



ENERGY EXHIBIT by Sandia and LASL is part of the new Albuquerque Museum of Art, History and Science opening Sunday, Aug. 5. Mac McHarney (3155) designed the exhibit; Joe Laval coordinated it. The arch at left is a

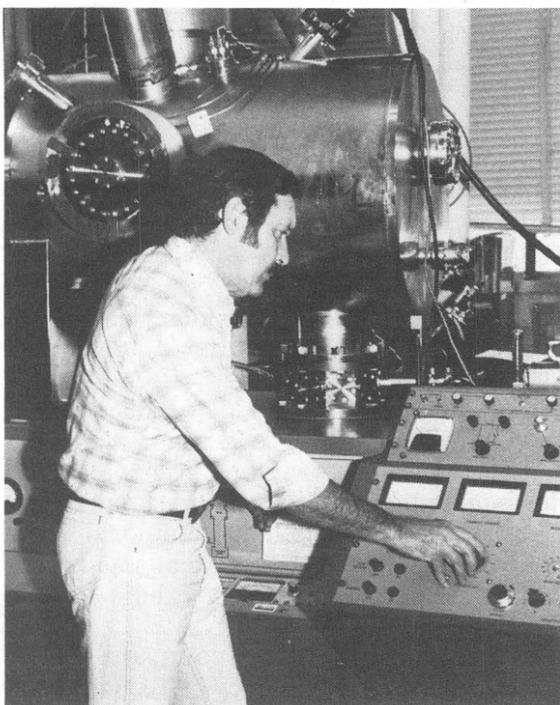
blade from the Sandia vertical axis wind turbine. At right is part of a fusion machine. Other solar and geotechnology hardware in background complete the outdoor display. It will be shown through Nov. 4. See page two.

LAB NEWS

VOL. 31, NO. 15

JULY 27, 1979

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



FOR TOKOMAK — Art Mullendore (5834) prepares to run test in combined environment test chamber upon coated materials samples. The coated materials are under test as possible first wall materials in tokamak fusion devices at Princeton and Oak Ridge.

CTR/Tokamak

Sandians Work On First Wall Materials

Last year, physicists at Princeton University were able to demonstrate that temperatures required to sustain a fusion reaction were not only attainable in Princeton's tokamak fusion device but also that such high temperatures did not produce predicted plasma instabilities that would have compromised the whole tokamak concept for controlled thermonuclear fusion. The press was quick to label the experiment the "breakthrough" needed in fusion.

The Princeton work and its results were indeed significant but, as Don Mattox of Surface Metallurgy Division 5834 notes, "We learned from Princeton that there is no fundamental physics problem which calls into question the tokamak concept of controlled thermonuclear fusion. But that only gives us the go-ahead to proceed with some of the truly difficult problems in tokamak development."

For Mattox and Sandia colleague Art Mullendore (also 5834), that translates into a materials challenge: to develop coatings for fusion reactor components able to survive the rigors of the fusion environment — the "first

wall" problem — while at the same time not contaminating the fusion plasma. Supported by funding from DOE's Office of Fusion Energy, Mattox and Mullendore have been working on this materials project for the last two years. Additional funding comes from Princeton's Plasma Physics group.

The Materials and Radiation Effects Branch of DOE's Office of Fusion Energy initially came to Sandia because of our recognized expertise in coating technology, an expertise that grew out of extensive involvement with nuclear weapons development. Requirements on many weapons created severe materials problems, many of which were found to be solvable only through coating technology.

Present focus of the tokamak work in Div. 5834 is on development of coatings for two components within the reactor that are designed to take the brunt of the high thermal loads in the vicinity of the plasma. Called "limiters" and "wall armor", these

(Continued on Page Two)

Afterthoughts

Sacred horse--In India it's the cow, but here in New Mexico and especially at the State Fair, it's the horse that we revere, at least institutionally. The trailers for my motorcycle and your boat must be licensed each year, but did you know that horse trailers bear no license? The State Fair Commissioners simply go bananas over horses, not only with the races and the rodeo, but also with a seemingly endless procession of events in which adolescent girls-- who seem to have a special affinity for these animals--and their mounts prance around barrels as fond parents look on proudly.

There probably isn't one New Mexican in a hundred who rides--let alone owns--a horse, yet the Fair program is overwhelmingly nag oriented. What the Fair needs, obviously, are commissioners who would represent the present, varied interests of New Mexicans--skiing, backpacking, boating, bicycling, motorcycling, golf, tennis, and so on. It's time we enter the 20th century and drop this silly romance with the horse.

* * *

Keeping up--We're always on the lookout for items to enhance the scientific acumen of readers, and we've found two that richly qualify. Our sister laboratory, LLL, has announced its finding of the world's largest prime number. No, it wasn't out there hiding behind the cyclotron but rather, like so many things today, erupted from the bowels of the Cray-1, a computer that can do 75 million multiplications per second. It's 13,395 digits long and--get ready--here 'tis: $2^{44,497}$ minus 1. (If your math bogged down after long division, a prime number is one that cannot be divided evenly except by itself and the number one.)

Next, for fans of metrication, we've learned that the Beaver, Oklahoma Championship Cow Chip Throw has gone metric for the first time in its 10 year history. One Leland Searcy had the winning throw in the men's open category--54 1/2 meters. A U.S. Metric Board official participated in the VIP section, but the event chairman noted that "Anyone who works for the government is considered a professional."

* * *

"In the 1980's, we will have to make coal king again because King Oil has become a tyrant and Prince Nuclear has come down with a bad case of the vapors." DOE's Asst. Secretary George McIsaac at meeting of National Security Industrial Assn.

*js



Being able to read apparently makes you a better listener, too. John Stauffer of Babson College tested the ability of adult literates and illiterates to recall and use information given on a national network TV news program. The literates were able to recall 55% more stories than the nonreaders and their scores were 63% higher on a verbal multiple-choice test covering information content.

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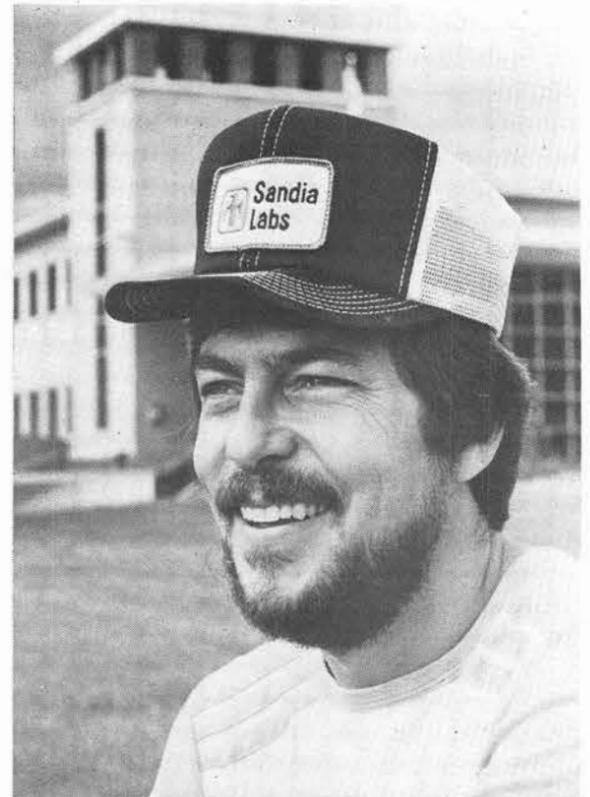
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Chuck Cockerleas & Norma Taylor write

Bill Laskar does picture work

Aided by Gerse Martinez

Bruce Hawkinson & Lorena Schneider report Livermore.



A CAP for all seasons . . . well, for most seasons says Jack Strascina (1472). LAB NEWS is selling the caps -- color royal blue with white mesh -- in behalf of South Highway 14 Village Project (a charity venture). Cost is \$4.25, \$3.75 for retirees. LAB NEWS is located in Bldg. 814.

Continued from Page One

First Wall Studies

components protect the first wall. (If the plasma should brush against the wall itself, the resultant contamination of the plasma would diminish the high temperatures and densities necessary for the fusion reaction.)

Coating materials with good adhesion properties, low erosion rates, low atomic number, and high temperature stability are being sought. At present, the materials of most interest are titanium diboride, boron, boron carbide, and titanium carbide. Besides material selection, methods of fabrication are being investigated, including chemical vapor deposition.

Next step in this ongoing program is a series of tests in the early fall. Scientists will then subject Sandia-prepared coated limiters to tests within the tokamak device.

With Sandia Exhibit

Albuquerque Museum Opens Aug. 5

Sandia Labs and LASL have contributed an impressive outdoor exhibit to be part of the Aug. 5 opening of Albuquerque's sparkling new \$4 million Museum of Art, History and Science. It's located at 19th St. and Mountain Road, just north of Old Town. The scientific exhibit is called "Probing Energy Potentials" and includes hardware from various solar, geothermal, drilling technology and fusion projects.

Inside the new museum visitors will be viewing a major arts and crafts show called "One Space, Three Visions" and a historical show about "The Automobile in Albuquerque." Mayor David Rusk cuts the ribbon opening the doors to the museum at 1 p.m. following a short parade through Old Town.

Outstanding visual feature of Sandia's exhibit is the 17-metre aluminum blade tested on the Vertical Axis Wind Turbine. It's set up to form an arch over the museum courtyard.

A 2-metre model of the VAWT will also be displayed.

Other parts of the exhibit include an electron beam machine originally developed for simulation of weapon effects, photovoltaic arrays, various solar collectors, a model of the Power Tower, and hardware relating to Sandia's drilling technology, oil shale and enhanced oil recovery programs.

LASL is contributing additional solar exhibits, a laser fusion exhibit and geothermal display. The energy exhibit will be shown through Nov. 4.

Overall design of the courtyard exhibit was done by Mac McHarney of Technical Art Division 3155. Joe Laval of Community Relations Division 3163 coordinated the exhibit. Many organizations at Sandia contributed technical support and project hardware, while the Maintenance Shops, Plant Engineering and Reprographics group provided valuable services.

'No Tool Like An Old Tool' — Jim Rogers

Up until the turn of the century, furniture and homes were built mainly without the use of machinery, depending on hand workmanship and specially made tools.

"These were the implements that built our country," says Jim Rogers (8324), an avid collector of antique tools, particularly 19th century American hand tools. "Several I especially prize came down through the family, from my father who was a railroad carpenter and my grandfather and father-in-law, both expert cabinetmakers."

Although Jim had this family contact with experienced craftsmen, he didn't begin serious collecting until several years ago, when he realized that most manufacturers were no longer making high-quality hand tools. According to Jim, current tools do a nice job, but an antique one of the same version has an entirely different feel. The old castings are smooth and decorative and the handles shaped from finer woods make them more comfortable to hold. On occasion, he's seen tools in which the owner's hand imprint has actually become worn into the handle through years of use.

Antique tools can still be found in perfect working condition, although more often than not they're at least dirty, if not rusty. When they are heavily rusted, restoration is difficult; but if the paint is gone and there's just light surface rust, time spent restoring and sharpening is well worth the effort.

"Bringing the old tools back to usefulness is really what has kept me hooked on collecting," comments Jim. "In by-gone days, a good hand tool was a significant investment, just as today a good power tool means quite an investment, whether for the casual or professional worker. So it's interesting to see how some of these old tools have been repaired, salvaged, or even converted to another function."

Jim's favorites are his Stanley iron planes, of which he has over 100 in various designs. The company started manufacturing wooden planes around 1850 and metal planes in 1869, and grew to become the largest hand-tool plant in the trade. Stanley is still in business today, which Jim believes says a lot about their quality and design ingenuity.

Some planes come in many versions. The Stanley No. 4, for instance, has 39 versions, and there are collectors who have one of each. More intriguing to Jim, however, is the Stanley patent history; the late 1880's and early 1900's were periods of making all kinds of "gee whiz" specialized tools to do this, that,

Congratulations

Bob Sandoval (8257) and Pam Allen, married in Livermore, June 23.

Al Salmi (8316) and Linda Quinones, married in South Lake Tahoe, NV, June 26.

Sympathy

To Joe Bradshaw (8413) on the death of his father in Chicago, June 17.

To Norm Toly (8271) on the death of his mother in Pleasanton, July 3.

LIVERMORE NEWS

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COLLECTOR Jim Rogers (8324) compares the smallest and largest Stanley metal planes manufactured, as he displays various designs in his antique hand tool collection. At right are planes used by his father and grandfather; at left, one of the more complex planes with 23 interchangeable blades.

and the other thing. "Some weren't too successful," he says, "but these are the rare tools today, difficult to find and priced as high as \$1000. Most likely you could get one only by trading."

As a collector, Jim is a member of the Early American Industries Association, the British-American Rhkenological (plane) Society and Mid-West Tool Collectors Association.

And he uses his antique tools. "I find it often takes longer to set up my modern power tools than to do a job itself, particularly if it's a small job and providing, of course, I have just the right hand tool. The early craftsmen weren't any less smart than we are today; to compensate for not having power, they made specialized tools to do specialized functions easily."

Take Note

Winner at this year's Alameda County Fair was Dick Cook (8272) who took first place in the adult showmanship for swine category, competing against some 35 other entries. Dick's son Brian won third place in Future Farmer's of American showmanship with the same animal and, with another of his animals, took the FFA grand champion swine award.

* * *

Gordon Kibby (8424) is a member of the National Air Racing Group, and he reports that the Group is sponsoring the Livermore Air Show & Rally of War Birds on Sunday, July 29, at the Livermore Airport. The show features three hours of aerobatics, runs from 10 to 3:30, and admission is \$3/person or \$8/carload.



ENGINEERS FROM SPANISH INDUSTRY assigned to the Center of Energy Studies in Madrid visited SLL recently and toured the Labs' solar facilities. Under treaty funding, SLL is providing technical assistance to Spain's solar central receiver program (CESA I). Shown with visitors Carlos Ortiz and Cayetano Hernandez (center) as they observe heliostat image diagnostics are (from left) Cliff Selvage (8420) and Tom Brumleve and Don Osmund (both 8451).



HERB PITTS (3530) and GEORGE BANOS (3510)



RAY CHAVEZ (3155-1), OTIS COX (3255) and PAT MURPHY (2651)

Supervisory Appointments

OTIS COX to supervisor of Customer and Supplier Accounting Division 3255, effective Aug. 1.

Since coming to Sandia in June 1963 as an auditor, Otis has done contract as well as internal auditing, worked on program and systems analysis, and was named a senior auditor in January 1975. Since last March he has worked as a budget analyst.

Otis earned his BS in business from Kansas State University and an MBA from Oklahoma State. He is a member of the National Association of Accountants. Off the job he enjoys "being outdoors." He and his wife Agnes have two daughters and five grandchildren. They live in the NE heights.

PAT MURPHY to supervisor of Computer Administration Support Division 2651, effective July 16. Since joining the Labs in August 1967, Pat's primary work has been in systems analyses for the accounting, budgeting and financial organizations. Responsibilities of his current division include administrative support for all aspects of Sandia computers, from initial purchase and maintenance to budget and communications analyses.

Pat earned his BBA and MBA degrees in accounting from Texas Tech. He is a member of the Albuquerque Chapter of Data Processing Management Association and has served two terms on its Board of Directors.

Off the job, Pat enjoys church activities, camping, woodworking and stamp collecting. He and his wife Janette have two children and live in NE Albuquerque.

RAY CHAVEZ to supervisor of Presentations and General Art Section 3155-1, effective July 16. Ray has been a technical illustrator in Tech Art since coming to the Labs in December 1959. In his new position, Ray and his staff are responsible for Sandia's general art work — visual aids, manuals, journal publications, line drawings and color renderings.

Ray studied art for two years at the Trade

Technical Jr. College in LA. He interrupted his studies to serve two years in the Navy and then attended El Camino College.

Leisure activities for Ray, his wife Rose and their five children include music and church activities. Ray and two of his sons play guitar and organ for their church choir. The Chavez' live in the NE heights.

HERB PITTS to manager of Personnel Department 3530, effective Aug. 1. Since coming to Sandia in August 1961 as a personnel representative, Herb has had assignments in all phases of personnel administration. He was promoted to supervisor of Hourly Job Evaluation Division in 1966 and, since then, has been supervisor of Affirmative Action, Personnel Data Systems, and Recruiting divisions. Since December 1977, he has been Assistant to Vice President Al Narath (4000).

Herb earned his BBA degree from the University of Oklahoma and an MBA from UNM. He is a member of the Rocky Mountain College Placement Association.

Tennis and running are Herb's favorite leisure-time activities. He and his wife Carol have a 10-year-old son and two Great Danes. The Pitts live in SE Albuquerque.

GEORGE BANOS to manager of Equal Opportunity and Affirmative Action Department 3510, effective Aug. 1. Joining the Labs in Aug. 1955, George worked as a graded employee and later became a staff member in the accounting organization. He completed assignments in Benefits, Compensation and as a personnel representative. In August 1968, George was promoted to supervisor of the newly created EEO Division, a group which he had helped organize. He has also supervised divisions in Education and Training, Personnel and, since January 1978, has headed Staff Recruiting and Employment Division 3531.

A native New Mexican, born in Vaughn, George earned his BA degree from New Mexico Highlands University, where he also

completed some graduate work. George served in the U.S. Army in Germany from 1946-49, and was recalled during the Korean conflict. He is a member of the Rocky Mountain College Placement Association and the Southwest College Placement Association.

His hobbies include stream and lake fishing, swimming, and golfing. George and his wife Connie have three children and two grandchildren.

Congratulations

To Mr. and Mrs. Mike Garner (2146), a daughter, Rachel Sue, June 18.

To Mr. and Mrs. Fred Sexton (2146), a daughter, Anna Marie, July 15.

To Mr. and Mrs. Everett Taylor (5821) a son, June 27.

To Ian Fritz (5132) and Shelly Parmeter, married at Tesuque, July 1.

Sympathy

To Marie Vaughn (3332) on the death of her father in Breaux Bridge, La., June 26.

Death

Frank Baczek, supervisor of Stores Section 3742-3, died suddenly July 20. He was 59.

He had worked at the Labs for 31 years.

Survivors include his widow, four sons and three daughters.



Have Backpack, Will Travel: To The Holy Land

(Ed. Note: Have you taken an unusual vacation? Tell us about it — call 4-1053.)

Bert Quelle, who was Sandia's retirement counselor before his retirement 10 years ago, has heeded his own advice to retirees — keep busy. Bert says the past 10 years have been full and interesting for him and his wife Irene. They have traveled, worked, relaxed, studied, and enjoyed their children and grandchildren.

One of their most exciting experiences occurred last January — a three-week-visit in Israel. The trip came about by chance; Bert and Irene were enrolled at the Sagrada School in Old Town, taking a class in church symbolism. Their instructor, Sister Giotto of the Dominican Order, mentioned that she was making a pilgrimage to the Holy Land. Would the Quelles like to come along? They immediately agreed. The party of six included Susan Prouty and Mary Schaffer, also students at Sagrada, and Father Blase Schauer, a Dominican priest from Santa Fe.

"The trip was truly a pilgrimage," Irene says. "We were attracted to the country because of its religious associations. And we made the trip at the least possible cost." Bert continues, "Our only luggage was a canvas backpack and bed roll. We made no reservations, but we did have knowledge of several hospices operated by various religious orders and, along the way, we also found some youth hostels that offered beds.

"Jerusalem was our headquarters. We had rooms at a Franciscan convent in the Old City, within walking distance of Bethany and the Mount of Olives, the Damascus Gate and numerous other attractions. The best advice we received was from a nun at the convent who recommended we tour by taxi, specifically the taxi of Nazri, an Arab and the proud owner of a beautifully maintained Mercedes which nicely accommodated the six of us. While waiting for us at various places, he lovingly polished his car.

"We hired Nazri for the duration of our stay in Jerusalem and he was an absolute mine of information. The country is so small that it's easy to visit distant sites by car. Nazri knew everywhere to go, which shrines were closed during certain hours, and all kinds of information which tourists are not usually aware of."

"Most of the time we ate breakfast and dinner at the hospice," Irene continues, "but lunch was always a picnic, sometimes with the donkeys or sheep. The bazaars were plentiful and had the most wonderful fruits, nuts, bread, cheese and wine. There is such a contrast in the country — from arid desert to lush gardens and orchards. We walked through Shepherd's Field near Bethlehem amid blooming almond trees and it was beautiful."

Later, the party stopped at a kibbutz near the Sea of Galilee, surrounded by wheat fields and trees bearing dates, bananas, olives, cherries and oranges. "We were served St. Peter's fish, said to be found only in the Sea of Galilee," Irene says.

"Jericho is a fascinating place," she continues. "It's an ancient city near the Dead Sea and even in Herod's time it was a resort area. The water of the Dead Sea is an intense blue which contrasts with the surrounding desert colors of red, orange and ocher."

The Quelles stayed in Tiberias for four days at a hospice run by the Church of Scotland. "The building is immense and made of stone," Irene says. "We had a huge room with stone walls and floor and no heat. My favorite pastime was to sit in the large window



QUELLE OF JERUSALEM, Bert that is, retired from Sandia a few years back to adopt the life style of a free spirit. Latest excursion was a three-week backpack-and-bedroll trip through biblical sites of note in Israel. The outfit derives from Bert's melt-into-the background theory of touring. (We couldn't fit the camel into the picture.)

embrasure in my hooded sweatshirt and look down through the terraced gardens to the Sea of Galilee."

"We were never treated with discourtesy," Bert recalls. "Because of the British influence, most people speak English. We were rather anonymous driven about in a car with Bethlehem plates, and we were able to mingle and talk with many people. The military was much in evidence, but we could detect no tension among the people. While driving in the Golan Heights, we could see

across to Jordan, and there did seem to be much bitterness over that political situation. But the children all appeared to be healthy and rosy cheeked, even those living in the poorer areas. In the cities, most of the men wore business suits and a headdress and many women wore long skirts.

"Our only apprehensive moments occurred as we were leaving Israel. Nazri was stopped at the gates to the airport in Tel Aviv. Guards thoroughly inspected the car, even removing the hub caps and tires and throwing each tire against the pavement. I'm sure they were looking for drugs and weapons."

Logistics — Air fare (round-trip) from Albuquerque to Athens, Greece, was less than \$650 per person under a package plan sponsored by the AAA. Plane fare from Athens to Tel Aviv, purchased in Athens was less than if purchased in the U.S. (\$243, U.S.; \$207, Athens). Travel from Tel Aviv to Jerusalem was a short bus ride. Bert rates the hospices as follows: from \$5/night (single) and up — satisfactory (bed, hot water, no heat); from \$2-\$4 — unsatisfactory. Evening meal averaged about \$3.50 (soup, fish, cheese, fruit, an occasional meat dish; Arab meals were excellent: lamb and rice). Cost of picnic lunches was minimal. Taxi fare was \$11 per day per person. Overall cost of trip for two was less than \$2500. Mid-January is the "off season" (no significant religious holidays). Days were warm, but nights were cool. Because of their limited luggage, Irene relied heavily on sweatshirts; Bert says he slept in his jogging suit — warm enough and presentable. Bert adds that anyone contemplating this type of economy trip probably should make reservations at the hospices. They are clean and cheap, offering private rooms as well as dormitories, and are very popular.

Take Note

Colloquium for next Wednesday (Aug. 1) is entitled "The Structure and Evolution of Spiral Galaxies," and the speaker is Philip Seiden of the IBM Thomas Watson Research Center in New York. Mr. Seiden plans to discuss his theory accounting for the spiral shape of most galaxies. Dick Claassen (5800) is host. The colloquium starts at 10 a.m. in Bldg. 815.

Bill Hubbs, who headed the machine shop out at NTS before he retired from Sandia, now lies ill with leukemia at BCMC, reports Howard Viney (1130). The disease is being kept under control by massive blood transfusions — several per day — and more blood is needed. Sandians who would like to donate blood in Bill's name can do so readily by going to Medical any Tuesday between 8 and 3. Blood Bank people are there at that time, and donors may stipulate that their donation is a replacement for blood used by Bill Hubbs.

Jeff Gammon (3741) of the Employee Transportation Committee believed that out of 137 Sandians living in the Tijeras-Cedar Crest area, enough (25 to 30) would be interested in busing it to Sandia to pursue the matter with a bus charter service. Of the 137 polled, 71 responded favorably, so Jeff

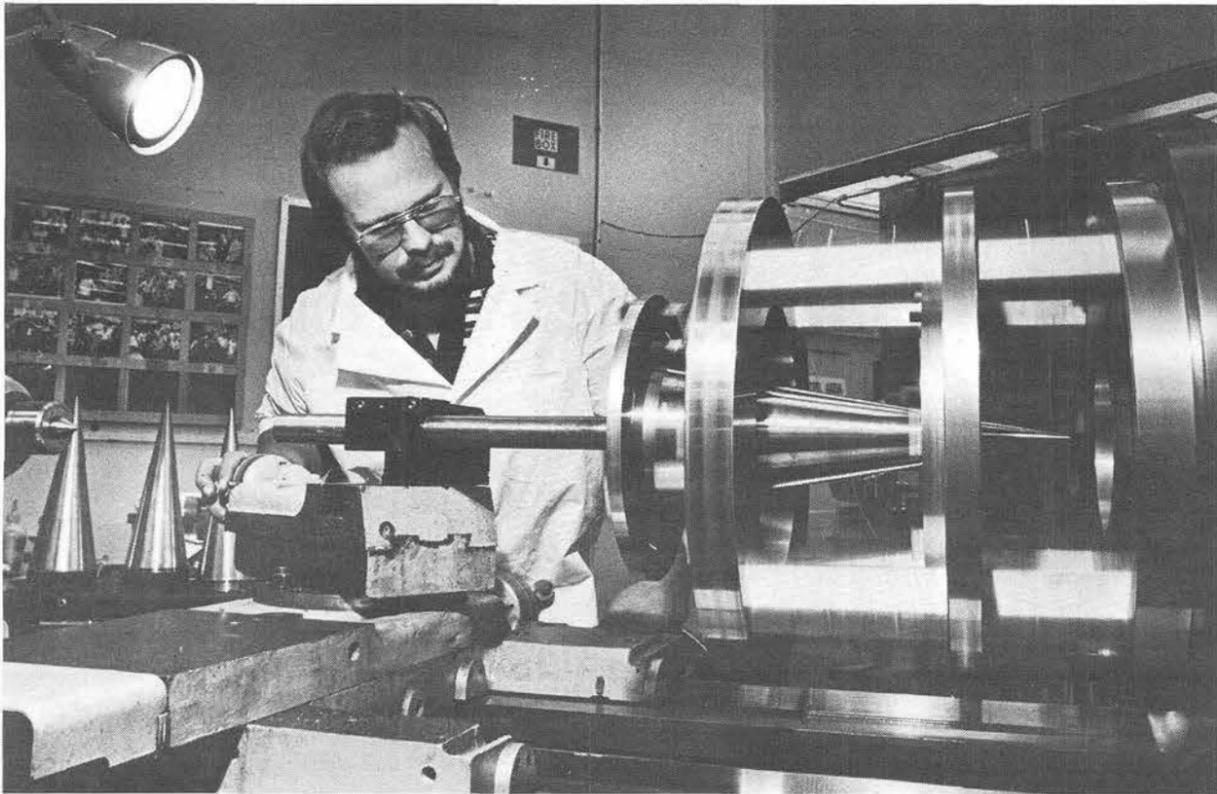
negotiated with the bus company, coming up with a per-ride fare of \$1.50 or 20 rides for \$25 (\$1.25 per ride). When he returned to the 71 with this proposition, it was overwhelmingly rejected — "fare is too high." (Ed. Note — Calculating the cost of driving an automobile solely on the basis of gas expense is an exercise in short-changing. Most studies reckon the total cost to be at least 18¢ per mile, and these studies were performed before OPEC scaled the present heights of price gouging.)

From Tonopah Test Range comes a reminder that TTR people work a four day week — Tuesdays through Fridays. The word is don't call on Mondays — nobody's home on the range.

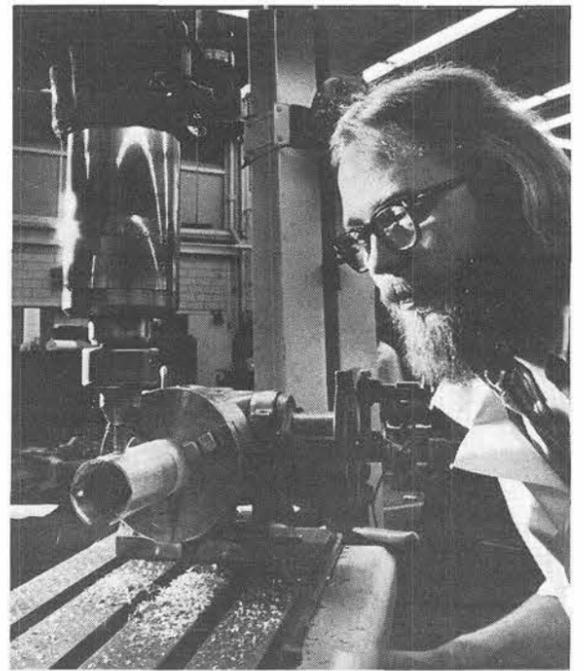
An exhibition of paintings by retiree Dave Berry will hang at Jonson Gallery at UNM Aug. 5-30. An opening reception will be held from 3 to 6 p.m. Sunday, Aug. 5. Parking is available on the paved area at the rear of the gallery.

Speakers

John Holmes (4713), "Solar Power Tower Program," Solar Energy Seminar, Argonne National Laboratory, June 28, Argonne, Ill.



INSIDE a special holding jig, the nosecone of a rocket payload shapes up. Carl Brezowski, fourth-year machinist apprentice, makes an internal cut in the steel nosecone.



JESSE KANNIANEN, who will graduate from the five-year machinist apprentice program in September, mills a slot in one of the internal tubes of a rocket payload.

Apprentice Machine Shop

Five Years from Student to Journeyman

Sandia's machinist apprentice training takes students through a carefully planned, step-by-step five year program to graduate as journeyman machinists, fully qualified, knowledgeable and experienced in the most complex of modern machine shop operations. They are trained by professionals to meet the requirements of demanding technologies — those associated with weapons and alternative energy sources.

For supervisors responsible for apprentice training, the problem is two-fold — match the work to the skill level of the apprentice while making it challenging and still productive for the Labs.

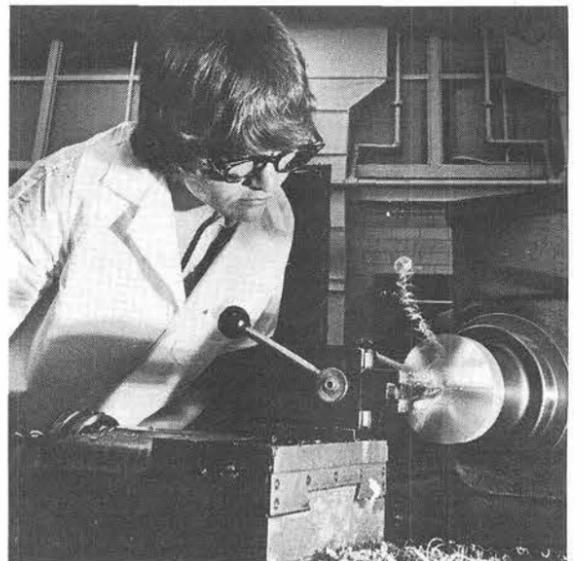
Ed Peterson, supervisor of Machinist Apprentice Training Section 1484-4, found such a job recently when design engineer Lou Feltz (5624) brought an order for five rocket payloads into the shop. Part of a development program called SECORS (for Security Emergency Communication Rocket System), the payloads will be matched with standard military Zuni rocket systems and test fired from Tonopah Test Range in mid-August.

"This was a perfect project for the apprentice shop," Ed says. "The job could be divided into all kinds of piece parts from simple-to-fabricate to complex parts from a variety of materials. We know Lou and his work — good design and good engineering — so we took the job and promised to meet his deadline."

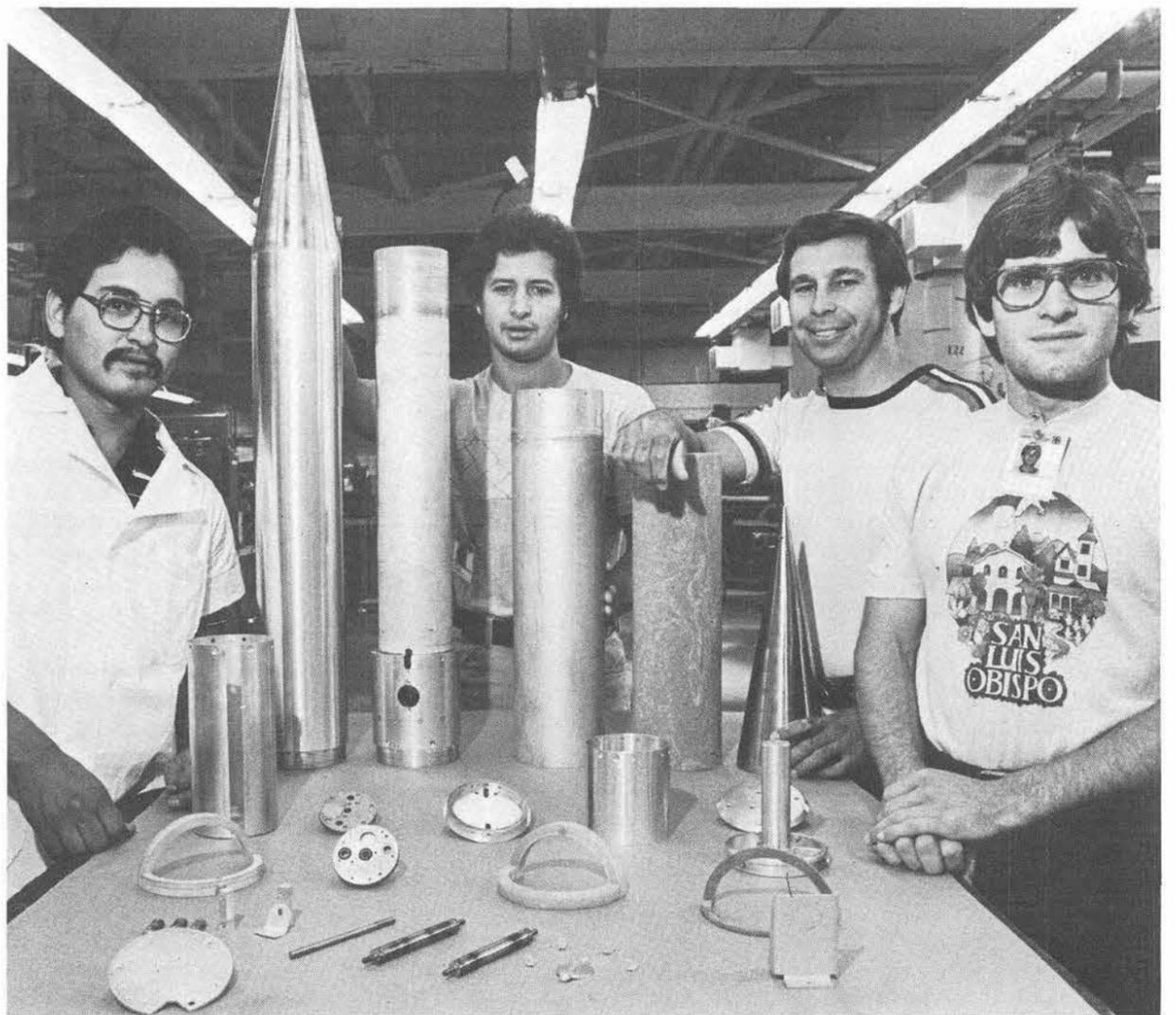
Under the formal training program, apprentices are given 1000 hours of instruction in benchwork, 560 hours in grinding, 1200 hours of turning and boring, 1500 hours of milling, 400 hours in drilling, 600 hours using special machines such as the pantograph, jig borer or power saw and some 3700 hours of special assignments such as welding, inspection and heat treating.

In addition, apprentices complete 1000 hours of classroom instruction in shop theory and related subjects such as industrial mathematics and shop physics.

The machinist apprenticeship program started at Sandia in March 1958. Since that time 98 have completed the training and 29 are currently enrolled. The program at Sandia is administered by the Joint Apprenticeship Committee which includes members from management and the Metal Trades Council. The training is supported by Education and Training Division I 3521.



JEAN WILLIAMS, fourth-year apprentice, makes a facing cut on an aluminum hub, part of the rocket payload job.



ROCKET PAYLOAD SHELL and various parts fabricated in the Apprentice Shop 1484-4 are displayed by first- and second-year apprentices Michael Rosales, Ivan Alderete, Henry Baca and Marcel Hesch.

The Word: Conservation & More Conservation

In a LAB NEWS interview last week, Plant Engineering Director Ward Hunnicutt declared that 65°/80° thermostat settings, reduced lighting and intermittent ventilation are likely to be with us for a long time. "The directives from Washington keep asking — or mandating — for more, not less conservation," states Ward.

The basic problem in complying with these directives is that the Sandia plant is and has been running lean for several years. Since most of our energy savings come from turning things off, a point is ultimately reached where the only things remaining to be turned off happen to be essential to the day to day operation of the Labs. "You have to provide heating or cooling, you need power for machinery and other equipment in the labs and shops, so where do you cut?" Ward asks.

The Labs undertook an energy conservation program following the oil embargo of 1973. Fiscal '75 was used as the base year, and the goals were zero growth — irrespective of changes in Sandia's programs — as well as a 20% reduction in energy usage by FY '85. Then, more recently, President Carter ordered a 5% reduction in use of electricity, natural gas and petroleum, and a 10% reduction in mileage.

For Sandia, the energy equation is complicated by our having added over 100,000 square feet of floor space, plus more than 800 people, since 1977. Nevertheless, our natural gas consumption has diminished between FYs '75 and '78, though electrical consumption has increased slightly.

Further, says Ward, Plant Engineering has a measurement problem. "We'd like to turn off a bunch of lights in, say, 802, then look at the electrical meter and determine the conservation effect. But our buildings don't have individual meters. Our entire electricity usage is calculated by one metering device." The result is that all energy savings of this type have to be calculated analytically.

Ward is encouraged by employee

response (or lack of response, i.e. complaints) to measures already taken. More lights and most water heaters have been turned off. And ventilating and air conditioning equipment isn't started until 8:30 in the morning and is turned off at 3:30 each afternoon. The result has been some discomfort, but energy is being conserved.

"It's been a new experience for us to keep our buildings between 65 and 80 degrees," Ward notes. "The heating and cooling systems in most of our permanent buildings weren't designed for that kind of control. But we're working at it and we'll do our best to provide as much comfort as possible within the 65 and 80 degree constraints. Please be patient . . ."

Events Calendar

July 27-29 — Civic Light Opera, "Company," 8:15 p.m., Sun., 2:15 p.m., Popejoy, 277-3121.

July 27-29 — Two one-act plays: "Mrs. Dolly Has A Lover," and "Halloween," 8 p.m., Downtown Center for the Arts, 216 Central SW.

July 29 — Chamber Orchestra of Albuquerque, Summer Concert II, music of Hayden, Beethoven and Strauss; 4 p.m., Keller Hall, UNM.

July 30 — Lecture Under the Stars: "Voices Out of the Land: The American Writer and the Spirit of Place," Fredrick Turner, professor of literature and folklore, Univ. of Mass., 8 p.m., Central Mall.

Through Aug. 24 — Second Annual Invitational Native American Art Show; painting, lithography, photography and sculpture; Special Exhibit Gallery, Indian Pueblo Cultural Center, 2401 12th St. NW.

Aug. 3-4 — "Bless me, Anima - Growing up Female in America," Kimo Theater, 8:15 p.m., 247-4047.

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Dorris Tendall (1111)



Geri Costello (2632)

NATIONAL POW / MIA RECOGNITION DAY, held July 18 on the Parade Grounds, included two Sandians as honored guests. They were Orville Padilla (4450), representing POWs from the Bataan action of WWII, and Tom Harrison (4721), representing POWs from the Korean conflict. (That's Tom standing to the right of the young woman.) The program included this fly-over by the 150th Tactical Fighter Squadron of the Air National Guard.



feed *lib*back

Q. This morning I went to the copying machine on the first floor, Bldg. 800 (north wing) to run a few copies. I was told by the two people just beginning some copying work that they had "a jillion copies to run — a BIG job —" and that I might as well come back later. At 11:15 (one hour later) I did just that . . . and what to my wondering eyes did appear but the same two people working on the same job! Aren't jobs like this better done by the Print Shop?

A. We wondered what kind of copying job would require a "jillion" copies, so we found out why this situation occurred. Purchasing was in the middle of negotiating a rather large and complicated priority contract and needed duplicates of that contract. The users started this job at 9:50 a.m. and finished at 12:45 p.m. They had been told to stop and let other users in if they were at any good stopping point, however, and continue through the lunch period if necessary. This reproduction effort was not known by the Print Shop.

Signs posted over copiers state "quantities of 25 or more copies can be produced more efficiently and economically in the Duplicating Service Center." This remains true, and persons who have a large duplicating job are urged to use the Rapid Service print shop rather than a copy machine.

K.A. Smith — 3100

Q. If we want to save energy, why not go to a 4-day work week?

A. A four-day work week has been carefully considered from time to time by the Laboratories.

It has been found, however, that the cost of utilities and government vehicle usage for 40 hours is approximately the same whether spread over a four-day work week or a five-day work week. Regarding savings in to-and-from transportation, it is unfortunately likely that most people would drive more miles on an extra day of leisure than the round trip distance from home to the Labs.

Sandia does not propose to deviate from the present five-day weekly schedule at this time. We hope this will not discourage your further thinking on energy conservation. Please continue to submit any further ideas you may have for consideration.

C.R. Barncord — 3200

Q. What base traffic regulations should motorists observe regarding pedestrians (civilian and military) jay-walking across Wyoming (middle of the block) between the parking lot and Bldg. 20130, and Bldgs. 20200 and 20201? (The area between D and F streets.)

A. We appreciate your concern for the safety of jaywalking pedestrians. Our response is not intended to be the final word in the interpretation of traffic laws; however, so far as is known, and in accordance with the practical realities of the car vs. pedestrian argument, pedestrians *always* have the right-of-way.

Nevertheless, your point is well made. Since the area you refer to (between D and F streets) would indicate the violators are non-Sandians, we believe the best approach is to bring the problem to the attention of the Air Force Security Police, and we will do so. However, we have observed a number of Sandia employees who also jaywalk from the parking lot, across Wyoming, and into

Building 800. They will probably also be cited (and properly so) if the Air Force exercises tighter control on pedestrian street crossing.

D.S. Tarbox - 3400

Q. 1) Why must one wait until noon before airline tickets are available at the Teller's Office?; 2) Why doesn't the Teller's Office modernize and use a single queue in waiting for a free teller?

A. Airline tickets are delivered to the Financial Division each day as soon as the Travel Planning and Reservation Section can complete the required reservations and prepare the tickets. Although the daily workload causes the schedule to vary somewhat, tickets are usually available at the teller windows around 11:00 each day.

Every effort is made to provide additional teller service when traffic is heavy by borrowing assistance from an alternate teller assigned to other financial services. However, it is inevitable that lines will form at the teller windows when we are short of help during alternating lunch periods, vacation or sickness absence, and during heavy check cashing periods such as Fridays.

We have investigated the possibility of using a queuing line but we don't have enough room to make it practical. Usually the three teller windows can accommodate the accumulating traffic with easy switch over to an available teller if one line is longer than others.

R.B. Yoder - 6020

Q. A suggestion: That the 1/4 watt, color-coded resistors be reinstated into general stores stock. The markings on currently stocked resistors are too small to be readable.

A. Your suggestion to carry color-coded resistors in General Stores was immediately referred to the Technical Staff Stock Evaluation Committee which is meeting regularly to recommend to us what should be carried in our stock. As a result of the meeting held this week, we have been advised that the committee will recommend that we carry a complete line of 1/8 watt and 1/4 watt color-coded resistors and phase out current non-color coded stock. Committee members have experienced the same difficulty you have and

agreed that the color-coded items are more easily used. Thank you for your suggestion.

J.C. Strassel — 3700

Q. Are eye problems likely as a result of reduced illumination in working areas?

A. Our industrial Hygiene Division has reviewed proceedings of a 1974 symposium on the safety and health effects of reduced levels of illumination. It was the consensus of the symposium attendees that:

1. The lighting standards prevailing in 1974 were based on achieving highly accurate visual performance and were promulgated during a period of abundant energy.
2. A 50% reduction in these standard levels would not impair the safety of employees and would cause no anatomical or physiological damage to human eyes.
3. There is no physiological effect, i.e., organ damage or permanently reduced visual performance, as a result of low levels of illumination.
4. Eye strain is a complex function of the tasks to be performed, the viewer's visual acuity, and the level of illumination. It is difficult to correlate eye strain with a measure level of illumination; however, the symposium attendees concluded that no permanent damage to visual ability would result from repeated episodes of eye strain.
5. If reduced illumination seems to cause discomfort for any Sandia employee, that person should contact Plant Engineering's Division 3652.

Paul B. Mossman, M.D. — 3300



In response to enraged howls of indignation at government obfuscation, the IRS has been trying to simplify its forms and instructions. Two years ago they were "targeted to a 12th grade level and above," according to an item in *People and Taxes*. When a GAO study placed the average reading level in the U.S. at the eighth grade, the IRS decided to one-up the average citizen and make the form even simpler than that. Their efforts to produce forms than even 6th graders can understand will probably die aborning, however. Seems some rather significant words are too difficult for 6th graders — words like "itemize, deduction, spouse, exemption, refund, Social Security, taxpayer and, yes, Internal Revenue Service."

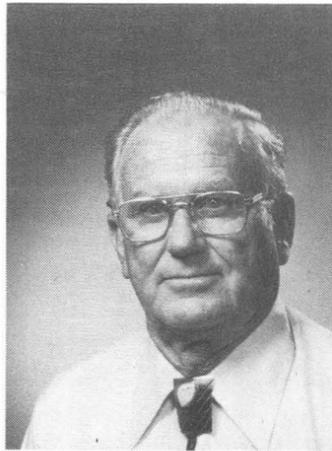


LAST WEEK, ANN MICHELE (3100) was installed as president of The National Secretaries Association (International) in Hollywood, Fla. During her one-year term as president, Ann will meet with the 12-member board of directors, attend conferences, and act as chairman of the association's Research and Education Foundation. She is also a member of the group's Institute for Certifying Secretaries. NSA, whose objectives are to upgrade the standards of professional secretaries, has 38,000 U.S. members plus numerous foreign affiliates. Ann has been a secretary at Sandia for 26 years. She is also the 3000 secretarial coordinator.

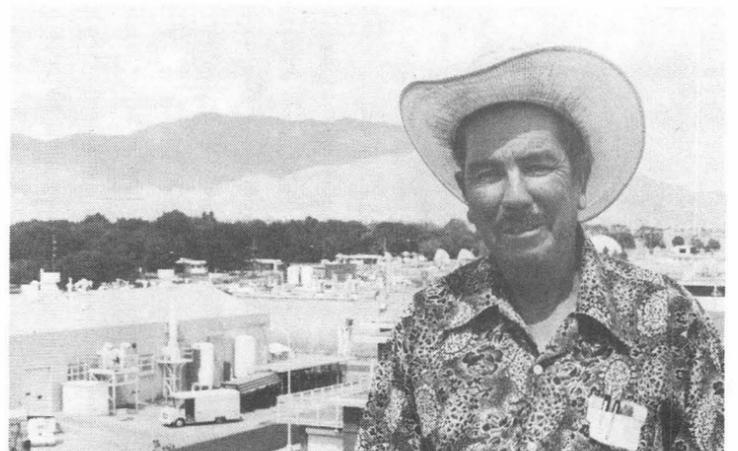
MILEPOSTS

LAB NEWS

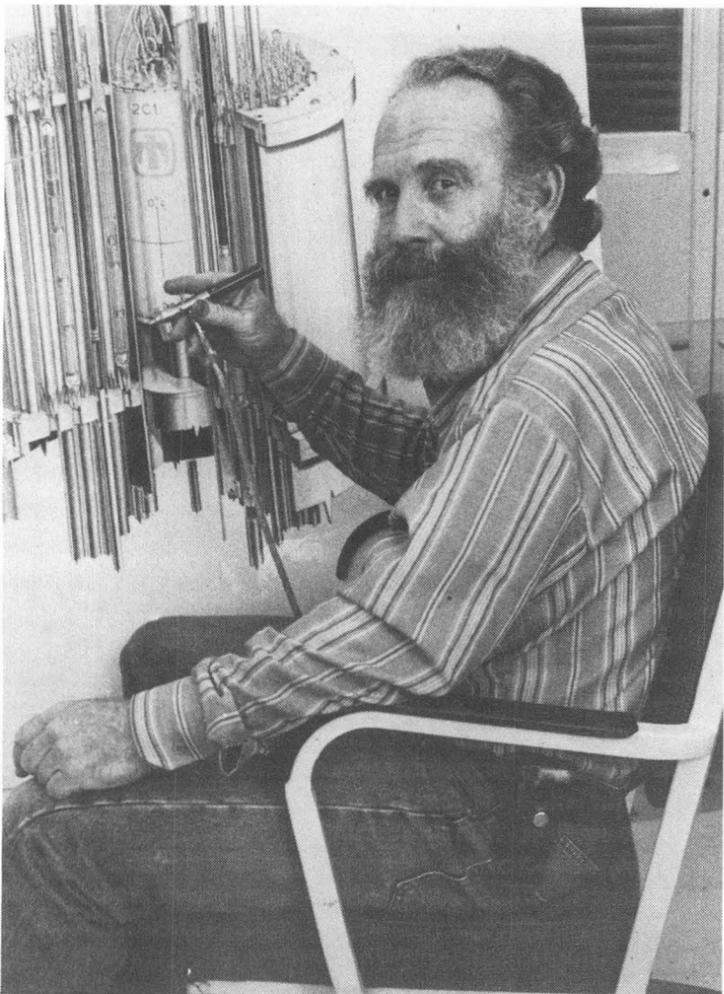
JULY 1979



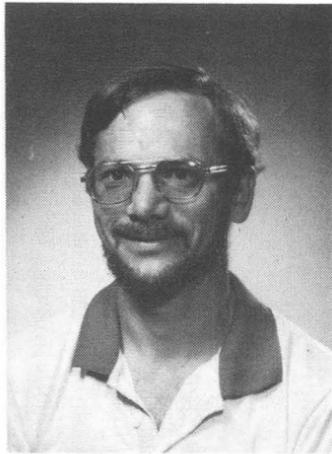
Willis Whitfield - 4453 25



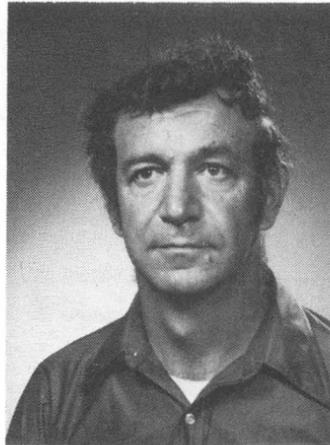
Fedelino Edwell - 3614 20



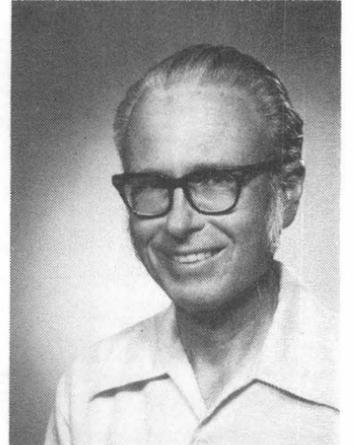
Buzz Babcock - 3151 30



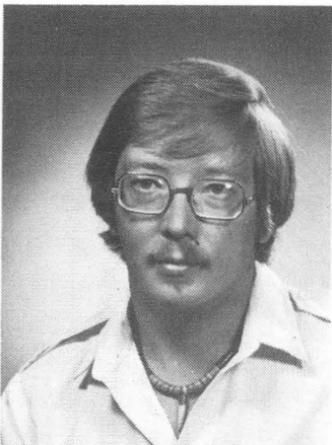
Charles Fuller - 5111 10



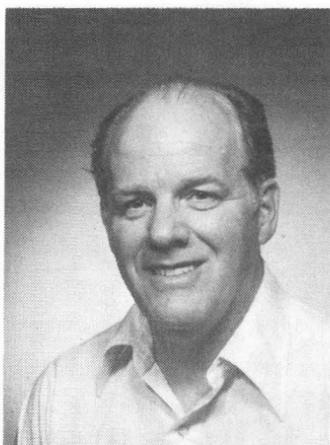
Fred Cericola - 1542 20



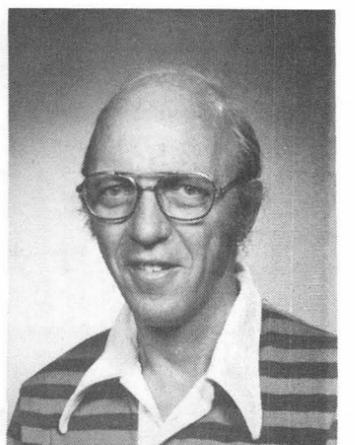
James Nowak - 5812 10



Brian Joseph - 4552 10



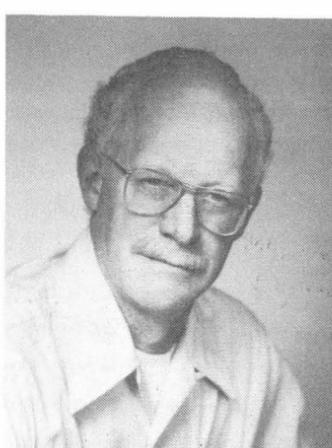
Bill Guernsey - 1481 25



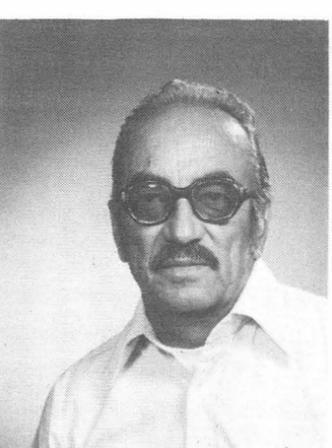
Rodney Boade - 4734 15



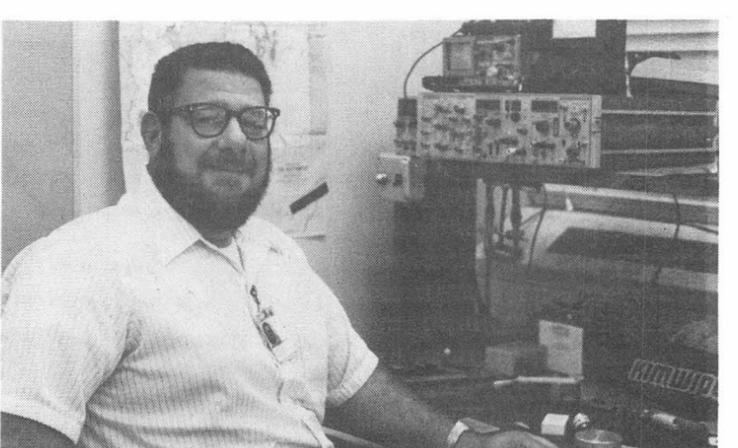
Irv Pytlik - 8271 25



Doug MacMillan - 8411 20



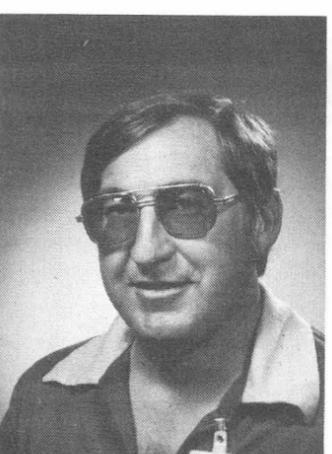
Deaudin Griego - 3742 30



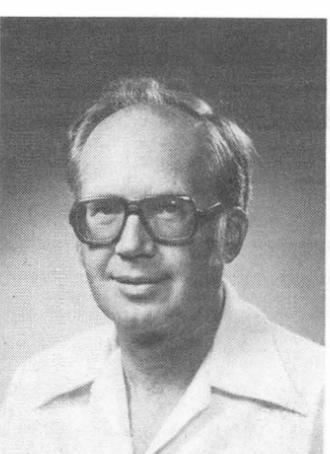
John Anastasio - 2335 15



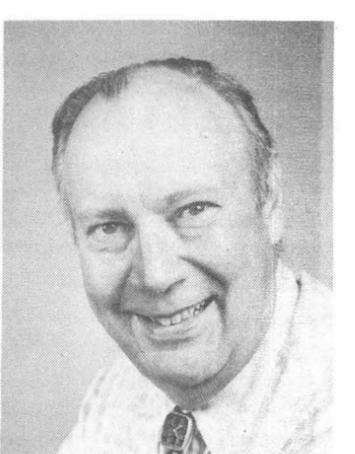
Joanna West - 2632 20



Carl Konrad - 5534 10



Stan Spray - 1232 25



Elwood Ingledue - 8168 25



Marge York - 8212 10



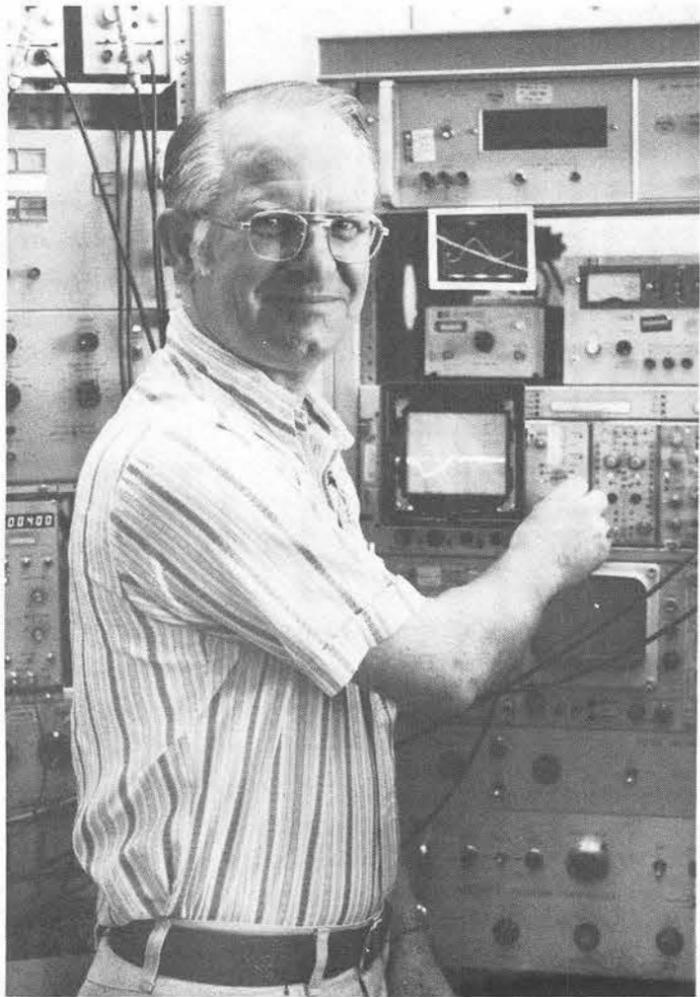
Wallace Newman - 2351 20



Eric Reece - 4733 15



Jack Mortley - 1521 20



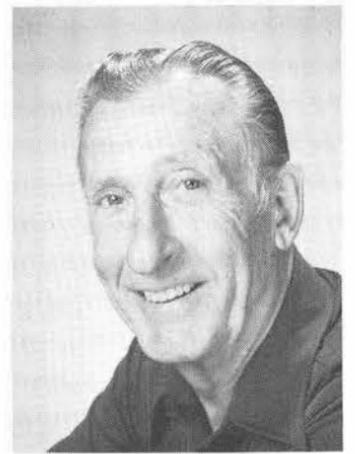
Neal Nelson - 2354 20



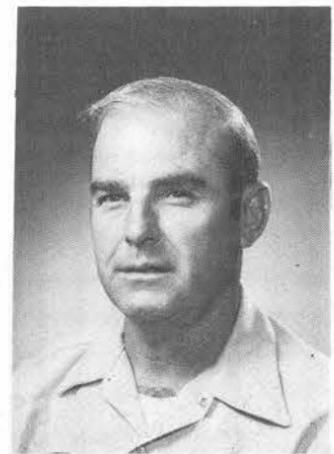
Kenneth Hessel - 2152 10



Herman Kaneshiro 1473 15



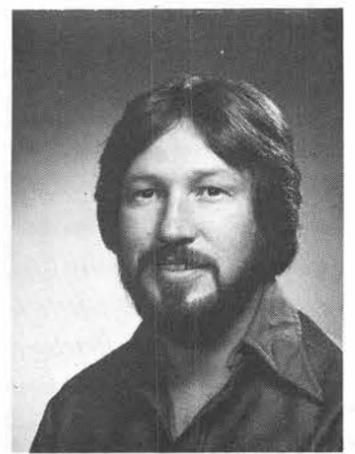
Ralph Jaeger - 8265 15



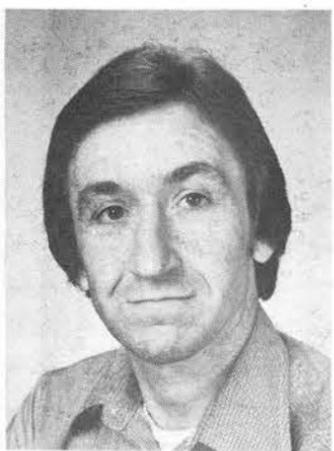
Ray Sanchez - 3421 10



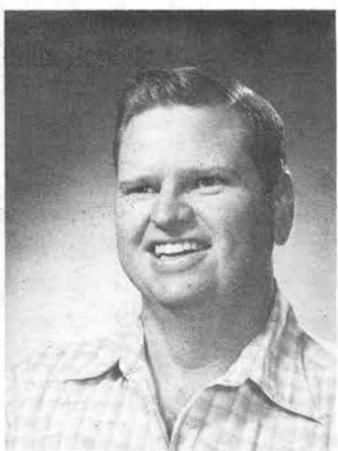
David Barham - 1763 20



Lorenzo Chavez - 1531 10



Tommie Bryant - 8261 20



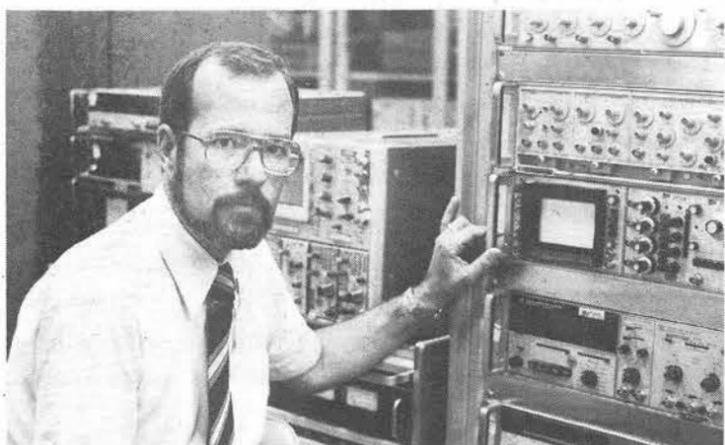
John Kirkland - 1585 10



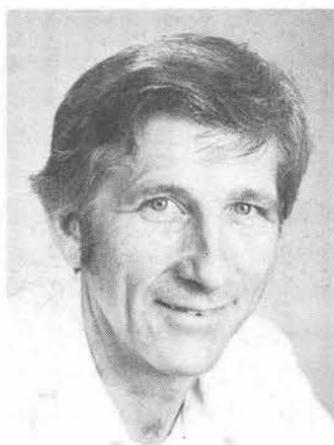
Ernest Duran - 3613 10



Bobby Vaughan - 3154 15



Richard Adams - 2531 15



Chuck Hoyle - 8122 20



Ed Barsis - 2330 10



Roy Tackett - 8115 25

Biking — A few issues back we brashly declared that Sandia in Albuquerque has a greater percentage of commuting bike riders than any other similar institution in the country. (With 225 riders, that amounts to some 4% of the employee population.) It wasn't long before we were shot out of the saddle . . . by our own kith and kin. Sandia Livermore has nearly 100 biking commuters, about 10% of the population, while LLL claims 600 to 650, almost 10% of their population. Looks like we have a way to go. Of course, some will say that numbers out of California and Texas tend to have an unreal quality . . .

Running — At this month's runs in Los Alamos, Skip Dougherty (C-Club) and Patricia Allen (2629) participated in the five-kilometre run. Skip was first in the master's division, coming in 23rd (out of 711) with an 18:31, while Pat took fifth in the 29-38 age

Joe Maloney (2626), and Earl Gruer (3652).

Golfing — Leon Chapman won the low gross trophy in the Fred Given Memorial tournament on July 14 at the UNM South Course, shooting a one under par 71 on the rugged, 6900-yard course. Wendell Nelson (3243) took a tie breaker from Jerry Shinkle (2328) to win the low net trophy; both finished with net scores of 68. Ivars Gals (1717) was tournament chairman.

Bowling — Regulars and subs are needed for the Sandia/DOE Tuesday night men's handicap league this fall at Fiesta Lanes. Call Dan Puetz (2634) at 4-8017 for details.

Fun & Games

bracket with a 24:30. In the 20 kilometre run, Pete Richards (5132) gained a fourth place in the master's division with a 1:23; also competing and completing the difficult 7300'-elevation course were Alan Spencer (3643),

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

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (814/6).

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. 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

DIAMOND EARRINGS, .48 ct total wt., new, \$450. Schmidt, 299-7305.
 PUPPIES, AKC sheppard-collie cross, 6 wks. old, father & mother on premises, \$25 ea. Yaniv, 821-0999.
 '76 CARDINAL travel trailer, 14', furnace, ice box, stove, chemical toilet, \$1900. Hullinger, 1-864-4739.
 AURORA HO scale model motoring set, 2-lane roadway, 42 pieces, power pack, speed controls, cars, \$15. Stevens, 299-6086.
 FURNITURE: sofa & love seat, dark wood & fabric, both for \$265; DR table w/2 leaves, 6 chairs, Ethan Allan maple, \$400. Bartlett, 299-4861.
 WHEELS for Ford ¾ ton pickup, 3 16½", 8-lug, 1 w/9.50x16.5 tire, \$15 & \$25. Bland, 265-6286.
 MACRAME plant holders, wall hangings, ready-made or will make to your specifications. Salisbury, 867-5388.
 FOUR 15" white spoke wheels & tires, 5-hole, will fit Ford pickup, \$150 for all. Jaramillo, 864-8491.
 ROOM AIR CONDITIONER, 5000 BTU refrigerated, \$85. Woodworth, 294-4477.
 29' 5TH WHEEL trailer, Twilight Bungalow, '76 mod., 8'x14' awning, complete w/hookup for pickup, \$8000, 2447 Rose Ave. NW. Manning, 243-7124.
 RC P-38 Lockheed Lightning, partially assembled, two .61 K & B R/C engines; 20-gal. aquarium. Siemers, 296-0651.
 FURNITURE: dining room bedroom & kitchen sets, misc. items. Potter, 268-5451.
 ENGINE analyzer, Alen, professional, \$120. Lenz, 298-9121.
 POOL TABLE, full size, non slate, incl. balls & cue sticks, first \$100 or highest offer. Rueb, 299-4805.
 CLARINET, Reynolds Medalist, \$100; bassinet w/skirt lining, \$10. Montoya, 881-6898.
 OAK DRESSER w/mirror, \$100; clarinet w/case, \$100; kitchen table & chairs, \$125. Iman, 299-6500.
 REFRIGERATOR, \$50; 10-speed, \$15; Kenmore washer, \$20; dishwasher, \$10; mattresses. Wampler, 281-1307.
 DOUBLE BED MATTRESS, foam rubber, matching springs, \$35; Wards 15 cu. ft. upright freezer, \$50. Marrs, 821-5144.
 B-FLAT CLARINET, Selmer. King, 265-3189.
 MATTRESS & box springs, \$50. Denish, 256-1559.
 LOUDSPEAKERS, 1 pr. Celestion UL-00, cost \$600, sell for \$300. Jones, 298-8492.

EASY CHAIR, \$50; man's 3-spd. balloon tires bicycles, \$25. Kidd, 256-1020.
 PICKUP SHELL, homemade, fully insulated, plywood & aluminum, fits lwb, \$250. Waite, 867-5953.
 DERBY stoneware "Camelot" pattern, 4 place setting, \$75. Mason, 821-9260.
 QUADRAFLEX ST-19 stereo speakers, 4-way, 12" woofer, \$275. Kovacic, 281-1754.
 PADDED serving bar, walnut finish, \$100; 2 RV ceiling vents, 14x14, \$10 ea. Gray, 265-1883.
 BABY CRIB, \$30. Abel, 296-6089.
 VW TOW BAR, motorcycle carrier, hitch type; equalizer hitch for 2" receiver w/2" ball. Trujillo, 869-3008.
 SLIDING GLASS DOORS, patio & bathtub; 2 refrig. air conditioners; 2 working B&W TV sets; alum. frame 3x3 window. Martin, 255-8030.
 TIRES, F78-14, Goodyear Custom power cushion, 900 miles wear, mounted on Chev. rims. Clark, 296-4541.
 REYNOLDS Medalist clarinet, \$100; Astrex stereo record player, \$60; fender-mount side mirrors, \$8; Argus 300 slide projector w/changer, \$20. Randall, 299-3935.
 PUPPIES: free to good home, Doberman/Irish Setter mix. Millard, 298-8915 or 268-0036.
 CENTRAL air conditioner, 36,000 BTU w/10 kw heater, 230V, 37A, \$315, (1/3 new cost). Womelsduff, 281-1693.
 CASSETTE DECK, Marantz super scope CD-302 w/Dolby, \$70; bicycle, Sears 10-spd., \$35; telescope, Edmund 3" mirror, \$30. Magnuson, 821-5330.
 12-STRING YAMAHA guitar, \$200; Olympus Pen F half frame camera, \$150; Fairchild TV game w/5 cartridges, \$125. Cochrell, 298-2068.
 BOYS 6½D hiking boots, leather uppers, lined, Vibram soles, \$36, new used 10 miles, will take \$20. Stamm, 255-2640.
 OLYMPIA manual port. typewriter, almost new, 13" carriage, pica type, \$150 firm. Gerstle, 298-7854.
 O'BRIEN "Competitor" water ski, life vest & ski jacket; Gitane 26" bike, 12" aligator, 20 gal. aquarium. Hymer, 298-1606.
 WEDDING & engagement ring set, 35 diamonds in white gold, 25 yrs. old, never worn, \$650. Ley, 281-5174.
 REFRIGERATOR, white, 16 cu. ft., frost free, GE, \$250; freezer, white, 17 cu. ft., \$100; pressure canner, 22 qt. Mirromatic, \$40; canning jars, 4 dz. qtrs., \$10. Allen, 293-3043.
 BEDROOM FURNITURE: washer/dryer; oak desk; stereo; bicycles; plants; etc., Aug. 3-4, 8 a.m.-5 p.m., 5412 Noreen. Dr. NE. Cox, 293-5518.
 SIMMONS CRIB w/mattress, \$50; 8x10 green-orange tweed rug, \$15; 15-gal. aquarium w/iron stand, accessories, \$25. Modreski, 296-9387.
 VIDEOTAPES, blank, VHS format, 2/4 hr. length, approx. \$18. Barnard, 256-7772.
 CB, Pace 162, 23 chan., use as home base or mobile, \$40. Sherwood, 299-2169.
 STUDENT B-Flat clarinet, \$50; guitar,

\$50. Madsen, 294-3235.
 KITCHEN TABLE, 36x48 plus 2 12" leaves, marble formica top, 6 chairs, green vinyl, bronze legs, from Kays Dinette City, \$175. Borgman, 299-6010.
 EAZ-LIFT equalizer hitch, \$50; Volvo hitch, \$25. Sasser, 298-1439.
 10" NEWTONIAN TELESCOPE, f 5.6 40-25-16-6mm oculars, filters, \$415. Jensen, 821-6178.
 ANTIQUE cupboard, \$225; white porcelain wall-hung bathroom sink, \$5. Peterson, 256-7514.
 TRAVEL TRAILER, Teton 5th wheel, 40', 1976, dbl. insulation, storm windows, 2 furnaces, AC, washer/dryer. Fox, 881-8095.
 HOUSEWARES; plants, macrame lamps; linens; TV trays; books; much more, Sat. Sun., 9-5, 9700 Lona Lane NE. Ratzel.
 SHOP MANUAL, 1967 T-Bird, \$5. McIntire, 294-5884.
 '77 TAURUS self-contained camping trailer, new tires; '73 Scout, new motor & tires, includes hitch & wiring. Marquez, 873-1127.
 DRILL PRESS, Craftsman, industrial type, ¾ hp, under warranty. Schroeder, 344-1011.

TRANSPORTATION

'76 DATSUN pickup, short bed, AM radio, 4-spd., below book, 30,000 miles, reg. gas. Norris, 299-3469.
 '75 PONTIAC Astre, 25-27 mpg city, \$1500 or best offer. Behring, 265-7205.
 '78 DODGE Trans-Van, 318 V8, AT, AC, cruise control, 5500 miles, below book. Vonderheide, 842-6988.
 17' MARK TWAIN open-bow boat, new 150hp Mercury outboard, power tilt. Morenus, 293-0339.
 '57 GMC pickup, 4-spd., camper shell, AM-FM radio, rebuilt engine, \$350. Schneider, 884-9250.
 '76 TIIGA motorhome, shower, tub, dbl. AC, stereo, refrig., freezer, captain chairs, sleeps 5, 14,000 miles, many extras. Banach, 292-0788.
 '77 SCOUT II convert., 20,000 miles, \$5000. Kovacic, 281-1754.
 '73 PINTO Runabout, 41,000 miles, AM-FM radio, Michelin tires, new maintenance-free battery, \$1300. Mendel, 265-3840.
 '74 MERCURY Comet, copper color, 2-dr. sedan, vinyl top, AM-FM radio, AC, PS, rebuilt trans. Hartwig, 298-5048 or 821-8305.
 DUNE BUGGY, 40 horse, headers, roll bars & tow bar, extra tires, \$400 or best offer. Armijo, 268-7645.
 '77 ITASCA mini-motorhome, 25', 9200 miles, 350 Chevy chassis, fully equipped, inc. generator & roof AC, Kerr, 296-1991.
 '72 FORD F100 pickup, AT, new snow tires, camper shell, \$2150. Komarek, 281-3826 after 6.
 '76 MUSTANG II, Mach I, V8 w/built in stereo, 4-spd., \$3400. Kenna, 298-6059.
 '77 CHEVROLET van, 6-cyl., AT, PB, PS, AC, all windows, 20,000 miles, \$5000. Olson, 268-2227.
 '74 CHEV ¾ ton Camper Special, AT, AC, PS, PB, new tires-paint-brakes & overhaul, \$2900. Kerr, 299-7527.
 BOAT, 15' fiberglass, 100 hp Evenrude motor, complete water ski rig,

current license & lake permit, \$1050. Snowdon, 344-4637.
 '66 IMPALA 4-dr. sedan, 327 engine, AT, PS, AC, one owner, see & make offer. Dow, 881-2958.
 BICYCLE, Boys' 20" w/high handle bars & banana seat, \$30. Connor, 268-9497.
 BICYCLE, 3-spd., man's, \$50; 10-speed, ladies', \$70. Joseph, 299-6989.
 CANOE, 17' aluminum Lowe-Line, 800-lb. capacity, will trade for square stern canoe or 12' aluminum car-top boat. Holmes, 292-0898.
 HONDA Trail 90, 1969 model, \$225. Luikens, 881-1382.
 '74 CHEVROLET pickup, AT, AC, PS; '69 Open Road camper, 10½' over cab, \$3500 or sell separately. Ley, 281-5174.
 '70 PLYMOUTH Fury III, AT, PS, AC, 99K miles, 383 V8, \$600 or offer. Allen, 293-3043.
 '66 RAMBLER American, 6-cyl., AT, 4-dr., new tires & battery, \$350 or best offer. Modreski, 296-9387.
 TWO BIKES, girls' 20" Sears spyders, \$25 & \$30. Doggett, 293-6210.
 '76 FORD F-250, 4x4, 360 CI, 4-spd., PS, PB, LWB, dual batteries, dual aux. tanks. Walla, 299-2209.
 '71 INTERNATIONAL Travelall, PS, PB, AC, towing package, luggage rack, new brakes & carb, 71,500 miles. Doughty, 296-1465.
 YAMAHA 200cc twin, \$595. Whitley, 842-6715 after 5.
 '79 CHEVY ½-ton pickup, short wide bed, AT, 6-cyl., 5000 miles, \$5500 or trade equity for older model vehicle. Valdez, 345-9446.
 '78 VW Dasher, loaded, take over payments. Gallegos, 262-2011 days or 255-5102 after 5.
 '77 OLDS Cutlass V6, EPA 17 & 20 mpg, 29,000 miles, power, air, \$3895. Syme, 296-4758.

WANTED

MOTHER who has children in Our Lady or Assumption school who could care for a first grader before & after school for working parents. Cernosek, 299-2252.
 WILL TRADE \$10,000 equity in '78 motorhome, 32' deluxe, for equity in house or townhouse. Hubbs, 294-1930.
 RENT CLASS A motor home for 2 weeks, Aug. 12-25. Ewing, 268-6920.
 EXERCISE hand weights, cast steel only. Navalesi, 344-0598.
 MAN'S BICYCLE. Houghton, 299-3386.
 LADIES 3 or 5 or 10-spd. bike. Tabor, 299-0490 or 299-5272.
 GLASS BRICKS, 20 or more, new or used. Arnold, 898-1467 after 5.
 SANDIA women for winter bridge group, 1 night per month. Sheldon, 293-0467.
 HOUSESITTING, Sandja new-hire available for house sitting, no fee. Burns, 255-5366.

REAL ESTATE

3-BDR. Chapman, new roof, new paint inside & out, near Constitution & Eubank, \$59,900. Wicke, 268-8263.
 '74 MOBILE HOME, 12 x 70, 3-bdr., 1 bath, washer/dryer, dishwasher, fp, parked in North Hills MHP, \$11,250. Bullington, 299-1433.

3-BDR. HOUSE, 1 bdr. as nursery, LR, DR or FR w/fp. Silva, 836-0307.
 TWO STORY, 2284 sq. ft., 4-bdr., 3-car, schools, tennis courts, landscaped, \$78,500, 9½%, cti \$44,500 or 9¾% financing. McDaniel, 821-7028.
 '73 MOBILE HOME, 12 x 65, set up in 4-Hills, adult section, 2-bdr., 1 bath, landscaped, fenced yard. Orth, 299-4610 after 6.
 3-BDR., 1½ bath, w/16x32 in-ground pool, near Juan Tabo & Copper, \$53,900 owner/ broker. Maxam, 296-9394.
 MOBILE HOME, 1978 Windsor, 2-bdr., 2 baths, utility room, in park near Base. Pigg, 865-6463.
 TWO-ACRE LOTS, controlled subdivision, east side of Sandias bordering Nat'l. Forest, 20 mins. from Labs, underground utilities. Kennedy, 298-0704.

FOR RENT

3-BDR. house, 4 miles from Base, \$275/mo., avail. Aug. 1. Martinez, 298-8812.
 RENT/LEASE: new 2-bdr. unfurnished apts., fp, carpets, drapes, all major kitchen appliances, \$250/\$275/mo. + gas & elec., \$150 DD. Taylor, 292-0496.
 ONE-HALF ACRE in Bosque Farms, all utilities, 2 wells, no pump, for mobile home, \$60/mo. Armijo, 268-7645.
 PRIVATE PATIO, 1-bdr., living area w/fp, lg. bathroom, water paid, \$165/mo. Durand, 840 Ortiz SE, 842-6700.
 HOUSE IN NE (Eastridge), avail. 8/15/79-9/1/80, 3-bdr., 2 baths, all major appliances, \$375/mo., water included. Reif, 299-2665.
 2-BDR. HOUSE in Kirkland Addition (SE), avail. Aug. 1, water paid. Parker, 836-3195.
 2-BDR. APT, new 4-plex, view, stove, refrig., carpet, drapes, near Lomas & Tramway. Nelson, 268-0208.
 SHORES TOWNHOUSE, 3-bdr., 2½ baths, pool, patio, clubhouse & tennis privileges, unfurnished, water paid, \$450/mo. + \$100 DD. Newsom, 299-2074.
 CHALET in Taos Ski Valley, 3-bdr., fully equipped kitchen, quiet, scenic, hiking, fishing, etc., \$28-\$38/night. Marion, 294-8256.
 1 YR. LEASE: 2-story adobe style in NW valley, 4-bdr., furnished, on 1 acre w/horse facilities. Houston, 345-1169.
 HOUSE, Montgomery-Eubank area, avail. 8/20/79-9/1/81, 1900 sq. ft., 3-bdr., 2 bath, study, den w/fp, dbl. garage, landscaped, sprinklers, \$475/mo. Ratzel, 821-7089.
 2-BDR. furnished house on acre lot, \$225/mo., single or couple, no dogs in house, \$50 DD. Schock, 877-3728.

WORK WANTED

HAVE TRUCK, will haul, paint, whatever. Peter Shunny, 265-1620.

LOST AND FOUND

LOST — Ladies' gold Hamilton watch, black box w/10 lights & multiple pin package.
 FOUND — Screwback bead/turquoise earring, 6x9" color portrait of small boy (found in Tng. Comp. book), silver frame Rx sunglasses. LOST AND FOUND, Bldg. 832, 264-1657.

Coronado Club Activities

New Cruise Announced

HAPPY HOURS — Young Blood holds the bandstand tonight while beef kabobs top the menu. Next Friday the buffet features Steamship round of beef, a group called Crosswinds making music. To reserve buffet tickets, call the Club office by mid-week, 265-6791.

VARIETY NIGHT on Saturday, Aug. 4, features entertainment by the Miguel Caro Dancers, a Mexican dance troupe. The movie is "Ride a Wild Pony." Super sandwiches are available starting at 6 p.m., the show starts at 7. Admission is free to members and families.

TEENAGERS disco Thursday, Aug. 9, with Bryan Dunn and Dunn's Dancing Machine making the music. Member parents must pick up tickets for their youngsters.

TRAVEL — The Club announced a Caribbean cruise this week starting Jan. 5, 1980, from San Juan, Puerto Rico, for seven nights on the Amerikanis. Visit a different island every day. Prices depend on accommodations chosen. Check with travel director Ed Niedel in the lobby tonight between 6 and 7. Ed also has packages to Mazatlan, Ixtapa, Hawaii, Europe, Disneyland during October, and excursions on the Cumbres and Toltec railroad on Aug. 25 and Oct. 5.



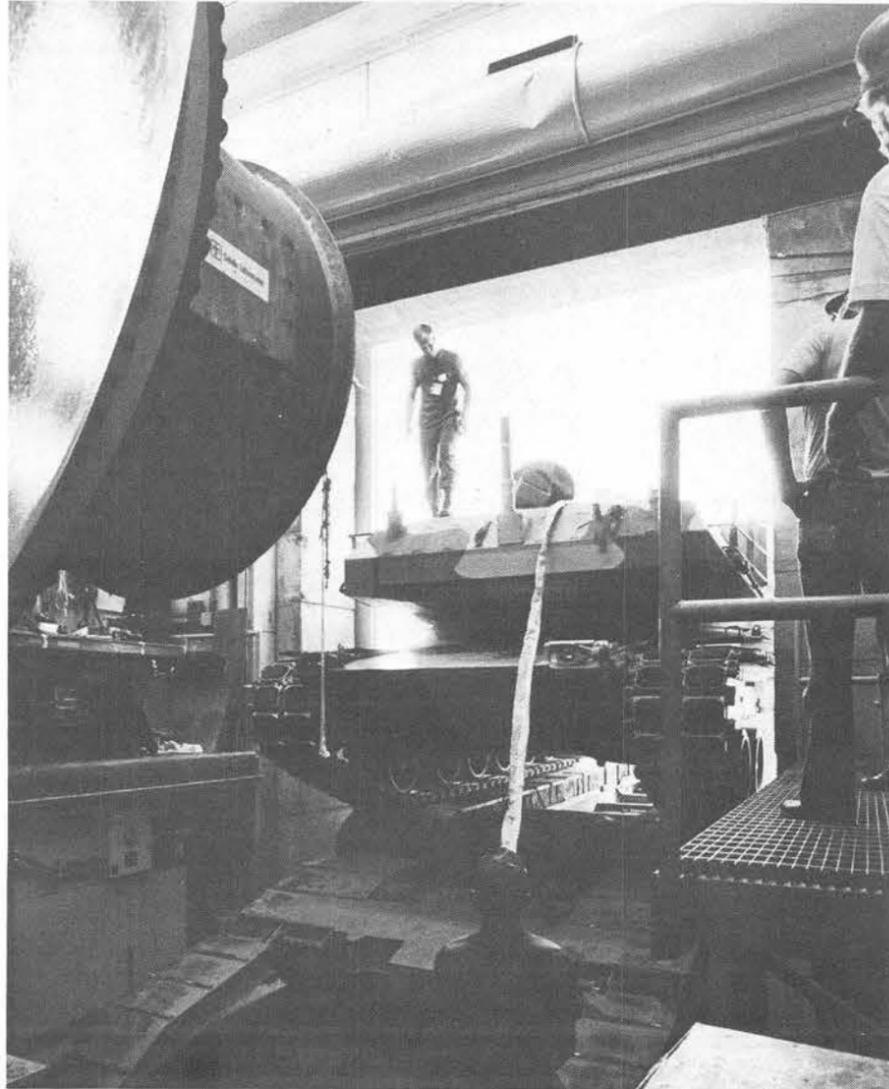
It's easy enough to blame air pollution on the industrial giants — but hardly fair in light of a recent Environmental Protection Agency report. Seems about 80 percent of the cars manufactured in the U.S. since 1971 are heavy polluters, even though they're equipped with emission controls. "Widespread maladjustment of engine settings, deliberate tampering and illegal use of unleaded fuel have rendered them ineffective," says the EPA report.



FRIDAY	SATURDAY
27 — HAPPY HOUR Beef Kabobs Buffet Adults \$5.25 Under 12 2.60 YOUNG BLOOD	28 — WOLFPACK PARTY 6:30 - 10 Disco, Cocktails Dinner (Members Only)
3 — HAPPY HOUR Steamship Round of Beef Adults \$5.25 Under 12 2.50 CROSSWINDS	4 — VARIETY NIGHT Miguel Caro dancers "Ride a Wild Pony" Super Sandwiches 6 p.m. Entertainment 7 p.m.

Retiree Deaths

Robert Zumwalt (65)	April 2
Andrew Kuntz (77)	April 12
Franklin Martin (73)	April 18
Harold Gustafson (55)	April 19
Howard Turner (63)	April 21
Vera Reed (79)	April 27
Santiago Garcia (82)	April 29
Irving Ellicott (80)	May 7
Prospero Armijo (69)	May 21
William Anderson (62)	June 9
Joseph Duran (73)	June 15
William Smitha (71)	June 18
Emil Pearson (83)	June 29



HERMES II, MEET THE XM1 — This improbable liaison, between the Army's latest tank and Hermes II, Sandia's flash X-ray machine in Area V, took place because the Army wanted to perform radiation vulnerability tests upon the new machine. Bob Schuch and Jesse Harness of Beam Source Applications Division 4232 worked with the Army people to squeeze the 60-ton XM1 into the test area. The tank has a turbine engine, is based at White Sands.

