

New Solid-State Radioluminescent Lights May Prompt Long-Life Space Batteries

Illuminating the corner of a darkened lab, the opaque material inside each of the test tubes glows red, green, or blue. But Carol Ashley (1846) says the tritiated solid inside the tubes can be made to emit any color in the spectrum of visible light. In principle, she adds, it could also be made to emit non-visible ultraviolet or infrared light.

Carol is one of eight Sandia researchers developing new solid-state radioluminescent (RL) lights, a Sandia technology that may improve on the safety, reliability, and lifetime of existing RL lighting systems. Further, Carol says, glowing light sticks and cubes made from tritiated plastic or aerogel can glow much brighter than existing RL lights.

The new lights might be useful for optical computing and photonics, as instrumentation lights on a space station, or as long-life power sources in weapons or deep space probes. "We're discovering lots of practical applications for the solid-state lights," says Bob Walko (2525). "As people hear about this new technology, more potential applications will follow."

The Old and the New

Radioluminescence — the emission of light stimulated by radioactive decay — has been applied commercially for several decades, typically in lights for remote areas where electrical power is not available. The first RL lights were used for emergency lighting in ships, planes, and buildings. Later versions served as runway lights for remote military airstrips.

Conventional RL lights are sealed glass tubes filled with tritium gas and coated on the inside with an inorganic phosphor. Beta particles from the decay of tritium excite the phosphor particles, which emit a dim glow. The phosphor's color determines the color of the light emitted from the tube. Gas-filled lights are suitable for many applications, but the glass tubes would release tritium gas if broken (as much as 160 curies in the larger tubes).

Health and Safety

Statistics Help Improve Training and Processes

Improved procedures developed by Medical Directorate 3300 and Environment, Safety, and Health Directorate 3200 are producing statistics that will help Sandia organizations learn where they need to make changes to enhance safety and health. Dr. Larry Clevenger, 3300 Director, says this is the most valuable use of such statistics.

As a result of his organization's collaboration with Safety Engineering, Larry says, "We're now doing three things better than before: We're capturing data systematically, categorizing it accurately, and providing line organizations with information to help supervisors assess and correct causes." These improvements come from a combination of more comprehensive reporting and a new data collection system for analyzing the data.

Analyst/programmer Lori West (3301) wrote the software for the tracking system, which went into use at Albuquerque a year ago and will soon be operating at Livermore. "A year ago," says Lori, "Medical and Safety were receiving only about 20 percent of the 2050P written reports of incidents that they should have. [The 2050P is Sandia's 'Report of Occupational Occurrences (Injury/Illness).'] The current figure is more than 90 percent. So it's now possible to analyze and report data more effectively."

Margaret Carroll, Supervisor of Safety Engineering Div. I (3215), explains how such a dramatic increase came about: "Until fairly recently, (Continued on Page Six)

The Sandia researchers hope to reduce or eliminate this danger. In the Sandia-developed lights, tritium and phosphorescent materials can be chemically bound and physically trapped in a clear solid such as plastic (in the organic versions) or silica aerogel (in the inorganic versions). In these solid-state RL lights, large-scale tritium releases could

be prevented, minimizing potential hazards and providing greater reliability than their gas-filled counterparts.

Bob says the tritium is most dangerous if it binds with hydrogen atoms in water and is ingested. "We're now looking into the safety of the (Continued on Page Five)



GLOWING GLASS — Carol Ashley (1846) gazes into a glass-like aerogel material used in new Sandia-developed radioluminescent (RL) lights. The solid-state Sandia lights glow up to 10 times brighter than conventional gas-filled RL lights. In the new lights, tritium and colored phosphors (simulated here) are chemically and physically trapped inside the plastic or aerogel solids. (Photo by Randy Montoya, 3162)

Radio Sandia: What's It About? — See Page Seven



LAB NEWS

VOL. 43, NO. 8

SANDIA NATIONAL LABORATORIES

APRIL 19, 1991

Participation Is the Key

Remote-Site Secretaries Say Their Jobs Are Worth Going the Extra Mile

On a clear morning, Sherrie Jones (6428) can see hundreds of square miles of western New Mexico's terrain from the remote trailer where she works, west of Tech Area 3. She says she doesn't really mind the extra 15 minutes she spends driving to work every morning. In fact, she likes to work out on the desolate fringes of Kirtland AFB. The air is clear, the atmosphere relaxed, and, on occasion, a coyote dashes across the dusty road.

Sherrie is the secretary for Sandia's Fusion Technology Division, a job that requires resourcefulness and independence. "Working out here in the middle of nowhere, you have to save up your little errands and do them all at once," she says. "You can't just run to Building 800 whenever you want to because you'd spend your whole day on the road. You've got to work efficiently and use your resources."

Sherrie is one of a handful of secretaries who work at remote sites and support Sandia

operations. "Many of us know remote-site secretaries only as voices on the phone or as names in the directory," says Wendy Falls (7520), a member of the 1991 Sandia Secretarial Committee. "That's a shame because they perform some very interesting jobs. Next week is Professional Secretaries Week, a good time to recognize secretaries and learn more about their contributions." There are approximately 550 secretaries at Sandia.

Working Against the Unexpected

For secretaries working at Sandia's remote sites, the unexpected is the norm. They contend with dust storms, washed out or muddy roads, inclement weather, long commutes, and the occasional military truck convoy coming to and from Manzano Base.

"A convoy means you stop your vehicle wherever you are and remain there, sometimes (Continued on Page Four)

This & That

Happy Secretaries Week! - Next week is Professional Secretaries Week. Take a guess - how many secretaries are employed by Sandia? Perhaps not as many as you think, because it's a trick question. Most (but not all) Sandians who do secretarial work at the division level have been called office administrative assistants (OAAs) since February. Those who do secretarial work at the department level and higher have the job title of secretary. At last count, Sandia employs about 225 secretaries and about 325 OAAs. But I'm going out on a limb and wishing all 550 of them a happy Secretaries Week, no matter which job title they have. See story about some of Sandia's remote-site secretaries (and office administrative assistants) on page one.

* * *

Quiet When Commended, Kathy! - ES&H VP Glen Cheney was impressed several weeks ago when he saw an employee pick up what looked like a wad of trash from a sidewalk inside Tech Area 1. So Glen stopped briefly to express his appreciation to the Sandian - travel coordinator Kathy Eyster (3743). "Thanks, Glen," she said, "but this is a scarf that fell out of my hair, and I've been looking for it for the past 10 minutes."

* * *

Super Hazardous - One of the best typographical errors I've seen lately was in a Sandia memo that mentioned a hazardous *sincident*.

* * *

Monumental Savings, Plus - Several months ago, to save paper we went to a two-column typeset format for the Sandia *Weekly Bulletin*. With the cooperation of the folks in Personnel and General Employment Div. 3533 who produce the jobs listings, we have reduced the size of the average *Bulletin* by about eight pages, or four sheets of paper printed front and back. Multiply those four sheets times 10,000 copies printed per week times 50 issues per year, and you get 2 million sheets of paper saved per year. That much paper would stack up in a pile roughly 650 feet high, almost 100 feet higher than the Washington Monument.

* * *

Natural Beauties? - Texas women are noted for their beauty. Several years ago, Texans won the Miss USA contest several years in a row. But an observation I made on my recent auto trip across Texas makes me wonder - is it natural beauty? The small towns along my route seemed to have about one beauty shop every third business.

Spotted on the same trip: An aging Texas motel named "It'll Do." I admit to being frugal (some say cheap), but even I have too much pride to stop at the ol' It'll Do Inn unless it's mighty late, I'm mighty tired, and it's a long way to the next motel.

* * *

Not So Dedicated Elsewhere - I sometimes joke that Sandians are a "severely dedicated" lot (almost a necessity in today's demanding climate). But I admit to working at some other places earlier in my semi-illustrious career where the pace was a bit slower and folks weren't quite so dedicated. In fact, I still remember a conversation at one place between a couple of co-workers. "Man, it sure makes the day seem long when you get to work on time," said one. The other one replied, "Yes, but I see you're leaving early again to make up for getting here on time. And you must've been busy today, because this is the latest I've ever seen you leave early."

•LP

A Delighted Customer

Labs Commended For High-Level Waste Research

In a recent letter to Dave McCloskey, Director of Nuclear Energy Technology 6400, Nuclear Regulatory Research Director Eric Beckjord of the Nuclear Regulatory Commission (NRC) praised Sandia for its contributions to a new "performance assessment methodology to assess the long-term risks from [high-level waste] disposal in deep geologic media" and for its continued contributions to NRC research. Excerpts from this letter follow:

"Since 1976, SNL has produced over 25 major NUREG reports which document the methodology, components of the methodology . . . and applications of the methodology . . . The NRC HLW [high-level waste] research program is known throughout the world primarily based upon the SNL publications which formed the starting point for many countries to begin performance assessment efforts.

"The staff and management of SNL are to be complimented on the technical quality of the technology transfer effort and their willingness and ability to accommodate the needs of the NRC and the [Center for Nuclear Waste Regulatory Analyses] staffs.

"Finally, any project that has attained the international success as has the SNL performance assessment work is the result of the combined talents and dedication of a number of individuals. I would like to single out Evaristo Bonano [6416], Jim Campbell, Robert Cranwell [both 6415], Paul Davis [3223], David Gallegos [6416], Nestor Ortiz [3200], and David Updegraff [contractor] as individuals who have made significant contributions to the methodology and given years of dedicated service not only in the development of the methodology but also in providing technical support in countless areas."

Nestor Ortiz, in a memo addressed to members of the Sandia Management Council, writes of the commendation: "This is a good example of a delighted customer. It also shows that Sandia's staff and management can work as a team to develop, implement, and transfer technology and methodology at national and international levels. In the area of 'performance assessment and high-level waste,' Sandia is recognized as a national and international leader. We have similar recognition in the area of 'risk assessment of nuclear reactors.' I am convinced that Sandia can achieve similar recognition in the R&D associated with waste minimization and environmental restoration."

LAB NEWS

Published Fortnightly on Fridays

SANDIA NATIONAL LABORATORIES

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Sandia National Laboratories, a prime contractor to the US Department of Energy, is operated by Sandia Corporation, a subsidiary of American Telephone and Telegraph Co.

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feed *li*back

Q: I have been a Fair Share contributor to United Way for a number of years. But every year I mark my ECP donation card "no change," and every year I get hassled about the ECP meeting. I have become sufficiently incensed to consider reducing my contribution. This year, to add insult to injury, I received the usual ECP sticker plus a brass-colored pin. I assume the cost of these items is deducted from advertising costs supported by my contribution. Why is part of my donation being wasted on symbols to tell the rest of the world that I have contributed?

A: As a longtime supporter of ECP, I thank you for being a Fair Share contributor, apologize for your being hassled, and implore you not to reduce your contribution. Your dollars do a lot of good in Albuquerque. The pin and sticker are meant to acknowledge and thank you for your contribution. They aren't to advertise that you contribute as much as to reflect to others the support you provide to people who can use the help. I encourage you to wear your pin proudly. I surely do.

The success of the ECP campaign over the last 35 years is an indication that it is being appropriately promoted and that Sandians feel they're getting their money's worth.

Herb Pitts (3100)

Q: I wear a Sandia dosimeter badge. I feel it is inappropriate for Sandia to both provide and read the badge. An outside diagnostic facility should be responsible for this to ensure impartiality.

A: Dosimeter processing (reading) must be performed by a DOE-accredited facility. There is no facility other than Sandia's Health Instrumentation Div. 3213 that is currently accredited to process Sandia dosimeters. We are seeking an emergency processing agreement with Westinghouse/WIPP. Part of our current accreditation is the demonstration of a high level of quality assurance to ensure accuracy and "impartiality." If you have further questions, please contact Al Stanley, Supervisor of Div. 3213, on 4-5405.

Nestor Ortiz (3200)

Family Day Visitors Will See Lots of Changes

Retirees and family members of employees will notice some new facilities and new faces when they visit Sandia on April 27 for the Livermore site's 35th anniversary.

The last time they visited the site was Family Day 1986.

The most noticeable additions are the Weapons Lab (Bldg. 910), the as-yet-unoccupied addition to the Combustion Research Facility (CRF), and the Defense Engineering Lab complex now under construction southwest of the Credit Union. Other new structures built at the site during the past five years include the Environmental Test Facility (Bldgs. 955 and 956), the Security headquarters (Bldg. 964), and Shipping and Receiving (Bldg. 927).

Another change is the renovation of Bldg. 912. The building has a new management office area, and its west section is undergoing the final stages of remodeling.

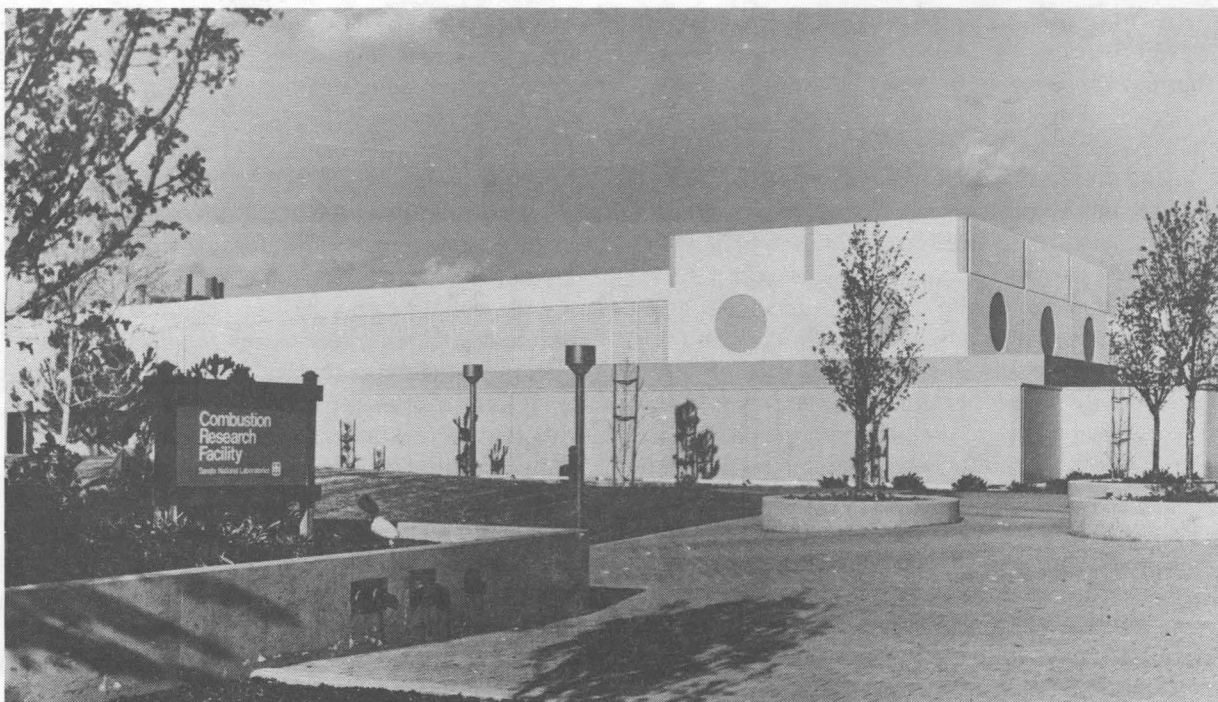
The largest and the most recent of the projects is the four-building Defense Engineering complex, which will house the Materials Department and several other engineering functions when it is completed in March 1992. The interconnected buildings total 87,000 square feet and will house state-of-the-art engineering labs, offices, and a large conference room.

Four-Story Weapons Lab

The Weapons Lab has four stories, including a basement, with a total of about 85,000 square feet. The addition to the CRF includes a 21,000-square-foot extension on the south of Bldg. 906 that is not yet occupied, and a smaller addition already in use on the north end with 3,000 square feet.

Along with new buildings, upper management at Livermore has four new leaders since the last Family Day. John Crawford replaced Dick Claassen (ret.) as Vice President of the Livermore facility in June 1987; Ron Detry succeeded Arlyn Blackwell (2800) as Director of Engineering Design 8200 in November 1986; Peter Mattern followed Dan Hartley (5) as Director of Combustion & Applied Research 8300 in November 1986; and Paul Brewer heads the Administrative Directorate (8500), formed in October 1987.

The end of an era was marked on April 3, 1990, when Gayle Cain retired. Gayle was the last of the original 25 employees who were present on March 8, 1956, the official founding date of the Livermore lab. ●BLS



PHASE II of the Combustion Research Facility is an extension of Bldg. 906, containing some 21,000 square feet. The interior is not yet finished.

Sandians May Invite Family Members April 27

Family Day at Livermore Saturday, April 27, will run from 9 a.m. to 5 p.m. for employees, families, retirees, and guests. Hundreds of laboratories, exhibits, and offices will be open for Sandians to share with their visitors. The popular weapons display featured five years ago will again be set up in a tent at the southeast corner of Bldg. 912.

Refreshments will be provided at three locations throughout the day, and lunches will be available for purchase from the Livermore Lions Club and the local Boy Scouts on the Computing Center patio.

Family Day chairperson is Darlene West (8532-1). She is assisted by 11 steering committee members, including Denny Sparger (8171), Alice Rogers (8242), Lois Johnston (8316), Ray Ng (8511), Holly Stryker (8511), Carol Caldwell (8541), Sherry Angelini (8531), Cindy English (8522), Paul Canepa (8515), Jack Bishop (8535), and Bonnie Grant (8534).



**SANDIA
LIVERMORE NEWS**

Take Note

Names inadvertently left out of the Expanding Your Horizons article (LAB NEWS, April 5) were five of the eight Sandia women who offered workshops. They include Kim Mahin (8312), who developed the Metal Mania workshop, plus Beth Fuchs (8243), Vera Revelli (8242), Ellen Meeks (8245), and Lynda Hadley (8285).

* * *

Three Sandians volunteered to serve as judges in the recent Manteca Unified School District Science Fair. Barry Hess (8343), Louie Tallerico (8484), and Theo Pope (8515) were three of the nine judges at the March 15 event.

Congratulations

To Glenda (8483) and Mike Ross, a daughter, Jennifer Lynne, March 6.

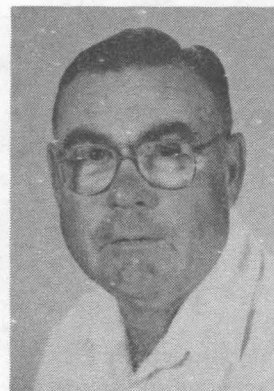
To Debbie and Anthony (8484) Bentley, a son, Allen Joseph, March 17.

To Winalee (8154) and Stanley Carter, a son, Stephen Wesley, March 25.

Sympathy

To Chuck Rudberg (8525) on the death of his wife, Rosita, in Oakley, Jan. 12.

Recent Retirees



Don Gallagher
(8532-1)

33



Lloyd Rothacker
(8513-2)

32



COMPLETED THREE years ago, Bldg. 910, the Weapons Laboratory, has three floors and a basement, which together total 85,000 square feet.

Remote-Site Secretaries

for as long as 45 minutes," says Ruth Tucker (6217), formerly a secretary at Sandia's Solar Thermal Test Facility located two miles southeast of Area 3. "I missed several meetings and appointments when I worked there."

But there are advantages to working away from the main area, she says. "Working at a remote site, to me, is like working in a branch office. In many cases there's the opportunity to work with a smaller group. And who in Area 1 gets to sit and watch a rabbit hop past the window or hear a woodpecker pecking at the door?"

Lou Killian (6215) agrees that the advantages of working at a remote site outweigh the disadvantages. "The Solar Tower is 15 minutes away from Area 1, so I have to use the phone and the fax machine more. It takes away some freedoms, such as going out to lunch. But the people in my division always help me with errands whenever they travel to the main area, and I like the extra space in my building, which is something most secretaries don't have. I also like the full view of the Manzano Mountains from my window."

Lou says working at a remote site can also provide the alert observer a daily lesson in New Mexico wildlife. Coyotes are sighted regularly near Albuquerque's remote facilities, and families of owls and field mice living near, under, or on top of Sandia buildings are not uncommon.

"I often see snakes and rabbits outside my door, and last year there were three rattlers in the office doorway," she says. "Once we spotted a bald eagle that we thought was hurt, but when we approached it, it flew away."

Elaine Torres (7530), a secretary at Sandia's Coyote Canyon Test Complex on the eastern edge of KAFB, says nature can be a little scary, too. "I haven't seen any rattlers or tarantulas, but I keep my eyes open for them constantly when I walk during my breaks — I want to spot them before they spot me."

Unusual Duties

The unusual operations carried out at Sandia's remote sites, such as field tests and large-scale experiments, require a host of support personnel and test participants who per-



POSING WITH "RAYBOT" (named after its Sandia developer, Ray Byrne, 5267) is Connie Vanderburg (5267), secretary for Sandia's Robot Vehicle Range. RAYBOT is a multi-purpose mobile platform used in a variety of experiments. Connie says she enjoys working at a remote site because of the direct involvement she has with the research taking place.

form specific functions. Often this means special responsibilities for many remote-site secretaries.

Connie Vanderburg (5267), secretary for Sandia's Robotic Vehicle Range, says the facility's unique capabilities attract lots of visitors. "We get visitors from the other national labs, DOE, and other government agencies," she says. Her duties include making arrangements for visitors and special arrangements when her division has to perform tests at night or on weekends.

She cites a recent project during which some of the division's researchers worked 80-hour weeks. "There are no floaters [temporary secretaries] out here," she says. "When I'm gone, there's nobody at my desk. I've got to make special arrangements to support the division when I'm on vacation or during off hours."

Connie says she recently drove one of the robotic vehicles from a console at a remote operating station. "It's not the same as a video game, because you're controlling a real object," she says. "It was rewarding to me to be a part of the program."

Nelcine Roland, a contractor who supports Waste Isolation Pilot Plant (WIPP) Site Operations Div. 6343, says her division used to hold monthly underground meetings, but now there is too much

"Next week is Professional Secretaries Week, a good time to recognize secretaries and learn more about their contributions."

activity to hold them. However, she still goes underground occasionally to help with special projects, she says. She also updates the procedures for Sandia operations at the WIPP site — some 357 of them — which change nearly every day.

"I enjoy doing something different every day," she says. "There are plenty of new challenges here."

Participation and Job Diversity

Diane Farish, a Sandia contractor for Kauai Test Facility (KTF) Range Support Sec. 7523-1, envies few secretaries. Her non-traditional duties include operating the radio networks and relay stations that provide communications for tests and using the equipment in her office to monitor explosions.

Preparation for each test launch is hectic and usually involves some overtime, she says, but watching rocket shots and having an office near the beach make it all worthwhile. "Kauai is a fun and unusual place to work," she says. "During lunch I can sit on the beach and get some sun."

Goldie Piatt, secretary for Nuclear Energy Programs Liaison Div. 6401, says her job in Washington, D.C., is cyclic. "One week it's hectic and the next it's regular," she says. "There's no support staff here, as in most 'remote' sites. We hire temporary help when we need it."

Goldie's division provides technical support to DOE's new production reactor (NPR) program. She says her most important job is managing the day-to-day activities of the Washington office, which serves a liaison role with DOE and the NPR program staff in Albuquerque. She organizes meetings and prepares materials for visitors, helps put together workshops, schedules conference rooms, and purchases office materials.

She also helps pull together the approximately 40 Sandians staying in Washington in order to establish a Washington-based Sandia community. "That's the most rewarding part of my assignment," she says. "We had a dinner dance on a cruise ship recently, and we'll be having a picnic soon."

Valuable Contributions

Nancy Dury, a contract secretary for Nevada Test Site (NTS) Operations Div. 9324 in Tonopah, says she goes underground a couple of times dur-



DWARFED by the 16-kilowatt solar furnace at Sandia's Solar Thermal Test Facility (STTF) are Lou Killian (6215, left) and Ruth Tucker (6212). Lou replaced Ruth as office administrative assistant for the STTF in October, 1989. (Photo by Mark Poulsen, 3162)

ing each test event. One of her functions is to help take inventory of all underground instrumentation before each test. "The tunnels are noisy and dusty," she says. "It's hectic down there, but it's great to be an integral part of our work."

Nancy's other responsibilities include compiling the security access lists for underground events and getting her new building decorated and furnished. "I've got to be independent and respond to challenges every day," she says. "But the challenges make the work much more meaningful."

She says that despite the two-hour commute (to and from Las Vegas/Tonopah) and ten-hour work days (four days a week), she wouldn't want to work anywhere else. "The variety and the people here make it worth it," she says.

Nearly all remote-site secretaries share a common feeling: their divisions are like family to them. "The best way to describe it," says Gladys Shaw (6460), secretary in Area 5, "is that the at-

"Participating in the work that's being done is what makes our work meaningful."

mosphere is relaxed — not casual, but relaxed. There's plenty of work to do, but it's much less hectic when all the people are friendly and helpful. We often work late together. It's like having two families — one at home and one at work."

Sue Stone (2810), member of the 1991 Secretarial Committee, says it's nice to see Sandia's secretaries recognized for their hard work and dedication, especially those who rarely get recognized. "Participating in the work that's being done is what makes our work meaningful. We make many positive contributions to the Labs' mission when given the opportunity." ●JG

Retiree Deaths

Sherrill Woodall (65)	Mar. 1
Geneva Wiseman (61)	Mar. 3
Harold Faulkner (75)	Mar. 5
Kenneth Seaver (78)	Mar. 7
Julia Polito (71)	Mar. 13
Herman Romero Jr. (61)	Mar. 13
John Olson (84)	Mar. 14
Frank Gordon (76)	Mar. 15
Phil Arnold (66)	Mar. 17
Frank Casner (70)	Mar. 19

(Continued from Page One)

Tritium Lights

solid-state lights," he says. "Our objective is to find the best material for binding the tritium so it can't get out."

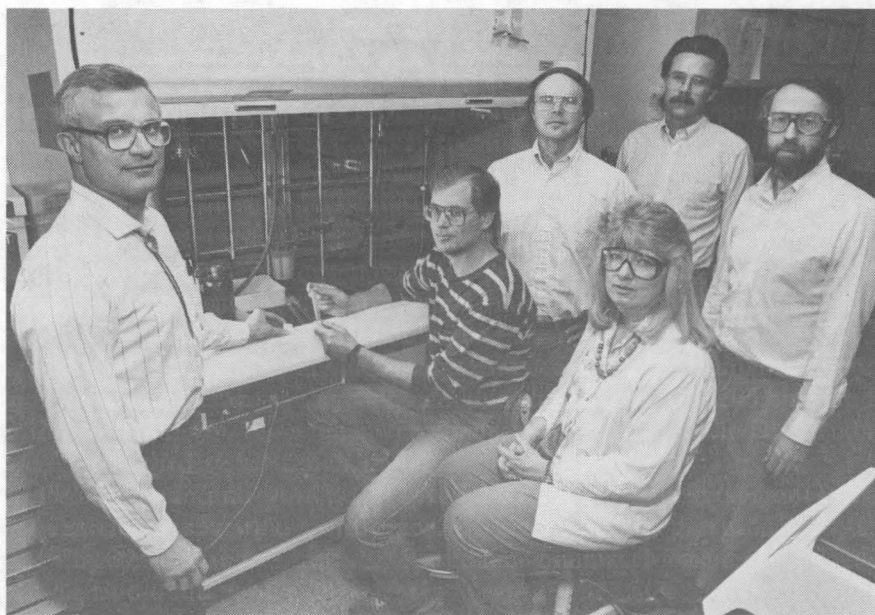
The researchers are also looking into disposal issues, including methods for extracting tritium from the material. To reduce safety hazards to the researchers, the lights are currently handled at the tritium-handling facilities at Mound Laboratories in Ohio.

The solid-state RL lights can be made brighter by increasing the thickness of the material, whereas the brightness of the gas-filled lights is limited by the size of the tube (the tritium gas absorbs beta particles if the tube is too large). The lights can also be molded into a variety of shapes, including cubes, spheres, and thin films.

Organic vs. Inorganic

Two versions of the solid-state RL lights are under development at Sandia. The inorganic lights, consisting of tritium and commercial phosphor powder bound in an aerogel (essentially a glass sponge), can emit light up to 10 times brighter than light emitted by their gas-filled commercial counterparts. (The porous aerogel structure permits a higher tritium density than the commercial RL lights.) Recently, Bob says, the researchers have made lights that emit 4.6 foot-lamberts (a measure of brightness), which is about one-half as bright as the glow of a television screen.

Their brightness makes the inorganic lights good candidates for low-power power sources, according to Scott Reed (7476). Concentrated into tiny glowing cubes, these brighter RL lights



MEMBERS of the Sandia team developing the solid-state radioluminescent lights include (standing, left to right) Bob Walko (2525), Cliff Renschler (1812), Scott Reed (7476), and Roger Clough (1811). Seated are Mike Malone (1811) and Carol Ashley (1846). Jeff Brinker (1846) and Timothy Sheppodd (8311) are not shown.

could be surrounded by solar cells and their light energy converted to electricity — a light-powered battery. Such photo cubes would glow for 20 years or more and require considerably less space than current long-life lithium batteries.

The world's first completely organic RL lights are also under development at Sandia. In the organic versions, the tritium molecules are chemically bound to an organic hydrogen-getter molecule, called DEB, and dissolved in transparent styrene, which can be molded to almost any shape. Organic dyes are also dissolved in the plastic. Beta particles emitted as the tritium decays excite electrons in the styrene, and the organic dyes shift the light-energy wavelengths in steps until a visible wavelength is achieved.

The beta particles emitted by the tritium travel minute distances in both varieties of solid-state lights. In the organic lights, the tritium is bound

more tightly than in the inorganic lights, giving them a safety advantage.

In addition, the materials used in both the organic and inorganic lights are moldable and machinable, meaning they can be fabricated into various shapes and sizes. The styrene used in the organic lights, however, is less fragile than the aerogel used in the inorganic lights, reducing the probability of breakage.

"The organic lights are much more robust than existing RL lights," says Cliff Renschler (1812). "You could put a bullet through them and only the bullet hole itself would go dark."

The Best of Both

Another version of the Sandia-developed RL lights is a hybrid, combining the brightness of the inorganic versions with the relative safety of the organic versions. In the hybrid RL light, zinc sulfide, the phosphor providing the brightest light, is combined with tritium-loaded hydrogen getters and pressed between a mirrored surface and a glass cover. The result is a brightly glowing thin film that is safer and more reliable than gas-filled lights.

"Each version is useful for a different set of applications," says Bob. "The version of RL light used — organic, inorganic, or hybrid — will be determined by the application." (See "Applications for New RL Lights Capture the Imagination.")

DOE, which has filed patent disclosures for all three RL light types, funded the research as part of a 10-year nationwide pursuit of better, more reliable RL lights. The Sandia researchers, although cautious, say the RL technology developed here will have a number of military and commercial applications if certain hurdles are overcome.

"We're still in the developmental stage," says Roger Clough (1811). "But we are proceeding on all three fronts — organic, inorganic, and hybrids." Roger adds that much of the RL research grew from technologies developed in weapons R&D, such as current tritium-handling technologies.

"This highlights the important role weapons R&D has played in unrelated technology developments," he says. In particular, he says "getters" such as DEB — originally developed to bond, or absorb, hydrogen gas atoms in weapon systems — are important for bonding tritium in the organic or hybrid lights.

Solid-state RL research has required the expertise of several organizations. Bob, Scott, Carol, and Jeff Brinker (1846) are working on the inorganic versions, while Cliff, Roger, Tim Sheppodd (8311), and Mike Malone (1811) are working on the organic versions. Bob serves as technical liaison between the organic and inorganic groups.

Researchers at other laboratories also contributed, including Mike Smith (Allied-Signal, Kansas City Division), John Gill and Bob Ellefson (EG&G Mound Applied Technologies in Ohio), Lee Leonard (formerly of DOE Headquarters), and Andy Tompkins (formerly of Oak Ridge National Laboratory). ●JG

Lighten Up!

Applications for New RL Lights Capture the Imagination

Luminous watch dials, glowing gun sights, emergency exit lights for commercial aircraft, and runway lights are among some of the commercial uses RL lights have been put to in the past.

But according to Bob Walko (2525), technical liaison between Sandia's organic and inorganic RL light researchers, the list of potential applications for the solid-state RL lights captures the imagination. In fact, he says, the new lights may be applicable for any use that requires a long-term, continuously operating, non-electric source of light.

The inorganic RL lights, for example, may be ideal for providing electricity to deep space probes on long missions, says Scott Reed (7476). Power sources for such missions must provide electricity reliably for the duration of a mission, possibly several years. Also, components for many space applications are low-drain, meaning they require little power. "A low-energy power source could be useful for some space applications," he says.

The RL lights are physically driven, not chemically driven, meaning they operate based on the fixed rate of the radioactive decay of tritium regardless of environmental factors such as temperatures in space. This feature makes them a reliable power source for space missions.

In addition, the RL lights would provide power for 20 years or more, although the light would dim gradually as a result of radioactive decay. "You'd have to start with enough power so you'll have the power you want at the time you need it," says Bob.

The organic RL lights also could provide visible light in space stations to avoid wiring

through bulkheads or other tight spaces. They may also be used as reliable emergency lighting wherever power outages are possible.

Yet another application can be found in computing, says Bob. "In a computer, random-access memory (RAM) goes away when the power goes out. RL light-based power sources could provide a constant source of electricity and take over if there's a power outage." RL lights could also play an important role in optical computing and photonics, although distinct applications have not been explored.

"Determining which version of RL light to use in a given situation is a flexible process," says Bob. "We can tailor the type and color of light to the application. You'd probably use green light for indicators, dials, or gun sights, because that's the wavelength the eye is most sensitive to. Industry will have to guide us on which lights are the most valuable."

However, the unique characteristics of each type of light can be taken into consideration, he says. Because the inorganic lights are the brightest and the tritium is not as tightly bound to the aerogel, applications requiring long life and bright light may be best served by the inorganic lights. Applications requiring less glare, special shapes, shorter lifetime, or greater safety may be better served by the organic lights.

"We're now focused on working with industry through CRADAs [cooperative research and development agreements]," says Bob. "If there's industry support for advanced R&D concepts, then we'll identify some viable commercial applications and try to transfer our technology to private companies."

(Continued from Page One)

Statistics Help

2050P forms went from the supervisor to Medical to us — Medical is responsible for worker compensation matters and we're responsible for reporting to DOE and OSHA [Occupational Safety and Health Administration]. Payroll records were indicating job-incurred injuries or illnesses for which

"It became more and more obvious that we needed a computer system in common."

we had never received a 2050P. Because Payroll shows only time-lost cases, we knew there must be many missing 2050Ps. We and Medical started working together to improve information for both of us."

In Margaret's division, Therese Kelly is responsible for reporting to OSHA and DOE and for preparing any special internal reports, such as occurrences in a particular building. "We were previously sharing data with Medical through a manual system," recalls Therese, "and it became more and more obvious that we needed a computer system in common."

"Also," says Margaret, "the reporting system was changed so that when an employee goes to Medical with a health concern that may be related to his or her work, the 2050P is distributed there. And as Lori says, the increase in volume has been huge."

More Reports, Not More Incidents

That change illustrates a pitfall of drawing conclusions from different sets of statistics. "If you compare this year with last," says Lori, "it appears that we had a dramatic increase in incidents. But the

Statistics Show Most Injuries Are 'Ordinary'

Few injuries at Sandia have exotic or even unusual causes, says Dr. Larry Clevenger (3300). "Mostly, people trip and fall, they walk into things, they get a cut. That kind of ordinary occurrence is one area where I believe employee consciousness has been increased, which will result in fewer incidents in the future. Fortunately, very serious or catastrophic events are rare."

Sandia's 1990 incident report shows that the largest numbers of incidents were caused by cutting or piercing (164 total/43 OSHA recordable), falls (110/46), lifting (96/64), and being struck by a falling object (65/19).

Only one work-related death has occurred at Sandia, says Larry. In 1967, an employee who was a painter fell from a roof and later died unexpectedly while recovering in a hospital.

CHECKING STATISTICS: Therese Kelly (3215, left) and Lori West (3301) discuss results of a new system for collecting and analyzing data on accidents and illnesses at Sandia.



Making Prevention the Rule

Incident Tracking Can Head Off Injury

Most people would agree that we shouldn't wait for an injury or illness before taking action, and indeed Sandia isn't waiting. Besides the injury/illness reporting for which Medical and Safety have responsibility, other occurrences are also tracked so that prevention can become the rule.

"DOE reporting requirements were expanded last year," says Duane Hughes (3443), who has primary responsibility for reporting to DOE under Order 5000.3A, "Occurrence Reporting and Processing of Operations Information."

"Previously," says Duane, "the categories included 'unusual occurrences' and 'emergencies.' Now, less severe 'off-normal' incidents are also reported." As examples, Duane mentions evacuating a building as a precaution, or suspending an operation because of a power outage — either might be reported.

Duane says Sandia, Albuquerque had from 10 to 17 reportable incidents a year for the past five years. Using the expanded criteria, Sandia had about 70 at Albuquerque just in the first half of FY91. Most of that total — probably

nine cases out of 10 — reflects "off-normal" occurrences.

Sandia, Livermore and the Tonopah Test Range report separately. Donna Mitchell (8543) is responsible at Livermore, and Claude Potter (7514) at Tonopah.

"One benefit of the new system," Duane says, "is that things are reported to us now that we wouldn't have known about in the past. For instance, when a fixture holding a heavy object slipped and the object almost fell on someone, we learned that it had happened before without being reported. This time, there was action to prevent a recurrence and possible injury."

Duane emphasizes that emergencies should be reported by dialing 144, and that anyone who observes a non-emergency problem should report it on a 24-hour hotline (846-7163). The hotline number is on ES&H informational "green cards" that have just been issued. More information about reporting procedures and responsibilities is in a new Safe Operating Procedure, "Reporting Procedures for Accidents, Occurrences, and Releases," SP471417.

real difference is that we have more complete data."

The imperfections of earlier data are why Larry prefers to focus on future utility, rather than past or present comparisons. Even within the DOE complex, different installations might report the same incident differently.

As one possible variable, not every incident need be reported to OSHA or DOE. In 1990, Sandia employees reported 848 incidents, but only 323 of those were "recordable" by OSHA's definition. A recordable incident is any work-related death or illness, or any work-related injury that results in loss of consciousness, restriction of work or motion, lost work days, transfer to another job, or medical treatment beyond first aid.

"Sandia encourages employees to report any occurrence that might be work-related," says Larry. "That gives us a good opportunity to know about employees' concerns or potential problems. We track even the non-recordable incidents, because they can be valuable clues to root causes of problems."

"Notice, though," he continues, "that if an employee comes to Medical and gets more than simple first-aid care — for instance, a prescription medication — the incident by definition becomes OSHA recordable. It's not necessarily a measure of the severity of the injury. Also, we assign work restrictions liberally, allowing an injury to be rehabilitated while the employee still does part of his or her job. A work restriction automatically puts an incident into the OSHA recordable category. So Sandia's practice benefits both the company and employees, but it may affect the statistics adversely."

Larry believes that all DOE facilities will report more consistently in the future, so comparative statistics will become more meaningful.

Detecting Patterns of Incidents

A major value of the new recording and reporting system will be to give line organizations well-categorized information that can help them detect patterns of injuries and their causes. "For instance," says Larry, "if an organization has a relatively high incidence of back injuries, and if the majority of them are caused by improper lifting, employees might need training in proper lifting techniques, or the organization might consider other material-handling tools, such as conveyor belts or forklifts. This is just an example, of course, but the idea is to have information that points to preventive measures."

Incident reports at Sandia are now distributed quarterly to vice presidents and directors. Margaret says, "We're working to fine-tune the categories of incidents and make them even more useful for corrective action." ●CS

Congratulations

To Karen and Doug (6224) Ruby, a son, Michael David, Feb. 27.

To Amy and Tim (2345) Bielek, a daughter, Kacey Marie, March 9.

To Barbara and John (2345) Fuller, a son, Daniel Thomas, March 12.

To Estella and Earl (9132) Creel, a daughter, Kelcie Ranae, March 25.

Attention Retirees

Picnic Date Moved to June 27

The date has been changed for the annual picnic for Sandia retirees, their spouses, and surviving spouses of retirees. The new date is Thursday, June 27; as usual, the picnic will be held at the Coronado Club from 4 to 7 p.m. Details will be mailed in late May and will contain all pertinent information, including registration forms.

The date originally scheduled (May 23) had to be changed because of conflicting Labs activities.

On the Air at AM 1610

Sandia Radio Station Provides Tiger Team Info

Within minutes of an accident or an event of general interest, *Radio Sandia*, the Labs' new radio station (KOP20), can broadcast information to all Sandians. Recently, the station has featured programs about ES&H and Tiger Team matters as Sandia strives for excellence in ES&H, says Pace VanDevender (1200A), ES&H Communications Project Manager.

Special flyers and dashboard cards have been distributed to remind Sandians that they can listen to the broadcasts by tuning to 1610 on their AM dials any time they are in their cars near Sandia. Reception inside buildings has been

Sandia Line Offers New Services

The ES&H Communications Project has established a new phone service, "Sandia Line," that provides an overview of events at the Technology Transfer Center, the Tiger Team schedule, and unusual and off-normal occurrence reports. Listeners who have missed a broadcast may call to hear any of the previous five programs aired on the station. Programs are changed daily. "Sandia Line" can be reached on 5-7294.

improved to allow employees to listen to the programs at work.

The station's official call letters — KOP20 — were assigned randomly by the National Telecommunications Information Administration.

Possible Future Uses

Though the primary purpose of the current radio broadcasts is to disseminate timely information to stimulate an improved ES&H culture at Sandia, it could continue to be used in the future to address broader issues, says Pace.

"For example, Organization 5 and the Change Ambassadors are evaluating the radio program as a means of broader communication after June 1," he notes.

Pace came up with the idea of a radio station shortly after he was asked by Glen Cheney, Vice President of ES&H Improvement and Compliance Program Management, to handle the ES&H Communications Project. He had recently met Randy McCutcheon, a teacher at the Albuquerque Academy, who had once been a producer and broadcaster of a daily radio program in Lincoln, Neb. The five-minute broadcast is still remembered as a force in the community 14 years later.

Looking into the matter further, Pace discovered that radio costs only about half as much as preparing, printing, and mailing memos to all Sandians. "If Sandians will listen, this is a most cost-effective way of getting information to them quickly," Pace says.

In addition, recent studies, such as one conducted by Johns Hopkins University, have concluded that radio broadcasts are a powerful force in reaching people and stimulating them to seek more information, Pace says.

Sandia did not have to purchase much of the radio equipment. DOE already had a broadcasting license that was not being used, and a digital recorder, transmitter, and antenna were available from a previous Sandia experiment at Prudhoe Bay, Alaska.

The only items Sandia had to buy were tape recorders for interviews, an editing machine, and a voice module for the digital recorder, at a total cost of \$8,000, Pace says.

To get an idea of how many people are listening to the program and how to improve it, phone surveys are being conducted once a week.

Though a non-commercial station like KOP20 is limited in scope (it may only broadcast over a radius of four miles) and may not be used for entertainment, the "Sandia Today" team of Project



Manager Bruce Hawkinson (5), consultant Chuck Woolsey (contractor), and audio engineer Peter Gonzales (contractor) is trying to make the content and format engaging to Sandians.

Programs feature public service announcements and interviews with a wide spectrum of

people from all levels within Sandia (see "Sandia Today's ES&H Programming"). Future programs will emphasize interviews with non-management people who will share what they and their colleagues have learned during the Tiger Team experience. ●LD

CONTEST WINNERS — Pace VanDevender (left, 1200A) last week congratulated B.J. Jones (center) and Jann Levin (both 3545) and gave them special T-shirts honoring their contributions to ES&H excellence. B.J. nominated Jann for a contest on Sandia's new radio station (KOP20, AM1610) after Jann had reported a piece of rebar protruding from the pavement.

'Sandia Today' ES&H Programming

Following is a list of some recent programs broadcast on *Radio Sandia* and the dates they were aired. The programs feature interviews with Sandians at all levels.

- March Shows — The Best and Worst We Can Expect from the Tiger Team Audit, 18; Stopping Unsafe Practices I & II, 20; The Beginning of Sandia's Jump-Start Assessment, 21; Safety Days, Green Cards, Walkarounds, and Disciplinary Actions, 22; Ownership from the STA Perspective, 25; Conduct of Operations, Mindfulness, and the Jump Start in Research, 26; Smart Technicians vs. the Inflatable Building in Hurricane-Force Winds, 27; From Reluctance to Advocacy in Jump-Start Self-Assessment, 28; and Sandia's Vision of ES&H Excellence, 29.
- April Shows — Stopping Unsafe Prac-

tices III, 1; Management by Walkaround Really Works, 1; Evacuation of Bldgs. 805, 806, and 807 for Chlorine-like Smell, 2; Stress Is High at Sandia and Stress Management Is Ready, 3; Retribution for Reporting ES&H Concerns Will Not Be Tolerated, 4; Fear of Tiger Teams Turned to Mutual Respect at LBL, 5; Danger: Soldered Copper Fuel Line on Outdoor Gasoline Tank, 8; Management View of Readiness for Tiger Team, 9; STA View of Readiness for Tiger Team, 10; Represented Employees Have Advocated Better ES&H for Years, 11; and The Cost of ES&H Is Less Than the Cost of Not Doing It, 12.

Sandians interested in additional information about these or other "Sandia Today" programs can contact Bruce Hawkinson (Org. 5) on 4-3502.

Welcome

Albuquerque — Debra Buttry (21-1), Charlotte Johnson (21-1), Maria Santiago (22-2).

Elsewhere: *California* — Tamara Ulibarri (1811).

Fun & Games

Soccer — Sandia Summer Soccer registration is now open. Two leagues are available — "A" league for experienced players and "B" league for beginners. All Sandia, DOE, and contractor employees and adult dependents are eligible. Games will be played at the Van Buren Middle School field on weekdays May 28 through August. The SERP Office has registration packets for team entries and a free-agent list for individuals. Deadline for entries, teams or individuals, is Monday, May 13, at 5 p.m. For more information, call Gilbert Quintana (5245) on 296-9155 or Rick Hurley (2345) on 299-8401.

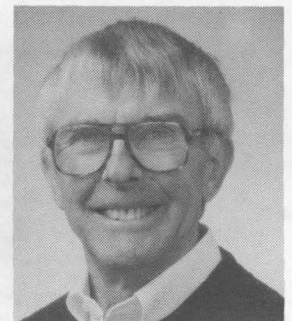
Correction

An April 5 "Recent Patents" listing for Sol-Gel Antireflective Coating on Plastics should have been credited to Carol Ashley (1846) and Scott Reed (7476).

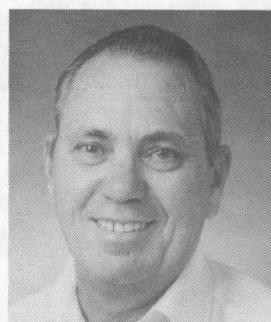
Recent Retirees



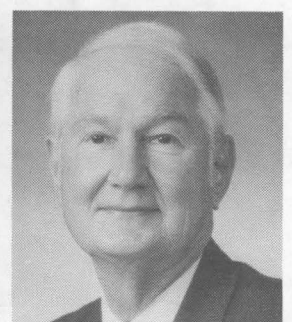
Bob Gaeddert
3410 30



Keevin Moriarty
122 38



Robert Crotzer
7481 23



Herman Mauney
7200 37

Supervisory Appointments

JUDITH HUBBARD to Supervisor of Video Production, Still Photography, and Film-Processing Div. 3153.

Judy joined Sandia in 1985 as a security inspector in Patrol Division - North 3434. She was promoted to lieutenant in June 1986. She also worked as a field lieutenant and desk lieutenant on the 'graveyard' shift for a year and a half and then was day-shift administrative lieutenant. In 1988, she became Supervisor of



JUDY HUBBARD

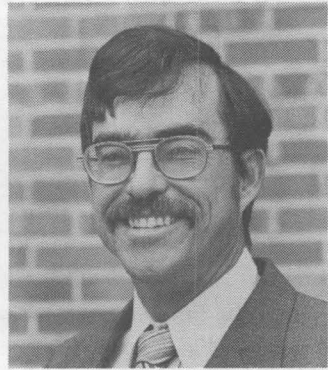
the Mail Services Section. Judy was Supervisor of the Still Photography Section from September 1990 until her promotion.

She has a bachelor's degree in university studies from UNM and will complete an executive masters degree in business administration at UNM in August. Before joining the Labs, she managed several Albuquerque restaurants.

Judy enjoys reading, traveling, running, and hiking. She lives in NE Albuquerque.

MARK GROHMAN to Supervisor of Advanced Projects Div. IV 9127.

Mark joined the Labs in 1985 as a member of the division he now heads. He worked on advanced conventional munitions development and all-electronic fuzing and was project leader for Sandia's laser radar development project. In 1990, Mark transferred to Advanced Projects Division V, where he was



MARK GROHMAN

project leader for the bomb control unit in the Advanced Bomb Family Program sponsored by the Navy.

He has a BS in nuclear engineering and an MS in electrical engineering, both from Texas A&M. He was a Naval officer at the Naval Reactors headquarters in Washington, D.C., from 1978 to 1983.

Mark enjoys golf, chess, skiing, camping, and singing in his church choir. He and his wife Ellen have two children and live in the NE Heights.

PAUL ROYER to Supervisor of Optoelectronic Components Development Div. 2531.

Paul joined Sandia's Measurements Development Division I in 1968, working on design, fabrication, and fielding of custom thin-film detectors and filters in support of underground experiments. In 1973, he joined the Physical Design and Materials Division, where he did nuclear



PAUL ROYER

safety packaging analysis, design, and testing for firing sets.

He transferred to the Advanced Development Division in 1978 and developed the first low-inductance integrated firing set that became base technology for W88 and W89 weapons. In 1982, Paul joined the Firing Subsystems Division, where he was W84 and B83-1 firing set project leader. He was in the Advanced Fire Set Division from 1984 until 1986. While there, he was Sea Lance firing set project leader and developed firing systems for earth penetrators. He joined the division he now heads in 1988. He has been W89 project leader for optoelectronic devices.

Paul has a BS in engineering physics from the Colorado School of Mines and an MS in nuclear engineering from UNM.

He enjoys hiking, camping, fishing, golf,

painting and drawing, and church activities. Paul and his wife Elizabeth have three children and live in the NE Heights.

GERALD ESCH to Manager of Technical Communications Dept. 3150.

Jerry joined the Labs in 1976 as a member of the Engineering Support Systems Development



JERRY ESCH

Division, where he was a systems analyst/programmer and project leader for engineering drawing applications. In 1980, he transferred to the Data Resource Management Division as a data base administrator.

He was promoted to Supervisor of the Scientific Computing Operations Division in 1981 and was responsible for mainframes and peripherals used by scientific customers. He later worked for the Personnel Data Systems Design Division, the Data Administration Division, and the Communications Development and Support Division.

Jerry has an AA in business from York College, a BS in mathematics from the University of Nebraska, and an MBA with emphasis in operations research from the University of Colorado. Before joining Sandia, he worked for AT&T in Denver.

Jerry is a member of the Colorado State University MIS (Management Information Systems) Advisory Council. He's been a campus recruiter at Colorado State for the past 11 years, was an adjunct professor at the UNM College of Engineering, and has been leader of Sandia's MIS Rotation Committee for the past three years.

Jerry enjoys volleyball, basketball, golf, restoring old mechanical games and scales, and photography. He and his wife Barbara (4021) have four children and live in the NE Heights.

Excitement, Innovation, and Enthusiasm

Sandia Works with Teachers to Enhance Science Education

Sandia and Los Alamos national laboratories are teaming up to help improve the quality of science instruction in rural middle-school classrooms.

Called TOPS — Teacher Opportunities to Promote Science — the intensive, three-year pro-

gram is sponsored by DOE and includes a three-week summer institute for teachers, followed by three academic-year workshops.

Fifty sixth-, seventh-, and eighth-grade teachers selected from rural New Mexico counties visited Sandia last week for a two-day work-

shop, in which Sandia and Los Alamos volunteers demonstrated hands-on science projects that teachers can use in the classroom to enhance science education.

In one workshop, Eunice Young (9123) conducted a variety of team-oriented experiments to demonstrate the scientific method of examining basic physical principles. In another workshop, Louie Romero (1422) showed how teachers can use simple classroom models to teach students about shapes, such as platonic solids, that occur throughout nature and are important in mathematics.

Sharon Holmes (3511), TOPS program coordinator, says one of the goals of the program is to increase opportunities for networking in rural districts. Participating teachers are required to share their training with colleagues in their districts.

"Educators are now emphasizing the importance of injecting excitement, innovation, and enthusiasm into science classes," Sharon notes, "and these qualities make science appealing for students. We're working closely with these New Mexico teachers to come up with some creative ways to accomplish this, and we're all learning from one another. It's an exciting program."

TOPS will also provide support for teachers to establish a student-parent component in their school or district to build a basis of community involvement. This will help maintain the program when DOE funds are no longer available. ●LD



LOUIE ROMERO (1422) helps New Mexico mid-school science teachers in the TOPS program build complex geometric solids with toothpicks and raisins. Seated are (from left) Mary Nelson, from Springer High School; Becky Harris, from Magdalena High School; and Pat Horn, from Cimmaron High School.

New Integrated Materials Laboratory Now Being Built

The Integrated Materials Research Laboratory (IMRL), when completed late next year, will become home to people in three directorates: Solid State Sciences 1100, Materials and Process Sciences 1800, and Components 2500. A groundbreaking ceremony was held earlier this month.

"Several federal agencies — including DOE, DoD, and Commerce — have recently identified materials as a critical technology, vital to the nation's economic competitiveness," says Venky Narayanamurti, VP for Research 1000. "I'm glad that Sandia many years ago saw the need for this IMRL."

A National Research Council committee recently concluded that new, modern materials are crucial to the success of industries important to the US economy and defense, and that materials science and engineering is a field "entering a period of unprecedented intellectual challenge and productivity."

The IMRL will encompass most of Sandia's efforts in this area. It will provide the kind of close integration of materials research, including synthesis and processing with advanced component development, that is required to develop and make use of new, specially tailored materials.

The facility will house R&D in semiconductors, superconductors, ceramics, altered metals, dielectric materials, microsensors, optical devices, and surface and interface physics and chemistry.

The 140,000-square-foot building, located near the Microelectronics Development Lab southeast of Tech Area I, will have space for university postdoctoral researchers and other collaborators from industry and government.

●KFrazier (3161)



BREAKING NEW GROUND: Sandia research in materials sciences will be housed in the Integrated Materials Research Lab, south of the Microelectronics Development Lab (Bldg. 858, background). Wielding the shovels are (from left) Ricardo Zuniga, Project Specialist for US Sen. Jeff Bingaman; Bruce Twining, Manager, DOE Albuquerque Operations Office; US Rep. Steve Schiff; Linda Alvarado, President, Alvarado Construction (contractor for the IMRL); President Al Narath; Vice President-1000 Venky Narayanamurti; and Paul Gilman, Administrative Assistant to US Sen. Pete Domenici.

Take Note

Cecil Land recently retired after 35 years of service at the Labs. As a tribute to him, his friends have created the Cecil F. Land Science Fair Award to be given at the Northwest Regional Science Fair at UNM. Barb Wampler (1163) is the fund coordinator. If you are interested in contributing, call Barb on 6-7089.

The provisional class of the Junior League of Albuquerque and the Rocky Mountain Adoption Exchange are sponsoring a parent education seminar for individuals who may be considering adopting or fostering special-needs children. A panel of professionals and parents will answer questions. The class is being held Tuesday, April 23, from 6:30 to 9:30 p.m. at the Coronado Shopping Center Coronado Community Room. Early registration is encouraged. Call the Rocky Mountain Adoption Exchange on 296-4017 by April 19.

Several free seminars are being offered by Sandia Laboratory Federal Credit Union in April and May. Dates and topics follow: Tuesday, April 23, 6:30 to 8 p.m., "Three Steps to Buying Your Next Car/Truck"; Tuesday, May 7, 6:30 to 8 p.m., "Wills & Estate Planning for Small Estates (under \$600,000)"; Tuesday, May 14, 6:30 to 8 p.m., "Wills & Estate Planning for Medium & Large Estates (over \$600,000)"; Tuesday, May 21, 6:30 to 8:30 p.m., "Estate Planning for Senior Citizens (powers-of-attorney, right-to-die, Medicaid planning). All seminars will be held in the first floor meeting room at Credit Union Center (Juan Tabo & Comanche). For more information and reservations, call 293-0500, ext. 303.

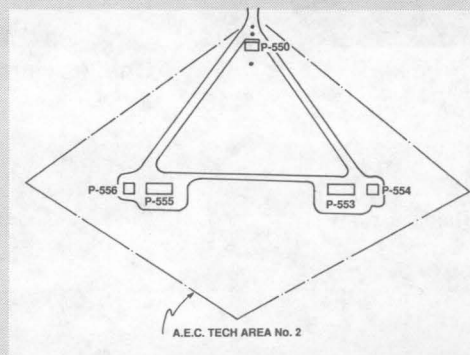
Benefits Parking Area Moved

The parking area for Benefits Dept. 3540 visitors was recently moved from the lot east of Bldg. 832 to the lot north of Bldg. 832. Sandians, retirees, and other visitors will find 21 regular visiting parking spaces and three handicapped spaces in the new location.

Sandia has been selected to receive a 1991 President's Volunteer Action Awards Citation from the National Volunteer Center. The award is to be presented during National Volunteer Week, April 21-27. Details in the next LAB NEWS.

Info Needed: Tech Area 2

Old-Timers, Retirees Wanted

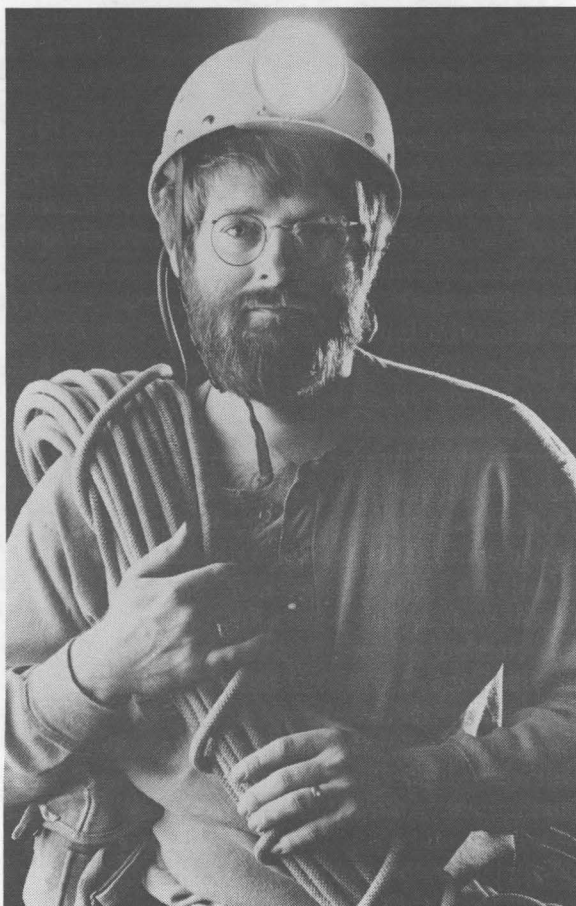


Environmental Impact and Restoration Div. 3223 is developing a work plan to assess the nature and extent of contamination in Tech Area 2, where a variety of weapon work has been performed since the late 1940s.

"We have a draft work plan for the assessment," says John Cochran (3223). "To develop the plan, historic aerial photos were analyzed, corporate records were reviewed, and long-time employees were interviewed. The knowledge of many long-time employees has been our greatest asset in focusing the draft plan.

"But we still need to talk to other people who might have knowledge of the operations in TA-2 in the 1940s and '50s. A lot of those people are now retired, and we'd especially like to hear from them."

John Cochran can be reached on 505-844-7209.



STEVE ATTAWAY (1425), a member of the Albuquerque Mountain Rescue Council (a United Way agency), was part of the rescue operation that pulled Emily Mobley from the Lechuguilla cave south of Carlsbad during a dramatic five-day cave rescue that began Easter Sunday. Mobley broke her leg while exploring 2 miles into the nation's deepest cave. Several WIPP employees were also part of the operation. Steve, a rope rigger for the rescue, says he has been spelunking since he was 15 years old. Seventeen Sandians are members of the Rescue Council. (Photo by Randy Montoya, 3162)

MILEPOSTS

LAB NEWS

April 1991



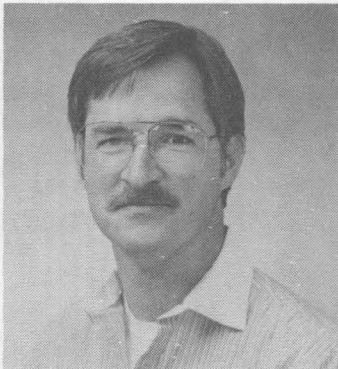
Patricia Newman
9119 20



Kent Biringner
9415 15



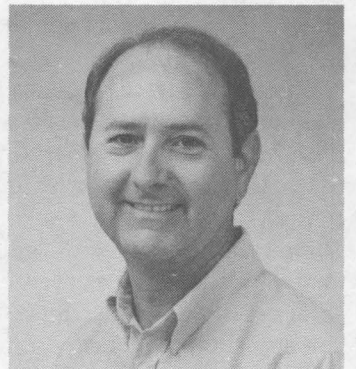
Keith Almquist
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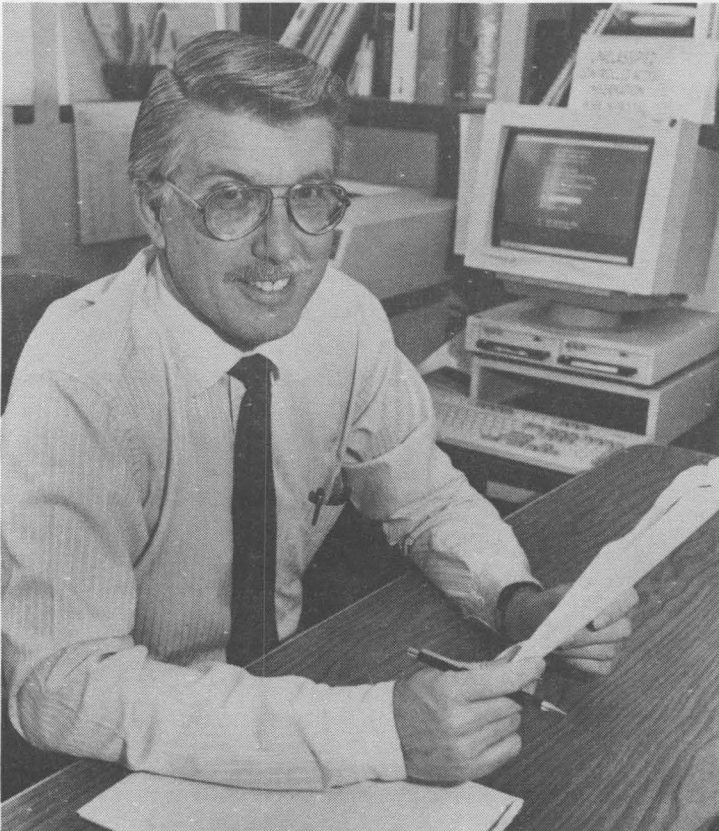
Gary Webb
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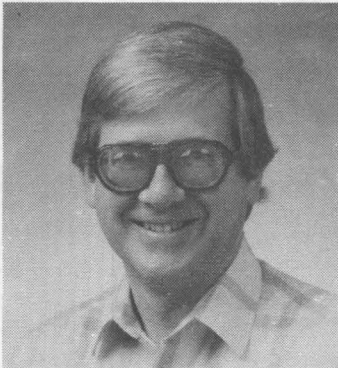
Harry Saxton
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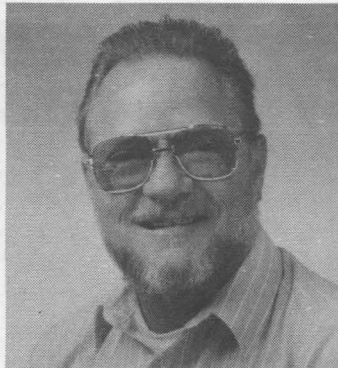
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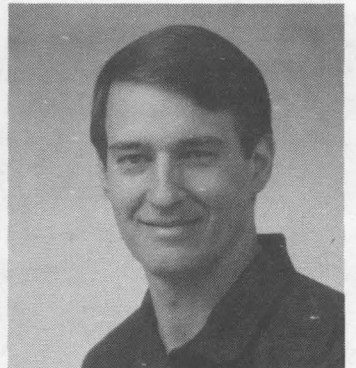
James Asay
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Don Thalhammer
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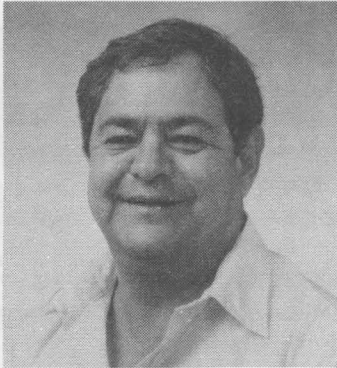
Andy Jones
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Tom Lutz
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Larry Predika
5261 15



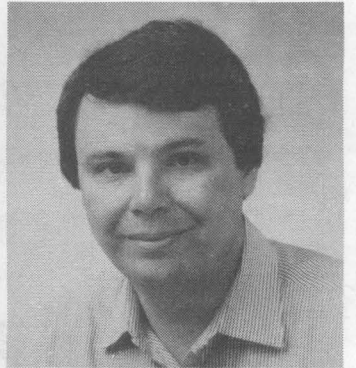
Charles Hurtado
2851 15



Dean Pershall
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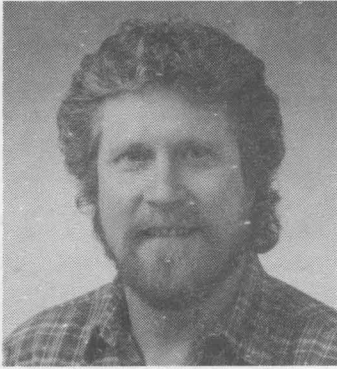
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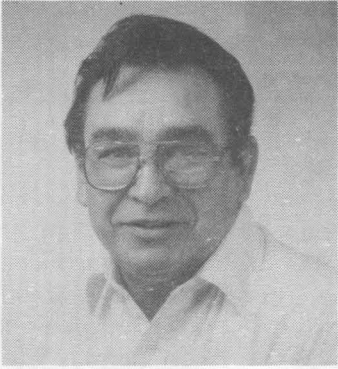
Ramon Leeper
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John Cerutti
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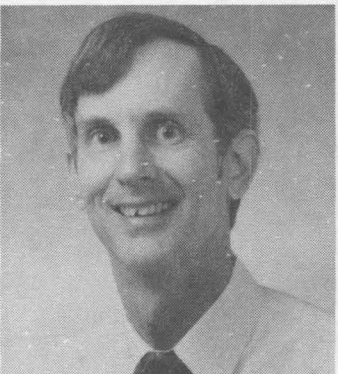
Stephen Sanderson
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Gilbert Muniz
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Tom Cleveland
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Doug Brown
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Duane Smith
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John Holmes
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Take Note

The 44th annual meeting of the American Physical Society's Gaseous Electronics Conference will be held Oct. 22 through 25 at UNM. Paper submissions are invited and will be accepted until July 12. Papers should concern the role of basic phenomena and plasma processes in ionized gases and the relevant theory and measurement of basic atomic and molecular collisional processes. Special sessions for the conference

include particulates in radio-frequency discharges, cathodes in discharges, high-density plasma processing, electron and atom collision-related phenomena, alternative applications for plasma processing, and ionized gas physics in pulsed power applications. For further information, contact conference secretary Harold Anderson (UNM professor of chemical and nuclear engineering) on 277-5661.

Fun & Games

Running — The Scholarship Committee of the New Mexico League for Nursing is sponsoring the Second Annual Nightingale Classic Road Races April 28 as a fund-raiser for its nursing scholarship fund. Events include a 10K and 5K run-walk, 5K race walk, and a 1-mile fitness run-walk. Races begin at 8 a.m. at Tiguex Park. Applications are available at most sporting goods stores. For information, call Marie Duke on 884-4593.

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8 1/2 by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per category per issue.
8. No more than two insertions of same "for sale" or "wanted" item.
9. No "For Rent" ads except for employees on temporary assignment.
10. No commercial ads.
11. For active and retired Sandians and DOE employees.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

SEARS EXERCISE BIKE, \$50; utility trailer, 24" x 42" x 72" bed, \$250. Baca, 296-8474.

PAINT SPRAYER, Sears electric, airless, used once, \$70. Shunny, 265-1620.

MICROWAVE OVEN, Sears Kenmore, 0.8 cu. ft., 600-watts, fully programmable, w/temperature probe, \$100. Schlavin, 299-6592.

WATERBED MATTRESS, soft-sided, king-size, w/heater, no pedestal, free, you pick up. Lemen, 293-3487.

DESK, 2-drawer, 30" x 43" x 26", gray formica top, \$55 OBO; couch, 2-seater, curved arms/back, new, \$80 OBO. Beck, 294-4591.

GERMAN SHEPHERD PUPPIES, AKC-registered, \$150/males, \$100/females. Inge, 344-1582.

WATERBED ENVELOPE, king-size, Hibernation Series Extra Firm, w/heater & thermostat, 72" x 84", \$75 OBO. Schmidt, 821-2917.

DOGHOUSE, large, similar to those at Acoma Pet Center, needs paint and a few shingles, free. Damkroger, 897-7017.

286 COMPUTER, 2FD, 444HD, 1P:2S ports, RGB/TTL display driver, amber monochrome monitor, mouse, \$785; home video editor, \$75. Hale, 298-1545.

WINDSURFING EQUIPMENT: 6.7M Neil Pryde camber race sail, \$150; WH clamp-on boom, 4' to 4'6", \$55; Chinook clamp-on boom end, \$12; slotted Hyperform fin, \$15. Ritchey, 298-4311.

BEDSPREAD, hand-crocheted, royal blue w/red roses, \$500; IBM Model D typewriter; kitchen stool; table-tennis table. Johnson, 296-3431.

SEARS TABLE SAW, 10-in., cast-iron table, belt drive, 2 extensions, casters, Sears sawdust collection system, \$425. Zarrella, 892-0822.

SANDIA COFFEE MUGS, new shipment, \$7; caps & T-shirts, \$7. South Highway 14 Village Project, LAB NEWS, Bldg. 814, 4-7841.

TREADMILL, electronic Cadence 5.2, \$200; basketball post & goal, \$50. Matthews, 869-2370.

AT&T PC 6300, w/color monitor, 640K, 20MB hard drive, 8087-2 DOS, extra manuals. Irwin, 291-9382.

CD RACK, holds 100 compact disks, solid oak, new, \$40. Ricco, 828-1997.

EPSON EQUITY I, 512K RAM, 30M disk, 5-1/4" floppy drives, CGA color monitor, software, \$800. Lin, 294-5908.

TELESCOPE LENSES: 7-in.-diam. f5.7, doublet, \$500; 5-in.-diam. f4.8, doublet, \$300; both are coated achromats in aluminum cells. Scott, 281-4332.

BEDROOM FURNITURE: queen-size headboard, box spring, mattress, matching chest-of-drawers, \$250. Clauss, 822-8101.

CUSTOM PLEATED SHADES, 2, metalized back, coral, 44-1/2" x 86-1/2", can be cut down, below decorator cost, \$125/ea. Smith, 281-2940.

TELESCOPE, Meade Schmidt-Cassegrain LX5, w/extra lenses and accessories, \$2,000. Billups, 892-7057, leave message.

FULL-SIZE BED, Sealy Posturepedic Premium, 20-yr. warranty, used 5 yrs., \$200. Chadwick, 275-2368.

HOT-AIR BALLOON, '84 Raven S55A, Champagne Limited basket, twin 20-gal. tanks, 5-hp inflator fan, extras. Blaine, 869-6584.

UPRIGHT FREEZER, Kenmore, 15.2 cu. ft., 430 liters, \$250. Jojola, 255-8178.

BULLETS, 9mm Luger (Parabellum), 115-grain, partial box (40 rounds), \$15; bicycle rack, roof-style, holds 4 bikes, \$40. Joseph, 299-6989.

DISHWASHER, needs timer, \$50 OBO; DP300 rowing machine, \$25 OBO; old RCA TV, works, \$50 OBO. Ghanbari, 883-3819.

CENTURY PLANTS, locally grown, healthy, 5" to 15" diameter, \$5 to \$15. Bando, 292-2452.

MOVING SALE: Saturday, May 4, 2 stereos, TV, furniture, games, household items, more. Suderman, 883-4039.

DISHWASHER, Whirlpool Supreme 420, built-in, complete, \$40. Brooks, 275-0056.

GIBSON ELECTRIC GUITAR, w/hard-shell case, \$300. Trujillo, 865-0253 after 5:30 p.m.

PATIO FURNITURE, 42-1/2"-diameter tempered-glass table, 4 chairs w/cushions, \$100; Genie wet/dry vacuum, 6-gal., 1.1-hp, \$40. Beardsley, 292-5910.

FIREPROOF FILE CABINET, 4-drawer, \$75; antique settee & chair; antique dresser. Patterson, 299-1062.

SKIS AND NORDIC SKI BOOTS, size 10, \$40; 3/4-in. polybutylene tubing: hot/cold water, 44¢/ft. Everts, 822-1767.

REFRIGERATOR, White Westinghouse, 17 cu. ft., 22 mos. old, \$300; 21-in cable-ready color TV, w/stand, \$250. Griggs, 892-4152.

COCKER SPANIEL PUPPIES, 5 wks. old, \$100/ea.; paddle tires, 16.5x15, fit VW or adapters for Ford, \$300 w/rims. Apodaca, 294-5525.

LAWN MOWER, Sears Craftsman, 22-in. rotary, side discharge, power-propelled, transferable maintenance agreement through 7/93, \$225. Shortencarier, 857-0107.

VIVITAR 200mm TELEPHOTO LENS, used once, \$50; new fondue set, \$10; pasta maker & racks, \$20; bike rack, \$20. Anderson, 897-2772.

WESTINGHOUSE DRYER, heavy-duty, \$30; Princess House crystal. Apodaca, 247-8101, leave message.

GOLF CLUBS: 4-PW irons, PGA-Par-Exc., \$50; Stag sand foil, \$16.50; Axaline 60-B putter, \$12.50; First Flight woods (Lam), 1-3-4 reg., \$36; all for \$105. Stang, 256-7793.

PUREBRED AIREDALE, 2-yr.-old neutered male, free to good home. Rex, 344-6552.

PINTO GELDING, 9 yrs. old, professionally trained English and carriage, 4H-trained western, triple registered. Farnsworth, 865-6160.

THREE-FAMILY SALE: April 27, 8 a.m.-2 p.m., cash only, 13313 Cedarbrook NE (near Tramway & Montgomery), sports, household, appliances, more. Jeffers, 299-7020.

PING-PONG TABLE, 3/4-in., folding w/playback position, 10 mos. old, used indoors, w/accessories, \$115 firm. Kwak, 294-2524.

COLOR MONITOR, 13-in., \$75; daisy-wheel printer, \$100; dot-matrix printer, \$50; Commodore 64 parallel interface card, \$20; '77 Layton travel trailer, \$2,950. Hudson, 298-3935.

386-AT, 10MHZ, 71MB HD, 2MB RAM, 1.2 and 1.44 floppies, EGA, 1P & 1S, 128K shadow RAM, no monitor, \$1,200 OBO. Scott, 281-4332.

CAMPER SHELL, fits long wide-bed, aluminum construction, sliding front window, louvered side windows, \$275. Hesch, 268-6122.

TREADMILL, 1/2-hp Vitamaster Ajay 750, electronic instrument panel, 0-6 mph speed, distance, time, pulse, calories, adjustable incline. Liguori, 256-3613.

DINING ROOM SET, solid maple, 4 chairs, 54-in.-round table, w/2 leaves, will seat 6, \$195 OBO. McCord, 281-2146.

CONSOLE PIANO, \$600; doll house, fixer-upper, \$50; large spring horse, \$50; white canopy twin bed, \$80. Mills, 299-2130.

ELECTRONIC KEYBOARD, \$60; stereo receiver, \$60; 310-lb. Olympic weight set, w/bench, \$350 OBO. Howard, 839-9203.

WATERBED, queen-size, dark pine, bookcase headboard, 6 drawers, electric heater, \$100 OBO. Claussen, 293-9707.

TRANSPORTATION

10-SPD. BICYCLE, 24", \$50. Baca, 296-8474.

TOURING BIKE, Motobecan Mirage, 25-in frame, aluminum alloy rims, cranks, headset, & seatpost, front derailleur missing, \$75. Shunny, 265-1620.

'88 PLYMOUTH VOYAGER LE, loaded, call for details. Silva, 345-3807.

'66 VOLKSWAGEN BUG, 1300cc, 6-volt, 30K miles on engine, radio, electronic ignition, new battery, coil, seat covers, \$1,200 OBO. Leeman, 299-9149.

'89 CHEV. CONVERSION VAN, loaded, 16K miles, cruise, tinted windows, \$1,000 negotiable, assume SLFCU loan. Spinello, 292-5681.

10-SPD. BICYCLE, Bridgestone Aries, steel frame, w/28-in. wheels, \$180 OBO. Schneider, 299-6243.

'72 VOLKSWAGEN SUPERBEETLE CONVERTIBLE, cobol blue, white top, tan interior, mags, new tires, 45K miles, \$6,900 OBO. Gutierrez, 281-2413.

'83 CHEV. PICKUP, 4x4, 3/4-ton, w/camper shell, AC. Anderson, 298-1635.

'67 LINCOLN CONTINENTAL CLASSIC, suicide doors, \$1,200 OBO. Zownir, 256-3717 or 256-3753.

'85 HONDA CR500, used less than 40 hours, \$1,500 OBO. Meeks, 292-5915.

'83 JEEP WAGONEER LIMITED, full-size, 98K miles, AC, PW, PL, PS, PB, AT, Select-A-Trac, leather, cruise, tilt, AM/FM cassette. Irwin, 291-9382.

'89 TOYOTA CELICA GT, 2-dr. liftback, PS, PB, AC, stereo, tinted glass, power sunroof, 22K miles, \$11,000 book value. Fleming, 888-0744.

'86 FORD TAURUS LX WAGON, loaded, has third seat, 60K miles, \$6,400. Crine, 292-5321.

'76 FORD F-150, 4-WD, 360 V-8, 4-spd., shell, \$3,200; '78 Silverline boat, 16-1/2-ft., V-hull, 140-hp, I/O, power trim, canvas, \$4,000. Yingst, 884-3812.

'82 TOYOTA TERCEL, 4-spd., 64K miles, AM/FM cassette, new interior/exterior, \$2,500. Langlois, 293-3097.

'84 CHEV. CITATION, AT, PS, AC, 6-cyl., 55K miles, AM/FM radio, original owner, \$3,000. Langlois, 275-2108.

BOY'S BMX BICYCLE, 20-in. Murray, \$35; girl's 20-in. blue bicycle, \$20; Kent 12-in. scooter, w/handbrakes, \$20. Witek, 296-5198.

'82 AMC CONCORD, 2-dr. sedan, AT, PB, PS, tilt, PW, \$1,500. Phillips, 821-9633.

BICYCLE, Fuji Gran Tourer, 21-in. mixte frame, 12-spd., completely rebuilt, \$95. Joseph, 299-6989.

'78 DODGE MAXIVAN, AT, PS, radio, CB, carpet, cabinets, bed, \$2,250. Tobyas, 877-0354 after 6 p.m. or on weekends.

'86 DODGE DAYTONA TURBO Z, 45K miles, red, T-roof, AT, AC, PS, PW, recent tune-up, below book, \$5,000. Brooks, 275-0056.

WOMAN'S 3-SPD. BICYCLE, 26-in., lightweight, Sears Free Spirit, \$75. Beardsley, 292-5910.

'84 HONDA ATC, 250cc, 10-spd., automatic reverse gear, \$1,000. Apodaca, 247-8101, leave message.

'81 PLYMOUTH RELIANT STATION WAGON, white exterior, beige interior, AC, AM/FM. Dillon, 877-7628.

'59 AUSTIN HEALY, Bugeye Sprite, completely rebuilt, \$6,400; girl's 10-spd. bicycle, \$60. Hale, 823-9563.

'86 FORD F-250, 3/4-ton, 4x4, AT, cruise, tachometer, dual tanks, AC, PS, PB, regular gas, 48K miles. Grenfell, 344-9355.

'84 CHEV. CAMARO, 4-spd., 4-cyl., PS, AC, \$3,800. Dunlap, 884-0232.

'86 FORD MUSTANG LX, 3-dr., 4-spd., AC, PS, PB, PL, 37K miles, \$4,250. Clingan, 275-0849.

'84 MONARK BASS BOAT, 16-ft., V-hull, 55-hp Evinrude. Matthews, 869-2370.

'85 CHEV. FLEETSIDE, 4x4, 1/2-ton, short bed, 62K miles, AC, dual tanks, custom wheels, one owner, \$5,800 OBO. Schwaner, 828-1404.

'82 DATSUN 280ZX TURBO, 2+2, AT, PS, PB, PW, \$3,500; '81 Chev. Malibu Classic, AT, PS, PB, PW, \$1,300. Miller, 281-3936.

'77 VOLKSWAGEN CAMPER VAN, new tires, other improvements, \$3,600. Ezell, 821-1768.

'84 VOLKSWAGEN GTI, 2-dr. hatchback, white, sunroof, 5-spd., alloy wheels, bucket seats, 4-speaker AM/FM cassette, 65K miles, \$3,800 OBO. Ricco, 828-1997.

'83 RENAULT ALLIANCE LIMITED, AC, PS, 5-spd., new brakes and clutch, \$1,500. O'Hern, 275-3185.

PLEASURE BOAT, 18-ft., fiberglass Wellcraft Air-slot, cabin w/bunks, twin gas tanks, 1500cc Mercury outboard motor, trailer, \$2,200. Moss, 299-5149.

'72 WINNEBAGO BRAVE, self-contained, generator, 72K miles, \$5,500. Farnsworth, 865-6160.

'79 HONDA ACCORD, hatchback, 5-spd., beige, 112K miles, \$1,500. Baldwin, 822-1860.

'74 MERCEDES 280 SEDAN, 4-dr., PL, PW, PB, AT, AC, regular gas, light blue, reconditioned engine, \$4,865. Martel, 293-1892.

'82 HONDA GX500 MOTORCYCLE, 14K miles, new tires, \$850 OBO. Parsons, 298-7363.

'70 CUTLASS, 2-dr. hardtop, body straight, mechanically rough, partially assembled, reconditioned 350 engine, \$600. Barker, 892-3513.

10-SPD. BICYCLE, \$75. Mills, 299-2130.

'83 YAMAHA YZ250 MOTORCROSS BIKE, water cooled, \$600 OBO. Howard, 839-9203.

REAL ESTATE

3-BDR. HOME, 1 bath, garage, pitched roof, backyard access, Eubank & Constitution area, \$61,500. Romero, 299-3296.

4+ ACRES COLORADO LAND, on Rio Grande near South Fork, electricity, water well, views, \$29,500. McCoy, 821-2509.

3-BDR. HOME, 1,600 sq. ft., sprinklers, fireplace, sunroom, large kitchen, 1-3/4 baths, NE location, \$85,000. Fleming, 888-0744.

3-BDR. HOME, NE Heights, 2 baths, fireplace, dishwasher, garage opener, landscaped, \$59,000. Coulter, 275-2183.

2-BDR. MOBILE HOME, '84 Del Rose, 14' x 54', 1 bath, take over payments. Garcia, 836-8671 after 6 p.m.

4-BDR. HOME, 2+ baths, pool, hot tub, 2,600 sq. ft., 1100 Stagecoach, Four Hills, \$152,000. Hudson, 298-3935.

2-BDR. MOBILE HOME, 14' x 60', Westchester, 1 bath, on 1-acre fenced lot in Los Lunas, \$9,400. Archuleta, 865-6516.

3-BDR. HOME, Glenwood Hills, 2 baths, on cul-de-sac bordering foothills, formal living and dining rooms, family room w/fireplace, RV pad, wet bar. Draelos, 296-3078.

WANTED

CRIB MATTRESS, in good condition. Palmquist, 281-5951.

COMMODORE C-64 COMPUTER, will pay up to \$70 for fully functional keyboard and power supply. Stallard, 888-0255.

REMOTE CONTROL UNIT for a Stanley garage door opener. Greer, 281-4688.

TEENAGER for miscellaneous yardwork, other jobs, must be dependable, w/own transportation, \$4.25/hr. to start, near San Mateo/Lomas. Hasenkamp, 255-8946.

BEEFED-UP TRANNY for Sand Rail or parts to beef up VW tranny. Apodaca, 294-5525.

TWO RESERVED-SEAT TICKETS for Albuquerque Dukes' April 27 game and Beach Boys concert. Perrine, 293-1429.

CANOE. Martinez, 884-5047 after 5 p.m.

ROOMMATE, male nonsmoker to share 3-bdr. apartment at Academy/McKinney, starting June 1, \$180/mo. plus 1/3 utilities. Brock, 821-2712.

NORDICTRACK or comparable exercise equipment. Korbin, 821-8461.

WORK WANTED

HOUSESITTING, by UNM senior, experienced, w/references. Vandewart, 298-4741.

Coronado Club Activities**Tonight, You Won't Stay Sitting Long**

GET YOUR FEET IN A FRENZY — Tonight's C-Club bash features a never-ending supply of can't-sit-down dance music by the Brown River Band. Menu items include prime rib or poached halibut (both two-for-one price \$15.95), steak Neptune (\$8.95), pan-fried catfish (\$8.95), and chicken teriyaki (\$6.95). Reservations recommended (265-6791).

BOSSES, TAKE NOTE — Next week is Professional Secretaries Week, and on Wednesday, April 24, all secretaries get a 10 percent discount on lunch from 11 a.m. to 1:15 p.m.

COME BRUNCHING at the C-Club Sunday, April 21, and Sunday, April 28, from 10 a.m. to 1 p.m. Adults get a free glass of champagne with brunch on both days, and on the 21st, Bob Weiler and Los Gatos play dancing music from

1 to 4 p.m. at a special Sunday tea dance. Cost is \$5.95 for adults (\$6.95 for guests), \$1 for children (4 to 12 years old), and free for toddlers. Reservations recommended.

THREE EQUALS FOUR when Trio Grande takes the stage. On Friday, April 26, from 7 to 11 p.m., the four-member musical "trio" plays those great dancing tunes. Also try the Club's five-item menu selection, including filet mignon or deep-fried shrimp (two-for-one price \$15.95), prime rib (\$8.95), poached halibut (\$8.95), or chicken teriyaki (\$6.95). Make reservations now.

HE'S NOT BLUFFING — Jim "Jaws" McCutcheon, T-Bird Card Sharks organizer, wants you to be the Sharks' next new member. May's meetings take place on Thursdays (as always), May 2, 16, and 30, from 10 a.m. to 3 p.m.

Events Calendar

Events Calendar items are gathered from various sources. Readers should confirm times and dates of interest whenever possible.

April 19-20, 26-27 — "Bye, Bye Birdie," musical comedy about a rock-and-roll singer who is about to be inducted into the army; 7:30 p.m. (2 p.m. April 28), St. Pius X High School, Auxiliary Gym (Coors & St. Joseph's Pl. NW), 831-8406.

April 19-May 5 — "Frankie and Johnny in the Clair de Lune," romantic comedy by Terrence McNally; 8 p.m. Fri.-Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

April 20 — "El Caballero De Olmedo," La Compania presentation of timeless story of love and honor pitted against jealousy and betrayal, in Spanish; 8 p.m., South Broadway Cultural Center, 848-1320.

April 20-21 — New Mexico Cactus and Succulent Society Annual Plant Show and Sale, silent auction of special specimen plants will run concurrently with show and sale; 1:30-4 p.m. Sat., 10 a.m.-4 p.m. Sun.; Albuquerque Garden Center (10120 Lomas NE), 296-6020.

April 21 — Chinese Cultural Festival, lion dance, traditional music, folk and popular songs performed by the Albuquerque Chinese Chorus, the Chinese quartet, and the Albuquerque Chinese Youth Choral; dynasty fashion show (3,000 years of Chinese fashion), traditional art forms demonstrations (Kung-Fu, folk dances, brush painting); 3 p.m., UNM Continuing Education (1634 University NE), 277-4624.

April 21 — Symphony in the Sunshine: New Mexico Symphony Orchestra Chamber Players with the NMSO Chorus perform works by Handel, including "Music for the Royal Fireworks," "Concerto Grosso in G Major, Op. 6, No. 1," "Four Coronation Anthems" (composed for the coronation of King George II and Queen Caroline); 3 p.m., Sunshine Theatre, 842-8565.

April 23 — "Gardening Organically," class sponsored by the Albuquerque Garden Clubs, presented by the New Mexico Organic Growers; 7 p.m., Albuquerque Garden Center (10120 Lomas NE), 296-6020.

April 23 — Thomas Mapfumo and Black Unlimited, Zimbabwe recording artist and 13-piece African ensemble, sponsored by the South Broadway Cultural Center; 8 p.m., El Rey Theatre, 848-1320.

April 24-May 5 — "The Great Divide" by William Vaughn Moody, originally produced in 1906, first play of New Mexico Repertory Theatre's Millennium Project, a retrospective of 20th Century American theatre during the Rep's ten seasons this decade; 8 p.m. Tues.-Sat., 2 p.m. Sat. & Sun.; KiMo Theatre, 243-4500.

April 26-27 — Marketplace Spring Arts and Crafts Show, more than 70 local crafters; 9 a.m.-5 p.m. both days, free, Harper & Wyoming NE in

Del Norte Center (next door to Furr's), 294-1606 or 296-0460.

April 26-May 18 — "The Homecoming" by Harold Pinter, Theatre-in-the-Making presentation; 8 p.m. Fri. & Sat., CenterStage, 260-0331.

April 27 — Pops Concert, New Mexico Symphony Orchestra with guests Manhattan Rhythm Kings performing songs from the 1920s, '30s, and '40s; 8:15 p.m., Popejoy Hall, 842-8565.

April 27 — Transition, Middle Eastern ethnic jazz fusion, New Mexico Jazz Workshop presentation; 8 p.m., the Outpost (112 Morningside SE), 255-9798.

April 28 — Spring Fest, benefit for the American Cancer Society, German foods, dancers, musicians, face painting, clowns, petting zoo, auction, entertainment; noon-5 p.m., the Alpine Sausage Kitchen (2800 Indian School NE), 262-2333.

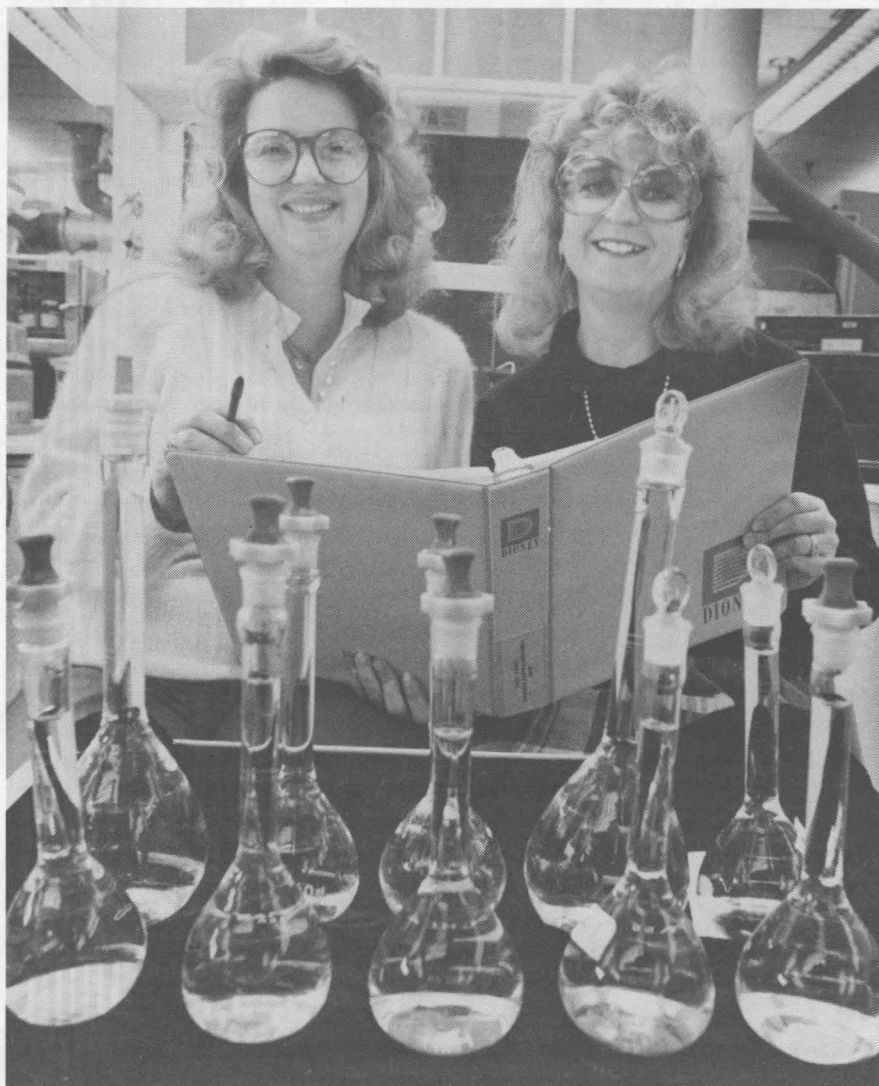
April 28 — "Growing and Designing with Everlastings," workshop with master gardener Marie Torrens, designed to teach the art of dried-flower arranging, from garden planting to the finished creation; 1-4:30 p.m., Albuquerque Garden Center, 296-6020.

Fun & Games

Biking — Ride for kicks on Route 66. Saturday, May 4, marks the kickoff of National Clean Air Week, and the New Mexico Affiliate of the American Lung Association is celebrating with the Clean Air Bicycle Challenge. Nationally, more than 10,000 riders are expected to participate. Three different routes are available, with a 13-miler for families, a 30-miler for intermediate cyclists, and a 51-miler that will challenge anyone. All three routes travel into Tijeras Canyon on historic Route 66. Registration forms are available at all Lovelace Hospital clinics, all Wendy's locations, or by calling the American Lung Association on 265-0732.

Bike Touring — The Desert Storm Bike Tour from Albuquerque to Taos will be held Memorial Day weekend, May 25 & 26. The benefit tour for the Operation Desert Storm Fund starts in Albuquerque and travels along the Turquoise Trail to Santa Fe and on to Espanola, where the tour camps overnight. The tour continues to Taos the next day. Full support services will be available for this event, including bike mechanics, sag wagons, communications vehicles, medical personnel, and motorcycle escorts. Volunteer massage therapists and chiropractors will be on hand at the end of the day. Rest stops will be set up every 6 to 12 miles. Entertainment for the Saturday night camp party includes a live rock band and cycling movies. Chartered buses and rental trucks will bring participants and their bikes back to Albuquerque. Registration deadline is April 25. Pick up brochures and pledge forms at the LAB NEWS office in Bldg. 814.

Golf — Sandia Women's Golf Association (SWGGA) will host two golf tournaments in April. The first will be an 18-hole fun tournament at Double Eagle Country Club on April 20, and the second will be a 9-hole fun tournament at Arroyo del Oso Golf Course on April 27. All Sandia, DOE, and contractor employees and their dependents are invited to join SWGGA to be eligible to participate in these tournaments and future events. For more information, contact SWGGA president Janice Montoya (153) on 836-3859.



BESS CAMPBELL-DOMME (left, 1823) was named 1990 Technician of the Year, and Pam Puissant (1824) was runner-up, in a competition sponsored by the South Central New Mexico Technicians' Affiliate Association. The group, which is a division of the American Chemical Society, conducts activities to enhance the careers of technicians in chemistry and materials science. Michael Gonzales (6212) is a contact for prospective members and can be reached on 6-4868.