

Sandia Intensifies Ongoing Efforts To Protect Environment, Minimize Waste

For the first time in history, humans have the potential to destroy their natural surroundings. Environmental hazards, such as ozone depletion, greenhouse warming, water and air pollution — all created by people — could conceivably cause irreversible change to our 4.7-billion-year-old planet, unless we take immediate steps to prevent it.

As policy-makers search for solutions to environmental threats, researchers at Sandia are also involved in the effort to clean up and protect the environment both in the world at large and within the Labs.

The effort has resulted in a two-pronged approach that focuses on developing new technologies as well as reducing the amount of waste generated. Strategies are as diverse as building sensors to track underground water flow, finding substitutes for harmful chemicals like industrial solvents, recycling unused chemicals (see "Reducing the Amount of Waste Generated," page four), and harnessing the sun's energy to detoxify pollutants (see "Detoxifying Hazardous Waste," page five).

Ultimately, the environmental initiative is one that will involve people in many areas of expertise, says Bill Luth, Manager of Environmental Technology Programs Dept. 6350.

"The way the laboratory will ultimately suc-

ceed on this is by getting ideas from people who are doing things at all levels — at the bench level as well as the managerial level. The ideas are going to come from the staff. My job is to be a broker, a supporter, and to do whatever I can do to make it possible for folks to implement their ideas, without getting in their way," he notes.

With that in mind, Dick Lynch, Director of Nuclear Waste Management and Transportation 6300, recommends that researchers with ideas for environmentally friendly technologies contact Bill, who can help make the necessary contacts with potential funding sources.

Devices to Monitor Air, Water, and Soil

One of the problems facing modern society is the threat posed to water supplies by pollutants that

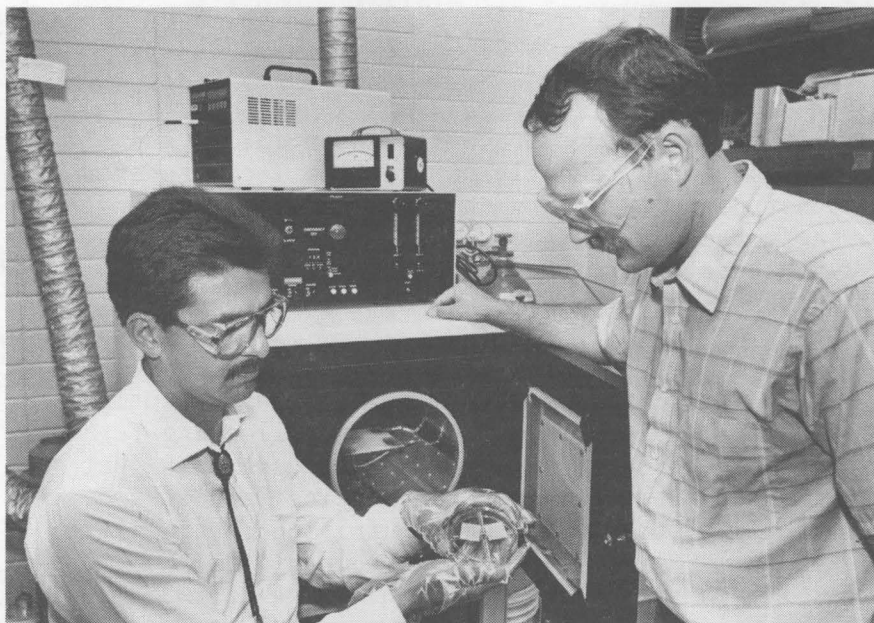
can migrate through the soil into the groundwater. The DOE is faced with such a problem at its Savannah River plant in South Carolina, where an effort is under way to remove trichloroethylene (TCE) from the soil. The hazardous chemical

"The way the laboratory eventually will succeed on this is by getting ideas from people at all levels."

seeped into the ground from a faulty sewer line.

Serendipitously, the DOE effort will be assisted by a Sandia research project that was brought to the attention of Savannah River researchers by Bill and Harry Hardee, Supervisor of Geophysics Div. 6231.

(Continued on Page Four)



ED LOPEZ (left, 1834) and Al Galuska (1823) examine copper coupons that have been etched clean with a plasma of ionized hydrogen and argon in the chamber behind them. The plasma removes surface oxides — an essential preparation before metals can be soldered — without using hazardous chemicals. See "Reducing the Amount of Waste Generated," page four.

Only Part of the Picture

The Labs' involvement in ES&H (environment, safety, and health) activities extends beyond Energy Secretary James Watkins' directive that all DOE facilities reach full compliance with federal laws and regulations. Sandians are working on many R&D projects to help clean up and preserve the environment, many of which may prove useful not only here and at other DOE facilities, but around the world. Environmental problems abound and continue to worsen in many countries. This article and related ones in this issue cover only a sampling of environmental research at the Labs. The LAB NEWS will report periodically on the progress of environmental projects at Sandia.



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Personnel Reps Wear Many Hats

Accessibility, Credibility — Tops on Their Priority List

Today's pop quiz: Who's your personnel representative? Second question: What do personnel representatives do?

If you flunked the quiz, you may be missing out on a valuable Sandia resource. "Personnel representatives are often your first point of contact in a variety of situations — for example, if you have a problem that can't seem to be resolved, or if you want to make a job change, but don't know how to go about it," says Harriet Morgan (3533). Harriet was a personnel representative for two and a half years before her recent promotion to Supervisor of the Personnel and General Employment Division.

Though the job title implies otherwise, personnel reps are *not* members of the Personnel (Human Resources 3500) organization. Rather, they are assigned to specific vice-presidencies (in some cases, more than one) and report to the VPs in charge of those organizations.

Harriet's division serves as a conduit through which personnel reps learn about changes in personnel policy, hiring procedures, and advancement guidelines, as well as new programs. "I get together with all the reps every other week to pass along any new information they need to do their jobs," says Harriet. "At the same time, they give me feedback about how new policies are

working out and how existing procedures could be improved."

'People Reps' More Appropriate

"Maybe we should be called 'people representatives,'" says Dolores Chavez, who's been the Org. 1000 personnel rep for about six years.

"Being accessible to people in your organization when they need you — that's what the job is all about."

Dolores also serves as the rep for two other organizations: 200 and 20. The latter includes secretarial trainees and secretaries not yet as-

(Continued on Page Seven)



VISION-DAY DINING — hoisting a soda to Sandia's future at last week's "Vision for the '90s" gathering are James McDowell (5126), Larry (2514) and Judy Moore (5126). For more photos and information on Vision Day at Livermore and Albuquerque, see pages three and six.

This & That

"I Feel Great" - Those words from Al Narath right after "Vision for the '90s Day" in Albuquerque on Thursday, April 26 (see photos, pages 1 and 6). "I sensed good feelings out there [on Kirtland AFB parade grounds] - a lot of support for the changes that will make the Labs better and stronger; I also sensed that the four department managers' presentations were well received - they were terrific!" Al added. The crowd (4000-plus is our unofficial estimate) was the largest gathering ever of Sandians and probably would have been even larger if the weather had cooperated the day before. Rainy weather (snow in some parts of Albuquerque) caused postponement of the event from the previous day. Al was also pleased with the April 19 Vision Day presentations at Livermore. The Albuquerque gathering was too large to make audience questions easy, but they were part of the Livermore event (see page 3).

* * *

Keep Those Cards Coming - What can/will you do personally to help implement the new Sandia Strategic Plan? That's the question you're encouraged to answer on the 3 by 5 cards distributed at the Vision Day presentations in Albuquerque and Livermore. Send your responses to the LAB NEWS, Division 3162. Add your name only if you'd like. We'll publish some of your answers soon. If you lost - or didn't get - the card, no problem. Answers on plain paper are fine.

* * *

Moving Out - Former LAB NEWS editor Bruce Hawkinson (3153) and I were visiting during a meeting break recently outside the Tech Transfer Center and noticed the construction activity on the south side of Bldg. 823. It's scheduled to be "moved outside the tech area" - as it's commonly phrased - in June. But, as Mr. Precision (ol' Bruce) quickly pointed out, the building won't actually be moved out; the fences will be moved in.

* * *

Namely Speaking - While searching my bottom desk drawer recently, I came across my list of unusual names, which I've been collecting for about 20 years. Some are mighty strange, but my favorites are ones that fit a person's profession. Here are a few - all authentic: Dennis Herd, a beef cattle specialist; Dymple Cooksey, a foods/nutrition specialist; Scott Discount, Wall St. broker; Gary Greaser, oil company employee; Dr. Safety First (I swear it), a physician; and Minnie Magazine, Time magazine employee. Some other generally interesting names: Sherwood DeForest, Wendy Day, Larry Derryberry, Steely Gray (government office furniture salesman?), Heinz Puppe, and my all-time favorite - which I occasionally use as an alias - Otis W. Muckinfuss (elocution required here).

* * *

Acronymically Speaking - Regular "This & That" readers (both of them) know that I've railed before about overuse of acronyms - especially unexplained acronyms. All of us (including LAB NEWS writers) use acronyms today to prevent repeating long program/project names. However, the full name should appear at the first reference unless it's so common that all readers know it - DOE, for example. It would be nice if all report/memo writers and speakers would follow that policy. Otherwise, folks unfamiliar with the acronym may not know WITHTA (What In The Heck You're Talking About).

•LP

Fitness Day '90

Get Ready to 'Walk Off the Job'

For the tenth year in a row, it's Sandia's Annual Fitness Day - May 16. It's sponsored by the Total Life Concept (TLC) program. And if you're a Sandian, a DOE or KAFB employee, a retiree, or a spouse or dependent of one of those, you're invited.

Fitness Day activities begin a day before the main event, says Pete Egan (3330), TLC program manager. At noon May 15, UNM Athletic Director and sports psychologist Gary Ness will speak about "Making Exercise a Priority." He'll be talking in the Technology Transfer Center, and all Sandians and their spouses are welcome.

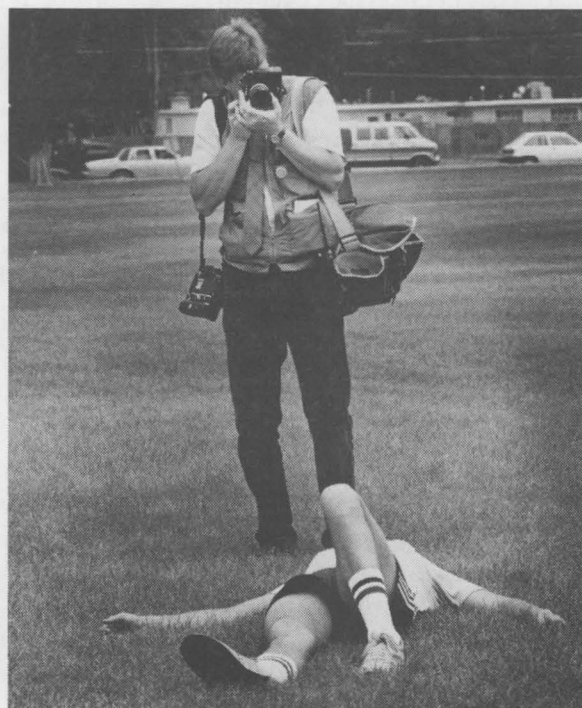
On the morning of the 16th, Sandians can check in at locations throughout the Labs (places and times to be announced). In exchange for a promise to exercise 20 minutes that day, they'll get a voucher for an exercise water bottle (squeezable style), redeemable during the lunchtime festivities. (TLC will be distributing more info via special mailing to all employees.)

Then, at noon, Sandians are invited to "Walk Off the Job" and come over to Kirtland's Hardin Field (the parade ground) for an hour of fun and physical activity. Contests include "precisest predictor" events, in which walkers, runners, and cyclists try to estimate their time of arrival at the finish line - no watches allowed! Closest predictors will win prizes.

Then comes relaxation and lunch. Nutritious lunches will be available for \$2, and brown-baggers are also welcome. During the lunch-munching, there'll be a show of the latest fitness fashions and equipment. KOB radio's "Bird Man" will provide music and entertainment.

Although fun is one object, there are serious benefits, says President Al Narath: "Staying physically fit will prepare Sandians for the tougher competition that lies ahead. The company realizes that fit employees contribute to higher quality work. Fitness Day has management's full support. All employees are encouraged to attend."

Rain date is May 23.



IT AIN'T OVER till it's over, but looks like it's over for one fitness enthusiast. Or maybe he's just counting the clouds in post-jog serenity. Snapping the unidentified sprawler at a past Fitness Day is the *Albuquerque Journal's* Mark Holm.

Herbivory a Blood Thinner



Blood is thicker than water - but how much thicker? The answer may depend on your diet, according to the results of a study by E. Ernst and colleagues at the University of Munich. The team measured the viscosity of the blood in 48 vegetarians and 41 omnivores. Vegetarians had significantly thinner blood than meat-eaters. Among the vegetarians, the degree to which they stuck to a meatless diet was also influential. A similar trend applied to blood pressure, which was lowest in the most devout vegetarian.

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LARRY PERRINE, Editor (505/844-1053)
PHYLLIS WILSON, Assistant Editor (844-7842)
CHARLES SHIRLEY, Writer (846-5542)
LINDA DORAN, Writer (846-6888)
RANDY MONTOYA, Photographer (844-5605)
MARK POULSEN, Photographer (844-5605)
JANET WALEROW, Editorial Assistant (844-7841)
TABITHA JEANTETTE, Assistant
BARRY SCHRADER, Livermore Reporter
(415/294-2447; FTS 234-2447)

Earnings Factors February 1990

Savings Plan for Salaried Employees (SPSE)	Earnings Factors
AT&T Shares	1.0154
Government Obligations	1.0053
Equity Portfolio	1.0169
Guaranteed Interest Fund	1.0069
South Africa Restricted Fund	1.0190
Savings and Security Plan — Non-Salaried Employees (SSP)	
AT&T Shares	1.0125
Guaranteed Interest Fund	1.0067
South Africa Restricted Fund	1.0066
Equity Portfolio	1.0066

Congratulations

To Ana and Robert (5217) Martinez, a son, Ambrose Isaiah, March 28.

To Sara Quinn and Allen (1141) Vawter, a son, Christopher Allen Quinn-Vawter, April 18.

Vision for the '90s**Al Narath Answers Questions at Vision Day**

President Al Narath answered employee questions at the conclusion of the "Vision for the '90s" presentations on April 19 at Sandia, Livermore. Selected questions and Al's answers (excerpted) follow:

Q: Is there a way to measure progress on how well we're meeting our new challenges?

Al: In the private sector, there's always a bottom line. The national labs don't have that profit statement. I'd like to get some kind of report card to show how we're doing, and that's something we are thinking about. Lee Bray [30] is working with a small committee to develop an objective self-assessment methodology for the Labs. They're considering something like a matrix of performance against cost and schedule commitments. They're also going to try to measure, at least qualitatively, the value of the things we take on and how well we execute them. That sort of thing is at the heart of this whole change process.

Q: The idea of empowering employees is great, but isn't DOE looking for a more centralized structure so as to pinpoint blame or credit?

Al: I think we have an opportunity to show DOE by our performance that there's a better way. We can't win the argument by pointing to past accomplishments. We can demonstrate by improving our performance, decentralizing control, empowering people, delegating responsibility — all showing a better way to manage.

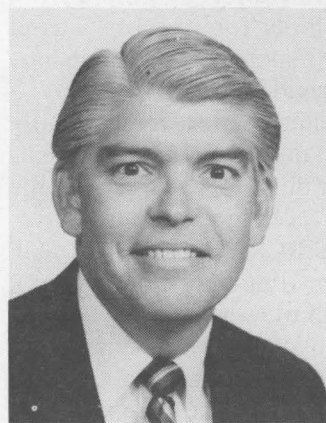
Q: What about the customer's needs versus what the customer wants?

Al: I think there's a time to convince the customer of what's right. Then there comes a time to make a commitment to serve that customer — but I

Supervisory Appointment

DAVID HAVLIK to manager of the Test and Model Labs Dept. 8280.

Dave joined Sandia, Livermore in November 1966 as a mechanical engineer in the W71



Spartan missile warhead project group. Before joining Sandia, he had worked at Bell Labs on the design of central office equipment for three years.

His next assignment at Sandia was development of the gas transfer system for the W79 eight-inch artillery

shell. He then became lead mechanical engineer for the W82 155-mm Artillery-Fired Atomic Projectile. In 1979, Dave was assigned to the Office of Military Application in Washington, D.C. The following year, he returned to Livermore and was named supervisor of a gas transfer system design group. He later headed divisions with responsibility for Phase 1 and 2 systems and engineering programs associated with the Strategic Defense Initiative effort. In 1986, he moved to the W89/Short Range Attack Missile II Mechanical Systems Division as project officer, the job he held until his recent promotion.

Dave has a BS in mechanical engineering from Arizona State University and an MS in the same field from New York University.

His spare-time activities include downhill skiing, golf, and woodworking. He also has served as a boys' soccer coach. Dave and his wife Judy live in Danville and have three children.



A PACKED HOUSE heard President Al Narath address Livermore employees in three sessions at the Bldg. 904 auditorium April 19. Introducing him was VP John Crawford (8000, foreground). Seated in the front row were three of the four department managers who also spoke (right to left from aisle) Dan Arvizu (410), Jay Gilson (8100-B), and Joan Woodard (1820). The fourth DM, not pictured, was Jack Walker (6510). (Photo by Cary Chin, 8285)

don't encourage anybody to make a commitment they don't believe in. We need to educate the customer up front, then strike a good bargain, then deliver the goods as promised. We need to improve the way we communicate, incorporating all employees' ideas in our decision-making process. I saw the same thing at Bell Labs; it took a long time to establish the communication channels.

Q: What about having a place where our industrial partners can come to do work without the hindrances of security that's necessary only in certain areas?

Al: Yes, we can't tie their hands behind their backs. We're now a multi-program lab and have to satisfy requirements placed on us without putting any of our technology-transfer partners at a disadvantage. We need to manage our space so that we can maintain security in those areas that need it, yet provide access without security getting in the way.

Q: How can we avoid the trade-off of seeking quality so diligently that we avoid taking any risks?

Al: Progress can't be achieved if we insist on zero risk. The quality program I insist on is where we look risk squarely in the eye and accept it in measured doses. But we don't plunge into something without having assessed the potential risks. There are trade-offs, and we need to maximize the opportunity for success. I agree that for a leading-edge R&D organization like Sandia, quality with the rejection of all risk — that's death.

Q: What about "barrier busters?"

Al: There's a committee under Dan Hartley [6000] to identify unnecessary bureaucratic barriers. A key element will have to be improved communication, because who knows better what the barriers are than you, the employees? Dan will solicit suggestions from all levels within the Laboratory.

[Dan then explained more about the committee, which includes Don Wagner (8532) representing Livermore. Input on how to break down barriers should go to Don.]

Q: Are there any role models for nonprofit corporations like ours making a successful transition of the type we're contemplating, or are we treading on new ground?

Al: It's certainly true that not-for-profit organizations have had to undergo significant change, but I think we're unusual in trying to respond to changes in the external environment before the meat-ax falls on us. It will be unusual and against human nature, but not impossible.

Q: Aren't many of the things you've talked



about going to put a lot of pressure on long-term research?

Al: We exist because we have a mission orientation that requires a strong technology base, which in turn requires a strong research program. For us to do well in the future will continue to require the right mix — the right balance — of everything from basic research to development. That isn't going to change, and we'll fight very hard to maintain a balance. I should also add that a major challenge facing the nation is how to do a better job of integrating knowledge into the process of developing real products and services. We as a nation do a lousy job. AT&T had to go to Japan to buy products based on a number of Bell Labs inventions — that's embarrassing. We're a laboratory dedicated to serving the nation. I think we have an obligation to figure out better ways of integrating science and technology; that's in our Strategic Plan. I'm a strong believer in the importance of, and strong supporter of, research; I'm also a strong supporter of a mission orientation with a focus on tangible output. We've got to figure out ways to integrate these things even better than we have in the past, and make in some small measure a contribution to the nation in showing how that's done. Among all the national labs, I truly believe we're best at that integration, but we're not doing enough.

Q: Do you see Sandia, Livermore still being here 10 years from now?

Al: Yes. As far as I'm concerned, there is one Sandia Laboratories. We happen to be at several locations, and this is a very important one. This place has a special and unique character. You're large enough to get big jobs done, but small enough to not suffer all the communication impediments that we suffer in Albuquerque. There's something particularly energetic about this place, and it would be very foolish for anybody within Sandia to contemplate ever losing this kind of strength. I do worry a bit about the offensive being waged right now in Alameda County — the Nuclear Free Zone initiative. If it passed and were not challenged successfully in the courts, it could change the character of our operations here.

Q: Albuquerque seems to be more diversified
(Continued on Page Eight)

(Continued from Page One)

Environmental Research

The Sandia scientists recognized that the Savannah River project could benefit from underground sensors being used at Sandia to monitor groundwater flow near the Rio Grande in Albuquerque (the sensors were originally developed to measure convective heat flow through porous rock in geothermal regions). The Rio Grande project is for demonstrating the technology rather than actually applying it to a problem, such as tracking the spread of pollutants in groundwater. Savannah River researchers will use the instruments to understand the dynamics of local groundwater migration in order to assess the effectiveness of their cleanup effort.

The principle behind the Rio Grande study is simple enough — tiny glass beads known as thermistors detect differences in temperature as water circulates around a cylindrical probe suspended in the water table 65 feet underground. Inside the probe, designed by Harry and by Sandy Ballard

(6231), is a heater that warms the water contacting the probe, making water downstream from the probe slightly warmer than water upstream from the probe. The locations of the cold and warm spots indicate the direction of groundwater flow.

"We heat up the water a little bit. As the water travels around the surface, it warms up more and more," notes Harry. The difference in temperature between the upstream and downstream sides of the instrument tells researchers how fast the water is flowing.

Three new probes designed by Harry and Sandy are scheduled for testing this month at the Savannah River spill site.

DOE's plan is to flush or "sweep" the soil at Savannah River by pumping air through a gas line into the soil beneath the spill, forcing the TCE upward into a well to be vented into the atmosphere. By comparing sensor data before, during, and after the sweep, Harry and Sandy can determine if the air pumped into the ground is circulating over a wide enough area to be effective.

The target month for the Savannah River cleanup is July. Installation of the underground sensors is scheduled May 15.

Harry and Sandy are now using DOE funding to design two more sensors to be placed near the Rio Grande. Materials have already been ordered
(Continued on Next Page)



ART SENA, left, and Sandy Ballard (both 6231) display underground probe and cable designed to measure groundwater flow.

Reducing the Amount of Waste Generated

In addition to developing new, environmentally conscious technologies for handling hazardous wastes, a second major area of environmental research at Sandia involves recycling toxic materials and minimizing their use.

"Sandia's approach to dealing with hazardous materials is based on the understanding that it is not only necessary and desirable to treat toxic and hazardous waste, but to avoid their production in the future. In the long run, the answer lies in minimization, in pollution prevention. The way to solve the problem is to not create the wastes," notes Bill Luth (6350).

To limit hazardous wastes to a minimum, Sandia researchers are designing non-hazardous production techniques and recycling and finding substitutes for hazardous materials.

DOE recently earmarked approximately \$20 million in funding over the next five years for elimination of hazardous solvents as part of DOE's Environmental Restoration and Waste Management Five-Year Plan, says Mike Cieslak (1833), project manager of the Environmentally Conscious Manufacturing program, which is focused on the solvents problem.

Sandia researchers are developing substitutes for industrial solvents like trichloroethylene (TCE) and Freon, says Jim Fish (3222), chairman of the Radioactive and Hazardous Waste Minimization Network, also known as MinNet. Such solvents are commonly used to remove machine oils, fingerprints, and other contaminants from printed circuit boards and other components, and are used as coolants.

Examples of alternative substances tested so far are aqueous-based solutions such as non-ionic soaps. The soaps are not hazardous, and can be

discarded without risk to the environment, says Jim. However, water residue can cause parts to corrode, an unacceptable risk when it comes to nuclear weapons that must remain reliable throughout long stockpile lives of 30 or more years. To prevent the corrosion of parts rinsed with water, researchers are experimenting with various drying methods.

For example, isopropyl alcohol, a quick-drying fluid, cleans parts efficiently, but has a low flash point — a fire hazard when the alcohol is used with electrically operated drying systems. Many organic solvents with high flash points have low vapor pressures, making them difficult to remove.

To eliminate the need for solvents, Sandia is pursuing alternate cleaning technologies as well as inherently clean manufacturing processes, such as laser ablation, plasma cleaning, and new soldering techniques.

Soldering techniques are being modified to eliminate the need for solvents, says Mike. To be effective, solder must spread evenly when it is melted and "wet" the metallic surface to which it is being applied, such as a wiring connection. In order to wet the surface, oxides, such as copper or nickel oxide, must be removed.

In the past, reactive compounds, called "fluxes," which could contain organic or inorganic acids, have been used to reduce surface oxides and bare the metal where solder is being applied. Because these chemicals can be corrosive, their residues must then be removed with other chemicals, such as the chlorinated hydrocarbons TCE and TCA (trichloroethane). However, laser ablation and plasma techniques could eliminate the need for fluxes and save money by eliminating flux removal from the manufacturing process.

Another class of non-hazardous solvents being studied at Sandia are terpenes, which can be derived from orange peels. A critical consideration in using such products, notes Mike, is their compatibility with other components and their long-term reliability compared to existing materials — that is, do they work as well? He points out that one of the differences between Sandia and the electronics industry in general is that unlike a stereo or television set, weapon components have to work on the first try after being inactive for long periods of time.

Once these and other technologies have been fully tested and proven, they will be shared with the industrial suppliers to the nuclear weapon complex, many of which are small businesses and do not have the same resources to spend on environmental R&D, notes Joan Woodard, Manager of Materials and Environmental Sciences Dept. 1820.

Recycling Hazardous Materials

Besides developing new manufacturing techniques and methods for treating waste, Sandia is saving a lot of money by recycling hazardous chemicals, notes Jim.

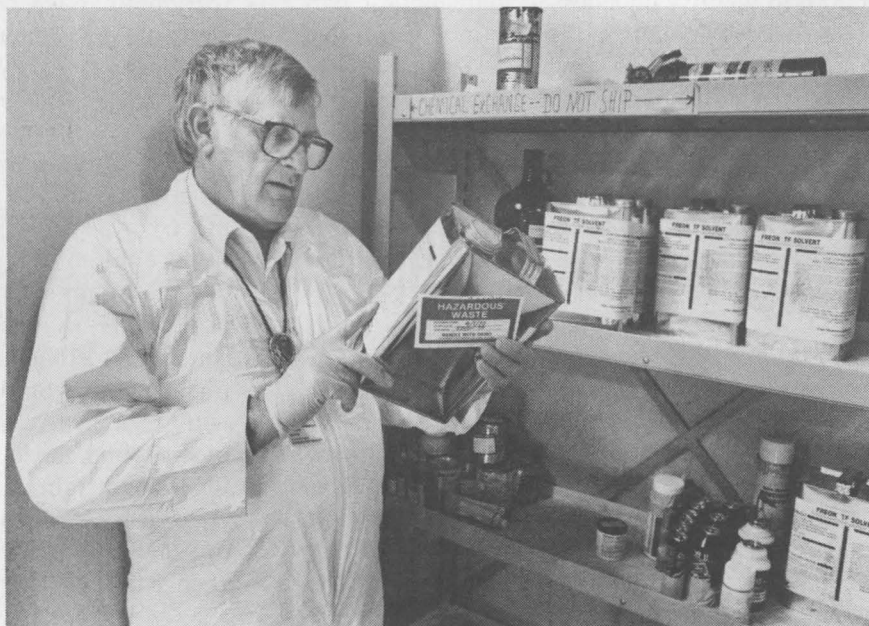
In the past, hazardous wastes were specially packaged and shipped to an EPA-approved facility for incineration or dumping, at considerable expense. However, the federal Resource Conservation and Recovery Act (RCRA) makes it illegal to bury any toxic waste starting May 8 (next week), and it is Sandia's goal to recycle all hazardous chemicals, even those that can be incinerated, such as acetone and other non-chlorinated solvents.

Chlorinated compounds like Freon, a commonly used solvent, can only be treated by special methods, such as burning in an expensive incinerator equipped with a gas-capturing system to prevent the effluent from acidifying the air.

Sandia is tackling the problem by distilling and reusing some chemicals and recycling unused chemicals through its Chemical Exchange Program. These materials are now packaged and stored at the Hazardous Waste Management Facility. A list of available materials is published once a month in the *Weekly Bulletin* and Sandia is already saving an estimated \$60,000 to \$70,000 a year by not having to reorder or dispose of hazardous chemicals, says Jim.

In another recycling project at Sandia's solar tower, nitrate salt used as a heat transfer fluid is being recycled to a company in Florida. The salt is hazardous because it can react with combustibles and catch fire. Rather than being incinerated, the nitrate salt is used to finish metals, leaving behind only a harmless, non-reactive salt. ●

AARON BOND, a contractor for Rinchem Co., examines a gallon of Freon, a common industrial solvent, that has been stored for recycling through Sandia's Hazardous Waste Management Facility.



(Continued from Preceding Page)

for the sensors, and the city of Albuquerque has given the go-ahead for the experiment, says Harry.

Sensors That Use Fiber Optics

In another experiment, Sandia scientists have adapted commercially available fiber optics to detect contaminants in air, water, and soil. Designed by Mike Butler, Tony Ricco, and Kent Pfeifer (all Microsensor Div. 1163), the sensors are ultra-thin mirrors the size of a virus (100 angstroms thick) at the ends of optical fibers. The micromirrors reflect laser light that travels down the optical fibers. Return signals are measured by a photo detector.

The mirrors are actually thin coatings of reflective materials such as nickel, silver, palladium, or gold, deposited by an evaporation process at the ends of the fibers. Just as a bathroom mirror reflects less light if it is smudged, the coatings show changes in reflectivity if exposed to pollutants. To date, researchers have successfully used the mirrors to detect mercury, oxygen, nitrogen dioxide, chlorine, sulfur dioxide, and hydrogen sulfide.

Work is also under way to modify the mirrors

with polymers that can detect organic pollutants such as TCE and other solvents. This coating technology, developed by Rick Buss (Physical Chemistry and Mechanical Properties of Polymers Div. 1812) with help from Mike, Tony, and Kent, involves depositing an ultra-thin layer of polymer on top of the micromirror. The polymer swells when it contacts organic compounds, which affects reflectivity.

When both metal and polymer coatings are used, the reflected light waves interfere with each other, changing the intensity of the return signal.

"We have had some success with moderate concentrations of contaminants. Now we need to look at ways of optimizing the sensor to detect lower levels," notes Mike.

Transporting Hazardous Materials

The transportation of hazardous wastes is another important area where improvements are being made to protect people and the environment, says Bill.

Researchers are investigating the use of novel materials, such as ductile cast iron for spent fuel casks, and metal meshes or screens to mitigate

shock in place of woods and foams, says Joe Stiegler, manager of Transportation System Development Dept. 6320. In fact, Sandia is involved in all of the technical aspects of packaging and transporting hazardous materials, he notes.

Sandia is currently designing and testing a package for the Army to transport chemical munitions on-base from storage sites to incinerators.

Sandia developed the RADTRAN computerized risk assessment code, which uses mathematical models to estimate accident risks and routine exposures involving nuclear material shipments. In recent years, the code has been refined and linked to the TRANSNET system, a centralized facility that provides access to computer models and data bases that allow analysis of the environmental impacts of hazardous waste transportation and route designation. Researchers are continuously updating and improving the models, says Joe.

Sandia also tested and provided technical support for development of the TRUPACT II Nuclear Waste Shipping Cask designed to transport transuranic waste to the proposed Waste Isolation Pilot Plant (WIPP). The cask received official government (NRC) certification in 1989. •LD

Detoxifying Hazardous Waste

Sandia researchers are working on solving a long-standing problem at DOE facilities — the detoxification of nuclear and hazardous chemical wastes.

Often, such wastes are produced in combination and must be separated before being discarded, explains Jim Fish (3222). The separation of hazardous chemicals from nuclear waste significantly reduces the volume of radioactive waste to be discarded.

For example, a nuclear reactor may be cooled with liquid sodium, resulting in a mixture of radioactive fuel elements and sodium, a haz-

"These methods are important to DOE because if we can change hazardous waste to make it non-toxic, we have the disposal problem whipped."

ardous material. Solvents such as trichloroethylene (TCE) are sometimes used to decontaminate parts exposed to radiation, or a lead solder in a fixture may be irradiated in a nuclear reaction, again resulting in mixed wastes.

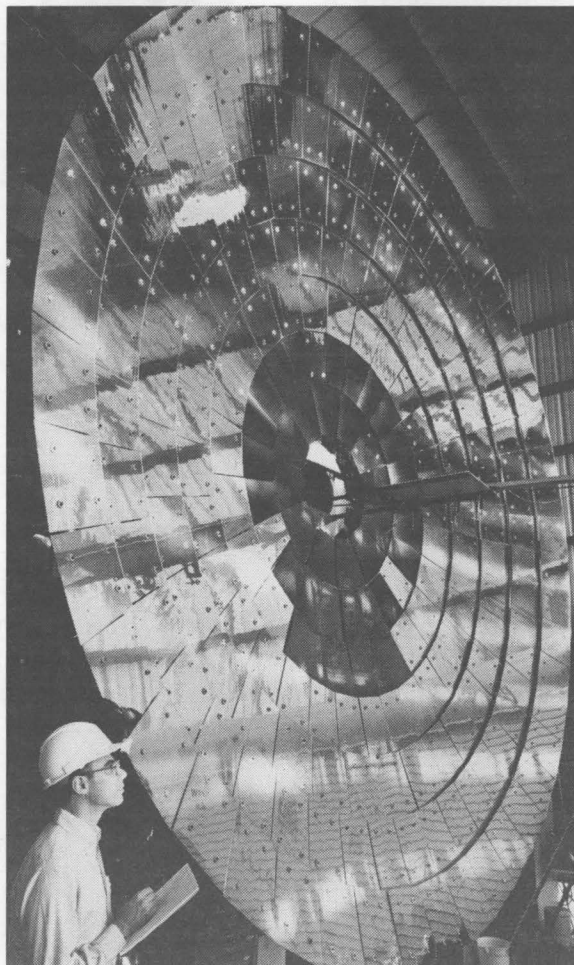
One detoxification method developed at Sandia destroys organic pollutants and leaves behind only the radioactive material for disposal. Examples of organic wastes are oils and lubricating fluids, such as those used at Rocky Flats; solid wastes, such as radiation-contaminated gloves and rags; and other hazardous wastes, such as chlorinated organics and nerve gas.

The wastes are immersed in molten nitrate salts, where the nitrate reacts with the organic materials, providing oxygen and converting the organics to harmless carbon dioxide and water, explains Craig Tyner, Supervisor of Solar Thermal Collector Technology Div. 6216. During the process, the nitrate is converted to a nitrite, which then can be reoxidized and recycled to start the decontamination process anew.

An advantage of the molten salt technique, notes Bill Luth (6350), is that heavy metals such as plutonium or uranium mixed with organic waste can be oxidized as the organics are destroyed, returning the metals to a more stable, naturally occurring state, such as uranium oxide or plutonium oxide.

This process eliminates the threat of explosion posed by the generation of hydrogen when the wastes are stored under pressure, a problem that recently raised concern at DOE's Hanford, Wash., plant. Highly oxidized materials do not generate such gases, says Bill.

Another method of separating toxic wastes is being developed at Sandia, Livermore under the guidance of Sheridan Johnston, Supervisor of Environmental Technology Div. 8364. Known as plasma waste processing, the technique separates



JEREMY SPRUNG (DMTS, 6216) records solar furnace data during destruction of organic pollutants. In the experiment, sunlight bouncing off a huge, multi-mirrored reflector is channeled into a reactor, not pictured, at right.

spent nuclear fuel, such as plutonium and uranium, from fission byproducts, such as cesium and strontium. This frees the nuclear fuel to be recycled and reduces the volume of the radioactive material to be discarded.

Harnessing the Sun's Energy

The sun's energy is being harnessed to detoxify hazardous wastes at Sandia, Albuquerque. Like the molten salt bath, the solar projects are managed by Craig. Two solar-driven technologies are being tested — one that destroys water pollutants photochemically and one that heats and converts organic compounds into carbon dioxide, water, and dilute acids.

In a joint project with the Solar Energy Research Institute (Golden, Colo.), contaminated water containing a chemical catalyst, titanium dioxide, is pumped through a transparent pipe mounted to a parabolic reflector. The reflector focuses sunlight on the pipe, and photons from sunlight trigger a chemical reaction that oxidizes organic contaminants and turns them into environmentally safe byproducts. The technology has already been used successfully to break down TCE and other chemicals such as salicylic acid and industrial dyes (LAB NEWS, May 5, 1989).

In the other experiment, a solar furnace is used to destroy organic wastes by converting them to carbon dioxide and water. The process demolishes TCE, a variety of other chlorinated compounds, and oils through a process fueled by heat from a heliostat that focuses sunlight on a parabolic dish. The sunlight is then reflected onto a small reactor within which water, carbon dioxide, and the pollutant pass through a catalytic sponge and are converted into hydrogen, carbon monoxide, and hydrochloric acid.

"These methods are important to DOE because if we can change the state of hazardous waste to make it non-toxic, we have the disposal problem whipped," says Bill.

"We're doing very well in the areas of waste minimization and detoxification, but not as well as we had hoped. There are so many ways in which Sandia could contribute to waste detoxification. We haven't marshalled all our resources yet."

Other Environmental Research Projects

Sandia's list of environmentally conscious research includes a variety of technologies to track waste and to prevent human contact with nuclear waste.

Two researchers, Carol Stein (6233) and David McTigue (1511), are developing ways to track the migration of chromium, a heavy metal, at a now-inactive chemical waste landfill at Sandia.

Robotics software packages are making intelligent machines smarter, enabling them to map and remove the contents of hazardous waste dumps and test the radioactivity of nuclear waste shipping casks autonomously, without risk to humans (LAB NEWS, March 9, 1990).

At Sandia, Livermore, Sheridan is conducting research into the burning of pollutants in water under high pressure and temperature, a process called Supercritical Water Oxidation.

Other projects are as diverse as reclaiming uranium chips from weapon production and breaking down hydrocarbons through artificial photosynthesis. •



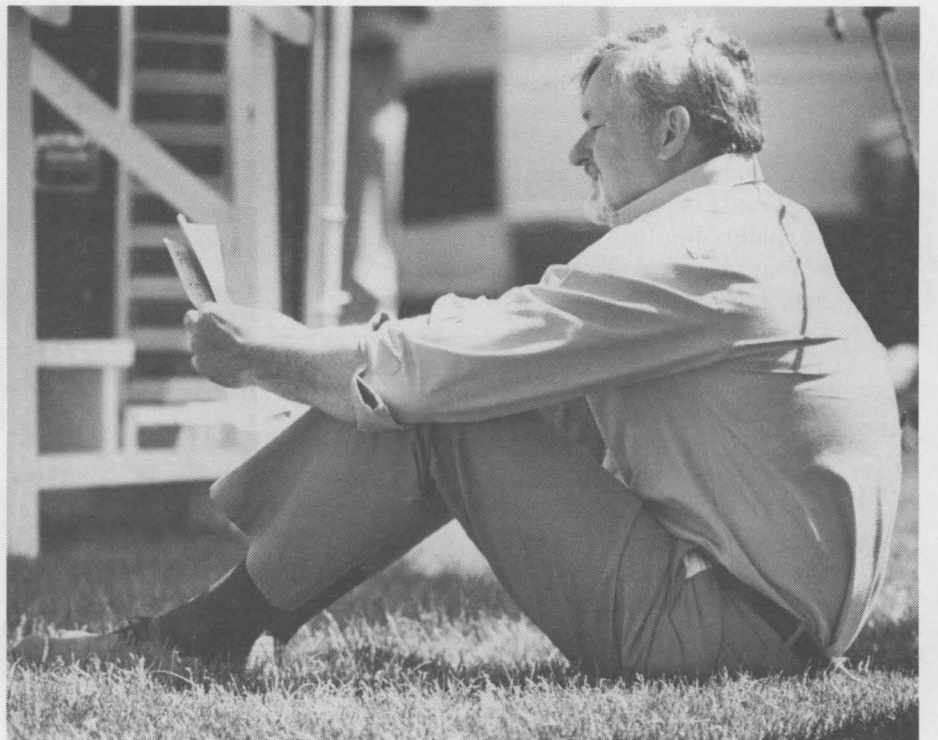
'Vision for the '90s Day'

An estimated crowd of 4000+ Albuquerque Sandians — the largest-ever assembly of Labs employees — converged on Hardin Field for Vision Day on April 26. The program, postponed one day because of rain, included introductory remarks by President Al Narath and talks by four department managers on various aspects of Sandia's Strategic Plan 1990: "Leadership," Jack Walker (6510); "Quality," Jay Gilson (8100-B); "Value of People," Dan Arvizu (410), and "Service to the Nation," Joan Woodard (1820).

Musical entertainment before and after the program was provided by Albuquerque singer Linda Cotton and her band, and members of Large Staff served refreshments — soft drinks and thunderbird cookies — afterwards. In his closing remarks, Al, in recognition of National Secretaries Week (April 23-28), paid tribute to Sandia secretaries, noting their special contributions to Labs programs.

Videotapes of the Vision Day program will be available at the Technical Library next week.

(Photos by Randy Montoya and Mark Poulsen, 3162)





PERSONNEL REPRESENTATIVES Harvey Brewster and Dolores Chavez — shown here in the Library mall — make it a point to “get out among ‘em” in Tech Area I almost every day. “I probably spend about 60 percent of my time that way,” says Harvey.

(Continued from Page One)

Personnel Reps

signed to line organizations. “My work with Organization 20 gives me a good opportunity to introduce myself to many new employees and let them know what kind of help personnel reps can offer,” she says.

Personnel reps wear many hats, Dolores points out: “In one situation, you’re a career counselor — for instance, about lateral moves or possible advancement. In another, you may be a conflict mediator and find yourself trying to defuse a potential problem between two employees or between an employee and his or her supervisor. Or you may be asked for advice about a personal problem. We also handle the paperwork on all personnel actions — promotions, transfers, that sort of thing — that occur in our organizations. I see the paperwork,

though, as secondary to the people-interaction part of my job.”

Harvey Brewster (7000/9000), who’s been a personnel rep for more than 10 years, agrees. “My number-one goal,” says Harvey, “is to provide assistance to employees — ensuring, at the same time, that we consistently follow corporate policies and procedures to the letter.”

Telling It Like It Is

“One of my biggest job frustrations,” Harvey continues, “is trying to help work out a problem for someone whose wishes conflict with established policies. In terms of policy, I have to tell it like it is; it doesn’t matter whether the person is graded, staff, or management.

“An exception to company policy, which could serve as a precedent for similar cases in the future, could very well have a detrimental effect on other employees — or the company. So I remind people

“Part of my charter . . . is to get out among the troops and listen to employee concerns.”

that there’s a fairness factor to consider, as well as the matter of a quick ‘fix’ for their problems.”

Harvey spends a lot of time outside his office — in areas where employees in 7000 and 9000 are concentrated. “Part of my charter from both Bob Peurifoy [7000] and Roger Hagengruber [9000],” he says, “is to get out among the troops and listen to employee concerns. I probably spend about 60 percent of my time that way.” Harvey also makes several trips a year to Tonopah Test Range and Nevada Test Site to keep in touch with employees in 7000 and 9000 who work at those locations.

Harriet, Dolores, and Harvey all agree that the most important aspect of the job for personnel reps is establishing credibility with all employees — nonmanagement and management alike — in their organizations.

“People have to know that what they tell you will be kept in confidence,” says Dolores. “You can’t be effective otherwise. When I first meet with an employee, I start out by saying, ‘What you say here remains confidential. If, in the future, we need to use some of the information outside this room to help resolve a problem, I will need your permission to divulge it.’ I’ve stuck by that promise; in fact, I can remember many times when I’ve said — to a VP or someone else — ‘I’m not at liberty to discuss that case.’”

“When employees come to me with problems,”

Harvey adds, “I ask, ‘What do you want me to do with this [information]?’ If they say, ‘Nothing,’ that’s as far as it goes — unless they agree somewhere along the line that further action is needed.”

Both Dolores and Harvey say that being assigned to the same organization for a number of years is a real plus toward establishing trustworthiness. “Over a period of time,” says Harvey, “word gets around among employees in the organization that you can be trusted.”

Personnel representatives are assigned to every organization at Sandia; some of the very large organizations also have assistant reps, who are also available for counseling on matters involving Sandia policies and procedures (see “Who’s Your Personnel Rep?”).

Firm lines aren’t drawn between organizations, however. “If a person transfers into the 1000 organization from another Sandia group,” says Dolores, “he or she may have established good rapport with the rep from the other group and may wish to continue that relationship. There’s no problem with that — none of us feels the need to guard our territory!

“Our main goal — to assist as many employees as we can in whatever ways possible — can best be attained when Sandians have absolute confidence in whichever personnel rep they’re working with.”

•PW

Who’s Your Personnel Rep?

Listed below are Sandia personnel representatives, the organizations to which they’re assigned, and their phone numbers:

20, 200, 1000	Dolores Chavez	844-2141
2000, 4000	Sandra Barnes	844-2275
	Rochelle Lari (Asst. PR)	844-5638
30, 100, 400, 3000	Terri Giron-Gordon	844-3030
	Cleo Kerr (Asst. PR)	844-4118
5000, 6000	Peggy Burrell	844-3078
7000, 9000	Harvey Brewster	844-3000
	Dorothy Velasquez (Asst. PR)	846-1191
8000	Ed Hathaway	294-1398
	Dave Rosenzweig	294-2241

Take Note

Family Court Judge Ann Kass will speak about “Divorcing Couples and Mediation” at a dinner meeting sponsored by Duke City Business & Professional Women on May 15 at the Radisson Inn at 6 p.m. Guests are welcome. Cost of dinner is \$12.75. For reservations, call Fran McCarty on 888-7944.

May is National Stroke-Awareness Month. This year, the Albuquerque Stroke Club, a nonprofit stroke-support organization for stroke victims and their families, is focusing its efforts on presenting a look at “Life After Stroke.” Various events and presentations will be made throughout the month, beginning May 6. For information about the month’s activities and membership in the club, contact Elizabeth Austin on 298-5353, Vickie Taylor on 822-6236, Lisa Gillespie on 766-4790, or Rachel Nufer on 294-0117. If you know a stroke survivor or family member who might benefit from a visit by a club member, contact Ed Nicely on 881-6119.

Sympathy

To Lorene Adams (3426) on the death of her son in Ft. Worth, Tex., April 4.

To Mary Young (2341) on the death of her father in Cape Girardeau, Mo., April 17.



LACEY LEARSON (3428, standing) helps Miguel West (left), a fifth grader at Wherry Elementary, and Michael Kirby (second from left), a seventh grader at Hoover Middle School, during a computer class at Albuquerque Public Schools’ Career Enrichment Center. Unidentified youngsters work at right. This class and others are sponsored and taught by members of Sandia’s Black Outreach Committee. Additional information is available from Patricia Salisbury on 5-8718 or Mercedes Belarde (both 3511) on 4-9481.

Recent Issue Communicates Labs' Diversity

Sandia Shines in U.S. Woman Engineer

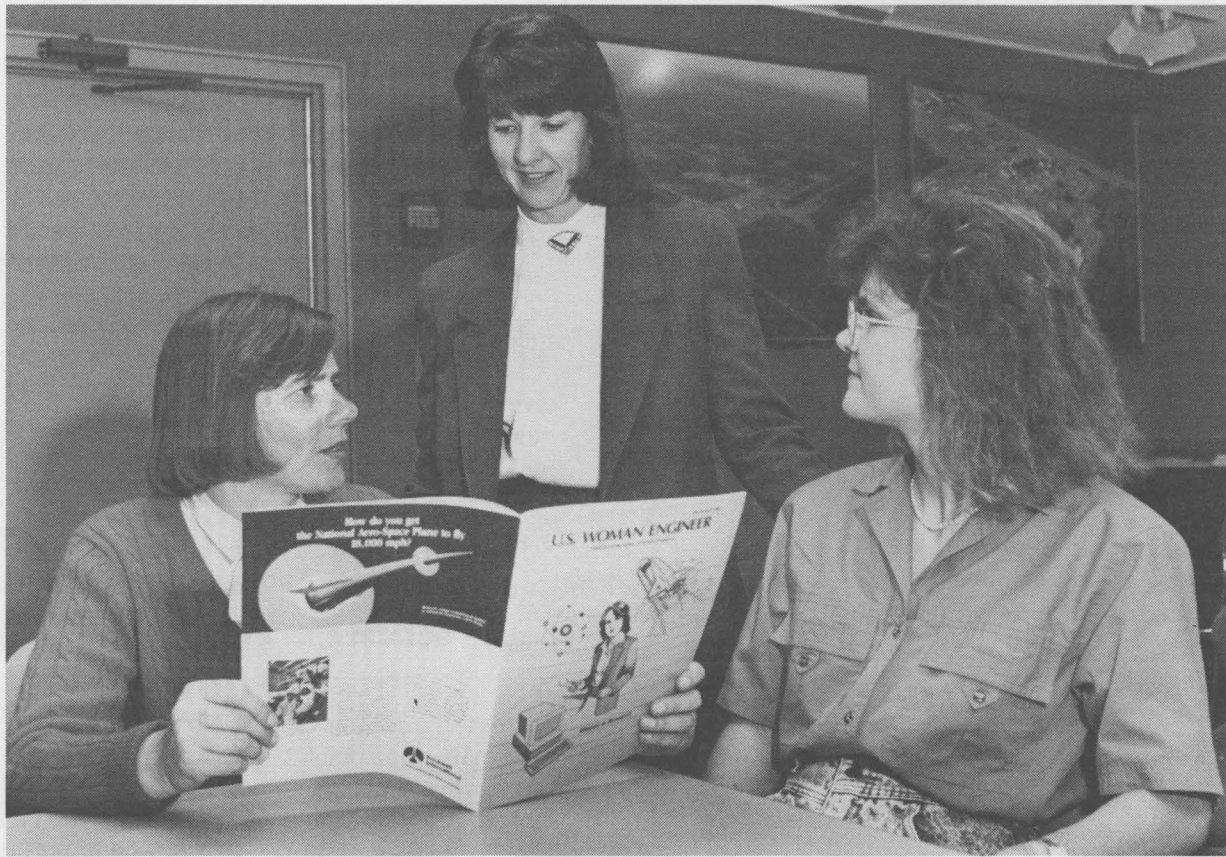
The March/April *U.S. Woman Engineer* has a distinct Sandia touch. This issue of the bimonthly publication of the Society of Women Engineers (SWE) was guest-edited by Jan Williams, a project manager and facility customer representative in Project Management Div. 7823. The lead article was written by Vickie Granstaff (1821) and Suzanne Weissman (1824 supervisor). Another article profiles five women working in R&D at Sandia.

"The theme for the issue is research," says Jan. "Each issue's theme is established by the editorial board, and then a guest editor takes over to locate authors and get the articles together. I volunteered because Sandia is strong in research, so people here would be a good base to build the issue on, along with my contacts in SWE in other parts of the country. And I think it turned out to be a good issue, thanks to the contributors."

Jan wanted to show a broad perspective of women in research — basic and applied, academic and industrial, and in different parts of the country. But with such breadth, how to keep a focus?

"I wasn't sure I was going to be able to tie it all together," says Jan, "but Suzanne and Vicki's article turned out to be the perfect way to do that. When I asked them to write the article, I didn't know it was going to be the lead. But the way they discussed the continuum of basic research, applied research, and product development turned out to exactly right for setting the theme."

The idea for that article — "The Road from Basic Research to Product Development" — came from a question Jan asked Bob Eagan (1800). "I said, 'Maybe this is a dumb question,'" she recalls, "but what is the difference between basic and applied research?" He laughed and said, 'No, it's not dumb, and it doesn't have an obvious answer. People in our field argue about it all the time.'



CHECKING OUT the March/ April issue of *U.S. Woman Engineer* are the issue's guest editor, Jan Williams (7823, standing), and authors Suzanne Weissman (1824, left) and Vicki Granstaff (1821).

Suzanne says, "I don't know if we settled the argument, but maybe we clarified what it's about."

Another article tells about the work of five of Sandia's approximately 250 women in technical staff or management jobs: Jill Werner (1414), Sylvia Tsao (1841 supervisor), Eden Tadios (1552), Phyllis Pei (now at SEMATECH), and Ruth David (7550). This article (written by Dan Scott, who was then a contractor in 7800) portrays

the diversity of both Sandia's programs and the accomplishments of women employees.

The cover for the issue was designed by Rosina Accardi, a contract graphic artist in 7800.

Most of Jan's work of putting together articles for the issue took place last October through December. But her attention had to be on other things as well during that period — such as preparing for the Professional Engineer exam (which she passed at the end of October). As project manager for design and construction of the Integrated Materials Research Lab, she spent a lot of time in December — and almost up to the present — overseeing preparation of a required environmental assessment.

Anyone interested in seeing a copy of the issue can call Vickie Rodgers (3511), Women's Program Coordinator, on 4-9482. ●CS

(Continued from Page Three)

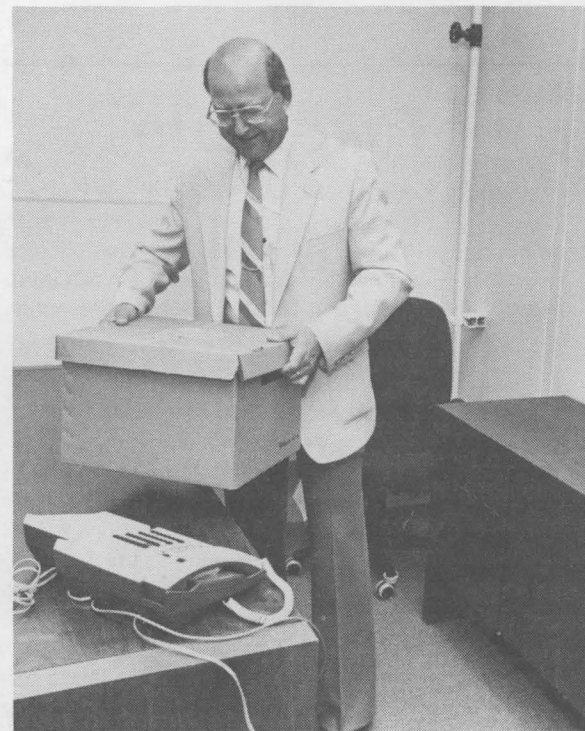
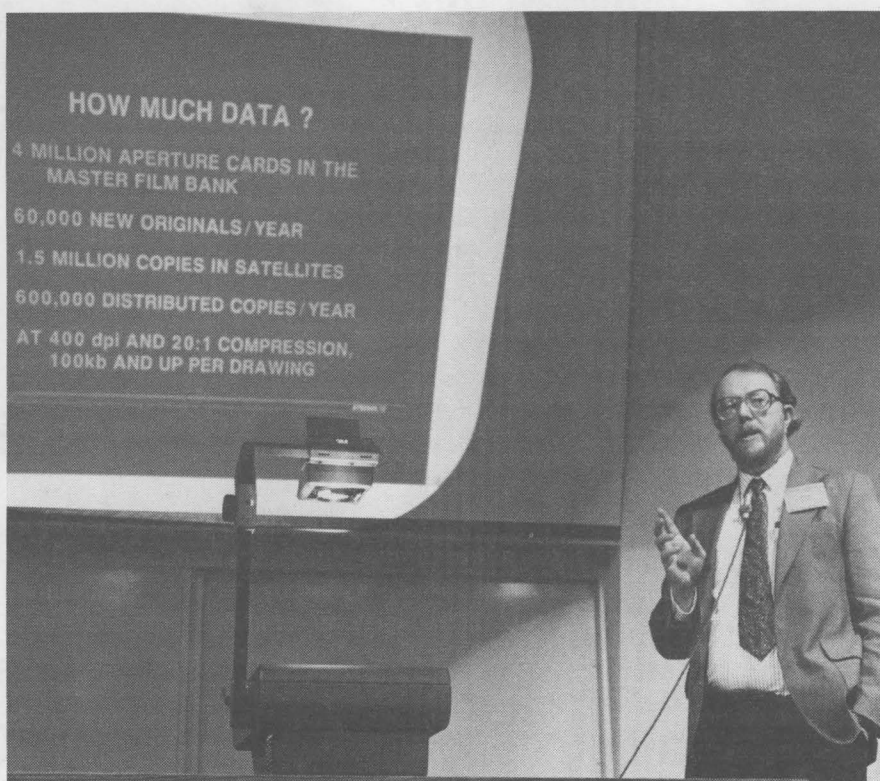
Narath Answers

than we are here. The weapons projects are getting fewer and fewer, and the only other major program here is in combustion research. What about more diversification at Livermore?

Al: I'm sure that at the appropriate time people who are more directly in line here will give some thought to that. This laboratory is smaller by roughly a factor of six. If we simply tried to create at Livermore a smaller version of

Albuquerque, I don't think you would be nearly as effective. You'd be doing the same things at a below-threshold level. I wonder if a more productive way wouldn't be to take what's already strong here and build on it. For example, I'm pushing hard to get this laboratory to think more expansively about the combustion program. I don't think we've reached as high as we can in the combustion area. And we're prepared to ship work back and forth between Albuquerque and Livermore, such as John Crawford [8000] and Roger Hagengruber [9000] have done with reimbursable reentry-vehicle work. ●BLS

SANDIANS CREATE lots of documents, says Jerry Stauffer (2834) at a Sandia-sponsored conference on document imaging (computerized storage and retrieval of digitized images on optical disks). Organizer Barbara Ortiz (3142) says, "Several Sandia organizations are making plans for document imaging systems or are already implementing them. The technology can handle large amounts of data — from engineering drawings to big collections of text-based documents." The conference shared information about document imaging with Sandians and others. About 125 people attended — from DOE, other national labs, and Kirtland AFB, as well as Sandia.



AL MOVES IN — Al Chernoff, Director of DOE's Albuquerque Operations (AL) Management Support Div., brings the first box into his Sandia office, just after President Al Narath and AL Manager Bruce Twining recently cut a ceremonial ribbon to Chernoff's newly remodeled space in Bldg. 802. He is Sandia's primary contact with DOE/AL.

Fun & Games

Flying — May is membership month for the Kirtland Aero Club, and the initiation fee is waived during this annual membership drive period. Membership is open to Sandia and DOE employees and dependents, and contractors. Stop by club headquarters in KAFB Hangar 333 to find out what they offer, or contact club manager Gloria Hinshaw on 4-0884 for information.

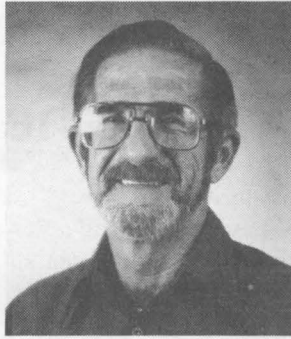
Bowling — Winners of the No-Tap/Scotch Doubles Tournament at Galaxy Bowl on March 17-18 were Dee Dee Frew and Jay Hammond (2362) with a 1404 combined handicap series. Second went to Margie Gaddy (9119) and James Kadlec (7814) with a 1383 series.

February Bowlers-of-the-Month: Scratch — Gary Cochrell (9115), 650; Dee Schumpert (DOE/AL), 596; Handicap — Mel Mefford (3531), 596 and 704; and Thelma Harrell (9119), 529 and 652.

March Bowlers-of-the-Month: Scratch — Lyle Davis (2825), 581; Micki Archuleta, 636; Handicap — Dominic Bellino, 540 and 651; and Alice Davis, 570 and 678.

Golf — The first Sandia Golf Association (SGA) individual tournament of 1990, the Equinox, was played on March 19 at Los Altos Golf Course. The object of the tournament was for players to break their handicaps (70 net). Only eight golfers in the field of 70 did so. Gift certificates were awarded to 20 players, and golf-ball awards were given for long drives and closest to the pin. Par-breakers included James King (7818), Larry Wilhelm (2631), Norman Grandjean (7233), Adolfo Maes (3724), Daryl Dew (contractor), R. Adams, Alvin Lang (9222), and Mike Quinlan (7852). Long-drive winners were Mike Quinlan, Lloyd Chapman (ret.), Joey Gutierrez, Tom Welch (9243), and David Trujillo (5144). Closest to the pin were Lloyd Chapman, Adolfo Maes, Robert Paulsen (9013), and Bill Curtis (2172).

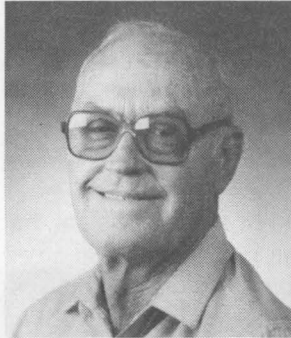
More Golf — The second SGA tournament, the Chet Fornero Memorial, was played at the Ladera Golf Course on April 7. Gift certificates were awarded for low-gross and low-net scores in five flights. Special prizes were also awarded for long drives and closest to the hole. Winners included: A Flight — Ivars Gals (9326), low gross; Mike Gray (9121), low net; B Flight — Orlando Espinosa (7485), low gross; Galen Puls (5122), low net; C Flight — Roy Tucker (contractor), low



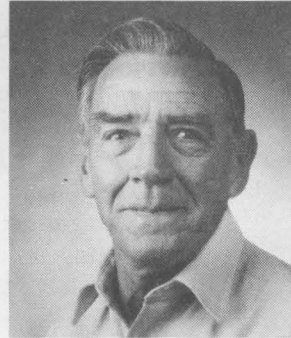
David Miller (5248) 37



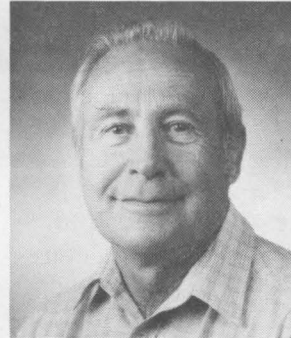
Chuck Stanton (2552) 33



Pat Brinkley (7543) 25



Kenneth Peters (7476) 33



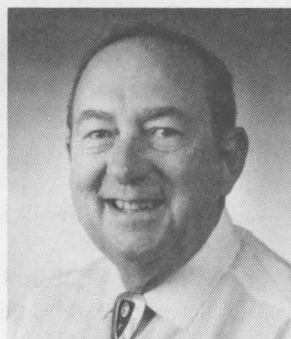
Clinton Tuthill (7476) 29



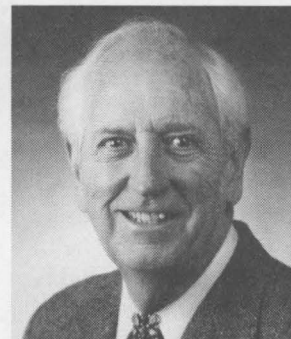
Eldon Julius (5231) 32



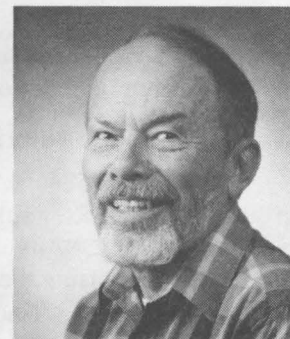
John LeRoy (2543) 33



William Barton (1555) 37



Morgan Kramm (5230) 35



Jack Castle (6258) 10

gross; Robert Paulsen (9013), low net; D Flight — Chuck Ladig (7485), low gross; George McClafflin (3437), low net; E Flight — John Garcia (6423), low gross; Ken Ronquillo (1552), low net. The long-drive contest was also flighted A through E, with Scott Strong (9242), Mark Grohman (9127), Roy Tucker, Tom Welch (9243), and Glen Whiting (5133), winning their flights, respectively. The closest-to-the-hole winners were Julian Lovato (2855), Carl Leishman (7412), Larry Hostetler (9133), and Orlando Espinosa. A special high-net award was given to Mark Retter (7253). Pres Herrington (9243) and Charlie Salazar (7485) were tournament chairmen.

Recent Retirees



Welcome

Albuquerque — Mary Ann O'Toole (3426), Marty Shaneyfelt (2147), Chris Tigges (1144); **Other New Mexico** — Maryann Becker (2174), Cyrus Latoma (3426), Mary Zanner (412).

Elsewhere: **Arizona** — Ernst Ahrens (6346), David Yocky (9115); **California** — Robert Campbell (6428); **Illinois** — Howard Walther (6523); **Maryland** — Bruce Green (3180); **Massachusetts** — Kenneth Steele (1415); **Nebraska** — Mark Ackermann (2171); **New York** — Mark Semonisck (3215).



NEW MEXICO HIGHLANDS UNIVERSITY Vice President of Academic Affairs Gilbert Rivera (left) chats with Bob Peurifoy (VP-Technical Support 7000). They recently met at a reception recognizing 7000's contributions to the Science and Technology Alliance and to the work of Human Resources 3500. The Alliance — which includes as members Sandia, Highlands, and several other educational institutions and DOE labs — was founded to increase the representation of Blacks, American Indians, and Hispanics in US science and engineering.



SANDIA'S 1990 AFFIRMATIVE ACTION PROGRAM is signed by President Al Narath, as Ralph Bonner (Director of Human Resources 3500) and Maureen Baca (Manager of Equal Employment Opportunity and Affirmative Action Dept. 3510) look on. As a federal contractor, Sandia annually prepares an updated version of the document, which reaffirms the Labs' commitment to EEO and AA. Contact Vickie Rodgers (3511) on 4-9482 if you'd like to review a copy of the AA Program or need more information.

System Offers Five Options

Conference Rooms Can Be Scheduled on VAX

The boss announces this morning that important visitors are coming for a meeting on Monday: "We'll have 40 people from 1 to 4 p.m., and — by the way — we need an overhead projector."

"No problem," you say, but then find that someone has already scheduled that handy conference room right down the hall for an equally important gathering. Panic time!

If you face this regularly, you may know already that the Sandia Directory (page 36, general info section) lists several conference/meeting rooms, capacities, and a phone number for scheduling them. But finding one the right size with the right equipment that's available at the right time — on short notice — can be difficult.

Now there's a better way to schedule conference/meeting rooms for Albuquerque-based Sandians who have access to the Labs' Distributed VAX computer network: the Conference Room Scheduling (CRS) application developed by computer whizzes in Sandia's ALL-IN-1 group. (The ALL-IN-1 Office Menu is a product of the Digital Equipment Corp. Sandia has adapted it to run several applications on the VAX.)

'Takes the Hassle Out'

Dal Jensen (2534), who chairs the ALL-IN-1 group, says the CRS application takes the hassle out of scheduling: "Anyone with access to one of the VAXes supporting the application can quickly find out what conference and meeting rooms are available at given times and their capacities, and can schedule them immediately without calling

anyone. That's about as easy as it gets.

"Sandians in Area IV have been using a version of the application for more than two years," Dal adds, "and they're enthusiastic about it."

The CRS application gives Sandians five basic scheduling choices: (1) choose a specific room for a specific time; (2) choose a time and schedule a room that's available then; (3) choose a specific room and schedule it when it's available; (4) choose a room and time from a list of available/acceptable rooms and times; and (5) choose a specific room and time for recurring meetings — for example, for a meeting that takes place every Monday from 10 to 11 a.m.

"All meeting rooms aren't on the system, but more are coming on line regularly," Dal says. "Right now, we have about 20 rooms on the system, all inside the tech areas, but in June we'll be adding some 'outside' conference rooms in Buildings 823 and 887. Our eventual goal is to add all Labs' meeting rooms to the CRS system."

(All meeting rooms currently available for scheduling through the CRS application will be listed in the May 7 *Weekly Bulletin*, and periodic updates will be published later.)

The main limiting factor is that anyone wanting to use the CRS application for rooms located within the tech areas must have access to one of the secure-network VAXes that are supporting the application, which limits its use to Sandians "inside the fences" and the few outside the area who have access via PBX lockboxes.

"If you don't have direct access, it pays to

have a friend who does," Dal notes. "A colleague who's willing to punch the right keys can schedule rooms for you."

Not the Only Way, Though

Everyone with access — direct or indirect — is encouraged to use the CRS application, but employees without access can still call the numbers listed in the directory for the individual rooms and schedule them that way. A primary benefit of using CRS is that alternate rooms can be scheduled. Simply calling to schedule a room only gives information about that one room.

Dal gives the Office Automation Working Group (OAWG) and the Office Automation Subcommittee (OAS) lots of credit for helping to get the system rolling: "The OAS supported the idea and helped set up meetings with Sandians who gave us a lot of good ideas that we incorporated. The OAWG, which is working to provide a pervasive OA environment for the Labs, supports CRS as one of the first applications."

Members of the ALL-IN-1 group will accept account requests for anyone wanting to use the CRS application. Information packets describing CRS and account request forms are available from the following persons:

For conference/meeting rooms inside the secure area: Paula McAllister (1262), 5-9088; Chris Morgan (2613), 5-8611; or Dal Jensen (2534), 5-8795. For rooms outside the secure area: Goldie Piatt (6410), 5-8614; or Jerry Hanks (7824), 5-8491. ●LP

Take Note

Orval Jones (20), an American Society of Mechanical Engineers Fellow, recently accepted on behalf of Sandia ASME's Industry Appreciation Award. The award, for the Labs' longtime support of the organization, was presented at a recent ASME Region XII meeting. Sandia ASME support includes providing leadership for local and national technical symposia, support for staff presenting technical papers at ASME conferences, and support for local, regional, and national officers. Orval was the meeting's invited speaker.

A topic of vital concern to the Rio Grande Research Corridor, "The Future of Defense Research and Technology Transfer," keynotes the Ideas in Science & Electronics Exposition and Symposium (ISE '90) opening in Albuquerque May 8. The related three-day technical program is organized by the local IEEE Section. All events

except the keynote lunch are free to advance registrants. Admission is limited to adults, aged 18 and up. Keynote lunch tickets, at \$20, are available through ISE, Inc., 8100 Mountain Rd. NE, Suite 207, Albuquerque, NM 87110 (phone 262-1023). The largest exposition ever housed in the Convention Center, ISE '90 features about 420 booths displaying products and services of 1300 electronics companies. Exhibits are open from 9 a.m. to 5 p.m. on May 8, 9, and 10.

A paper by Russ Skocypec (1512) and Roy Hogan (1513), "Investigation of a Direct Catalytic Absorption Reactor for Hazardous Waste Destruction," was named 1989-1990 ASME Best Paper in Solar Thermal at the 1990 International Solar Energy Conference. This is the second ASME Solar Best Paper Award for Russ and the third for Dept. 1510 in the last three years.

The Sandia Gun Club offers ongoing classes in personal protection and handgun fundamentals. A class covers four nights (Tuesday & Thursday, for two weeks) from 6:30 to 9:30 p.m. Each student is paired with an NRA-certified instructor while shooting. Cost is \$40, which covers everything needed for the class, including guns and ammo. The next class starts May 22. For more information, call 889-6061 and leave your name and home phone number.

Financial Seminar

Equitable Financial Companies will hold a financial seminar on Monday, May 14, at the Coronado Club, Zia Rm., from 5 to 6 p.m. Topics include annuities, insurance, and retirement distribution options.



SANDIANS JOINED others nationwide in celebrating Earth Day last month by hosting solar energy displays for the public. In the left photograph, Dave Menicucci (6217, left) and Dan Alpert (6216, center) explain the workings of a solar-powered Stirling engine to onlookers during an Earth Day Fair April 20-21 at the University of New Mexico. In the photo at right, guests of an all-day Open House April 22 at Sandia's Solar Thermal Test Facility learn about a sun-



powered water purification process from John Holmes (6215), who supervises the facility. During the process, contaminated water flowing through a tube is purified by sunlight reflected from a solar trough. The sun's ultraviolet rays trigger a chemical reaction caused by a catalyst in the water. The reaction also causes the tube to glow because the catalyst reflects sunlight.

(Photos by Anne Van Arsdall, 6220)

Take Note

"Ticket to Travel," the third annual benefit for Living Through Cancer (a non-profit organization that provides support groups, one-on-one connections, and other services to people dealing with cancer), will be held May 6 at the Coronado Airport, Hangar K, from 1 to 4 p.m. Activities include a drawing for trips and prizes, entertainment, a magician, clowns, pilots and their planes, and re-

freshments. Admission is free. For drawing tickets and other information, contact Gail Willette (3730) on 271-2095.

* * *

May is Better Speech and Hearing Month. The New Mexico Speech and Hearing Association is sponsoring a Speech and Hearing Fair on Saturday, May 12, at the Coronado Shopping

Center from 10 a.m. to 6 p.m. Purpose of the Fair is to make the public aware of speech and hearing disorders and where to get help or support. Fair participants include private practitioners, clinics, hospitals, and support groups. Entertainment will be provided throughout the day. Free hearing screenings will be available.

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

ROLLAWAY BED, propane lantern. Maestas, 831-4072 after 4:30.
 WASHER, dryer, refrigerator, 12 yrs. old, \$50/ea. OBO. Rundle, 828-0236.
 SCOTT'S LAWN SPREADER, \$20; 5-hp Rototiller, \$40; pickup bumper, fits '70s Chev., free; amateur radio receiver, Hammarlund HQ-170A. Richards, 281-9471.
 CAMPER SHELL, accordion-folding, for LWB Chev. or GM pickup, includes metal frame, front and back windows, \$175. Shunny, 265-1620.
 REFRIGERATOR, Sears Kenmore, harvest gold, 19.6 cu. ft., top freezer, auto ice-maker, \$175. Patrick, 265-4569.
 WASHER-DRYER SET, Whirlpool, harvest gold, \$100; Z-rim 20" rear, \$20. Byers, 298-8326.
 POOL COVER and water bags for 17' x 34' pool, \$50. Volk, 299-1702.
 PARTS FROM EARLY '40s RADIO SHOP: tubes, resistors, diodes, books, capacitors. Pinkerton, 255-2505.
 KING-SIZE WATER BED, oak & cane headboard, \$100. Holmes, 897-0916.
 RECORD ALBUMS: more than 85, from Elvis to Glenn Miller, \$45/all. Lynch, 298-7817.
 DOLBY SYSTEM, Walkman Realistic from Radio Shack, in original box, w/accessories. Wagner, 823-9323.
 WEDDING DRESS, sweetheart neckline, lace & pearl bodice, lace sleeves w/puffs, train, size 12, \$350. Brower, 298-2254.
 '72 APACHE TRAILER, sleeps 6, \$1400; AKC-registered Samoyed puppies, white, \$220. Puccini, 255-0568.
 KITCHEN TABLE, 36", w/2 oak armchairs w/casters, ivory/beige texture. Vigil, 828-1382.
 BOOSTER CAR SEATS: Cosco Explorer and Bobby Mac, wing-type styles, \$10/ea. Lamppa, 299-1119 evenings.
 WOMAN'S DIAMOND DINNER RING, yellow gold, appraised at \$4200, sell for \$3000 OBO. Orr, 892-5843.
 LEATHER TARP, for '68-'72 El Camino, \$40; Holley 700 DBL high-volume pump, w/regulator, make offer. Apodaca, 299-8515.
 COCKER SPANIEL, AKC-registered, buff/white male, 2 yrs. old, w/shots and license, free to good home; make offer on doghouse. Jensen, 821-4291.
 KING-SIZE WATER BED, with or with-

out frame, \$100 OBO; queen-size bedframe, with or without headboard, \$30 OBO. Mesibov, 292-1249.
 CULTURED-PEARL NECKLACE, 18" strand, w/pearls that average 7mm ea., never worn, appraised at \$800, sell for \$350. Martinez, 888-3067.
 AIR CONDITIONER, 1-spd. motor, 1/4-hp; single-size bed spring; \$100/all. Speakman, 299-8831.
 TWIN-SIZE BED, w/mattress & box spring, solid-wood head- and footboard, \$100; woman's dresses, size 12, make offer. Stronach, 298-5289.
 '72 REDDALE TRAVEL TRAILER, 19', self-contained, new upholstery, dual axles, \$2600. Chavez, 294-8962.
 PORTABLE OXYGEN UNIT, Lif-O-Gen model 500, \$15. Benton, 877-2473.
 TOW BARS: one fits Volkswagon truck, \$20; one fits '80s Datsuns, \$30. Tanner, 881-1636.
 DAYLILIES, choose from 45 varieties, call for price list. Hosking, 836-2128.
 ZOOM LENS, Canon mount, Tokina ATX-120 60-120mm focal length, f2.8 throughout. Neal, 292-8675.
 SOFA, 6', gray, loose pillows, \$150; coffee table; marble-top console cabinet. Church, 299-2175.
 LAWN MOWER, 20", 3-hp Briggs & Stratton, used 2 yrs., \$75. Caldwell, 255-9982.
 STEREO CABINET, walnut veneer, glass door, \$35; Kenwood turntable, \$70; Bose 901 pedestal speakers, \$60/pr.; Canon auto-exposure camera, \$35. Vogel, 275-0774.
 FANATIC FOX SAILBOARD, 370cm, 230 liters, 5.4 m² Neil Pryde RAF sail, clamp-on boom, 1-piece fiberglass mast, \$650. McRee, 898-5030.
 TWO WOMAN'S DIAMOND RINGS: 3/4 carat ea., antique white-gold brocade, local appraisal, sell for fraction of replacement cost. Kerschion, 281-1671.
 NEIGHBORHOOD YARD SALE: fireplace, electric winch, Barbie house, more, May 5, 800 block Oro Real NE. Rodacy, 293-2668.
 CENTURY PLANTS, locally grown, from 7" to 20" diameter, \$5-\$25. Bando, 292-2452.
 CHILTON'S AND TUNE-UP GUIDE for Ford Fairmont Zephyr, '78-'83. Padilla, 877-2116.
 LAWN MOWER, 3.5-hp, gas-engine rotary, 20", w/catcher, \$95. Stang, 256-7793.
 LINE-A-BED II BED LINER for '87 full-size Ford F-150 pickup, \$100; Sears stove-top electric range, never used, 4-burner, almond, \$100. Claussen, 293-9704.
 RON LIGHT FAMILY BENEFIT SALE, Comanche Elementary School parking lot, May 20, 10 a.m.-5 p.m. For donations and information, call Steve Graham, 884-6489.
 HANGING FIREPLACE, ski-lodge style, 36" screen, 37" diam., 57" high, black, 4 suspension chains, \$300. Talbert, 298-9036.
 MICROWAVE OVEN and cart, Norelco, full-size, \$100 OBO; Cobra telephone answering machine, \$25 firm. Hueller, 296-0976.
 TI 59 CALCULATOR, w/PC-100A printer, software, \$100 OBO for lot, make offer on pieces. Wood, 823-1965.
 WOODEN SLIDING DOORS, 6', \$12; 3 aluminum sliding windows, \$25; double electric blanket, \$7; woman's clothes, size 7. Bentz, 299-3448.
 COCKER SPANIEL PUPS, 6 wks. old, parents on premises, \$100/ea.; XL Bieffe helmet, \$40; Escort radar detector, \$100. Apodaca, 292-5525.
 STEINWAY SQUARE GRAND PIANO, old, very bad condition, free if you haul it away. Watterberg, 299-8517.

ALENCO ALUMINUM WINDOWS, double pane, sizes: 3' x 3' garden, 4' x 4', 2' x 3', and 3' x 3', \$200 firm. Caton, 281-9420.
 TAC-SEW INDUSTRIAL SEWING MACHINE, sews over leather, upholstery, jeans, \$450. Cibicki, 877-7098.
 PUSH REEL LAWN MOWER, \$25 OBO. Heifetz, 275-2648 leave message.
 WORLD WAR II GUN & KNIFE COLLECTION, \$1500 OBO; '83 Fleetwood Proper travel trailer, 32', self-contained, sway bars, mirrors, \$10,000 OBO. Torres, 1-865-5241.
 BATHTUB WHIRLPOOL, \$65; 2-dr. bar refrigerator, 34" H, 20" D, separate freezer. Horton, 883-7504.
 FLOWER-ARRANGING BOOKS, adult scout uniforms, electric range, stained-glass light fixture, bicycle basket, Electrovoice SP12B speaker. Scheiber, 298-0904.
 '76 TRAVEL TRAILER, 8' x 35', park model, microwave, stove, refrigerator, \$3750, will consider partial trade. Marquez, 831-3088.
 GLASS AND CHROME STAIR-STEP STAND, 54" wide x 28-1/2" high x 16-1/2" deep, appraised at \$90, sell for \$60. Pendall, 265-3008.
 '74 AIRSTREAM TRAILER, 25', completely equipped, \$5700 firm. Mares, 884-4843.
 ROADRUNNER TRAVEL TRAILER, 14', Porta-Potty, equalizer hitch, mirrors, \$1500 OBO. Erne, 299-0565.
 COFFEE TABLE, wood, natural grain, 26" x 60", polyurethane-coated top surface, \$89. Reda, 821-3817.
 BOW AND ARROWS, 45-lb. draw, recurve, left-handed, \$75. Moss, 298-2643.
 ANDY WARHOL PRINT, "Apples," number 118/150, 30" x 40", \$2000 OBO. Wilson, 275-2110.
 FREEZER, Wards Signature, upright, \$100. Garrison, 282-8973.
 FULL-SIZE SOFA SLEEPER, Kirby vacuum cleaner. Chavez, 298-1649.
 CHILD'S BEDROOM SET, solid wood, bunk beds w/mattresses, chest of drawers, desk, chair, \$235. Martel, 293-1892.
 TABLE SAW, 8", extras, \$100; queen-size water-bed mattress, heater, liner, \$50. Vanderburg, 836-1169.
 ANTIQUE-STYLE TELEPHONE, hand-held shower massage, 4-drawer dresser, Madame Alexander dolls, aluminum sliding windows. Van Deusen, 291-8196 after 5.
 COLOR TV, 19", Sanyo, \$100 OBO. Righter, 822-1927.
 LA-Z-BOY SWIVEL ROCKER, \$50; Early American sofa, \$65; 2 mahogany end tables, \$60/ea.; 2 white porcelain lamps. Trembl, 292-9219.
 DINING ROOM SET, dark wood, Mediterranean-style, 6 chairs, glass-front china cabinet, \$1200. Manzanares, 296-3828.
 SPRINGER SPANIEL, 3 yrs. old, neutered male, free. Fjelseth, 293-7331.
 TORO LAWN MOWER, w/grass catcher, 10 cu. in.; antique chest and dresser. Levan, 293-0079.
 FIFTH WHEEL TRAVEL TRAILER, '87 Hitchhiker, champagne edition, w/slide-out room. Zimmerman, 897-1704.

TRANSPORTATION

'79 HONDA HAWK 400, 10K miles, \$400 OBO. Bukaty, 345-4691.
 BICYCLES: 16", \$30; 20", \$30; man's 26" Gitane 15-spd. touring, \$125. Randour, 298-5684.
 '83 Z-28, 5.0LT, V-8, loaded, w/bra, tinted windows, Centerline rims, new tires,

\$5800 OBO. Barkocy, 296-6620.
 REDLINE MX2 DIRT BIKE, \$200. Edmunds, 293-3503.
 '88 CORVETTE CONVERTIBLE, white, leather, Bose, first reasonable offer. Hudson, 821-3968.
 '85 MUSTANG LX, loaded, \$5175. Smith, 292-6425.
 BICYCLE-BUILT-FOR-TWO, Schwinn, \$150. Krenz, 298-0619.
 MAN'S 10-SPD. BICYCLE, Sears, \$50 OBO. Carlson, 897-1850.
 '85 FORD E350 CONVERSION VAN, 6.9-liter diesel, AT, 58K miles, \$10,850. Jensen, 898-7356.
 '85 FORD ESCORT, AM/FM stereo cassette, AC, new tires, \$3000 book, make offer. Miller, 275-3283 or 822-0008.
 '40 BUICK SPECIAL, 4-dr. sedan, new battery, \$2400. Chavez, 294-8962.
 '84 CHEV. S-10 PICKUP, 4x4, long bed, V-6, AT, PS, PB, shell, \$4000 OBO. Whipple, 281-9285.
 '83 CHEV. BLAZER, Silverado, 6.2L diesel, AT, 64K miles, new paint, under book. Rogers, 822-1354.
 '86 SUBARU, 4-dr. wagon, 5-spd., 4-WD, 32K miles, AM/FM cassette, \$4800. Moll, 836-5673.
 '67 SCHWINN CLASSIC BICYCLE, \$125. Byers, 298-8326.
 '86 TOYOTA CELICA, white, 22K miles, AT, AC, cruise, AM/FM cassette, 28/32 mpg, \$8350. Dobranich, 298-4547 evenings.
 '87 NISSAN 300ZX, 2-dr. coupe, 5-spd., stereo, AC, T-top, 44K miles, \$12,800. McRee, 898-5030.
 '85 TOYOTA MR2, 20K miles, original owner, w/extras, \$6250. Vine, 293-0940.
 '72 FORD 3/4-TON PICKUP, LWB, AC, PS, AT, rebuilt 390, \$1400 OBO. Gibson, 344-8056.
 '89 HONDA ACCORD LXi, 21K miles, 2-dr., 5-spd., all options, 28 mpg, \$14,700 OBO. Schneider, 292-6373 or 292-8017.
 '89 JEEP COMANCHE, long bed, AC, 4-cyl., bought new in Jan. '90, extended 7-yr. warranty, 2K miles, \$8500. Convisor, 828-2137.
 '76 DREAMLINE RV, self-contained, newly reupholstered, 15K miles on rebuilt engine, \$7850. Cibicki, 877-7098.
 '80 KAWASAKI KZ440, luggage rack, windshield, 2 helmets, 12.8K miles, \$400 OBO. Heifetz, 275-2648.
 '82 PONTIAC 6000, 4-dr., rebuilt 4-cyl., AC, AT, PS, PB, stereo cassette, tilt, \$3500. Otero, 265-6034 after 5.
 '79 FORD PICKUP, 3/4-ton, 351 V-8, loaded, w/camper shell, new tires, AM/FM cassette, \$3000 OBO. Torres, 1-865-5241.
 '79 BMW 320i, silver w/blue interior, AC, 4-spd., \$4800. Doerfler, 823-9787.
 '79 HONDA XL500 MOTORCYCLE, on/off road, 16.5K miles, Supertrap muffler, rear rack, new tires, \$600. Van Geet, 281-4131.
 BICYCLES: boy's BMX Mongoose Expert, 20" wheels, \$175; Diamond-back Curaca mountain, 26", 10-spd., \$175 OBO. Manzanares, 296-3828.
 GIRL'S 12" BIKE. Levan, 293-0079.

REAL ESTATE

3-BDR. MOSSMAN HOME, 1-3/4 baths, den, double garage, 1570 sq. ft., solar heat/hot water. Hays, 897-1335.
 5.6 WOODED ACRES, Timberlake Ranch, Ramah Lake view, electrical and phone lines to property. Jones, 888-1564.
 3-BDR. TOWNHOME, near Ladera Golf Course, 2 baths, great room, 2-car garage, 10% FHA, no qualifying,

\$70,000. Jones, 836-6412.
 2-BDR. MOBILE HOME, 14' x 70', '81 Detroit, 2 full baths, all appliances, covered porch, in Wyoming Terrace park, \$13,500. Dunham, 293-6971.
 2-BDR. MOBILE HOME, double-wide, 2-car garage, on 2-1/2 acres near Moriarty, 1 mile from schools on paved road. Powell, 281-9570.
 3-BDR. HOUSE, double garage, pitched roof, landscaped, sprinklers, 1/2 acre, 2 wells, in Peralta, \$73,500. Tafoya, 1-865-9816.
 2.77-ACRE LOT, Canyon Estates, trees, 6 miles from Albuquerque, electricity on land. Barr, 281-1858.
 4-BDR. COUNTRY HOME, new, 2-6 acres w/home or sell separately, assumable terms or trades for equity. Senglaub, 281-8697.

WANTED

PANCHO, a registered male Airedale, seeks mate of like lineage, object puppies, no mutts need apply. Shunny, 265-1620.
 SHOP MANUALS for '77 Buick Electra. Baney, 294-8970.
 ROOMMATE to share home in Taylor Ranch, \$250/mo. plus 1/2 utilities. Kicklighter, 897-7247.
 BERLIN AIRLIFT PARTICIPANTS, reunion Sept. 23-27, Mirage Las Vegas, airlift occurred 1948-49, association to be formed, call Mark Burton, 800-523-7287, for information. Harris, 255-6577.
 HOUSE OR MOBILE HOME to rent in east mountain area, need to rent no later than July or August. Heald, 292-1614.
 CAMPER OR MOTORHOME, w/bathroom, to rent for 1 to 2 weeks, non-smoking family. Neal, 292-8675.
 BOOKS, new, used, all subjects, appraisals. Dybwad, 296-9047.
 TANDEM BICYCLE, touring model preferred, frame approx. 21"-23". Haaker, 298-7415.
 DONATIONS: IBM/XT-compatible mother board, chassis, keyboard, floppy drive, 1/0 port and driver, printer, word processor, to assemble for a physically handicapped writer. Zuchowski, 281-5678.
 BOOSTER CAR SEAT. Lewin, 255-0620.
 TEXAS INSTRUMENTS' "Speak and Read". Lachenmeyer, 268-7818.
 3-BDR. HOME to rent or lease w/option to buy, prefer garage and NE area, June 1, \$500-\$600. Buckle, 293-8407.

WORK WANTED

PAINTING, INSIDE/OUTSIDE in NE/SE Heights, by UNM student between spring and summer semesters, experienced. Perrine, 889-3428.

LOST AND FOUND

LOST: gold Cross pen, clip has Purgatory red & white emblem. Souder, 281-3121.
 FOUND: turquoise pin, found near Bldg. 823, identify. Martinez, 766-2303.
 LOST: yellow Lab, red collar w/tags, black spot on tongue, lost near Tramway/Comanche, reward. Olecksiew, 298-5850.

SHARE-A-RIDE

FULL-TIME VANPOOL SEATS AVAILABLE, Tijeras, along N-14, Frost Rd., ride every day. Yelton (281-2893) or Burns (281-3922).

Coronado Club Activities

M Is for the Many Things . . . Treat Mom on May 13

MOTHER'S DAY BRUNCH on May 13 is a treat not only for Mom, but for the whole family. The special menu includes roast turkey, Virginia baked ham, baron of beef, Spanish omelets, sausage, chicken drumettes, French toast, home fries, mini-bagels/cream cheese, fresh fruit, broccoli/cheese sauce (maybe George and Barbara will be there), and all kinds of wonderful desserts. Complimentary carnations go to each honored guest. Prices: \$10.95/adults and \$5.95/children under 12. This one always packs the place, so make that reservation early (265-6791).

GET AN EARLY START on your Cinco de Mayo celebration at festivities this evening, May 4. Dinner, served from 6 to 9 p.m., features beef or chicken fajitas (\$6.95) or carne adovada (\$5.95), served with Spanish rice, refried beans, sopapillas/honey, and a plateful of chips and salsa. Miguel Caro and his Mexican Fiesta Dancers entertain with a colorful floor show (7:30-8), after which

you can dance the night away (8-midnight) to the tunes of the Bourguet Brothers. Comida reservations *definitely* recommended.

KIDS' BINGO gets back on track this Sunday, May 6, with gaming beginning at 2 p.m. and reasonably priced (cheap, actually) food available at 1. Players — ages 3 to 15 — pay \$2.50 for four bingo cards and a ticket for the special drawing that day (prize: a Nintendo entertainment system). Bingo winners take home all sorts of terrific toys.

T-BIRD CARD SHARKS go back to the tables May 10, starting at 10 a.m. Jim McCutcheon promises to celebrate this month by wearing his Cinco de Mayo costume and dancing around a Maypole — if he can find one. Don't miss the show!

CHOICE CHUCK-WAGON CHOW is available next Friday night, May 11, from 6 to 9 p.m. Menu selections include prime rib, poached hal-

ibut, broiled salmon steak (all \$7.95), and filet mignon (\$8.95). Each entree is served with your choice of a baked potato or rice pilaf, sautéed vegetables, roll and butter, and a garnish. Don't forget your other dinner option: the soup/salad bar (\$3.95/all-you-can-eat, \$1.50/one trip). Afterward, dance away the calories as the Isleta Poor Boys provide stomp music from 8 until midnight.

MORE THUNDERBIRD NEWS: The monthly meeting on Monday, May 14, at 1 p.m. features the second in a series of discussions about estate planning by Kenneth Leach of Popejoy, Leach, Green, and Melkus. The talk focuses on wills, trusts, and other estate-transfer options. Need more info? Call Nick DeLollis on 299-5384.

GET IN THE SWING with free square-dancing lessons — offered to members every Wednesday night from 8 to 10 p.m. Call the Club office for more information.

Events Calendar

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

May 4 — "Amigos": 24 young entertainers from Mexico City present performance of high-energy song, dance, and instrumental showmanship; 8 p.m., Kiva Auditorium, 848-1320.

May 4-5 — "A Shopping Mall of Spring Arts & Crafts," East Mountain spring sale; 10 a.m.-5 p.m. Fri., 9 a.m.-5 p.m. Sat.; Los Vecinos Community Center (1/3 mile west of Tijeras/Route 40 exit on Route 66), 281-4455.

May 4-Aug. 5 — Exhibit: "From the Land of Dragons," collection of rare fossils, mostly from China; 9 a.m.-5 p.m. daily; New Mexico Museum of Natural History, 841-8837.

May 5 — "Sukay": concert of Andean music authentically performed on ancient instruments such as the antara, sicus, rondador, tarka, drum, and percussion; vocal harmonies sung in Quencha and Spanish; 8 p.m., South Broadway Cultural Center, 848-1320.

May 5 — Annual Strawberry Festival, street fair, adult and children's activities, food, entertainment; 2-7 p.m., Serendipity Day School (801 Girard NE), free, 255-7336.

May 5 — "New Chamber Music by New Mexico Women Composers," presented by New Mexico Women Composers Guild; 8:15 p.m., Keller Hall, 277-4402.

May 5-19 — "Noises Off," by Michael Frayn, hilarious play-within-a-play about trials, tribulations, triumphs, and travails of a troupe of intrepid thespians attempting to rehearse, perform, and get through a rather ordinary English sex farce called "Nothing On";

8 p.m. Thurs.-Fri., 6 & 9 p.m. Sat., 2 p.m. Sun.; Albuquerque Little Theatre, 242-4750.

May 6 — "Musicke for Mary and Elizabeth," performed by Musica Antigua de Albuquerque using voice and authentic period instruments, renaissance music from the courts of Queen Elizabeth of England and Mary, Queen of Scots; 4 p.m., Central United Methodist Church (University & Copper NE), 842-9613.

May 7 — Lecture: "Adobe Architecture," by Laurel Seth; 10 a.m., Indian Pueblo Cultural Center, free, 247-4907.

May 10-11 — Classical Concert IX: New Mexico Symphony Orchestra and Chorus, featuring works by Gabrieli ("Jubilate Deo"), Lutoslawski (Symphony No. 3), and Beethoven ("Eroica"); 8:15 p.m., Popejoy Hall, 842-8565.

May 11 — "Folktales and Tales for Folks": using their collection of props, costumes, and fantastic paraphernalia, Linda Piper and Deborah Blanche bring to life tales told around the world; 10 a.m. & 1:30 p.m., South Broadway Cultural Center, 848-1320.

May 12 — "Peter and the Asphalt Crack": Teatro Consejo, sponsored by Youth Development, Inc., presents an evening of improvisations based on teenage and adult concerns about substance abuse and related problems; free, South Broadway Cultural Center, 848-1320.

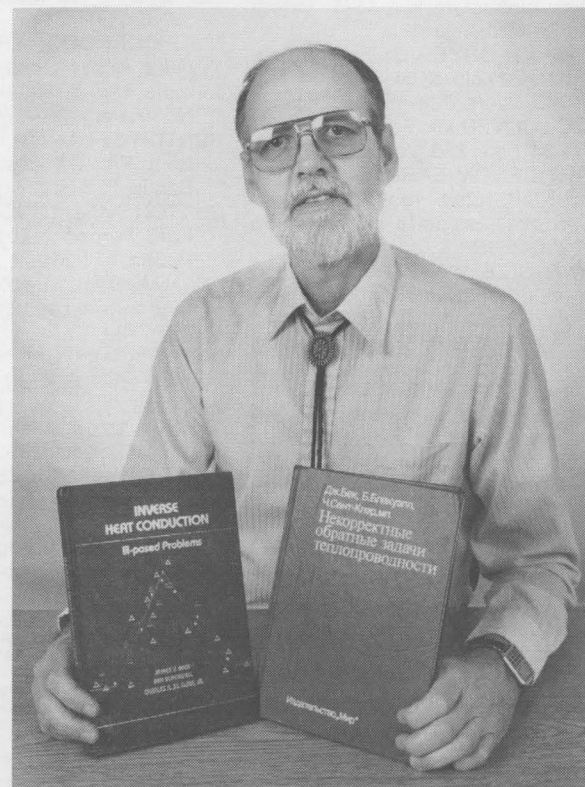
May 12 — Third Annual Rio Grande Celtic Festival and Games: gathering of Scottish, Irish, and Welsh communities; competition in dance, music, and athletics; 8:30 a.m.-5 p.m. (Ceilidh, 8 p.m., Elks Club, 1642 University Blvd. NE), Menaul School (301 Menaul Blvd. NE), 881-4404.

May 12 — Chinese Calligraphy and Name Translation: Explorations! class in conjunction with "From the Land of Dragons" exhibit, instructed by Fay Yao (Chinese American Citizens Alliance), for children ages 9-12; 1:30-2:30 p.m., New Mexico Museum of Natural History, 841-8837.

May 12-13 — Iris Show, presented by the New Mexico Iris Society; 4-7:30 p.m. Sat., 12-6 p.m. Sun.; free, Albuquerque Garden Center, 294-4955.

May 12, 15, 18, & 20 — "Carmen," romantic opera about a fiery gypsy and her tragically bewitched lover, presented by Opera Southwest; 8 p.m., 2 p.m. Sun.; KiMo Theatre, 243-0591.

May 13 — Annual Mother's Day Concert: New Mexico Symphony Orchestra, program includes light classics and family favorites such as Liszt's Hungarian Rhapsody No. 2, and selections from "My Fair Lady" and "Fiddler on the Roof"; Rio Grande Zoo band shell, 842-8565.



NO, HE DIDN'T DO THE TRANSLATION — But Ben Blackwell (1553) learned last year that a book of his — *Inverse Heat Conduction*, published in 1985 — would also be published in Russian. "Russian scientists have been active in heat-transfer technology for a number of years," says Ben. "Presumably, some of them requested the translation." Here, Ben displays both versions of the book, which he wrote in conjunction with Michigan State University mechanical engineering professors James Beck and Charles St. Clair.

Attention, Retirees

Annual Picnic Set for May 24

Sandia retirees, their spouses, and surviving spouses of retirees get together for chatter and chow at the Annual Picnic on Thursday, May 24, from 4 to 7 p.m. in the Coronado Club patio area.

The "Old Cooters" play tuneful music from start to finish, and members of Large Staff will be on hand to chat with picnickers. Partygoers can reminisce about last year's bash as they watch videotapes of the 1989 picnic in the Club dining room from 5 to 6. (On-the-spot video footage of this year's gathering runs after 6.) Both men's and women's rest rooms are located on the main floor and in the basement.

Casual dress is recommended. To assist the picnic planners, retirees should send the reservation cards they've received to the Benefits organization (Div. 3543) no later than May 16. Remember — this one's for adults

only. No grandchildren, please! If you haven't yet received a reservation card, call Benefits on 844-5072.

Parking areas are available at the C-Club, Base chapel, Que Pasa Recreation Center, Base hospital, or Sandia Base Elementary School; avoid parking in residential areas. A shuttle bus will run between parking areas on "B" Street and the Club patio entrance. A block of parking spaces for the handicapped is available near the Club's main entrance, which may be used only by handicapped persons; all others should use the patio entrance.

The Club will be closed on picnic day until the bash begins, so the staff can prepare for the hundreds of people expected to attend.

Sandia retirees and surviving spouses now number more than 4200 in 40 states and two foreign countries.