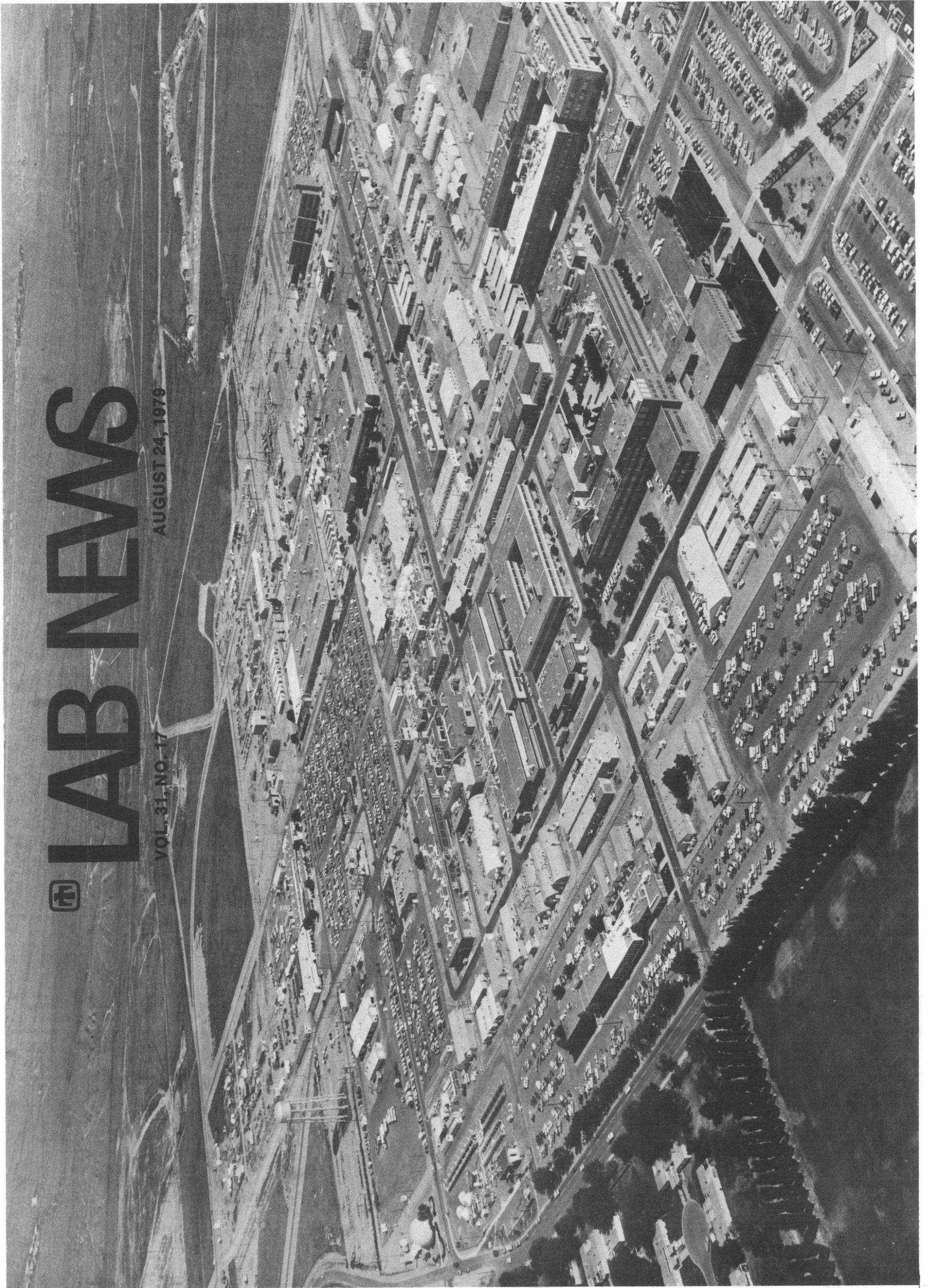


LAB NEWS



VOL. 31, NO. 17

AUGUST 24, 1979





LAST YEAR Sandians gave more than \$600,000 to the Employees Contribution Plan which supports the 39 agencies of United Way plus eight national health organizations. Share Your Care, Inc., is one of the newer United Way agencies where day care for frail elderly and dependent adults is provided. Above, Billie Poteet (center), executive director, joins a songfest at the center. United Way agencies provide vitally needed services for children, adults and senior citizens of Albuquerque. With rising costs, goal of this year's United Way drive is \$3,500,000, up some 20 per cent from last year. At Sandia, the ECP drive is scheduled Sept. 10-14.

Distribution of ECP Funds Set

Sandia Labs' annual Employee Contribution Plan campaign is scheduled Sept. 10-14, Gene Blake (1710), ECP committee chairman announces. As plans for the drive shape up, the committee has determined the percentage allocations of ECP funds for 1980. (ECP supports 39 agencies of the United Way of Greater Albuquerque and eight other national health agencies.)

This is the way ECP funds will be distributed next year:

	% of total
United Way (which now includes the Cancer Society) ..	86.8
Heart Association	2.5
Cerebral Palsy4
Muscular Dystrophy	3.0
Arthritis Foundation7
Easter Seal Society for Crippled Children & Adults	2.3
Multiple Sclerosis	2.1
Cystic Fibrosis7
Lung Association	1.0
Reserve5

Help Needed to Resettle Russian Refugees Here

Jennie Tischhauser (3434) and JoAnn Barsis (husband Ed is in 2330) are co-chairmen of a project to resettle in Albuquerque a refugee family from Russia. A young couple, a middle-aged couple and grandmother are arriving here next week after leaving Russia for political and religious reasons.

HEW is providing funds to match those contributed by the Jewish Community Council of Albuquerque. Also helping is the Women's American Organization for Rehabilitation through Training (ORT).

"Still," Jennie says, "we have funds for only about three months, and there are things we could use — household items, small appliances, bicycles, phonographs or cassette players, books, radios, clocks. But most important, we need the community to reach out to this family."

If you can help, call Jennie at 293-8768 or JoAnn at 293-5347.

Deaths

Max Richter, supervisor of Property Use Analysis Section 3411-1, died suddenly Aug. 20. He was 58.

He had worked at the Labs since 1949.

Survivors include his widow, a son and a daughter.

Junior Woellhart of Plant Utility Systems Division 3611 died Aug. 7 after a long illness. He was 59.

He had worked at the Labs almost 29 years.

Survivors include his widow, a daughter, a son and a grandson.



The Cover

Taken earlier this month by LAB NEWS photographer Bill Laskar, our cover photo shows all of Tech Area I and II, as well as outlying facilities such as the vertical axis wind turbine. Bill shot the photo from a helicopter at an elevation of 1000 feet.

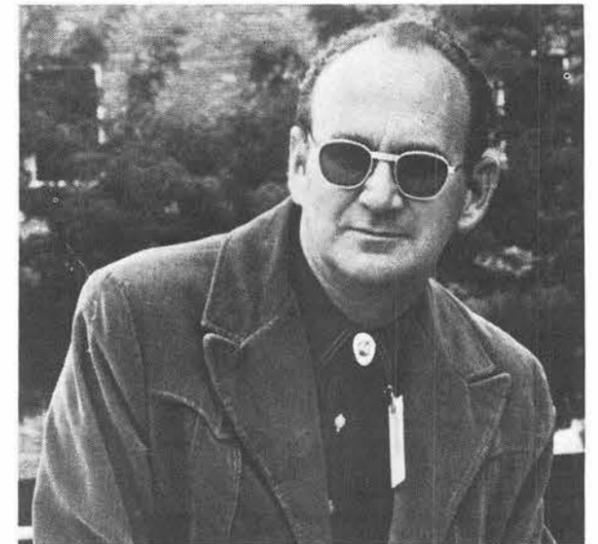
Supervisory Appointments



JIM JELLISON to supervisor of Process Metallurgy Division 5833, effective Aug. 1.

Since joining the Labs in September 1970 as an MTS in his current division, Jim's work has been in the area of fusion welding, solid phase welding and process development research.

Jim earned his BS in metallurgical engineering from the University of Kansas. He received his MS in the same field and PhD in materials science from Rensselaer Polytechnic Institute. He is a member of the American Society for Metals. Jim's leisure interests include church activities and trout fishing. He and his wife Virginia have two children and live in NE Albuquerque.



GEORGE STONE to supervisor of Systems Research Division III 1253, effective Aug. 1. George has been with the Labs for 19 years, working in the field of experimental and theoretical aerodynamic flight mechanics. He will continue this work in his new position.

George earned BS and MS degrees in aeronautical engineering from Georgia Tech and his PhD in aerospace and mechanical engineering from the University of Notre Dame. He is past chairman of the Albuquerque section of the American Institute of Aeronautics and Astronautics and served three years on the national committee for flight mechanics of AIAA.

George enjoys hunting, fishing, camping and Boy Scout work. He and his wife Gloria have three children and live in NE Albuquerque.

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LIVERMORE NEWS

VOL. 31, NO. 17

LIVERMORE LABORATORIES

AUGUST 24, 1979



BIRTHDAY GIFT you can't buy — Hesa Yano (8334) made a hole-in-one July 25 on the second hole at Las Positas golf course. A memorable day for any golfer — but this was his 50th birthday. "Best gift I got," said Hesa, stroking his trusty six-iron.



DELSOL developers Mim Fish and Ted Dellin. This month they co-chaired a conference at SLL for prospective users of the computer code. It was attended by 31 people, including three from foreign countries.

DELSOL Computer Code

How High the Sun?

Or, more precisely, how expensive the electrical energy produced by a solar central receiver plant? And what design for major plant subsystems is best in the long run? The answers to these questions depend on many complex and interrelated trade-offs among the performance levels and costs of the subsystems of such a plant, especially its heliostats, the most expensive components in the system.

DELSOL ("of the sun") is a new computer code that helps answer the question. Built on Ted Dellin's (8451) earlier research and developed by Mim Fish (8326) and Ted since then, DELSOL allows solar designers to optimize the system design (tower, receiver, heliostat field), estimate performance levels, and calculate the costs of energy produced. "The bottom line," says Mim, "is the system's energy cost expressed in cents per kilowatt-hour."

While other codes perform some of the same tasks, DELSOL is unique in the detail of its system design capability and in its computer time requirements. "DELSOL uses analytical techniques, including a Hermite polynomial expansion of the heliostat images, to predict the solar flux on a receiver," says

Ted. "With other codes, based on numerical techniques, a separate calculation is performed for each of the hundreds of tower and receiver combinations searched over in optimizing the design. It's a time-consuming process.

"With DELSOL, one relatively fast calculation can be used to predict the performance for any tower or receiver. The time saved amounts to several orders of magnitude over traditional numerical techniques."

The need for DELSOL grew out of Sandia's role as project managers of new solar central receiver technology. Tools such as DELSOL are the means by which Sandia directs the development of such technology. In the broad sense, it provides a perspective on the evolution of solar. For example, the code was recently used to evaluate heliostat design options — what would happen to the cost of energy if, say, cheaper, lower quality heliostats were built? Such studies provide builders with cost goals — "if it's only this good, then it can't cost more than so much."

In another sense, DELSOL offers a means by which to evaluate designs and subsystems of solar hardware proposed by industrial contractors. For example, it is now one of the tools Sandia uses in reviewing advanced systems designs for DOE.

"We feel DELSOL can be applied to a wide range of problems," says Mim. "And the people who attended our DELSOL presentation at the International Solar Energy Conference in Atlanta last May apparently think so too — we've gotten requests for copies from all over the world. Using the code means new entries in heliostat or receiver development won't have to start from scratch."

"And one of these days," Ted predicts, "optimized heliostat designs, mass produced, will be the key to supplying thermal power at costs comparable to those of fossil-fired plants."

ENERGY. We can't afford to waste it.

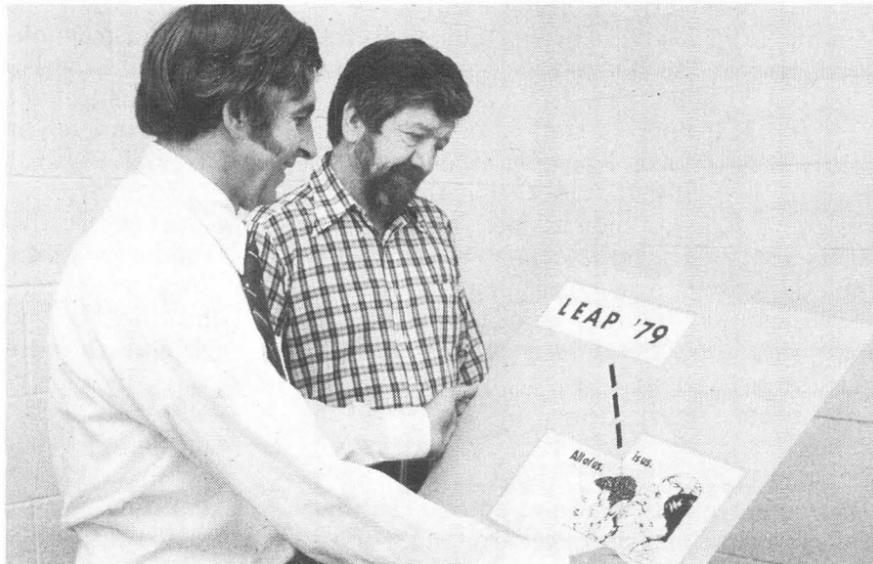
Sympathy

To Stan (8161) and LaVonne Pickens (8213) on the death of his sister in Pamona, July 16.

Congratulations

Kit Swingle and Tim Marino (both 8423), married in Reno, July 17.

LEAP '79 — Planning is underway for this year's Livermore Employees' Assistance Plan campaign, with agency representatives currently briefing the committee. Here chairman Marlin Pound (8214), left, and Jim Carothers, co-director of Connection, a local 24-hour information / listening service, discuss campaign poster and slogan, "LEAP '79 Is Us, All of Us." The campaign will be held the first week in October.





JACK WESBROOK (2631) hangs lapel buttons on his office wall. Here he displays the original one of his collection. It says, "I Pray in FORTRAN."

Jack Wesbrook Has All His Buttons

Jack Wesbrook, supervisor of Computer Operations Division 2631, has been in the computer business a long time. He worked with Sandia's first computer — an IBM 705 — back in 1956 and has been part of the evolution of Sandia's Computing Center in Bldg. 880.

"It's a serious business," Jack says. "Things can get a little tense around here."

Does this explain the collection of 270 lapel buttons displayed on his office wall?

"Partially," is Jack's answer. "We can always use a laugh. And it's a conversation starter. It helps to relax friends and strangers."

How did the collection start?

"About six or seven years ago, Charlie Clendenin and I were attending a computer conference in Las Vegas and someone was passing out 'I Pray in Fortran' buttons. I brought one back and hung it on the wall.

First thing you know, people started bringing me buttons. So I hung them all on the wall — inspiration or something."

Gems from the collection include "Fight Data Pollution" and "I'm Overdrawn at the Data Bank."

He has authentic "Win With Wilkie" and "Let's Back Ike" political buttons and others for Senator Joe Montoya, Governor Jerry Apodaca, and Emma Gonzales, even Pat Paulson for President.

There are a number of enigmas. Consider "Fiji Power" or "Fink University." And several buttons printed in Russian, Japanese and Polish languages. Must be American jokes.

Jack's favorite?

"Fats Is Beautiful."

"My former secretary gave me that," he says. "I also like 'When In Doubt, Doubt.'"

Our Town

Dial-a-Teen to Work Odd Jobs

There's some 6000 teenagers out there waiting for a phone call. They're registered with Dial-a-Teen, a job placement service sponsored by the Albuquerque Public Schools.

They will do almost anything — window washing, housecleaning, help you pack to move, mow lawns, take care of grounds, baby-sitting, house sit, paint, build shelves, or rake rocks.

It works this way. You dial 247-3691. You talk with a teenager manning an answering service. You tell her what kind of a job you have. She dials three youngsters in your neighborhood and tells them about it. They call you. You negotiate and hire one or more. They do the job. A few days later, a Dial-a-Teen rep calls you to find out how it went. Your evaluation is filed on the worker's card. It helps if the teenager did a good job. He or she gets more calls that way.

The teenagers register with Dial-a-Teen through their schools. Ages range from 14 through 18. They list the kinds of skills they have and the kinds of jobs they would prefer.

When a potential employer calls the service, the skill listings are checked. The service tries to find someone in the neighborhood of the employer. Transportation can be a problem.

Headquarters for Dial-a-Teen are in the APS Career Enrichment Center, 807 Mountain Road NE. From four to seven teenagers man the Dial-a-Teen number from 8 a.m. to 4:30 p.m.

Jack Kaemper is staff coordinator for Dial-a-Teen. (Carol Kaemper is department secretary in 5510). Jack says that the service fills about 3600 job requests per year. And he talks about success stories — teenagers operating their own gardening businesses, housecleaning services and the like. He mentions, too, the youngsters placed in permanent positions with fast food restaurants, retail stores or construction companies.

Naturally, he talks about the need for more employers. If you have an odd job that you can't quite manage to get around to, dial a teen. 247-3691.

Q. This would seem to be an excellent time for SLL to reconsider the four day week. It is my understanding that 22% of SLL's energy consumption is spent on lighting alone. Lights out 20% of the time (one day in five) would cut our energy usage by more than 4%. Adding this to the other energy that would be saved should result in savings greater than 74%. In addition to the in plant saving, gas would be saved by employees remaining home one day in five.

A. Thanks for your suggestion. We have already cut back in a number of areas - lighting, air conditioning, etc. However, our work depends upon important interfaces with other organizations - DOE, DOD, other Labs - who are on a five day schedule and we cannot realistically consider any other work schedule.

A.W. Blackwell — 8200

Q. Has any thought been given on the use of electric hand driers in restrooms? I know we are experiencing an energy crunch, but paper towels in the quantity used surely are not cost effective.

A. Your suggestion has been analyzed by our plant operations people as follows:

Paper Towels: Usage last 12 months 1,877 cartons; 30 packages/carton, 125 towels/package; cost was \$10.40/carton or \$19,520.80/yr. Cost per towel, material only - 0.27733¢.

Electric Dryers: 230 volts/10 amps = 2,300 watts = 2.3 kw. We have 425 restrooms and custodial people estimate that 50% would warrant two dryers and the others one each. So, 425 x 3/2 = 637.5 dryers. Cost per dryer, material only = \$160.00 ea. 637.5 x 160 = \$102,000.00 material only.

Operating Costs: Since our electrical energy demand peaks around noon time, when restrooms experience peak usage, the demand meters probably would see all of these at least once a month, which is enough to incur the \$4.50/mo/kw charge.

It is apparent that the capitalization and operating costs are an order of magnitude larger than our present system.

R.W. Hunnicutt — 3600

Q. (from SLL) Has solar heating been considered for the Combustion Research Facility now under construction? It would seem appropriate in light of our involvement in energy projects.

A. Yes we did consider solar heating for the Combustion Research Facility. We felt, as you do, that this would be a good application for our technology and good public relations. A joint study was made by PG&E, Sandia, our architect and the University of Wisconsin. Unfortunately, the cost was determined to be excessive for the small energy and cost savings. It was impossible to consider solar heating in the scope of original project funding. We did request that this facility be considered for additional funds for solar heating, but another facility was selected as a demonstration project.

The facility does include many passive energy saving features — solar glass, insulation, shading panels, etc. Also, the heating system design was specifically made so that solar heating could be incorporated easily in the future.

A. Blackwell - 8200



NEW VAX COMPUTER is examined by Gino Carli, supervisor of Computer Aids Development Division 2424, as Bill Burd (2424) checks out a MADDS console. VAX now links all the Org. 2400 MADDS systems.



BRIEN BOPP (2457) uses a MADDS console to check extra dimensions VAX power added to the system. Gino Carli (2424) and George Urish (2454) coordinated installation of VAX.

VAX Has Arrived

New Computer Links Org. 2400 Interactive Graphics Systems

A new dimension was recently added to the MADDS (Machine Aided Design Definition System) interactive computer graphics systems operated by the Design Information Center, organization 2400. Not that MADDS isn't impressive already.

At a MADDS graphic terminal, users can create geometry representing any category of engineering drawing or use the system to solve various engineering graphics problems.

Many of the features common to graphics systems are available, including scaling, rotation, three-dimensional views, etc.

The graphics definition can be stored and then retrieved for updating. The definition becomes a part of the complete data base associated with a program. If need be, this graphics definition can also be electronically transmitted to Bendix for fabrication.

Impressive?

Now consider this. The five separate MADDS systems used by 2400, a combined total of 22 design terminals, are being interconnected to form a powerful graphics processing network. Located in Bldgs. 836 and 892 in access controlled valut areas, the MADDS terminals will now be linked by a super mini central computer which provides a large capacity memory and a more rapid data handling and calculational capability. In addition, it makes possible the exchange of complete data base files from one MADDS installation to another — including transmission of classified data over secure hard-wire links.

Plans include a design terminal, connected to the network, to be located in the Process and Fabrication Labs. With this a graphics data file, created by 2400 users, may be accessed (by parts programmers in Organization 1480) to make a numerical control tape for driving NC machines for part fabrication.

Other plans are underway to extend the MADDS data base into automated design layout aids and related areas. The total system will be as automated as possible, giving the designer control of the CAD/CAM system.

Heart of this new system is a VAX 11/780 computer built by Digital Equipment Corporation. VAX is a new breed of computer — sometimes called a super-mini. Its capacity is about one-half that of a CDC 6600. The 2400 VAX costs \$250K. That's inexpensive for

a computer with this kind of power:

- 32-bit word size
- 1.5 megabytes of memory (expandable to 8 megabytes)
- 2 disk drives with a total capacity of 350 megabytes
- 8 terminals for timeshare operation (capability for 16)

VAX uses DECNET communications software. The operating system is VMS, a virtual addressing system.

The 2400 design definition organization is the first of several planned users of VAX-type computers. Nuclear Security Systems 1700 has a VAX machine ready for installation, and other directorates are considering employment of similar computers.

NTS Rock Studied For Waste Disposal

Argillite, a clay-rich rock resembling some shales, may be able to withstand thermal and mechanical loads produced by buried canisters of commercial high-level radioactive wastes, a recently completed Sandia Labs field experiment indicates.

The 250-day experiment involved placing a 3.5 kilowatt electric heater, simulating a radioactive waste canister, in a hole 80 feet below the surface at the Nevada Test Site and monitoring the thermal response of the rock. NTS has been the scene of underground nuclear testing for three decades.

"Based on this early experiment, argillite, which is found extensively in the central and southwest portions of NTS and in several other U.S. locations, should not be ruled out as a possible disposal medium for high-level radioactive wastes," says Al Lappin of Geological Projects Division, 4537.

"This test produced no comprehensive fracturing or significant hole wall degradation, either one of which is a sign of mechanical failure that could complicate waste storage," he adds.

The cylindrical heater — one foot in diameter and about 10 feet long — was placed in a 14-inch-diameter hole. Temperatures at the heater center line reached 350°C at 250 days into the test. Temperatures within the

Events Calendar

Aug. 24-26, 31-Sept. 2, 7-9 — Albuquerque Civic Light Opera, "Sugar," 8:15 p.m., (2:15 matinee Suns.), Popejoy.

Aug. 26 — Chamber Orchestra of Albuquerque, Summer Concert III, works of Mozart, Schubel and Schubert, 4 p.m., Keller Hall, UNM, 277-4402.

Aug. 27-28 — San Augustin Fiesta: carnival, street dancing; Isleta Pueblo, 869-3111.

Aug. 31 — Navajo rug auction, 7 p.m., Crownpoint, 786-5319.

Aug. 31 — Jazz music by Alma and Genre, tickets at door and Ticketmaster, 8 p.m., Kimo Theater.

Sept. 1-30 — Albuquerque Crafts Guild: Photography exhibit, daily 10-6, 2201 Silver SE.

argillite ranged from 290°C at the hole wall, to 155°C at a two foot radius, to 40°C at eleven feet from the heater.

Although test results paralleled modeled predictions — within ±10 percent — there were two major unexpected results.

As the rock dehydrated and contracted slightly at temperatures above 100°C, joints already in the argillite opened to about one millimeter, slightly decreasing expected underground thermal conductivity of the rock.

Secondly, because of the rock's water content — about four percent water by weight — there was vertical transport of steam within the heater hole during early stages of the experiment. This resulted in temperatures near the upper portion of the heater being higher than expected during the early days of the test. These then leveled off to expected temperatures.

Sandia is planning to conduct a similar test in tuff, a common volcanic rock found at NTS. The test, to begin in late 1979, will be supported by laboratory-scale experiments. These studies are aimed at determining the basic thermal characteristics and mechanical properties of tuff.

Sandia is one of several laboratories conducting experiments for DOE's NTS, Nuclear Waste Storage Investigations program.

Two Sandians Among Early Tourists to China

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

Although China opened its gates to American tourists about a year and a half ago, sponsored tours to that country are not all that common. When the Albuquerque Arts Council sponsored a 22-day trip to China this past spring, two Sandians immediately signed up. They are Zelma Beisinger (5521) and Norm Smith (1763).

Their itinerary went like this: from Albuquerque to San Francisco, then to Hong Kong with stops in Hawaii and Guam. From Hong Kong by train (about 100 miles) to Canton with a stop at the border to go through customs; then a 1500-mile flight north to Peking for a five-day stay. From Peking, they flew southwest to Sian, the ancient capitol of China, 900 miles inland. The next leg was a 27-hour train trip from Sian to Shanghai, finally the flight back to Canton.

Zelma and Norm talked with us about China. "I liked the people," Zelma says. "They're open and friendly. And they acted truly glad to see us. Not many westerners have penetrated as far inland as Sian, and crowds gathered around us wherever we went. We were treated more like state guests than tourists."

Norm studied the Chinese language for eight months prior to his trip. "I was able to converse in a very elementary way with the people," Norm says. "They appreciated my efforts, and I got lots of smiles. The Chinese are polite, friendly, punctual and honest. Once I left my camera on the bus and later that day it was returned to me by the person who found it. I conversed with two young boys who were learning English from the Voice of America broadcasts. They asked a lot of questions about our language and we had some fun as I explained English idioms."

While staying in Peking, Zelma and



"DEATH to the running dogs of the imperial lackey!" is *passé* these days in Red China, but Norm Smith (1763) thought he'd give it a shot anyway as long as he'd bought the Mao cap and jacket. "I paid the US equivalent of \$2 for the cap and \$7 for the jacket," Norm says. "People in Sian were not used to seeing tourists — they would occasionally reach out and rub their hands over our bare arms, seeming to be fascinated by our hairiness. They followed us everywhere, and when I made this purchase I had a crowd of a hundred or so smiling Chinese encouraging me."

Norm traveled north to visit the Ming tombs, where 17 emperors of the Ming dynasty are buried. A long avenue stretching between larger-than-life animal sculptures leads to the tombs. Another day was spent on China's Great Wall. "Our movements were not restricted in any way," Zelma says. "We could just wander around, and I always felt safe and comfortable."

"Special entertainment was laid on for us in all the major cities," Norm adds. "The banquets had outstanding food. In Peking we saw an acrobatic performance, in Sian a comic opera, and in Shanghai the ballet. Chinese audiences do not applaud; they sometimes laugh, but when a performance is over they quietly get up and leave."

Both Sandians feel that the real highlight of the trip was the visit to Sian. Sian is the site of an exciting archeological excavation. About 200 BC, when the Chinese emperor Ch'in Shih Huang Ti came into power, he immediately began preparing his final resting place. For 36 years, his subjects labored on a great underground tomb. In 1974, well diggers accidentally opened up a portion of the three-acre site. The tomb itself, yet to be excavated, is surrounded by three statuary military formations consisting of 6000 armed soldiers, horses and wagons, all life-size. A museum has been established on the site, and Chinese archeologists are painstakingly sifting the dirt and repairing the figures.

"The countryside is interesting," Zelma says. "Every available piece of land is planted — wheat, rice, cotton, beans. Even the space between airport runways is cultivated. We saw no fences. One person shepherds whatever animals are loose — sheep, water buffalo, ducks."

"The national dress is baggy pants and blouses, regardless of sex," Norm says. "They are all different colors but uniform in style. They don't have private cars and travel by bicycle — thousands of them on the city streets. The bikes appear to be well made, are single-speed, and cost about 60 U.S. dollars. The people own radios and televisions but no refrigerators. There are two types of stores, one for the Chinese and the other, called Friendship stores, for foreigners only. In the Chinese stores, we saw hi-fi sets and records, but heard only Chinese music. The Friendship stores offer Chinese goods — curios, handicrafts, clothes, silk, lots of antiques."

"The people look healthy and happy," Zelma adds, "and we saw no beggars. Everything is state owned and workers are moved around as needed. They work a six-day week with no paid vacation. They spend state holidays at the parks, the movies or the zoo — they're very proud of their pandas."

The tourists also visited cloth, jade and ivory, and rug factories. "I found the currency confusing," Norm says. "Coins are used for any denomination under 3¢, but anything over that is paper."

Zelma and Norm agree that it was a wonderful trip. "I want to return," Norm says. "Perhaps one day China will open up the rest of its country to Americans. I want to visit western China, Mongolia and Tibet."

Logistics — The package tour — round trip from Albuquerque, all accommodations in China, three meals a day, and a tour guide — cost \$3500. For sightseeing not included in the tour, the expense is minimal since bus and



ZELMA BEISINGER (5521) on China's Great Wall.

taxi fares are cheap. The food was similar to that in a good Chinese restaurant in the U.S. with lots of courses and served family style at high tables so that you have a shorter distance to move your chopsticks. (Zelma says forks were never furnished, but could be obtained if you could communicate with the waitress.) The beer was good and cheap. Coca Cola was available, but could only be purchased with U.S. money — \$1 for an 8-oz. can. Banquets were elaborate with two types of wine — one for toasting, very strong (one must tip the tiny glass upside down to show that you completed the toast). While some of the hotels were good, most were marginal by U.S. standards. "You have no control over your accommodations," Norm says. "The Chinese tourist agency handles all arrangements. You must always share a room in the hotel assigned. The country just isn't geared to tourists. For instance, Sian is a city of two million people with only one hotel. It was built by the Russians in the 50's for use by their technicians, and there are certainly no frills. But the Chinese government is building and



PEKING'S SUMMER PALACE is a tourist attraction.

remodeling in preparation for more tourists."

Both Norm and Zelma felt the tour cost was a bit high. They suggest that if you want to visit China, make your own way to Hong Kong and spend several days checking into China tours originating from that city. Cost of living is high in Hong Kong for tourists, but you have an excellent chance of picking up a much cheaper tour. On the other hand, Zelma adds, their tour was complete. "You could have gone on this tour and not spent an additional penny; everything with the exception of personal purchases was provided." • nt



THE TOUR INCLUDED visits to private homes. Zelma is shown here with a family she visited in Peking. "Six or seven homes are built around the communal courtyard. Each home consists of two rooms and a kitchen. The main pieces of furniture are beds. During the daytime, bedding and clothing are hung on lines strung in the courtyard. Communal plumbing is provided. Cooking is done over charcoal or gas, and fresh food is purchased each day at the markets. The buildings are very old, and the same families continue to occupy them for several hundred years."

Physicist & Wife Run Chinese Restaurant

Take a Sandia physicist born in China plus his wife, a native Missourian, and what — besides children — is this liaison likely to produce? Answer: a *haute cuisine* restaurant which offers an eclectic sampling of the Chinese cuisine. Jim Chang is the physicist, from Target Experiments Division 4242, and he and wife Mickie (from Missouri) operate the restaurant.

After WWII, when Jim was 5 years old, the Chang family moved from Chunking, where Jim was born, back to its ancestral home in Nanking, which had been occupied by the Japanese. Jim's father came to the United States in 1948 to complete his studies in chemistry at Purdue and the University of Maryland. A year later, Jim and the rest of his family moved to Taiwan when the Communist takeover of China occurred. Then followed several frustrating years, waiting for immigration visas to this country at a time when 40 Chinese were annually admitted. Finally, in 1955, when Jim was 13 years old, the family was reunited in Chicago.

"You've heard of 'A Slow Boat To China,' — well, our trip was just the reverse," Jim says. "We took inexpensive passage on a cargo ship, and it took us 40 days to reach San Francisco!"

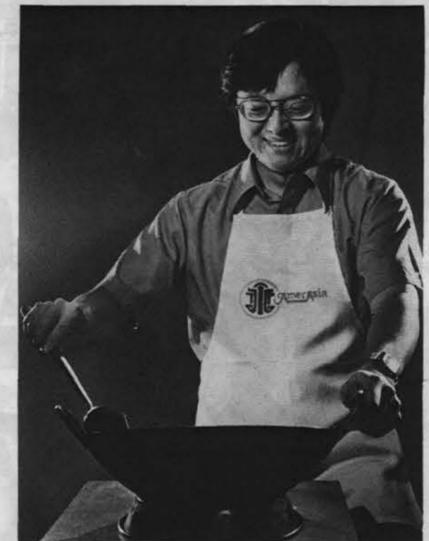
The Changs settled in Chicago where the four children grew up. Jim retained his ability to speak and write Chinese through Pen Pal letters and reading. While both were attending the University of Illinois, Jim and Mickie met and married. After receiving his PhD, Jim and Mickie moved to Albuquerque where Jim joined Sandia in 1971.

"Our two children were growing up and taking less of Mickie's time," Jim says. "We began to discuss how she wanted to spend her time and ultimately decided to open our own restaurant. Mickie and I had always enjoyed cooking; I taught her how to prepare a few Chinese dishes at the beginning and she absorbed a lot from my mother and sister-in-law — both tremendous cooks. We hoped that our experiment to couple two cultures in the kitchen would work and, indeed, it has. Mickie is in charge of the kitchen and I help out on the weekends in the dining room."

"We have no professionals working for us; we've introduced our staff to our way of preparing, cooking and serving food. Our menu is not familiar to most people; the food is different and we don't serve chop suey. Neither do we use monosodium glutamate (MSG). We try to be authentic and are constantly introducing new dishes. We even present each diner, at the end of the meal, with a hot, steamy towel. It's troublesome, but authentic. I can remember as a child in China how we used to take that hot, steamy towel and bury our faces in it."

Jim also has another outside interest. Last spring he was an out-of-hours instructor, teaching Beginning and Conversational Chinese. "The class met from 7-8 a.m. before work. The emphasis was on conversational skills and, at the end of the course, each student had a vocabulary of 200-300 words. This fall the beginning course will be taught by another Sandian and I'll take my students on to the next level — reading and writing skills. Chinese really is not a difficult language to learn. Once the student gets over the culture shock of exposure to a language so different from English, then it's smooth sailing," Jim says.

We asked Jim for a favorite recipe. Here are two he gave us whose simplicity commends them:



JIM CHANG (4242) describes the wok as a most versatile utensil. Made of stainless steel in many sizes, the wok is often the only cooking utensil found in Chinese kitchens. Because of its shape, the wok requires less oil and, in the case of deep frying, provides a larger cooking surface. Heat is concentrated in the bottom; ingredients can be moved up the sides or back to the center as needed. Long-handled tools are used to avoid the heat and oil splatters.

By the time we finished our discussion with Jim Chang about Chinese food and how to cook it, we were hungry for more — more recipes for favorite native dishes. The ethnic background of Sandians ranges wide, so if you have that family favorite recipe for Latvian goulash or Armenian grape leaves or whatever, then call us (Norma) on 4-7841.

Fried Won Ton

- Cut 4 egg roll skins into 4 equal squares.
 - Mix up stuffing:
4 oz. ground beef
½ tsp. garlic
1 tsp. soy sauce
1 tsp. finely diced scallions
pinch of salt & pepper
 - Divide stuffing into 16 pieces and place on the center of each square.
 - Moisten edges and fold into triangle.
 - Deep fry at 350° until golden brown.
- Note: Egg roll skins are available in the produce department of most grocery stores. Jim says fried won ton is good as a snack or appetizer.

Stir Fried Pork Loin with Scallions

- 2/3 lb. pork loin
- (1)
1 T. chopped garlic
1 T. soy sauce
½ T. sugar
1 T. sherry (dry)
1 T. cornstarch
 - (2)
2 T. soy sauce
1 T. sugar
2 thin slices of fresh ginger
½ C. 2-inch sections scallions
- Remove any fat or tough membrane from pork loin; cut into slices 1/3-inch thick. Pound meat with a meat mallet to tenderize. Mix with (1) and let marinate for 30 mins.
 - Heat pan and 3 T. oil with fresh ginger slices until fragrant, then remove ginger slices and discard; fry pork slices until golden brown. Use more oil if needed; add (2) and green scallion sections; stir together and remove to serve.
- Note: Jim recommends: Kikkoman Soy Sauce, available on most grocery gourmet shelves.



RECENT GRADUATES under Sandia's Doctoral Study Program are Paul Thompson (1251), seated, left and Bryan Preas (2113), second from left. Both earned PhD's in EE at Stanford. Others are recent graduates under the One Year on Campus program. Continuing in the first row, seated, are Gilbert Benevides (5635), ME, Stanford; Diane Zeigler (1716), Computer Science, U of Utah; and Hui Chien Shen (1757), EE, Stanford. In the second row are Jose Rodriguez (2146), EE, Stanford; Michael Hosking (5836), Metallurgy, U of Illinois; Vernon Willan (4363), ME, U of Illinois; and Joseph Morreale (2331), EE, Stanford. A graduate not in the photo is Doris Miller (1540), who received her MS/ME, the first woman to do so from UNM.

Retirement Scene

RSVP Needs You

Would you like to share your time, experience and talent with others in our community who need you? This is the question being asked by the Retired Senior Volunteer Program (RSVP).

Kathy Lee is director of the local RSVP, and she needs volunteers: "We've got 315 volunteers enrolled and placed in Albuquerque right now. I could find places for at least 200 more," Kathy says.

The only requirement for enrolling in RSVP is that you be 60 or over. Kathy and her staff will match an agency to your talents and, as part of that match-up, will consider the amount of time you're willing to donate to the work and whether you'll have transportation problems.

"If one of our 'seniors' doesn't like the job or doesn't feel that he or she is suited to a particular position, we'll work until we find the right place — the jobs are as numerous and diverse as the applicants," Kathy says. "We have listings for more than 50 agencies — museums, libraries, hospitals, working with children, teaching, balloon fiesta, State Fair, tour guides, and many more. If someone comes to us with a talent or special interest that we don't have a request for, we'll go out and find someone who needs this talent. Opportunities for volunteer work are unlimited."

RSVP prefers to enroll people who can work at least once a week for four hours, but they'll work with anyone who can volunteer. "We have one lady," Kathy says, "who works as a volunteer for three different agencies. One of her assignments is at the home for run-away girls. She has no specific duties; she just drops

in to visit. Perhaps she'll help the girls prepare lunch or help with some mending. More important, she has become their friend. They love her and are concerned about her welfare. She recently told me that she, too, was once a run-away."

RSVP encourages volunteers to use the city bus service and will reimburse them for the fare. "We enlisted Boy Scouts to each take a senior citizen for a bus ride — to familiarize them with bus riding. One young scout and his charge, an elderly man, developed a great relationship. They tell me that they have had some great fishing trips and spend time together like grandfather and grandson."

Another service offered by RSVP is the Minor Home Repair program. Kathy explains: "We are trying to put retired handymen in touch with the senior citizen in a low income bracket who needs minor home repairs — work that does not require a licensed worker. We need many more volunteers for this program."

The Inner Generation Program is another RSVP project. "This program has been a lot of fun," Kathy says. "We concentrate on getting young people together with older people. One of our activities last year was the Youth and Senior Citizens Conference. We had good representation from both sides and it was a revelation to learn their common problems: money, transportation, isolation and, in some, the feeling of not being needed."

Last year, RSVP recorded 79,000 hours of volunteer service. "We could easily do 100,000 hours if we had more people," Kathy says. If you're interested in RSVP, call Kathy, 766-4950.

Take Note

A group of Albuquerque senior citizen volunteers, called the Grey Gladiators, needs more members. The organization has been requested to contact 500 small businesses to seek pledges during the upcoming United Way drive. Bud Miller, chairman of the United Way committee for the Grey Gladiators, says members will pay a personal visit to each of the businesses. Other volunteer work includes the management of concession stands during the Balloon Fiesta and at Lobo football and basketball games. Dan Wood, retired Sandian, is the current chairman of the Grey Gladiators. Persons interested in working with this group can call Bud, 881-4583; or Dan, 266-3503.

A new bilingual (Spanish/English) theater company is organizing at the University of Albuquerque. Auditions will be held for permanent members of the group tonight at 7 p.m. and tomorrow at 3 p.m. at the UofA Fine Arts Center, Stage II. Needed are actors, singers, dancers, musicians and technicians. For more information, call Jose Rodriguez, 831-1111, ext. 289, artistic director of Compania de Teatro de Albuquerque.

North Valley YMCA (701 Grecian NW) is offering a class in "Basic Auto Mechanics," an introduction to do-it-yourself repairs as well as how to deal with professionals. Registration is open until Aug. 31 and classes begin Sept. 6, meeting each Thursday, 7:30 to 9 p.m. for eight weeks. Cost is \$15 for Y members, \$20 for non-members.

Classes in conversational German language are being offered for both children and adults by the UNM Community College. Elementary and junior high students are eligible for the small, informal classes which will meet in the NE Heights. Emphasis will be on songs, games, play and conversation.

Adult classes, designed for those planning travel in Europe, are also scheduled.

Classes start the week of Sept. 4. Call 294-1369 or 277-3751 for more information.

Conversation classes in French, sponsored by the Alliance Francaise of Albuquerque, start the week of Sept. 10. Day or evening classes are offered at various levels. Cost is \$48 for the 12-week session. Call 243-4187 or 242-1880 for more information.

The Sandians, an organization of wives of Sandia employees, meets Sept. 10 to discuss upcoming activities and welcome new members.

Roberta Glaser invites anyone interested to call her, 293-8110. She describes the Sandians this way:

"Our purpose is to provide educational and social activities for members, and to help introduce newcomers to Albuquerque. General meetings are held on the first Monday evening of each month in a member's home and include an interesting speaker or other type of program. Various interest groups also meet each month, and an excellent babysitting cooperative has been set up. We also have two or three social events including husbands throughout the year."

Sympathy

To Eddie Hoover (4716) on the death of his mother in Phillipsburg, Kans., Aug. 7.

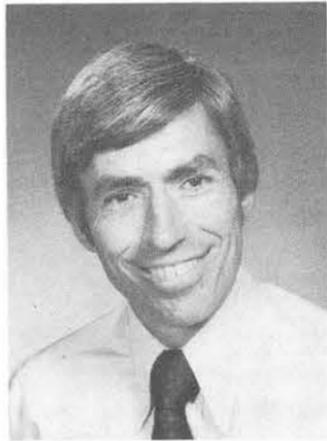
To Ray Reynolds (4342) on the death of his wife in Albuquerque, Aug. 11.

To Everett Dow (1762) on the death of his mother in Boston, Aug. 6.

MILEPOSTS

LAB NEWS

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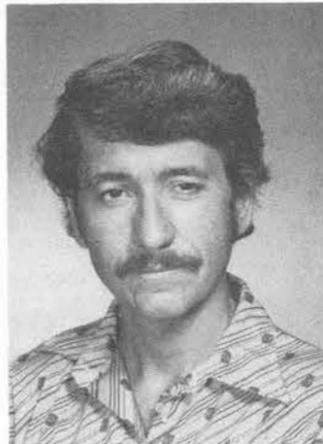
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Chuck Williams - 2344 25



Paula Stronach - 1582 15



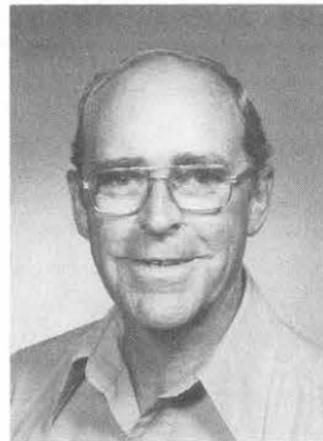
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Amadeo Aragon - 3614 25



Cathy Devarenne - 3255 25



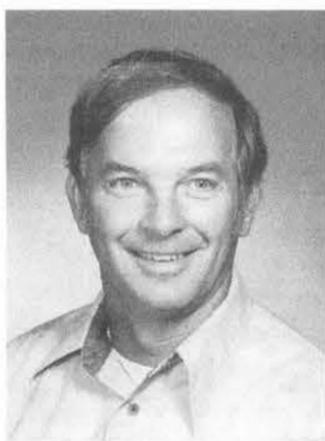
Wentzel Wagoner - 4362 25



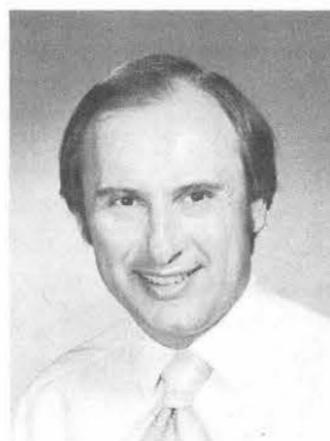
Lionel Chandler - 1417 25



Nell Arnett - 3144 15



Richard Worrell - 4414 15



James Renken - 4231 15



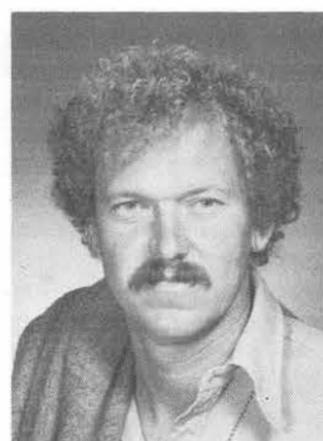
Frank Arellano - 5831 15



Maury Orrell - 3432 30



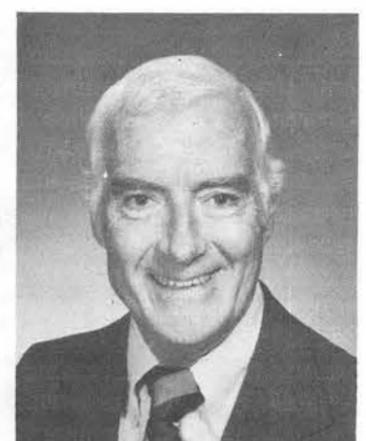
Clarence Ray - 3741 30



Ivars Gals - 1114 15



James Bushnell - 1554 15



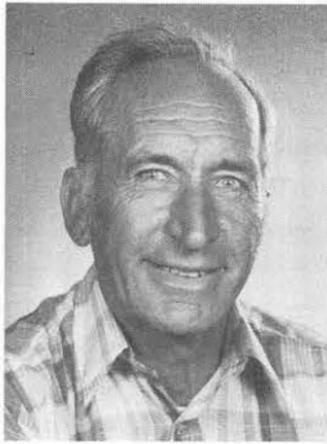
Hank Willis - 400 30



Charles Greenholt-5831 10



Mitchell Ruebush - 1126 10



Fenner Jones - 1137 25



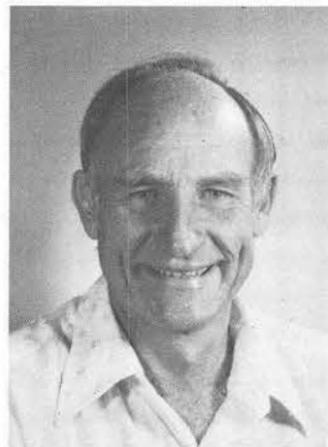
Joseph Saya - 1421 15



James Appel - 4325 25



Paul O'Brien - 4541 20



Walt Herrmann - 5530 15



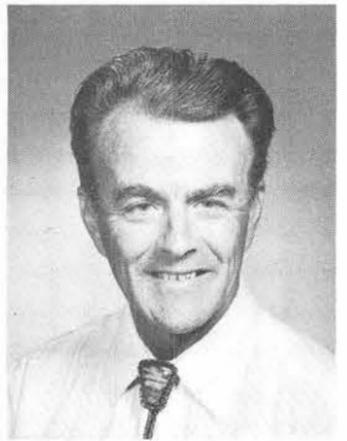
Verlan Gabrielson-8331 20



Morris MacGibbon-1485 25



Frank Biggs - 4231 20



Roy Hunter - 3254 20



Roy Schultz - 3417 10



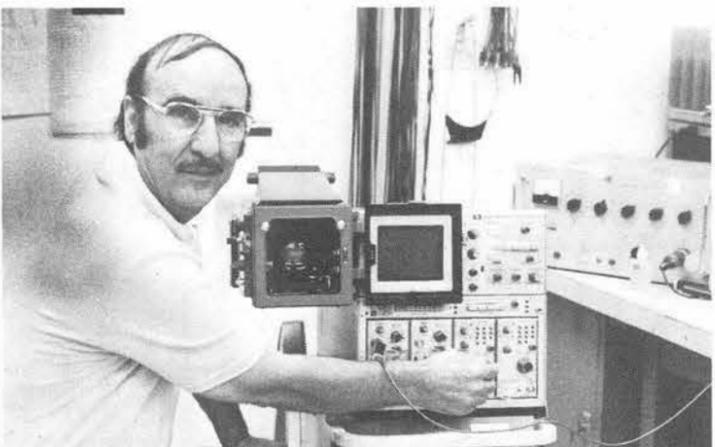
Frank Speakman - 1483 30



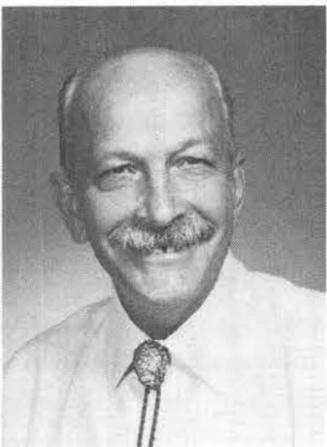
Kenneth Williams - 2324 30



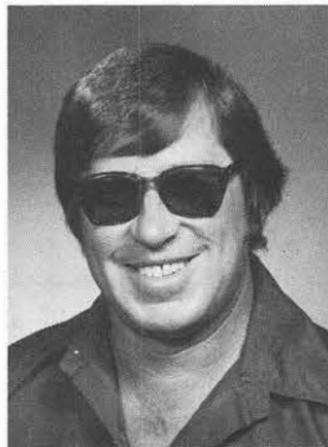
John Ayala - 3154 20



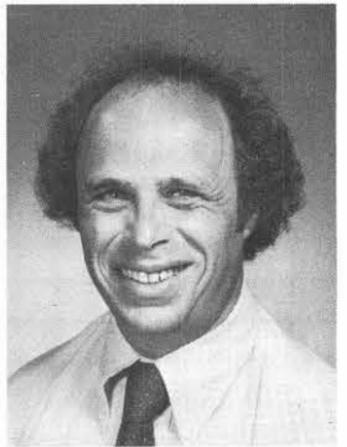
Eloy Armijo - 1471 30



Dennis Murphy - 1422 30



Paul Gabaldon - 1472 15



David Emin - 5151 10

Bowling — A pre-season meeting of the Women's Sandia Labs Bowling League will be held Aug. 30 at 7 p.m. at the Holiday Bowl. Openings are available for both regulars and subs. Call Bonnie Roudabush (1223) on 4-2704 for additional information.

* * *

Running — La Luz Trail run is this weekend, Aug. 26, and LAB NEWS has entry forms. All entries must be submitted by tomorrow (Saturday); there will be no registration on the day of the race.

Dave Douglass (5831) called to remind us

that the 2nd annual Southwestern Open Masters Track and Field competition will take place Sunday, Sept. 2 at Milne Stadium. Age groups run from 30 to 70-plus and, besides the

Entries (forms available in LAB NEWS) should be submitted ASAP. Dave has further details on 4-8940.

Volleyball — A seven-week season begins Sept. 17, and team entries should be submitted to Al Spencer, org. 3611. Only 16 teams will be able to play, and no entries will be accepted without a complete team roster as well as the \$77 per team entry fee. The KAFB gym no longer permits access by spouses and dependents, so only Labs, DOE and contractor employees are allowed to play.

Fun & Games

many running events over a wide range of distances, the competition offers the pole vault, high jump, long jump, triple jump, shot put, discus, javelin and hammer throw. Both male and female masters are welcomed.

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

SANDIA LABS CAPS, new shipment in LAB NEWS office, Bldg. 814, \$4.25. S. Hiway 14 Village Project.

TWO DOUBLE SINKS, white; car luggage carrier; 8-dwr. chest; alum. storm door w/hardware, twin bed headboard, white. Salazar, 255-1301.

'78 PROWLER, 31' travel trailer, take up payment, 46 left at \$171.37. Rupe, 281-1694.

SONY BETAMAX, 1 hr. model, \$600. Tafoya, 883-6090.

TOWER, crank up; 10 meter beam; 2 kw linear. Caldwell, 299-6480.

BERNHARDT (all wood) pecan, 6' dining table w/6 chairs & credenza, \$750; matching china cabinet, \$500. McCullough, 299-7426 or 299-7256 after 5.

FRENCH HORN, Conn student model 4D, f w/E flat slide, \$400. Smyrl, 294-4463.

PIONEER car stereo, AM-FM cassette, KP4000, 1 1/2 yrs. old, \$100. Shane, 884-7925.

REMINGTONS: 3200 O/U trap, F/M, \$475; 3200 O/U skeet 26" bbls S/S, 12 ga., \$375; 1100 auto. trap, full, \$250. Hollingsworth, 281-5426.

INSULATED camper shell for long bed pickup, 1 yr. old, cost \$625, sell for \$375. Freedman, 298-2177.

TRUSSEL STYLE bed & chair, \$75; 5-dwr. chest, \$75. Yonas, 294-3384.

SEARS Craftsman 3.7 cu. in./17" Power Sharp, automanual oiler chain saw, \$120. Kramm, 281-5379.

12 GA. TRAP MODEL 12, \$350; Heathkit 25" color tube, \$10; boys 20" bicycle, \$15; mounted tires (Scout) H78-15, \$14. Linn, 296-3176.

BICYCLE SEAT, Avocet Touring, 2 wks. old, cost \$26, yours for \$10. Bates, 256-0152.

HIS/HERS Penn House chairs, \$75 ea.; gold table lamps, \$30/pr.; fiberglass roofing, 6x20, free. Underhill, 294-5774.

KIRBY Classic vacuum cleaner w/attachments, \$125. Castillo, 873-1108.

SEARS trash compactor, \$125; 9" radial arm saw w/cabinet, \$150; 21" Zenith color TV, \$250. Richardson, Belen, 864-3575.

LOVE SEAT & SOFA, wood frame w/earth tone cushions, \$265. Bartlett, 299-4861.

96-PIECE, service for 12 Noritake "Reina" pattern china, \$200. Mowrer, 281-5595.

ONE 20-gal. propane bottle, \$40 or best offer. Teisher, 881-8759 after 5.

CHLORINE for swimming pool, 100 lbs., 65% granular, cost over \$100, sell for \$90. Tucker, 877-1140.

COMPUTER PRINTER: 30 c.p.s. 130 col. Univac printer, full documentation, spare sparts, \$200 or trade. Wampler, 281-1307.

SLIDING GLASS DOORS, 2 ea.; 29 1/4"x80 1/4" w/frame, \$50. DeLollis, 299-5384.

NATIONAL GEOGRAPHICS, 1965-1978, 50¢ per copy; Goodrich Silvertown belted tubeless tire, L78-15, new, \$25. Miller, 281-3189.

HUMMEL PLATES, 1972 through 1979 & anniversary plate, 9 plates total, \$1600 set. Fitzgerald, 265-3055.

MATTRESS & BOX SPRINGS, twin size, semi-firm foam, \$25 set. Coleman, 299-2377.

STEREO CONSOLE: AM/FM w/built-in 8-track & record player, \$250; GE washer, \$150. Aragon, 292-5899.

'65 14' CAMPER, sleeps 4 or more, \$995. Tabor, 299-5272 or 299-0490.

30-GAL. hot water heater, elec. used 3 mos., \$30; Sears outdoor umbrella type clothes dryer, never used, \$10. Russell, 292-3279.

870 MAG 12 gauge vent rib, almost new, \$175; Redfield 6-18 scope, \$125; bench rest stand & leather bags, \$25. Gonzales, 247-9406.

CAMPER SHELL for LWB, \$85; beginner's golf clubs, \$40; pair swivel bar stools, \$40; CB walkie-talkie, \$20. Stone, 821-5070.

PORT. TYPEWRITER, \$75. Horton, 298-4449.

VIOLIN: old German instrument, rebuilt, \$400. Krause, 293-8507.

DRYER, 3-yr.-old gas Kenmore, \$120; Conn student trombone, \$160; Vito clarinet, \$75. Pierson, 292-1857 or 881-7068.

REMINGTON SHOTGUN 870 "Wingmaster" 12 ga. pump w/30" vent-rib full-choke barrel, \$175. Brammer, 266-5158.

DINING ROOM SET, limed oak, table w/3 leaves, 6 chairs, glass front china cabinet, \$150; 3 end tables, limed oak, \$21. Bontrager, 292-1027.

DROP LEAF TABLE w/2 cane-seat chairs, \$30. Braithwaite, 294-5282.

PAPOOSE CARRIER, Gerry, \$15. Woods, 296-4741.

PIGEONS, rollers, racing homers, show racers. Puccini, 255-0568.

BAR, 53" wide, black leather arm rest, port. type, approx. 44" high, no chairs or stools, \$30. Marchi, 299-3653.

SUPERWINCH, 4000 lb., 12 volt w/cable guide & remote switch, suitable for import pickups, \$80. Womelsduff, 281-1693.

PACKING BOXES, all sizes; B&W TV & radio, need repairs; elec. can openers. Sharp, 842-0218.

HAMSTERS, males, champagne color, 75¢ each. Norwood, 262-0073.

YARD SALE: freezer; queen bed; hide-a-bed sofa; book case; paperbacks; misc. Saturday only, 8-4, 716 Morris NE. Davis, 293-4335.

OBOE, Signet student model, \$450. Blottner, 298-9459.

COUCH w/decorator pillows, ivory/beige, \$180, 2916 Las Cruces NE. Devers, 296-3134.

LAPIDARY combination unit: saw, grinder, sander, Sears dbl. rock tumbler; B&W port. TV; Polaroid 95 land camera. Hitchcock, 292-1179.

USED bathroom sink & toilet, pink, \$10 ea. Schwartz, 294-1113.

EXTERIOR DOOR, 32"x80", painted, \$30. Wilcoxen, 821-1621.

REAR END, w/springs, torque tube & wishbone for 1940 Ford, \$40; tri-power assembly for Pontiac, includes linkage, \$150. Weatherbee, 869-2849.

POODLE, black miniature male, 6 mos. old, shots, housebroken, \$95. Walters, 293-5381.

FURNITURE: black vinyl sofa & chair; fp screen, single bed. Novotny, 296-7167.

COMPACT refrigerator, 18x19x17", \$65; 6-dwr. oak desk, 30x54", \$45; Volvo hitch. Sasser, 298-1439.

TENOR recorder made of plastic by Dolmetsch; has 1 dbl. hole & a key, 1 yr. old, \$16. Hulme, 299-7715.

INFINITY Qjr speakers; Maxell UDXL/reel; Sears Bugwacker; tool grinder; sprinkler heads; classical records; open-reel tapes. Norris, 877-6415.

FRONT TIRE MOUNT for pickup or 4-wd, fixed bumper mount for 2 bikes, \$7.50 ea.; need removable bike mount. Baxter, 344-7601.

STEREO, Juliette, AM/FM 8-trac, BSR turntable, \$85; pickup headache rack, \$95. Luikens, 881-1382.

NO FROST FREEZER, 15 cu. ft., \$250; will trade for larger freezer; camper shell for Datsun pickup \$220. Lackey, 898-6638.

WANTED

ST. MARY'S uniforms, girl's size 10 or 12; ride for student from St. Mary's school to vicinity 12th & Candelaria, will pay. Padilla, 345-7660 after 6.

RIDERS for carpool from Corrales. Gorman, 898-9300.

OLD, good-running refrigerator, any size, any make; for outdoor cold storage. Tabor, 299-5272 or 299-0490.

GAME TABLE & 4 chairs in good condition; need break-down pool cues. Hymes, 243-4198.

FRENCH STYLE full size bedroom set for girl's room. Rice, 842-9457 after 5.

SHOP MANUAL for Pinto, vicinity of 1975. Baxter, 344-7601.

ANYONE interested in carpooling to UNM from Sandia for courses EECS 361 or EECS 370? Siemens, 296-0651.

PASSENGERS to share expenses of 4-to 5-hour weekend/holiday flights to Austin/ Houston area in Cessna 182, dates negotiable. Schkade, 265-5473.

FROST FREE refrigerator in almond (beige) color. Nation, 299-9213 after 5.

RIDE or carpool from Santa Fe to Sandia Mon.-Fri. beginning late Oct. or early Nov. Cordova, 266-5286.

WROUGHT IRON patio table and/or chairs, good condition or repairable. Worrell, 299-0381.

FOR RENT

NEW 2-bdr.-unfurnished 4-plex apts., fp, carpets, drapes, appliances, \$250/275/mo., water paid, \$150 DD. Chen, 298-2422 after 5.

VALLECITO LAKE cabin, near Durango, modern, furnished, lake front, fp, Croll, 881-7235.

RENT/LEASE: new 3-bdr., energy efficient home in Moriarty, 2-bath, fp, stove, refrig., landscaped, auto. water system, avail. 9/15, \$325/mo. Lackey, 281-3991.

APT./CONDOS: one month free on 1 & 2-bdr. units at 12913 Lomas NE. Key, 294-6035 or 296-4168.

APT., large 1-bdr., furnished/unfurnished, utilities paid, patio, bar, adults only, no pets, laundry, 541 Espanola SE. Aragon, 294-4275.

NEAR Juan Tabo & Spain NE, 3-yr.-old home, 3-bdr., 2-car garage, \$350/mo. + DD, lease, Muir, 883-7933.

NEW furnished house in Placitas, small, suitable for single or couple, \$275/mo. Muench, 867-2668.

2-BDR. unfurnished townhouse apt. near Central & Tramway, carpeted, dishwasher, view, \$215/mo. + electric, \$100 DD. Berg, 296-2695.

3-BDR., 1 1/2 baths, den, fp, carpets, 2-car garage, near Eubank & Candelaria, \$390. Moss, 298-2643.

NEW 2-bdr. unit w/fp, balcony, near base, 12600 Dunes SE, \$265 + DD. Thalhammer, 298-8521.

NEWEST HOLIDAY PARK: 4-bdr., LR, DR, den, Eisenhower/El Dorado schools, \$450/mo., \$200 DD. Johnson, 298-9926.

3-BDR. w/FR & fp, 2-car garage, appliances, fully carpeted, NE location, \$385/mo., Carne, 296-4219.

NEW 2-bdr. apt. in 4-plex, carpeted, drapes, fp, appliances, utility, storage rooms, near Juan Tabo & Central, \$265/mo., \$100 DD. Krumm, 299-2279.

REAL ESTATE

CONCHAS LAKE, new 2-bdr., stone veneer, view of lake & dam, all-weather equipped, \$35,500. Meikle, 299-4640.

4-BDR., 2 story, cul-de-sac, corner lot, custom drapes, 1 yr. old. Baca, 298-8586 day, 294-3545, eve.

LOT on Sedillo Hill, about 1 1/2 acre, \$5000 or best offer. Eversgerd, 265-2303.

THREE N. ABQ. ACRES, Alameda at Hamilton, \$36,000 or best offer. Phillips, 881-2450.

WEST SIDE PROPERTY, 2 lots, 1/2 acre each, \$5500 for both. Stibick, 898-5897.

5 ACRES LAND 3 miles off N-14, elec. water well, septic system, telephone, \$34,000. Rupe, 281-1694.

4-BDR., 1 1/2 baths, den w/kiva fp, near Lomas & Tramway, \$64,900. Baca, 293-8710.

'58 10X45 Manorette mobile home, partially furnished, carpeted, new Kitchette dishwasher, new AC, 2-bdr., \$3400. Armijo, 898-9284.

5-25 ACRES in pines, stream frontage, county road access, 1/4 mile from National Forest, 13 mi. west Las Vegas NM. Muir, 883-7933.

3-BDR., 1 1/2 baths, 1500 sq. ft., lg. LR & kitchen-den, \$45,000 firm, see after 6, 4913 Ponderosa NE. Weber.

15,000 SQ. FT. LOT close to Supper Rock Park, utilities, view, \$4500 down, \$105/mo., 8%, \$22,500 total. Chavez, 831-6470.

3-BDR. HOUSE, near Tomasita School, mid \$40's. Ward, 299-2859.

4-BDR., country kitchen, lg. master bdr., 1900 sq. ft., landscaped, near schools, \$71,000, flexible terms, Comanche/Juan Tabo. Nielsen, 299-6740.

TRANSPORTATION

'64 FORD F-100 pickup, SW, 3-spd. Jaramillo, 255-8288.

'68 AMC Rebel stn. wgn., 6-cyl., AT, AC, \$395. Schuch, 298-9924.

'77 DODGE Aspen (Special Edition), PS, PB, AC, AT, Cruise Control, AM-FM cassette, take over payments. McDaniel, 299-6189.

'78 MOPED, Smiley, less than 400 miles, \$350. Fitzpatrick, 294-4758.

'72 FORD Gran Torino Sport, 351 V8, AT, PS, PB, AM-FM stereo, \$1000. Rufsvold, 881-4358 after 5.

'74 PLYMOUTH Fury, AT, AC, new radiator, rebuilt engine, reg. gas. Malloy, 881-3531.

'79 DODGE van B200 Tradesman, take up payments, 40 left at \$164.03. Rupe, 281-1694.

'75 MALIBU estate wagon, AC, PS, PB, V8, roof rack, \$2200. Carne, 296-4219.

YAMAHA Enduro 175, '79 license, 1500 miles, \$275. Lassiter, 298-2461.

'73 PINTO Runabout, 41,000 miles, 4-spd. trans., radials, AM/FM radio, new maint.-free battery. Mendel, 265-3840.

'76 15' BOAT & 75 hp Chrysler outboard tri-hull, \$3400. O'Bryan, 266-1866 after 6.

'72 PONTIAC Grandville, PS, PB, AC, AM/FM radio, new tires, \$900. Griffin, 294-5702 after 5.

'71 FORD LTD convertible, 7000 miles, power, air, \$2500; '74 Mercedes 280, 78,000 miles, sunroof, stereo, \$8000. Yaniv, 821-0999.

'78 FORD Fiesta, factory air, other extras, 30 mpg town, 11,000 miles, \$4110. Gallo, 296-0112.

'73 EXPLORER 20' motorhome, 46,000 miles, new tires, roof & cab AC, Chev. 350, \$7100. Knotek, 296-6291.

'66 CORVAIR, \$400. Justice, 296-0414.

'76 GRANADA GHIA, 31,000 miles, almost new steel radials & Die Hard battery, cassette, \$3400. 8907 Los Arboles NE. McIlroy, 299-4977.

1/5 SHARE in 1971 Citabria aircraft, \$1800. Payne, 299-5966.

'76 GMC 1/2-ton truck, 250 cu. in. 6, cap top, manual trans., \$3575 or best offer. Kennedy, 298-0704.

'70 PORSCHE, 2.2L 911T, Kowli's, mag. wheels, 5-spd., AM/FM/cass. radio, sepia brown, 70,000 miles, \$7000. Sutherland, 266-1734.

'68 PONTIAC Firebird, 250 OHC6, 3-spd., AC, PS, 73,000 miles, \$1200. Bleck, 298-0504.

BICYCLE, men's 3-spd., Sears, new tires, \$50; cooler air vent w-adjustable louvers for 14"x24" opening, \$5. Joseph, 299-6989.

BICYCLE, girl's 3-spd. Schwinn, \$40. Muir, 883-7933.

BICYCLE, girl's 24", \$30. Schultz, 255-0686.

'68 CHEVROLET pickup, 1/2 ton, SWB, 6-cyl., 72,000 miles, AM/FM/CB, \$1195. Allen, 296-1264.

MOTORHOME, deluxe '78 model, 440 Dodge, cruise control, priced under book. Hubbs, 897-0653 evenings.

MEN'S 10-spd. bicycle, 26" wheel, AMF brand, gold, Shimano Eagle derailleur, \$70. Bunten, 821-9516.

'74 MUSTANG II, AT, new battery, \$1750. Mattox, 821-3945.

14' BOAT w/trailer & 5hp motor, \$450. Baca, 345-5817.

'72 FORD 3/4 ton Camper Special, 390 V8, PS, PB, AT, AC, dual tanks, \$2000. Rindt, 296-8567.

'68 JEEP CJ5, 225 CI, V6, 3-spd., Posi-traction, metal top, towbar, spare, gas can holder, 14 mpg, 40,000 miles, \$2400. Martinez, 293-2301.

BOY'S 24" 5-spd. bicycle, new tires, \$40. Worrell, 299-0381.

'72 INTERNATIONAL 3/4 ton LW, 4-spd., 350 V8, AM/FM/8-TRAC, \$1975. Luikens, 881-1382.

'77 GMC 3/4 ton 4-spd., radio, CB, 8-trac, new tires, goose neck hitch plate & elec. brakes installed, HD engine, Sierra Grande pkg. Rody, 281-1388. Arnett, 281-1350.

'79 MERCURY Capri, 4-cyl., 25 mpg, special sport pkg., under warranty, low miles, \$1200 below retail. Lucas, 831-6495.

Solar Materials Lecture Series Set

Several Sandians are participating in an upcoming lecture series on solar materials science to be presented at UNM's Kiva auditorium Thursdays at 4 p.m. starting Sept. 6.

The series is sponsored by the New Mexico Joint Center for Materials Science whose members include Sandia Labs, LASL, AFWL, UNM, NMSU and NMIT. Jim Schirber (5150) is Sandia's representative to the Center.

Dick Claassen (5800) will present a general introduction to the series Sept. 6. Barry Butler, of Solar Energy Research Institute and a former Sandian, is also an opening speaker.

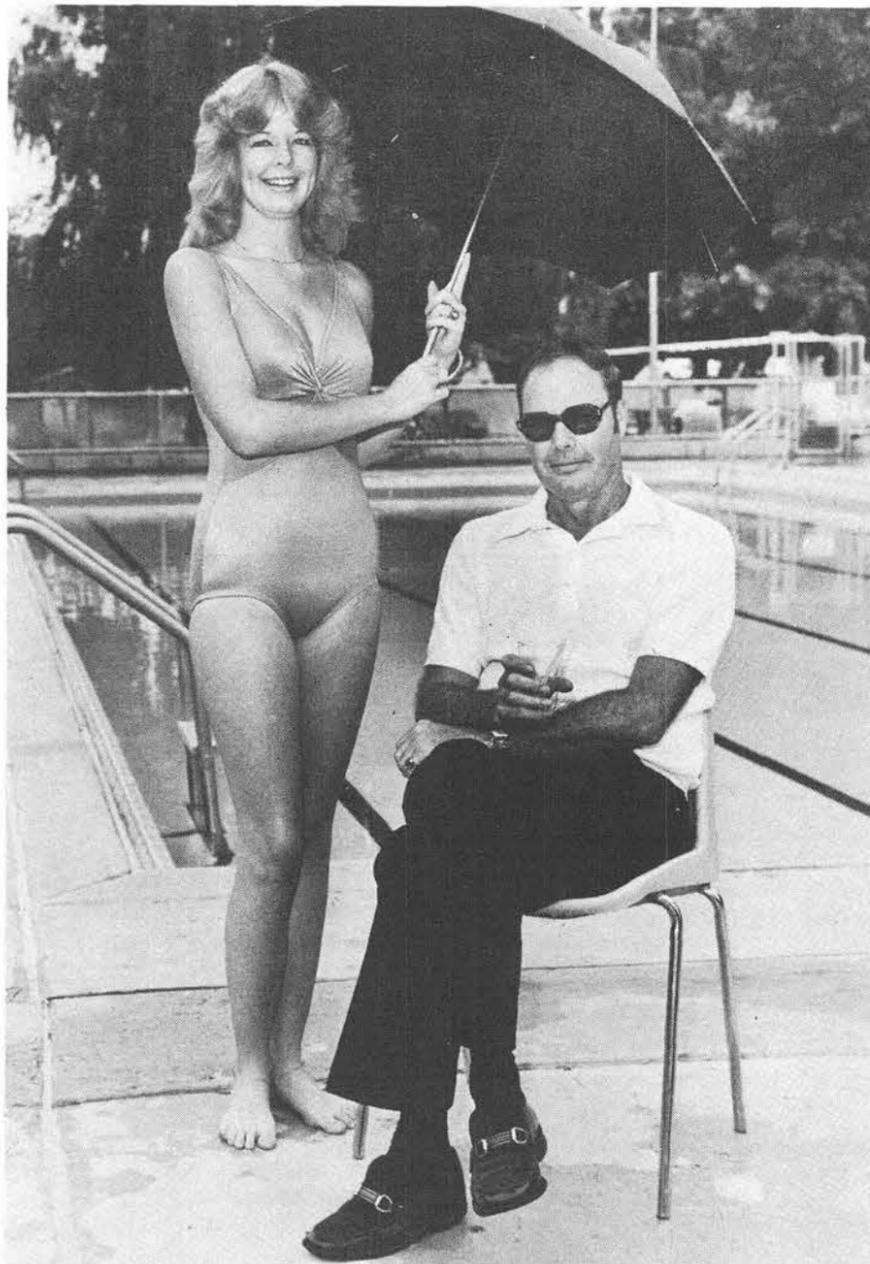
Dick Pettit (5842) will discuss "Solar Mirror Materials: Properties and Uses in Solar Concentrating Collectors" on Sept. 20. Also scheduled that day is "Outdoor Aging of Solar Mirror Materials" by E.P. Roth (5842).

Ray Mar (8313) will present "The Application of Reversible Thermochemical Reactions to Solar Thermal Energy Storage" and "Materials Problems and Research During the Development of Thermal Storage Systems" on Oct. 25.

On Nov. 29, Dave Ginley (5154) will discuss "The Application of Inorganic Chemistry to Two Materials Problems in Solar Energy Conversion — Use of Photoelectrochemical Cells to Convert Solar Energy to Electrical Power or Useful Chemical Products and Enhancement of Solar Cell Efficiencies Through the Passivation of Grain Boundary Defects."

Complete schedules for the lecture series will be posted on bulletin boards at the Labs next week. With supervisor's approval, Sandians may attend the lectures — no registration or fee required.

The series may also be attended for three hours of University credit from UNM or NMIT. Call Jim Schirber, 4-8134, for more information.



RELAX in the sun or in the shade with the family on the last day of swim season Sept. 3 at the Coronado Club. Showing us how is Ken Wiley (1135) with his daughter Terri, who last July was named Miss Albuquerque. The Club's triple pools and patio area will be open from 11 a.m. until 6 p.m. with the snack bar serving and Happy Hour prices in effect.

Coronado Club Activities

Annual Meeting Set Sept. 10

HAPPY HOURS — Tonight's buffet features fried chicken — all you can eat — for \$3.50. The colonel will eat his heart out. On the bandstand Shalako plays for dancing. Next Friday features barbecued beef and pork ribs on the buffet, Different Strokes on the bandstand. Happy hours start right after work on Fridays, run until midnight or so with special prices in effect all evening. Call the Club office, 265-6791, to reserve buffet tickets.

TRAVEL — The Mazatlan package is sold out and there's a waiting list. Check with Ed Neidel, travel director, in the lobby tonight between 6 and 7. Ed also has packages to Europe, Disneyland and Hawaii plus a Caribbean cruise in January. Or try an

excursion on the Cumbres and Toltec scenic railroad tomorrow or Oct. 5.

SWIM SEASON ends on Labor Day, Sept. 3. The triple pools will be open for recreational swimming from 11 a.m. until 6 p.m. A Happy Hour bar will be set up with special prices in effect all day. The snack bar will be serving.

ANNUAL MEETING of the Coronado Club membership is set for Monday, Sept. 10. Candidates for the Board of Directors are Bob Banks (5000), Frank Biggs (4231), Nina Chapman (3533), Charlie Clendennin (2651), Pat Crane (DOE), Frank Gallegos (4500) and Dick Shepardson (3242).

Sandia Commuters Still Mostly Lone Rangers

A recent traffic survey conducted by the city's Transportation Dept. at the Eubank Gate reveals a rather dismal vehicle occupant average during the time when most Sandians are leaving the Base:

Time	Vehicle Occupant Average
4:15 - 4:30	1.17
4:30 - 4:45	1.31
4:45 - 5:00	1.22
5:00 - 5:15	1.12

The 4:30 to 4:45 count is further broken down as follows:

No. of Vehicles	Number of Occupants
555	1
141	2
29	3
7	4
2	5
<hr/> 734	<hr/> 962

The survey was conducted Aug. 8. A copy of the results was sent to Jeff Gammon (3741) of the Employee Transportation Committee accompanied by what Jeff termed a "friendly chide" on our not-exactly-spectacular performance.

Coincidentally, LAB NEWS received an interesting note on this subject from John Garcia (3653): "Being an avid bus rider (13 years) and a firm believer that our gas shortage is genuine, I've made a game of counting the consecutive number of cars leaving the Base with only the driver as occupant. My record is 40 in succession before one comes along with two or more passengers. But, lo and behold, the other afternoon I observed a four-door sedan with six occupants! My sombrero is off to that car pool . . .".

Perform a death-defying act.



Exercise regularly.

American Heart Association

WE'RE FIGHTING FOR YOUR LIFE

