screaming from some New Yorkers who regard the new restrictions as onerous. But it's time to ask bikers and pedestrians and motorists to respect each other."

\* \* \*

**Horseshoes**—A membership meeting of the Horseshoe Club is scheduled for Oct. 2 at 5 p.m. at the Coronado Club. Awards will be presented, and election of officers will take place. Refreshments will be served.

\* \* \*

**Golf**—SGA will play its last two-day tournament of the season on Sept. 27 and 28. Play will be on UNM's south course and the city's Ladera course. Over 80 players are expected to compete for the SGA Cup. Information: Don Markwell on 4-1965.

\* \* \*

**Swimming**—The Olympic Pool is open again. Hours are as follows: Monday to Friday, 11 to 1, lap swimming; Tuesday to Friday, 4 to 7, open swimming; Saturday, 11 to 5, open swimming; Sunday, 1 to 5, open swimming.

**Running**—We've got a copy of the master schedule for runs in the Albuquerque area and environs through November. A few that are close at hand: Sept. 21, Sertoma Club run, 10K; Sept. 27, Tumbleweed Cross Country; Sept. 28, Tanoan Trail Run, 5 mile; Oct. 4, Clovis Marathon; Oct. 5, Socorro 9-Miler; Oct. 11, UNM Homecoming, 7K; Oct. 12, John Baker Memorial X-C; Oct. 19, Albuquerque Marathon. LAB NEWS has entry forms for the Clovis and Socorro events, telephone contacts on the others.

\* \* \*

**Arts & Crafts**—The Base A&C Center is offering these courses this month: General Pottery, Silk Screening, Stained Glass, and Ceramic Specialties. The Center's number is 4-0222.

\* \* \*

**Bowling**—First tournament of the season for the Sandia Bowling Association is a Scotch Doubles scheduled at Fiesta Lanes October 4-5. Other tournaments are planned for November, December, January, February and March. More info from Verne Christy (3442), 4-2443, or Steve Yazzie (ALO/MIS), 6-5302.

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**Tennis**—The Sandia Tennis Association has a men's and women's singles tournament set up Sept. 27-28 at the Albuquerque Tennis Complex, 1903 Stadium Blvd. SE. It's open to all Sandia/DOE employees and their dependents and the entry fee is \$2 for members and \$3 for non-members. The tournament will be single elimination with A and B brackets. Entry deadline is Wednesday, Sept. 24. Call Al Ortega at 4-5223 or Debbie Johnson at 4-5434 for info.

**Biking**—The annual Chama to Cumbres Pass Choo-Choo/Bike Race is set this year for Saturday, Oct. 4. Bikers take off from Chama when the train leaves (around 10 a.m.) and race it the 13 miles up to Cumbres Pass, 10,000 feet in elevation. The railbed is more-or-less parallel to the road, so participants on both sides can eyeball each other during the climb. After reaching the Pass, bikers may elect to tour downhill to Antonito, Colo., enjoying the spectacular scenery which, with luck, includes aspens in fall colors. More information: LAB NEWS, 4-1053.

## Video Films on Health To Be Shown

Sandia Medical will show video films on health related subjects during the noon hour every Tuesday and Thursday in October. The showings are on a trial basis and, if well attended, will be continued.

The 30-minute films will be shown in Bldg. 892, room 207, and will start at noon. Brown baggers are welcomed. Here is the schedule:

Oct. 7 & 9	Live Or Die
Oct. 14 & 16	On Your Mark, Get Set, Exercise
Oct. 21 & 23	Dying, Death & Grief
Oct. 28 & 30	Healthy People

### Speaker

R. L. Iman (1223), "Multiple Comparisons Procedures Based on the Rank Transformation," 140th Annual Meeting of the American Statistical Association, Aug. 13, Houston.



We wouldn't dare speculate why, but the American Psychiatric Assoc. reports that Washington, D.C., has more psychiatrists than any other major city in America. There's one psychiatrist for every 1780 people in Washington. In San Francisco, the ratio is one to 2296, in New York one to 3240 and in Los Angeles one to 6118.

**CLASSIFIED ADVERTISING**

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (M0125).

**RULES**

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

**MISCELLANEOUS**

**WOODBURNING STOVE**, Upland 207, solid cast iron, operates in airtight or fireplace mode, firebrick liner, 50,000 BTU/hr. capacity, list \$850, best offer over \$500. Kraynik, 294-1043.

**PUPPIES**, 6 wks. old, half Doberman, 6 males, 1 female, price negotiable. Guillen, 881-2612 after 4.

**EARLY AMERICAN couch** by Broyhill, \$250. Reif, 299-2665.

**CEDAR CHEST w/tray**, 451 x 19d x 18h, \$100. Dalphin, 265-4029.

**TRUMPET**, Eterna by Gretzen-Severinsen model, professional quality, many extras. Damrau, 883-8592.

**SOFA**, gold velvet, \$125; dbl. bed, \$40; Black & Decker lawn mower, \$35; Schwinn bicycle, \$35. Miller, 255-6838.

**SOFA**, wing style, \$125; tables, cocktail & end, solid maple, \$50 & \$40. Holmes, 292-0898.

**TWIN MATTRESS**, \$10. Schubeck, 294-5666.

**FREE, DOBERMAN/Shep. cross**, 2 1/2 yrs. old, license & shots; tires: 3 General JR78-15s on GM 5-hole rims, 1 BF Goodrich 195-70 HR-14 w/c rim, \$5 ea. Boettger, 293-5168.

**HOOVER floor scrubber & polisher**, \$15. Thalhammer, 298-8521.

**SUPER SUNFISH RACING RIG**, car topable, \$95; Dilley trailer, \$295. Baxter, 344-7601.

**MUSICAL INSTRUMENTS**: violin, full size, Roth, 2 bows & hard case, \$175; trumpet, Bundy w/case, \$150. Madden, 296-1082.

**SOFA**, 84" Early American, \$25; maple coffee table. Grey, 299-7349.

**GYM DANDY swing set**, 6-leg frame w/2 swings, glider, trapeze & lawn swing. Linnerooth, 884-8615.

**ENCYCLOPEDIA BRITANNICA**, 30 vols., '79 Heirloom edition, in orig. boxes, 10-year research service, \$700. Hall, 281-5376.

**TEDDY BEAR HAMSTERS**, 4 wks. old, \$2. Esch, 292-0754.

**CORONET**, Bundy student w/case, \$80. Dyckes, 299-7280.

**DRAPERY w/hardware**, for 70w x 78h glass door, \$25; 62w x 47h window, \$15; 62w x 34h window, \$15. Hendrick, 296-2163.

**7MM Magnum Winclfeister model 70**, 3-9x Bushnell banner scope, sling, recoil pad, fired 1 1/2 boxes shells, \$235. Stuart, 299-9190.

**CHILDREN'S ice skates**, Champion 249 radial tire chains, never used. Taylor, 869-2934.

**SKI OUTFIT**, complete women's size 10, grey/white/black, \$70; white bib, size 10, \$10. Wilson, 296-5965.

**TI 30 calculator**, \$10; 55-gal. drums, \$5. Patrick, 255-5944.

**REDFIELD 6X Widefield scope**, new, \$95; Remington 12 ga. plastic wads for 1 oz. loads, W 29922 (R 12L), \$6/500. Svensson, 898-3078.

**DELTA GRAPH stereo equalizer**, 10 bands, \$150; Toronado foosball table, professional model, \$175. Turner, 292-6819.

**GE refrigerator/freezer**, \$30. Rogers, 293-8201.

**LOGAN 6" swing lathe**, milling attachment, two chucks, quick change tool post, \$1500; horse-drawn farm wagon, \$750. Hickerson, 884-8462.

**BICYCLE wheels**, 1 set, quick release hubs, alloy rims, gumwall tires, new, \$70; assorted fittings. Drumheller, 821-9527.

**SLIDE-IN camper shell** for long wide pickup, includes porta-potty, \$650. Cordova, 345-0619.

**SEWING MACHINE w/case**, Sears Kenmore, zig zag, new, \$100. Pryor, 344-2931.

**VIOLA**, \$175; practically new Olivetti Lexikon 82 typewriter w/elite type & extra script element, \$250. Minor, 865-5117.

**HEATHKIT stereo amplifier**, \$25; AM/FM stereo tuner, \$25; AM/FM stereo tuner, \$50; Kodak Signet 35mm camera, make offer. Fuller, 294-3089.

**LOVESEAT/matching chair**, \$150 or best offer. Helling, 345-0678 or 884-9324.

**SOFA**, green, Herculan, 6', \$200; lamp, hanging, Tiffany, leaded glass, \$35. Pierce, 821-7536.

**4 RV TIRES**, 8:00/16.5, \$15 ea.; 2 port. water coolers, \$12.50 ea.; misc. items. Epstein, 265-4287.

**10 1/2" OVERHEAD camper**, self-contained, heater, running water, \$650. Padilla, 877-2116.

**PRESTO hot air popcorn popper**, \$10; Oster elec. egg cooker, \$10; Sears touchcord curtains, green, \$8. Hobart, 255-7749.

**CHILTON'S 1973 Repair Guide for Volvo 2**, \$6; gun rack, wooden, 2-level, wall-mounted, \$10. Mead, 294-2298.

**BATHROOM standing lavatory**, peach-colored, chrome fixtures, \$28; new bathroom medicine cabinet, \$12. Ahr, 883-0459.

**MARLIN .357 mag. rifle**, \$155; Ruger Blackhawk pistol, \$160; 6 x 18 scope, \$95; Eagle Claw fly rod, \$20. Zamora, 255-1305.

**THOMAS organ model "1776"**, professional lessons included. Simons, 292-8016.

**FREEZER**, commercial, 90x30" outside dimensions, 2 lg and 2 sm compartments, sliding glass tops, 110 V. Leyba, 1-864-4037, call collect after 6:30.

**CLARINET**, B flat, w/case, good condition, \$150. Stomp, 298-3824.

**SUPER 8 movie equipment**, Rolex K-160 macrozoom camera, \$200; B&H auto-load projector, \$100. Both new. Burgess, 345-2369.

**SIMMONS hospital bed**, manual, "Vari-Height" model, \$250. Gunter, 898-4951.

**TRUMPET**, King Silver Flare with mutes and music, \$400. Rechard, 266-7058 after 6.

**WALL kitchen cabinet**, Sears, un-assembled, all plywd, 60x30x13", \$45; electric hedge clippers, \$15. Anderson, 268-4188.

**FIREWOOD**, cottonwood, delivered to driveway, \$50 cord, limited amount. Owens, 881-0815.

**NAMBE WARE candlestick holders**, never used, \$25; lapidary equipment, 8" saw, grinding, sanding, and polishing wheel & more, \$200. Kenna, 298-6059.

**BEDROOM set**, complete, triple dresser, mirror, nightstand, dbl. box spring and mattress, frame and headboard, \$400. Bissegger, 822-1382.

**'66 VW parts**, front & rear bumpers, doors, fenders, headlights, hood, front & rear; '67-72 Ford p/u rear tinted window w/trim, \$20; antique Victrola w/records. Garcia, 256-7606.

**TOYOTA pickup sliding rear window**, \$50; Sears camping Karri Potti, \$40, both new; Sears room humidifier, \$40; 2 bicycles, \$15 ea. Tucker, 299-7711.

**MEDICINE cabinet**, 16x26", mirror door, 3 adjustable glass shelves, piano-type hinge, white enameled steel body, recess mount, \$15. Joseph, 299-6989.

**TELESCOPE**, Cave 10" F-6 Astrola, 60mm guide scope, Barlow lens, clock drive, setting circles. Uszuko, 298-4540 after 3.

**30X15" Sears above-ground pool**, erected 7/7/80, less than 1/2 price—\$800; stripped camper for 3/4 ton pickup, \$200. O'Neill, 898-5753 after 5:15 or weekends.

**AUTO TIRES**, F78-14, originally new, not retreads, several thousand miles left, fit standard 14" rims, set of 4, \$30. Horine, 268-6882.

**PET personal computer**, 8K RAM, BASIC in ROM, built-in CRT and cassette; Commodore tractor feed printer. Sokel, 299-8130.

**ENCYCLOPEDIA**, University Society, 24 volumes including dictionary, child-resistant finish, \$350; MG Midget pinstriping kit, \$15. Barnard, 831-4114.

**ALUMINUM ladder**, \$20; bumper pool table, \$30; electronic parts. Widner, 294-2014.

**SAILBOAT**, 14' Laser with trailer, custom sailbag, ratchet block, other extras. \$1275. Novotny, 296-7167.

**TELESCOPE**, Cave 8" Cassegrainian, 1/15, equatorial mount, clock drive, leveling screw, 5 eyepieces, 6-25mm, \$600. Brice, 344-4855 after Sept. 24.

**LARGE Sears jungle gym**, \$40. Worrell, 299-0381.

**NEW travel trailer tire**, 775X15, \$60; National Geographic magazines, 1963-73, 3 for \$1.00. Carpenter, 299-4312.

**KING SIZE Fantasy waterbed**, dbl. bag, designed like normal bed, regular sheets, no htr reqd, 1 yr. old, asking \$750; tiered lace wedding dress, size 11/12, w/matching veil, \$150. Sexton, 296-5337.

**ONE-WAY air ticket**, Denver to Frankfurt, \$300. Lopez, 265-3296, after Oct. 2.

**KENMORE 36" pilotless gas stove** w/hood, continuous clean, lighted window, harvest gold, almost new, \$250. Henning-Sachs, 266-9841.

**GARAGE SALE**, Sat. & Sun., Sept. 20 & 21, double-oven range, sink, bathroom cabinets, wardrobe, misc. furniture, antiques, misc. items. Hasenkamp, 804 Manzano NE.

**'66 & OLDER VW PARTS**, 2 doors left & right windows; 2 front fenders left & right, 2 headlamp assys, front & rear bumpers, tail, lens covers; '69-'72 Ford P/U rear tinted window w/trim, \$25. Garcia, 256-7606.

**SNOWMOBILE**, \$550. Brin, 281-3834.

**LIONEL 027 trains**, 50 watt transformer, engine, 5 cars, 3 switches, 4X8 carpeted plywood. Bush, 281-3773.

**COCKER SPANIEL**, AKC, male, gold, 2 1/2 yrs., excellent features. Ferrell, 883-8595.

**DECORATOR-DESIGNED loveseat**, 67" wide w/matching cornice \$130" wide, apple green print on white bkgrnd, rod w/sheer panels incld, \$250. Koehler, 293-7017.

**2 BRAND NAME receivers**, 2 pairs of speakers, 1 Garrard turntable, small repairs needed on some components, cheap. Norwood, 262-0073.

**STEREO**, AM-FM, 8-track turntable w/speakers & stand, \$200 or best offer; 2-seater stroller, good condition, \$25. Gross, 821-8761.

**LOVESEAT rocker**, Early American, earth tones, \$75; Levi cords, never worn, 30-34 and 32-34, \$7.50 each. Seaburn, 299-2215.

**COLONIAL ROCKER**, 3" solid pine seat, hardwood turnings & legs. Protectolac finish, 48 lb., new \$150, price, \$110. Peters, 293-6356.

**RUG**, 8 1/2' round, green-gold, \$12; Realistic record player w/spkr, \$10; Remington portable typewriter w/case, \$10; VW ski racks, \$3. Garst, 884-5176.

**AQUARIUM**, 30 gal., pump, light, heater, Kuhli loaches, 5 Convict fish, \$50. Madsen, 294-3235.

**TRUMPET**, Bundy, w/case & stand, \$175. Gammill, 299-4702.

**INFANT CARRIER & GM Love car seat**, for infants to 20 lbs. McFall, 299-3476.

**HONEYWELL electronic air conditioner**, removes airborne pollen & dust, portable, 2-spd, \$75. Esterly, 881-1973.

**BATHROOM SINK**, 18 1/2 x 17 1/2", pale green w/Eljer chrome fittings, pop-up drain, \$30. Joseph, 299-6989.

**ELECTRONICS**: Argonne turntable, Stanton EE681 cartridge, Aristocrat spkr SP12B/T35, Hallicrafters SW S408. Switendick, 821-2077.

**SCM Coronet Super 12 cartridge-type electric typewriter**, \$145. Mason, 299-2836 after 5.

**MAYTAG**, top-loading, portable dishwasher, used 8 mos., \$200; Sears Big-T gym set, \$35. Kupper, 298-7720.

**TWO-FAMILY yard sale**, Fri. & Sat., Sept. 19 & 20, 9-5, couch, chairs, recliner, garage dr opener, humidifier, arts & crafts, misc., 3407 Georgia NE.

**WINE RACK**, \$10; electric calculators, \$10 & \$25; chandelier, \$10; 7-ft. rose color couch, \$150. Botner, 298-6007.

**BABY QUILTS** made in cat or bear shape. Lesperance, 255-1237.

**ALLIS-CHALMERS**, old model, good engine, needs wiring, \$650, see evenings. Hamilton, 869-2178.

**MEMBERSHIP** in Early Risers hot air balloon club available; 1/9 participation. Arlowe, 298-1770.

**BEDROOM SET**, white, complete twin bed, bedside stand, dresser, mirror, desk, bookcase hutch and chair, \$350. Scheibner, 299-5993.

**'72 MUSTANG**, 250 CID, AC, AM-FM stereo cassette, wire wheels, \$2300. Montoya, 883-9115.

**'73 INTERNATIONAL Travelall**, 4-wd, factory air, PS, PB, towing pkg., AT, 56,000 miles, V392 engine, \$3000. Kepler, 298-5652.

**'72 HONDA CB 100**, overhauled recently, 10,000 miles, 4-stroke, \$250. Minser, 292-1391.

**'76 JEEP CJ5 w/11x15 wheels & all-terrain tires**, AM/FM/cassette stereo, 304 V8, low mileage. Jefferson, 293-3529.

**'73 1/2 ton pickup**, 4-wd., Jeep J3A, w/insulated camper shell, new transfer case, 8-cyl., AT, \$2800. Minnerly, 266-4423.

**'74 SUZUKI motorcycle**, TS-185 Enduro, 7950 miles, street and/or dirt, turn signals, luggage rack, knobby rear tire, \$450. Schkade, 265-5473.

**'72 DATSUN stn. wgn.**, new battery, ignition, tires, muffler, brakes, \$1250. Jewett, 898-4440.

**'75 FIAT 128 sedan**, 4-dr. std., rebuilt engine, FM radio, 34 mpg highway, \$1495. Neal, 299-3587 after 6.

**'73 DATSUN 610**, 67,000 miles, 4-sp., \$1795; '74 Ford Courier pickup, AT, 34,000 miles, \$2250; chickens, all kinds and sizes, \$3 ea. Lackey, 898-6638.

**'73 MOTORCYCLE**, Honda CB 450, \$750. Peterson, 877-6398.

**HONDA Goldwing GL-1000**, new tires, windjammer, many extras, below Blue Book. Marquez, 344-8455.

**'72 MONTE CARLO**, reg. gas, PB, PS, AT, AC, radio, \$1100. Clark, 298-4913.

**BICYCLE**, girl's 10-speed Huffy, 21" frame, 26" wheels, \$45. Pate, 293-5393.

**'75 CHEVELLE**, Malibu Classic, 4-sp., auto, A/C, electric wndws, tilt & pwr steering, good body, \$1450. Padilla, 296-0255, 296-7305 after 6.

**'69 MUSTANG**, 302 cc, best offer or will trade for pickup. Zamora, 897-3792.

**BICYCLE**, girl's 3-sp. Hawthorne, 26" caliper brakes, \$35. Mead, 294-2298.

**'64 CHEVY El Camino**, snow tires, automatic tool storage in bed, good engine, best offer. Horn, 821-9350.

**'75 VW Rabbit**, new upholstered seats, \$2500. Hawkins, 898-0618.

**'74 NOVA Hatchback**, automatic, pwr & A/C, vinyl roof, below book; Classic '67 Mustang, 289 cc V8, 4-sp., console, bucket seats. Szenasi, 299-1495.

**'74 VEGA wagon**, panel, 4-sp., below book, best offer. Tillman, 821-2920.

**'76 VW Rabbit**, 4-dr, A/T, A/C, AM-FM cassette, 38,000 mi., below book. Keizur, 884-8357.

**'77 DASHER station wagon**, A/T, A/C, 49,000 mi., AM-FM radio, over 23 mpg in town, \$3600. Vittito, 299-9298.

**'69 MERCURY Montego MX**, one owner, factory A/C, A/T, power steering, AM radio. Marrs, 821-5144.

**'67 COUGAR**, 289 cc, power steering, \$950; Schwinn 16" sidewalk bicycle, training wheels, \$20. Stueber, 298-1346.

**'78 OLDS**, Custom Cruiser, diesel engine. Clement, 884-4662.

**SCHWINN bicycle**, adult size, 3-sp., front & rear brakes, bought new, used little. Catt, 821-4726.

**'80 TOWN & COUNTRY mobile home**, 2-bdr, 2 bath, in park. Stibick, 821-8112.

**FOR RENT**

**CONDOMINIUM**, 2 bdr, study, 1 1/2 bath, pool, near tennis, Osuna school district. Switendick, 821-2077.

**WANTED**

**LISTENERS** to KUNM radio's "Asylum" show; contact Hansche, 821-5123.

**10-GAL. aquarium** to be used for plants. Esch, 292-0754.

**TIRES**: 78-15 radial or std. street tires, minimum two. Burton, 869-2541.

**TUNER** to drive tube type amplifier, must be inexpensive. Stuart, 299-9190.

**NEED used pony saddle** in good condition. Taylor, 869-2934.

**HOUSEMATE WANTED**: very nice 2-bdr. home in Ridgecrest area, den, fp, covered patio, furnished, \$200/mo. + 1/2 utilities. Gonnsen, 265-5379 or 281-3376.

**LARGE infant play pen**. Rogers, 293-8201.

**TRADE**: 21" P Mercury outboard motor prop for 17" P or 19" P prop. Cordova, 345-0619.

**'67-'69 PLYMOUTH Barracuda**, OK if it needs work; need car seats upholstered. Prevender, 299-5253.

**SAILING TOUR** of Galapagos Islands in early 1981, about \$2000 per person. Carnicom, 281-3421.

**PLAYPEN**. Fjelseth, 296-2257.

**PLUG-IN vertical** for 555 Tek scope. Chu, 296-4008.

**BOAT TRAILER**, light duty, for 14-ft. aluminum fishing boat. Matsko, 881-7655.

**BLACKSMITH tools and anvil**; other related supplies. Gunter, 898-4951.

**SMALL utility trailer** in good shape, prefer 6' length. Horn, 821-9350.

**FACTORY service manual** for BMW R90/6 motorcycle; XL350 Honda engine or wreck with good engine. Barnard, 831-4114.

**SHOT SHELL** loading equipment and supplies, 12 and 20 gauge. Worrell, 299-0381.

**CAMERA CASE** for Petri 35mm camera. Nelson, 881-0148.

**USED LEGO set or sets**, complete or w/pieces missing. Headley, 293-4930.

**WORK WANTED**

**PAINTING**, interior/exterior, exprncd UNM student w/brushes & other eqpmnt, estimates given. Shunny, 265-1620.

**BABY SITTING** in my home weekdays, Menaul & Washington area. Lesperance, 255-1237.

**SHARE-A-RIDE**

**WANTED**: carpool with one other non-smoker, vicinity of Eisenhower Middle School. Rogers, 293-8201.

**VANPOOL** service from Rio Rancho, Corrales Shopping Ctr., Paradise Hills, & Taylor Ranch to Sandia, \$2.50 for round trip. Page, 897-2396.

**LOST AND FOUND (Bldg. 814, 4-5677)**

**LOST**—Class of '72 ring: white gold w/blue stone, initials JCL; Armitron watch, pipe pouch, silver ring w/pearl inlay, sunglasses, several sets of keys, men's Rx glasses, Sandia briefcase, checkbook, gold earrings for pierced ears, orange backpack, umbrella handle, gold Schaeffer pen.

**FOUND**—Tail light cover and lens, 15" long w/white, red, yellow lenses; key ring w/name Tammy on glass, green tie, butterfly tie clasp, Casio watch, bolo tie w/Thunderbird (found in medical), women's glasses w/grey frame, book: *Linear Applications*, key no. 8792, General Motors key, Schlage key, cash found in front of cafeteria—identify container.

**TRANSPORTATION**

**'71 VEGA**, 4-sp., \$400. Mikkelsen, 881-3921.

**BICYCLE**, 10-sp. Hercules, 26" wheels, 21" frame, some extras, \$65. Church, 268-3590.

**REAL ESTATE**

**MOBILE HOME**, 3 bdr, walk-in closets, 2 baths, LR w/FP, carpeting, 1-yr. old, family section, Four Hills, \$28,500. Tye, 293-6961.

**3-BDR**, 2100 sq. ft., LR, dining area, 1 1/2 bath, sunken brick den w/FP, sewing rm, study, pantry, landscaped, near Base and Lovelace, \$66,500, \$15,000 dn, will take REC. Bucher, 268-4282.

**RIO RANCHO**, 3-bdr., 1 1/2 bath, F/P, crptd on 2/80, atrium entry, wrought iron gate & wndws, \$62,900. O'Neill, 898-5753 after 5:15 or weekends.

**MOBILE HOME**, 12X60' w/12X16' added room, F/P setup, Four Hills, \$12,000. Mozley, 884-3453.

**4-BDR**, NW, 2200 sq. ft., pitched roof, 2-car garage, \$18,000 dn, assume 5 1/2% mortgage, balance at 10 1/2%, total \$59,900. Skender, 898-5647.

**SAN GABRIEL Village**, 3-bdr, 1770 sq. ft., walking distance to Mitchell Elem., Hoover M.S., & Eldorado H.S., \$74,900, creative financing available. Farley, 299-9148.

**MOSSMAN**, tri-level, 4 bdr, study, den, DR, Japanese garden, waterfall by Taro, La Jolla Park, \$15,000. CTL. Clement, 884-4662.

# Western Stomp Tomorrow

TONIGHT is a quiet one at Happy Hour. The chef took the day off to go to the Fair along with most of the musicians. Still, Henry concocted a large vat of Rio Grande style green chili for us to enjoy at \$1 a bowl. Gary Waters went to the races last week so he's singing for his supper tonight in the lounge from 5 to 8 p.m. Other than that, it's Happy Hour as usual with special prices (cheap) in effect all evening.

TOMORROW the Club offers its annual "Fair Conditioner" event with a group of country western musicians called the Fugitives booked to play from 8:30 to 12:30. Put on your boots and stomp. There's no admission charge.

NEXT FRIDAY, Sept. 26, Henry is back on the job offering you a choice of strip loin of beef or lobster tail on the buffet. Youngblood is wired into the bandstand. For buffet reservations, call the Club office—265-6791—by mid-week.

TRAVEL—You can still sign up for the Washington, D.C., trip (Oct. 1-5, \$568) or the Rose Bowl Parade—Disneyland—Animal Safari Tour (Dec. 28-Jan. 4, \$315). We have obtained some additional cabins on the Caribbean Cruise (Dec. 13-21, \$780) and there are only a few people on the waiting list for the two Mazatlan trips (Nov. 3-10 & 10-17, \$299).

Other trips are: Western Canada (Sept. 25-Oct. 4, \$941), the Cumbres & Toltec scenic railroad (Sept. 28, \$40—adult, \$25—under 12), El Rancho de las Golon-



CORONADO CLUB Board of Directors for FY 1981: back row, from left are Bernie Kenna (5812), Nick Magnani (5840), Ron Ward (1483), Bob Banks (5000), Dick Chapman (3244), Pro Padilla (3735), Charlie Clendenin (2633) and Frank Biggs (4231). Seated up front from left are Frank Gallegos (3510), Dick Shepardson (3242), Adele Caldwell (3416), and Julian Romero (DOE/OPD). Gil Cordova, the DOE representative, was camera shy. The new members elected on September 8 are Nick Magnani, Ron War, and Adele Caldwell; Dick Chapman is the new Sandia representative.

drinas (Oct. 4, \$14), and the "Real Mexico" (Nov. 6-21, \$630).

There will be a pre-trip meeting for both the Mazatlan trips at 7:00 p.m. on September 23 at the Coronado Club. The Washington, D.C., pre-trip meeting is at 7:30 on Sept. 23. There will be a slide show

and discussion of the "Real Mexico" at 7:30 on Sept. 24 at the Club.

A travel table is set up every Friday in the lobby of the club. Come by between 6 and 7 p.m. and talk to Travel Director Frank Biggs about your travel plans and pick up literature on our trips.

## Take Note

The Friends of the Albuquerque Public Library are sponsoring a fall mini-sale of books at the Prospect Park Library on Saturday, Sept. 27, from 10 a.m. to 1 p.m. Their release states "... fewer books and shorter hours than at our big spring sale, but still lots of good browsing and good buys."

The New Mexico Symphony opens the season on Sept. 26 with works by Brahms, Sibelius, and Bartok. Music Director Yoshimi Takeda continues as symphony conductor. Guest artists lined up for the season include pianist Paul Shenly, soprano Donna McRae, guitarist Liona Boyd, pianist Andre Watts and, for a change of pace, pianist Peter Nero. The concert series runs through May and season tickets are still available. The Symphony office phone is 842-8565.

Gil Cordova, manager of the Sandia Area Office of DOE's Albuquerque Operations Office, was a recent visitor to Sandia Livermore. Among his briefings was a demonstration of the new Orion laser system being installed in the Combustion Research Facility. The DOE visitor also

saw the new Cray-1 computer and reviewed plans for other projects underway at the Labs.

Bella Vista restaurant is the location; Monday, Sept. 29 is the date; 6:30 p.m. is the time and Dick Schwoebel (5110) is the featured speaker for the ASME September membership drive meeting. Dick, the technical consultant for both the Double Eagle II and Kitty Hawk flights, will discuss both flight preparation and in-flight activities, including communications and meteorological support. Cost for the all-you-can-eat/drink meal is \$4.50 for members, \$3.00 for prospective members. Reservations by Wednesday, Sept. 25, with either Kathleen McCaughey (4-1573) or Wayne Leger (4-6308).

The KAFB Base Library is featuring a photography exhibit through the end of September. The librarian called to remind Sandia patrons to let the library know of any change of organization, phone (both office and home), and home address, so that the library can update its records.

