

Morgan Sparks: The State of the Labs

President Morgan Sparks views the present state of Sandia Labs as good, and he is confident about our future. Now in his sixth year at Sandia, Mr. Sparks characterizes his Sandia stint as "the best job I ever had." The occasion was a LAB NEWS interview.

Discussing the Labs' present health, Mr. Sparks sounded a positive note: "Basically we're in good shape. We are a proven, mission-oriented engineering lab—really a scarce resource that's much needed for national purposes. And our strength derives from our staff, which is excellent and improving."

The decision taken several years ago to diversify, chiefly into energy programs has brought enhanced stability. With the present 75/25 division between weapons and non-weapons work, it has been possible to maintain our resources at a level which would not have been possible had we continued as a single mission laboratory. Further, Mr. Sparks believes that the present close ties between our weapon and non-weapon activities have been "synergistic"—where the total effect is greater than the sum of the parts.

He anticipates that the 75/25 division will stay more-or-less constant for the remainder of the 70's, "...with our energy effort growing, but more slowly."

Of DOE, Mr. Sparks notes that the new agency has a much broader charter than ERDA or its predecessor, AEC. "That's likely to be significant for Sandia and other labs as well. Because of its charter, DOE is necessarily a more political creature. The DOE labs are bound to experience some effects from this more politicized climate."



Here are other topics discussed by President Sparks.

What are the implications of a comprehensive test ban [CTB] for Sandia?

"My personal view is that there will be a test ban because both sides (US/USSR) say they want it, probably for different reasons. As for its effect, that will depend in a major way upon the actual terms of the agreement. In the short run, Sandia will be less affected than LASL or LLL because work in our areas of responsibility depends very little upon nuclear testing. Our work would presumably continue for some time pretty much as now planned. However, it's obvious that, tied as we are to weapon developments at LASL and LLL, we would ultimately experience a more significant impact. But it's difficult even to speculate about that until terms of any CTB are known. Incidentally, we and the other weapons labs frequently have technical representatives at the SALT, CTB and other arms control meetings in Geneva. Paul Stokes (1352) and Roger Hagengruber (1351) are there now."

On weapons and energy work at Sandia:

"We tend to move people around, from weapons into energy areas and vice versa. This is good because, among other things, it helps insure that Sandia doesn't develop into two labs, one for weapons, the other for non-weapon projects. It's true that energy projects can have more ready appeal, especially in recruiting, but we've noted that weapon

[Continued on Page Three]

 **LAB NEWS**

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Afterthoughts

Equal time--LAB NEWS readers may have occasionally discerned a slight bias in these pages toward physical fitness and those matters that enhance fitness and health, e.g., giving up smoking. But we're not zealots, and we're nothing if not fair-minded, so in that liberal spirit we herewith reproduce a why-you-should-smoke article that appeared in the AMA Journal. Its author is Barry Lowitz, MD, who practices at a VA hospital.

• js

I am an exsmoker oncologist at an institution where most of my patients have lung cancer and many of the hospital staff and physicians continue to smoke. Knowing the odds and being outspoken about them, I have launched verbal assaults on everyone who "lights up." Those forays are met with responses ranging from mild annoyance to nearly physical rage.

My objective assessment of these data is that it is much easier to treat advanced lung cancer than to try to talk people into giving up smoking. With the cautious optimism that characterizes those in my subspecialty, I have now come to view smoking in a positive light and propose the following rationale:

1. If everyone were to quit smoking lung cancer would disappear, and we would never figure out how to cure it.

2. Smoking leads to creative rationalizations. Some interesting concepts I have heard over the years are the following:

I'll get fat
I'll lose my appetite
I feel better when I smoke, I think it prevents cancer
It keeps the smog out of my lungs
If I didn't smoke, I'd drink
Statistics lie
Six out of seven people who smoke at least two packs a day will not die of lung cancer.
Anyone can smoke, it takes a man to face cancer

3. Smoking provides the raison d'être for modern technologic progress, research provides cures for man's self inflicted ills.

4. Smoking stimulates the economy: it (a) provides jobs for tobacco farmers, (b) provides jobs for tobacco companies, (c) provides jobs for oncologists, and (d) provides jobs for undertakers.

With all these advantages, many of my smoking colleagues wonder why I have not resumed smoking and comment on my strength of will. I inform them that it is not will power but cowardice that keeps me from smoking, but I do admire the courage of those who persevere in the face of unrefutable data and overwhelming odds.

Events Calendar

Mar. 4,5—New Mexico Gun Collectors Ass'n. Spring Gun Show, Albuquerque Convention Center, 8 a.m.—6 p.m.

Mar. 5—"Same Time Next Year," UNM Cultural Entertainment Series, 277-3121.

Mar. 10, 11—Symphony Orchestra with

Israeli violinist Miriam Fried, Popejoy Hall, 8:15 p.m.

Mar. 15—"Kangaroos Can't Be Cornered," Audubon Wildlife Film Series, Popejoy Hall, 7:30 p.m.

Mar. 16—Dr. Bruno Bettelheim presented by UNM Speakers Committee, SUB Ballroom, 8 p.m.

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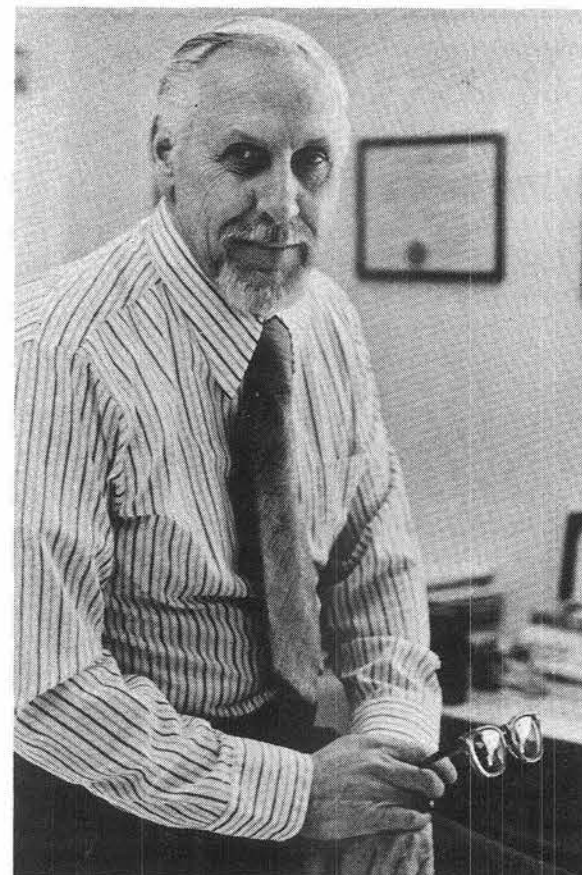
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bill laskar does picture work
so does russell smith

bruce hawkinson & lorena schneider report livermore

DOE Awards WIPP Design Contract

DOE/ALO has signed a contract with Bechtel Inc., under which the San Francisco firm will supply architect and engineering services for the proposed Waste Isolation Pilot Plant project in Southeastern New Mexico.

Under the contract, which covers services totaling \$12.8 million, the firm will provide preliminary engineering and design services for the proposed facility. At an appropriate time in the future, DOE may negotiate a contract modification with Bechtel for additional project-related services, including the detailed design of the facility. Sandia Labs is providing technical direction for the WIPP project.



Dr. Mossman Named Labs' Medical Director

Paul Mossman, M.D., succeeds Sheldon Bliss, M.D., as Sandia's Medical Director 3300. Dr. Bliss retired Feb. 28.

Dr. Mossman earned his M.D. from George Washington University in 1949. He interned at the New York City U.S. Marine Hospital and completed his residency in general medicine at San Mateo, Calif. He served as an Army medical officer in Germany from 1951-54.

Following several years of rural general practice near Sacramento, Dr. Mossman returned to school, earning a Master of Public Health degree in preventive medicine from the University of California, Berkeley in 1963. For six years before joining Sandia in 1969, Dr. Mossman was a specialist in preventive medicine for the Arabian American Oil Company in Dhahran, Saudi Arabia. He was certified by the American Board of Preventive Medicine in 1969.

"During the past few years, the medical organization has become busier," Dr. Mossman says. "We've added new equipment, tests, and programs as needed and, of course, we'll continue to do so. I do hope to continue to spend some time 'out front' with our other physicians."

Dr. Mossman and his wife Ann have four children—three in college and one working in the oil fields in the Middle East. Off the job, Dr. Mossman enjoys fishing. "I don't fish as much as I used to, but generally manage to fish a little on most of our trips." The Mossmans live in NE Albuquerque.



The New York Supreme Court recently reversed the decision of a lower court that had convicted a defendant on charges of distributing obscene films. The grounds were unusual to say the least. Under Federal guidelines, a film can only be obscene if it generates lustful thoughts in the viewer—and the jury that found the defendant guilty as charged had found the film in question to be "disgusting and repulsive." Since it elicited not a smidgen of lust, it didn't qualify as obscene and the defendant, ruled the court, was free to go.

Non-Proliferation Policy Subject of Symposium

Consequences of President Carter's nuclear non-proliferation policy will be examined in a two-day symposium, March 16-17, on the UNM campus. Featured will be a series of papers and panel discussion dealing with the theme of the symposium: "Non-Proliferation: Reality and Illusion of a Plutonium-Free Economy."

Bob Luna (5433), chairman of the symposium, explains: "The President's policy has significant impact on U.S. reprocessing and breeder reactor programs—not to mention the international fuel cycle program that depends on U.S. supplies of fissile materials and reprocessing technology. Sessions will be devoted to defining non-proliferation, examining the impact of such a policy on the nuclear fuel cycle, defining alternate fuel cycles and detailing the impact of a non-proliferation policy on New Mexico."

The symposium is jointly sponsored by UNM's College of Engineering and the NM section of ASME. Further info and details of meeting arrangements from Bob; John Andersen (5433), chairman of the NM Section of ASME; or Rich Yoshimura (5433), publicity chairman.

Take Note

VISTA is a federally funded program with a wide variety of assignments, and a representative of that agency, Bruce Allen, thought that a Sandia retiree might just be interested in a job that he describes thusly:

Full-time VISTA position. Seeking experienced individual to coordinate development of a low-technology solar demonstration program involving private, public, commercial, and educational solar energy groups. Immediate responsibility for solar greenhouse workshops and Sun Day activities.

It pays. If you're interested, send a resume to: Bruce Allen, 301 Menaul NE, Albuquerque, 87107.

* * *

Paul Robertson (1758) was recently elected chairman of the New Mexico State Technical Education Advisory Committee. The committee advises the state Director of Vocational Education on matters relating to the post-secondary programs leading to careers in technology. Paul is also serving this year as president of the NM Chapter of Phi Delta Kappa, a professional educational fraternity.

* * *

The Air Police on Base have a beef: motorists who neglect to scrape snow and ice off their bumper decals and then expect the guard at the gate to perform the service. When you scrape off your windows, give your bumper decal the once-over too.

Congratulations

To Dody McKelvey (3431) and Jim Hoffman (5212) married in Albuquerque Jan. 27.

The State of the Labs

work more than holds its own because of its high technical challenge. The fact is that weapons *are* complicated, and work on them requires use of very sophisticated tools and methods of analysis."

How about the B77 program at SLL? Is it being cancelled?

"Not really. Funds for B77 production are not included in the President's budget for FY79. However, we'll continue development work on the B77 at a reduced level. In the meantime, in lieu of the B77, we've been asked to undertake a modernization of the B43. Updating of the older weapon will be less costly than new production of the B77. Aside from some reassignments, I don't see any major effects resulting from the altered status of the B77."

Is Sandia being "micro-managed" by agencies in Washington? That is, is there ever greater, more detailed direction of our work?

"We have seen a trend in that direction, particularly in energy programs, and it's worrisome. Ideally, the Washington offices develop overall program guidance and leave both management and technical decisions to the laboratories they've hired to do the job. The DOE office of Military Application has been working effectively with us for years on that basis; unfortunately, the same isn't true with some other Washington program managers—there's increasing involvement in our day-to-day work."

What about WIPP [the Waste Isolation Pilot Plant in Carlsbad]? We seem drawn into the role of advocate whether we wish that role or not.

"That's true, but that's a role we must not assume: we have to retain our objectivity. WIPP is controversial and hotly debated. Unfortunately, much of the debate is based on inaccurate or non-factual information. I feel that our job is to provide factual information and to limit our comments to our sphere of expertise. However, the state and the nation must face the tough question—if we are to have nuclear power, what is to be done with radioactive wastes?"

What will be the principal elements of our weapons work for the next few years?

"I believe our weapons work will be chiefly in the areas of command and control, safety, security, survivability and

in minimum cost. Emphasis today is not on weapons with bigger effects, but rather on safer ones that are even less likely to experience an unintended detonation. Incidentally, there has never been an accidental nuclear detonation of a U.S. weapon. Most of today's weapons are less powerful but more precise instruments designed for use against military targets."

Sandia probably has the largest R&D budget for solar energy in the nation. Do you see any "homeruns" on the energy horizon?

"No, not in the solar area, nor for that matter in the other energy areas as well. What we're learning is that these alternate energy sources—the sun, the wind, geothermal and the like—will only augment existing energy systems. Each is likely to contribute only a small percentage, but in their total the amount will indeed be significant in the national energy picture."

"Fusion by particle beams is one Sandia program that does have a high potential payoff. Our new E-beam facility is designed for application in the weapons program and, at the same time, it represents this country's largest commitment to energy from fusion by the electron beam approach to inertial confinement. This work is very exciting, but any substantial energy payoff—if it occurs—is many years in the future."

In the next five or so years many of the old guard at Sandia will be retiring. How will this affect the Labs?

"After three decades of existence, we're becoming a mature company in terms of numbers of retirements. We'll lose many valuable employees through retirement in the next few years, but the other side of the coin is the widening opportunities that come as a result of these retirements. They will mean promotions and challenges for new employees."

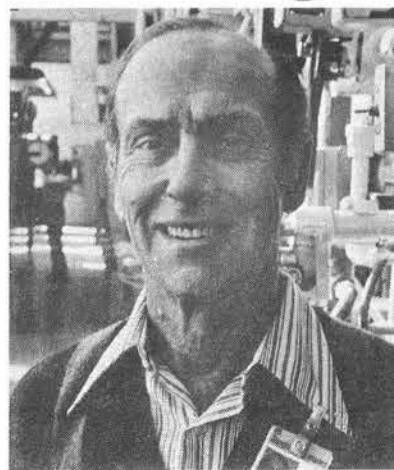
At the last department manager's conference, one item strongly endorsed was that the Labs should do more to promote physical fitness of employees. What is your view of this subject?

"I expect we could do more. It's certainly true that a serious concern for physical fitness has become a national trend. I endorse that attitude and try to keep fit myself. It's not clear how far the company should go in this basically personal area, but I'll be attentive to any suggestions by our medical people."

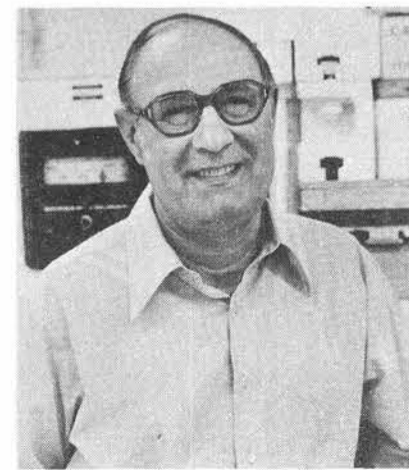
Retiring



Robert Carleton (3425)



Vincent Domme (9711)



George Mancuso (9573)



Jean Stuart (8256-2)

Supervisory Appointment

JEAN STUART to supervisor of Stock Control, Office Equipment and Material Processing Section 8256-2, effective Feb. 1.

Joining Sandia in 1961, Jean worked as an administrative secretary in Purchasing for a year before transferring to the Receiving organization. There she has processed reports of incoming material and resolved nonroutine receiving problems. Previously, she worked with the Army in Missouri and the Federal Housing Authority in Kansas.

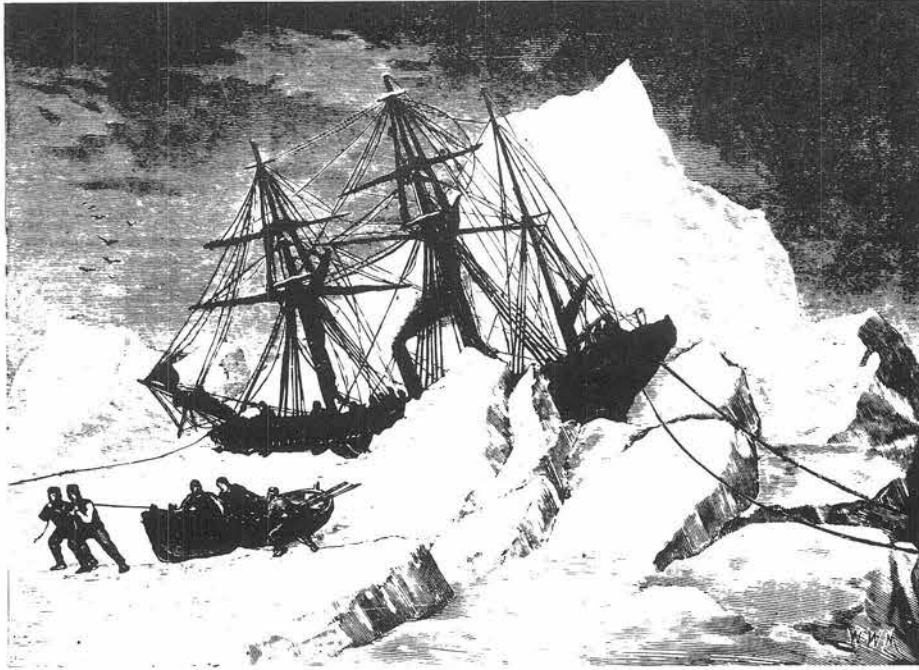
A business school graduate, Jean is active in the Livermore chapter of the American Business Women's Association. She also serves as a volunteer with the American Cancer Society's Reach to Recovery Program, a rehabilitation program for women who have recently undergone mastectomies.

Off the job, Jean enjoys all types of outdoor activities, especially hunting, boating and camping. She and her husband Frank (LLL) live on Lincoln Avenue in Livermore. They have two married daughters and two grandchildren.

Retiring



Norm Sinnott (8413)



LLLRA's Sailing Club makes occasional weekend trips.

At Livermore Labs

Let's Recreate

A new listing of recreational activities has been compiled, and copies are now being mailed to employees. The listing includes about 40 different clubs sponsored by LLL's Recreation Association which SLL employees are eligible to join. For a membership card (cost \$1), see Jill Green in Division 8214 (Mobile Office #4). Members have access to the recently renovated LLL olympic-size swimming pool which is now open for noontime use.

In addition, LLLRA members get discount prices on such items as luggage, TVs, stereos, watches, and cutlery. Some of these items are on display in the LLLRA office located in Bldg. 317, Rm. 100. Of special interest are upcoming travel of-

ferings—a "Cinco de Mayo" trip to Mazatlan on May 4; a Sun Valley, Idaho, summer vacation, July 1; and a Tahiti "Club Med" tour on Aug. 12.

At Sandia, Benefits Division 8214 has a supply of sports equipment (mostly basketball and softball items) which may be checked out. Basketball, softball, bowling and golf leagues are sponsored by the Labs.

Of interest to golf enthusiasts is the upcoming summer twilight league, scheduled to begin the end of April. Signups for the co-ed slo-pitch league will be held in mid-April. League games are played directly after work on SLL's baseball field.

Speakers

Ralph Cozine (8160), "Metrication in the DOE Weapon Complex," National Machine Tool Builders Association Conference sponsored by DOE, Oct. 11-12, Atlanta, Ga.

Carolyn Kramer (8313), "Dissociation of Molten Nitrates and Nitrites," Pacific Coast American Ceramic Society Meeting, Nov. 1, Los Angeles.

Bob Bastasz (8347), "Auger Study of Surface Carbon and Oxygen on Thorium Following Ion Bombardment," American Vacuum Society National Symposium, Nov. 10, Boston.

Al West (8315), "Engineering Applications of Surface Analysis Techniques," invited presentation, Surface Science and Catalysis Science Seminar, Materials and Molecular Research Division, LBL, Nov. 23, Berkeley.

Monte Nichols (8313), "Direct Contact Heat Exchange for Latent Heat-of-Fusion Energy Storage Systems," International Conference on Alternative Energy Sources sponsored by the University of Miami and DOE, Dec. 6, Miami.

Bob Bastasz (8347), "Ion Impact Desorption of Adsorbates on Metal Surfaces," invited presentation, Surface Science and Catalysis Science Seminar, Materials and Molecular Research Division, LBL, Dec. 7, Berkeley.

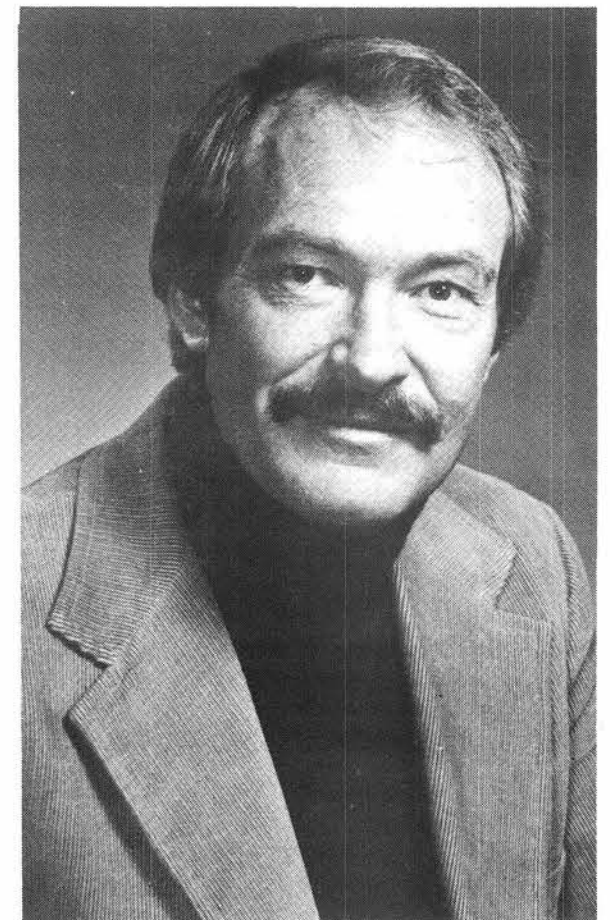
Dan Hartley (8350), "Basic Combustion Research at Sandia," invited presentation, Seminar at Argonne National Laboratories, Dec. 15, Argonne, Ill.

Bill Ashurst (8354), "Numerical Simulation of Fluid Motion in a Four-Stroke Piston-Square," Annual Meeting, American Physical Society, Jan. 23-26, San Francisco.

Ken Hicken (8423), "Principles and Applications of Electron Beam Welding," Society of Manufacturing Engineers Meeting, Jan. 19, San Francisco.

Rick Wayne (8130), "Overview of Sandia's Solar Program," Exchange Club meeting, Jan. 12, Pleasanton, Calif.

Ron Hafner (8252), "The Monitoring System of a Tritium Research Laboratory," Health Physics Society meeting, Jan. 17-19, San Diego, Calif.



LIVERMORE BOUND—Bill Spencer, present Director of Microelectronics 2100, becomes Director of Systems Development 8100 on April 1. A Bell Labs Alumnus, he was Director of University Relations and Technical Employment at Murray Hill before joining Sandia in June 1973. Bill is a Fellow of the IEEE. He gained MS and PhD degrees, in mathematics and physics, from Kansas State University.

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Down Under Down Under

Hardesty Visits Australian Coal Experts

Even the ancients knew that some rocks can burn. What they didn't know—and what modern industrial technology *still* doesn't know—is how to optimize that burning. Briefly, that's why Don Hardesty went to Australia and New Zealand last fall.

Don's Coal Combustion Division 8353 is responsible for a program in coal combustion research sponsored by DOE's Division of Power Systems, Power and Combustion Branch. One program task is to assess present needs and future requirements for basic research into the combustion of pulverized coal. "One major objective," says Don, "is to assist DOE in deciding where to put its coal research funds. At this point, we're about midway through our survey of coal research in the U.S. I went to Australia because most of its electricity is generated by burning pulverized coal. So it's a good source of real-world information on coal combustion because the Australians have devoted considerable time and money to understanding coal combustion and the day-to-day operation of power plant boilers. New Zealand is important because the New Zealanders have done a lot of work on smaller pulverized coal systems for industrial power."

During Don's 20-day tour of the Down Under coal country, he discussed pulverized coal with over 50 experts. Because each particle is less than 100 microns in diameter, the fuel has the advantage of being easily entrained in an airstream and is thus transportable in a pipeline from crushing mills to the furnaces. Despite, or perhaps because of, the relative simplicity of the operation, Australia has several problems with pulverized coal combustion.

One is that some coals have high (30-40 percent) ash content. Washing or other "beneficiation" is expensive, and the electrostatic precipitators that are supposed to trap ash and other particulates too often overload.

Another problem is the high moisture content (up to 65 percent by weight) of the brown coal (lignite) found in the state of Victoria. Dried out, it's likely to burn spontaneously, so most of the moisture is retained in the coal until it's ready for use. Wet coal will ignite, but the escaping water vapor carries off an inordinate amount of heat and causes a variety of problems in the boilers.

Still another problem is that most combustion equipment is imported from the U.S. or Europe and is often not well suited to Australian coals.

Don talked at length with the people who operate the furnaces as well as with those who troubleshoot when problems

occur. He also visited university, private, and state-supported labs and discussed the research in progress there.

"Australian and American coal combustion problems are not identical," Don adds, "but we share major areas of common concern. One need in both countries is a well-calibrated engineering model of a coal-fired boiler. That would be a step toward more precise methods of predicting heat transfer and of understanding the influence of ash, soot, and gases on combustion and radiation.

"A good computer model depends, in turn, on good data—for example, on what exactly happens when a coal stream ignites and burns. What are the physical and chemical properties of the coal particles? What is the nature of the fluid mechanics and thermal environment? And what diagnostic tools will it take to provide the answers?"

The Australian engineers emphasized the need for much greater understanding of what happens when pulverized coal burns. "That," says Don, "is also a worthwhile challenge for DOE."

Sympathy

To Sandi Chrisman (8181) on the death of her father in Phoenix, Ariz., Feb. 3.

Congratulations

Lou Selder (8254) and Elssa Passos, married in Livermore, Feb. 11.

On the Personal Side

If It's Thursday, This Is Lignite

Don's Australia-New Zealand itinerary kept him at less than a leisurely pace. But he did find some free time evenings and weekends. "At first glance, it seems to be a more friendly, less reserved place than England (where he went for a post-doctoral fellowship). The cities are attractive; I really enjoyed the many botanical gardens—spring-time down there, of course.

"I didn't have time to see much open space, much less the Outback, but I did visit a restored 'homestead' out in the 'bush' near Canberra. It was an authentic look at what we'd call a ranch headquarters of 70 years ago.

"My host in Canberra lived very near the edge of the city, but he told me he'd never seen any wild animals around. He was a bit chagrined when I told him I'd taken a short walk and seen five kangaroos, one with a joey in her pouch, just over the hill from his house.

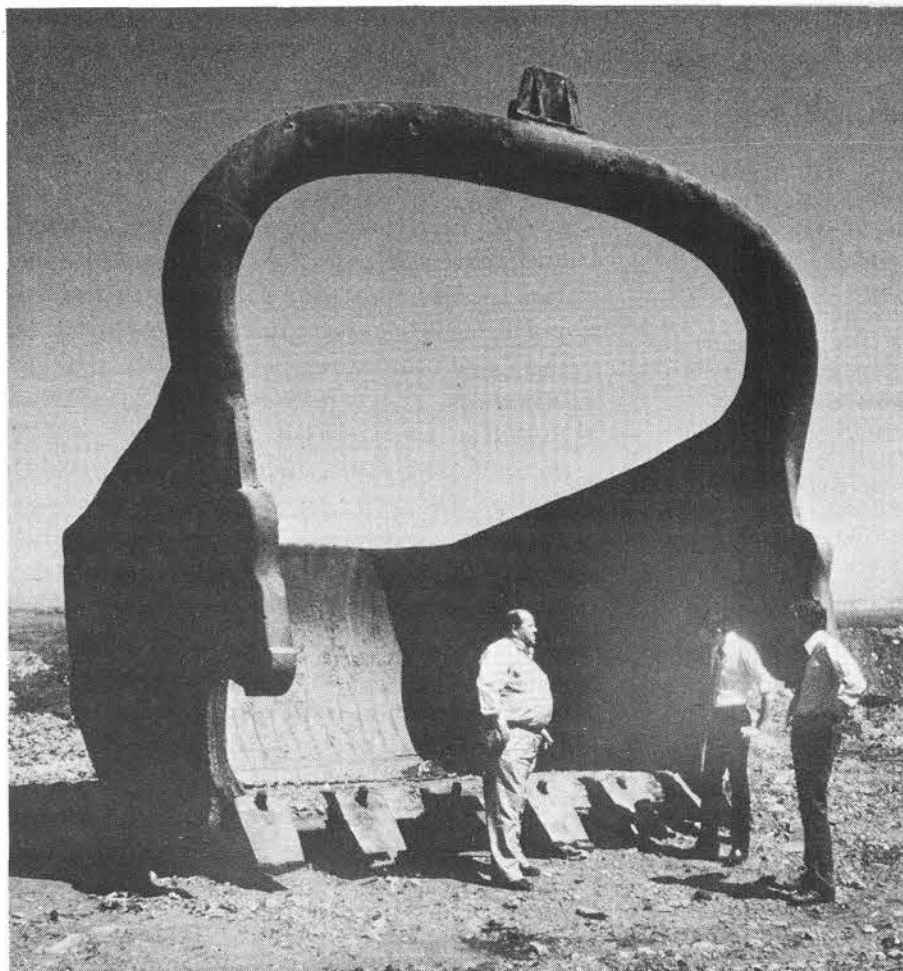
"We played tourist only one night when five of us took a two-hour cruise of Sydney's harbor. It's a beautiful city.

"Yes, I enjoyed what little I saw of Australia. I'd like to go back someday and visit places other than strip mines."

Authors

Charles Hartwig (8342), "Bound Hydroxyl in Vitreous Silica," JOURNAL OF CHEMICAL PHYSICS, Vol. 67, p. 4260-61.

Mike Soderstrand (8159) and E. L. Fields (UC/Davis), "Multipliers for Residue Number Arithmetic Digital Filters," ELECTRONICS LETTERS, Vol. 13, No. 6, pp. 164-66.



THE BUCKET in an open pit Australian coal mine is examined by Don Hardesty of Coal Combustion Division 8353. Don made recent tour of Australian and New Zealand coal facilities.

Speakers

R. M. Jefferson (5430) and H. R. Yoshimura (5433), "Crash Testing of Nuclear Fuel Shipping Containers," and "Integrated Nuclear Fuel Shipping Cask Testing Program," Transportation of Hazardous Materials Committee meeting, Jan. 25, Washington, D.C.

P. J. Slater (5121), "Structure of the k-Centroids in a Tree"; G. J. Simmons (5120), "Almost All n-Dimensional Rectangular Lattices are Hamilton Laceable," 9th Southeastern Conference on Combinatorics, Graph Theory and Computing, Jan. 30-Feb. 2, Boca Raton, Fla.

J. R. Brandon (5335), "Parasites in Soil/Sludge Systems"; M. E. Morris and H. D. Sivinski (both 5335), "Cost and Value of Pathogen Reduction for Land Application of Sludges," Fifth National Conference on Acceptable Sludge Disposal Techniques, Jan. 31-Feb. 2, Orlando, Fla.

R. J. Baughman (5154), "Crystals and Crystal Growth," Career Enrichment Center electronics class, Jan. 5.

H. C. Monteith (5411), "ESP Research in Russia and America," Northwest Kiwanis Club, Jan. 11.

T. F. Marker (6010), "The Oil Industry: Fact and Fiction," Evening Optimist Club, Jan. 12.

R. P. Stromberg (5714), "Sandia Solar Research," American Society for Metals, Baltimore Chapter, Jan. 16.

J. A. Kenagy (9580), "Metrication Update," Society of Manufacturing Engineers, Jan. 20.

J. A. Lovato (3533), "Techniques of Campus Interviewing and Resume Writing," American Society for Personnel Administration, UNM student chapter, Jan. 31.

G. E. Tucker (3313), "Health Physics," Host Lions Club, Jan. 31.

R. M. Axline (2344), "Adaptive Reduction of Effects of Multiple Interference Sources," Digital Signal Processing Symposium, Dec. 7, SLA.

L. R. Hill (5311), "Isolation of Radioactive Wastes in Southeastern New Mexico," Jan. 18, UNM.

L. F. Shampine (5122), "Theory and Practice of Solving ODEs," invited lecture series, National University of Mexico, Jan. 23-27, Mexico City, Mexico; "Heat Transfer by Conduction and Radiation," Mathematics Colloquium, Jan. 24, National Univ. of Mexico, Mexico City, Mexico.

D. K. Brice (5111), "Channeling of Low Energy D in (110) W," Seminar, Jan. 26, LASL.

J. A. Borders and S. T. Picraux (both 5111), "Hydrogen Isotope Profiling Techniques Applied to First Wall Materials," MFE Tokamak First-Wall Coatings Workshops, Jan. 31-Feb. 2, SLA.

K. R. Prestwich, M. T. Buttram and G. J. Rohwein (all 5246), "Development of High Average Power Driver Technology for the Inertially Confined Fusion (ICF)"; J. P. VanDevender (5245), "Power Flow Studies for Fusion Oriented Particle Accelerators"; T. H. Martin, D. L. Johnson and D. H. McDaniel (all 5245), "Pulsed Power Technology for Fusion Experiments"; J. R. Woodworth and J. K. Rice (both 5215), "An Efficient, High Power F₂ Laser Near 157mm"; P. A. Miller (5244), L. P. Mix (5242), J. W. Poukey (5241), and T. P. Wright (5231), "REB Pinching, Transport and Combination in Plasma Channels for ICF"; J. R. Asay (5167), "Mass Ejection from Shocked Surfaces of Lead"; L. P. Mix, F. C. Perry and A. J. Toepfer (all 5242), "Measurements of Material Response and Implosion Dynamics of ICF Targets"; C. W. Mendel and S. A. Goldstein (both 5244), "Electron Beam Pinching From Discrete Large Diameter Cathodes"; R. J. Leeper (5242) and J. Chang (5244), "Scintillator-Photomultiplier Response to a Simulated REB Generated Thermonuclear Neutron Pulse"; A. V. Farnsworth, M. M. Widner (both 5241), J. Chang, R. J. Leeper (both 5242), L. Baker (5241) and J. N. Olsen (5244), "Particle Beam Targets Containing Preheated Fuel and Magnetic Fields"; A. J. Toepfer (5242) and W. Tiffany, "Stability of Multiple Shell ICF Capsules"; J. L. Mitchiner (5742), "Parametric Analysis of a Relativistic Electron Beam Reactor"; T. D. Padrick, R. E. Palmer (both 5215), M. E. Riley (5211) and M. A. Palmer (5214), "The Effects of Gain Saturation on the Beam Quality of a High-Powered Atomic Iodine Laser"; J. P. Hohimer and P. J. Hargis (both 5216), "Intracavity Selective Absorption Spectroscopy as an Analytical Technique for Iodine Radioisotope Detection"; A. Owyong (5214), "CW Coherent Raman Gain Spectroscopy"; R. A. Gerber, G. N. Hays, J. M. Hoffman, E. L. Patterson and G. C. Tisone (all 5212), "Energy Extraction and Beam Quality Measurements of a High Energy HF Laser"; J. Chang, G. W. Kuswa and C. W. Mendel (all 5244), "A High Resolution Time Resolvable Flash X-Radiography System"; S. Humphries (5244), "Intense Pulsed Linear Ion Accelerators for Inertial Fusion," Inertial Confinement Fusion meeting, Feb. 7-9, San Diego.

The Directorates

5400: Nuclear Fuel Cycle Programs

When the Nuclear Regulatory Commission (NRC) approves a license for a nuclear reactor, their decision, in part, could be based on data supplied by Sandia's Nuclear Fuel Cycle Program Directorate 5400.

"Since 1974," says Bill Snyder, 5400 Director, "we've supported NRC with research and analyses on safety issues relating to the commercial use of nuclear power. We study all phases of the fuel cycle to improve answers to that all-important question: 'What's the risk?'"

While the role of 5400 has remained much the same over the years (even as AEC

became ERDA became DOE), significant changes have taken place in the way the nuclear power program is regulated. "In a manner of speaking," Bill points out, "The AEC Commissioners were a little like both defense lawyers and jury. They had one staff which promoted commercial nuclear and, at the same time, had another staff which supported them in exercising licensing power."

"When AEC became ERDA, licensing was transferred to the newly created NRC on the premise that public interest would be better protected if the government's leading proponent of nuclear power wasn't also its safety watchdog. NRC has the responsibility to protect the public's health, safety and welfare in matters relating to commercial nuclear power. We provide technical evidence which NRC needs to make decisions on licensing applications."

"Our largest single program for NRC—a program involving one third of our efforts—deals with the safety of advanced reactor systems," says Bill. "Current emphasis is on the LMFBR (liquid metal fast breeder reactor). Changes in national policy could cause shifts in research, but our current agreement with NRC on advanced reactor research is specifically aimed at the LMFBR."

"Another component of our reactor safety research deals with light water reactors. There are 65 of these on-line now, with approximately 125 projected to be in operation before 1985. We're developing data by studying hypothetical accidents which could result from hardware failure, human malice or error and from natural events like floods or tornadoes. Our goal is a data base that will permit accurate prediction of the results of untoward nuclear events. With such a data base, you can devise safety measures to minimize risk."

"Terrorism and its consequences have



5400 Director Bill Snyder and Sharon Daniels (5412) discuss interactive computer/display program used to study optimum methods of security for nuclear power plants.

been under study since the beginning of the program. None of the light water reactors was designed with the current emphasis on security, so we're looking at ways to protect these plants against sabotage and attack. Using computers and interactive graphics, we're analyzing the effectiveness of additional barriers to deny access, and in future plants of even changing the configuration of the plant to improve plant defenses."

Transportation is another phase of the nuclear fuel cycle that receives major emphasis. Recently completed were the PARC (plutonium accident resistant container) program and the full-scale crash test program. PARC demonstrated a container design that will survive air crashes and other modes of transportation accidents. The full-scale truck and train crashes showed that shipping containers designed to transport spent nuclear fuel will survive highspeed truck and rail crashes and fire.

In FY 78, NRC funding in 5400 totals approximately \$18 million, and several hundred Sandians work on the safety aspects of power plants and transportation systems—as well as on the overall environmental impact of nuclear energy.

Sympathy

To Charles Johnson (1754) on the recent death of his mother-in-law.

To John Zimmerman (5711) on the death of his father in Tucson, Feb. 13.

To Vanessa Haggerty (5710) on the death of her father in Paris, Texas, Feb. 10.

To Wally Granfield (1730) and Rick Granfield (2351) on the death of their mother and grandmother in Minneapolis, Feb. 13.

Solar Does Power, Heat, Cooling For Bldg. 832

The nation's first solar total-energy facility to produce and use both electrical and thermal energy is nearing completion at Sandia with installation of two additional solar collector fields.

The solar facility, operated by Sandia for DOE, is used to subject components, such as solar collectors developed by private industry, government contractors and research organizations, to extensive testing in both a laboratory environment and under actual operating conditions.

The Solar Total-Energy Test Facility at Sandia produces 32 kilowatts of electricity and some 200 kilowatts of thermal energy. Thermal energy from solar collectors is used to drive a turbine/generator to produce electricity. Exhaust heat downstream from the turbine/generator, usually discharged as waste heat, is used for space heating or air conditioning.

The facility produced its first electricity in March 1976, used low-grade thermal energy to operate an absorption air conditioner in June 1977 and, since then, has produced both electricity and heating or cooling for nearby Bldg. 832, a 12,000-square-foot building.

The Sandia-designed parabolic trough collectors now in use have reflective surfaces of aluminized Teflon laminated to Mylar and bonded to aluminum sheet. The collectors focus sunlight onto a black chrome-plated receiver tube sealed in evacuated glass tubing. Collector orientation and fluid-flow through the receiver tubes are controlled by a minicomputer.

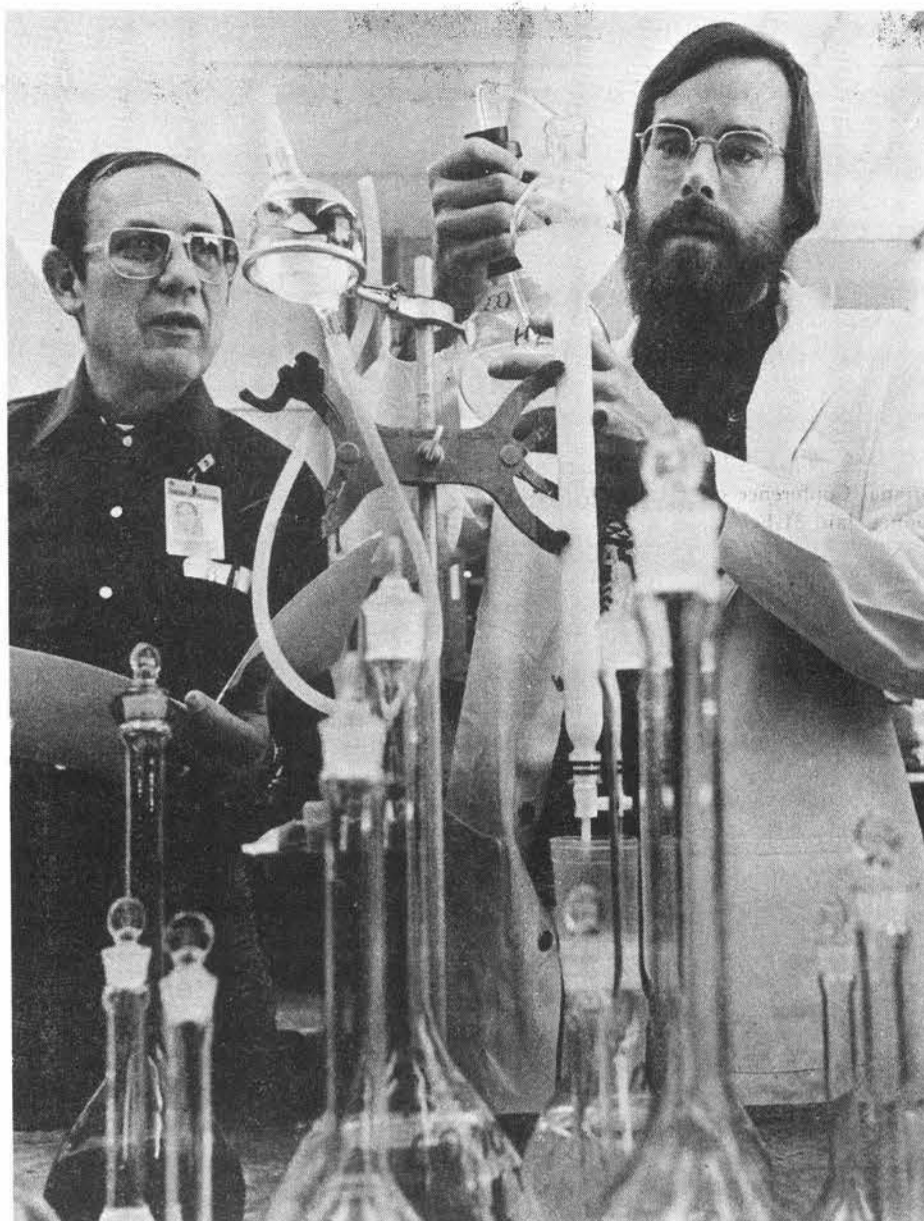
Collectors designed and fabricated by General Atomic and Suncor Systems are now installed. Raytheon has designed a parabolic dish collector, soon to be installed.

General Atomic has installed 2800 square feet of fixed mirror collectors. Each collector consists of a precision-cast concrete trough with silvered glass facets which focus the sun's rays on a suntracking receiver tube. A sun sensor activates a tracking motor which keeps the receiver tube in the concentrated sunlight.

Suncor has installed 2800 square feet of collector arrays which have mirrored slats that track the sun and concentrate solar radiation onto a fixed receiver assembly. This system also uses a sun sensor to activate a motor-driven tracking system.

Technology developed here will be applied in the near future to large-scale experiments and demonstrations as part of the national Dispersed Power Systems Program. Upcoming projects include solar total-energy systems for a 1500-man barracks complex at Fort Hood, Texas, and a light industrial plant in Shenandoah, Ga. Other experiments involving apartment and office buildings, industrial plants, shopping centers, and hospitals are in the planning stage.

Jim Leonard is supervisor of Sandia's Solar Total-Energy Test Facility Division 5712.



CHEMISTS Bernard Kenna & Kevin Murphy.

New Process Leads To Useful Isotope From Radioactive Waste

Sandia's program to convert sewage sludge into a useful product through irradiation has gained a boost as a result of work done by chemists Bernard Kenna and Kevin Murphy (both 5824).

The team has developed three methods of separating radioactive cesium-137 from high-level liquid radioactive waste (HLLW). When cesium-137 is separated in relatively pure form, it can be converted directly into a valuable, insoluble radiation source—of prime importance for sewage sludge sterilization. The sterile sludge can then be used as a fertilizer or even a feed supplement for ruminant animals.

Sodium zirconate, a material developed at the Labs for the solidification of high- and intermediate-level radioactive wastes, is the basis of the new separation techniques. Although the process is in an early stage of development—most of the laboratory tests have involved HLLW simulant—the Sandia scientists say the separation techniques offer economic and processing advantages over other well-known methods of obtaining relatively pure cesium-137. Early tests also show that 70 to 100 percent of the cesium in HLLW could be recovered, depending upon the technique used.

Sandia is conducting a major program to determine ways of treating sewage sludge with cesium-137, and a pilot facility to explore the economic and scientific aspects of such a process will be built at the Labs this year.

Two of the three separation techniques being studied—breakthrough and sorption/wash—are quite similar. A column is

packed with sodium zirconate, and HLLW simulant is then passed through this packed column. The sodium zirconate has a high affinity for all transuranic and fission product elements except cesium. Thus, in both processes, cesium-137 passes through the column and can be collected in pure form while the other elements remain in the column. The distinction between the two techniques derives from the method of passing HLLW through the column, either on a continuous pour basis or as one discrete batch. With continuous pour, 70 to 80 percent of the cesium is recovered; 80 to 100 percent can be recovered with the latter method.

In the third method developed at Sandia—batch equilibration—a known amount of sodium zirconate is placed in a container, and HLLW simulant with a known amount of cesium-137 is added. The container is then put on a shaker. After the solution and sodium zirconate have been agitated for the prescribed time—24 to 48 hours—the cesium is filtered out of the resulting slurry.

Tests have shown that 75 to 95 percent of the cesium-137 is recovered using this method. A drawback is that the cesium can become contaminated with other HLLW elements.

Laboratory-scale experiments continue. Experiments at Oak Ridge National Laboratory with real HLLW—obtained by dissolving a portion of an irradiated fuel pin in nitric acid and subjecting the solution to Purex processing—have shown the same results as those in which simulated HLLW is used.



ROSCOE CHAMPION (5712) displays part of his Santa Fe Railroad calendar art collection with an American Indian theme. The collection is complete from 1921 through 1978.

Santa Fe Railroad Calendar Art

Roscoe Champion Is a Collector

Roscoe Champion (5712) collects Santa Fe Railroad calendars. Perhaps unique in American advertising, the Santa Fe (with a couple of exceptions) has distributed an annual calendar since 1907 with an American Indian theme. Some of the most renowned of American artists have contributed to the series. Roscoe's collection of

58 calendar pictures is complete from the year 1921.

"Dad was a railroader," Roscoe says, "and that explains part of my interest. But I was more interested in Indians."

Roscoe started collecting the calendars in 1945 when he was in high school in La Junta, Colo. At the time he was a member

of the Koshare Dancers, a Boy Scout troop, famous for its interpretation of Indian dances. The troop appeared in movies, at Madison Square Garden, and in performances in major cities of the Southwest.

"We made our own costumes," Roscoe says, "Leadwork, feather headdresses, arm bands, baskets—everything. And we wanted to be authentic. In those years E. I. Couse of Taos was the artist for the railroad calendars, and his work was noted for authenticity of detail. We used the paintings for references on costumes. For a good many years the Koshare troop was the primary involvement of my life. I guess that's why I'm eager even now to see each new year's calendar issued by the railroad."

Roscoe's interest extends to other areas. He has a modest collection of Southwestern paintings, pottery and jewelry. And he is also an artist creating works in mixed media—paintings combined with wood-carvings, bolo ties, jewelry, etc. His work has been exhibited in several galleries and invited shows.

"I guess this goes back to my training with the Koshare troop. We learned to appreciate craftsmanship and artistry, design and color. We also spent a lot of time in museums and art galleries."

Roscoe plans to frame his collection of calendar art "one of these days. It will probably become a project for retirement."

Meanwhile, he keeps the pictures wrapped in plastic in a cardboard box.

"The lithography is remarkable," he says, "the colors are still true, no apparent fading. I take them out of the box occasionally to enjoy them. That's why a collector collects—to enjoy his treasures."

**Bring
home
the
bacon.**



**Take stock in America.
Buy U.S. Savings Bonds.**

KAFB: For Runners & Bikers

Runners and bikers who work at Sandia enjoy an unusual fringe benefit—a road network extending south from the Base gym that's just about ideal for the pursuit of their activity. Traffic is light, shoulders are wide and maintained, and round trip distances from one to 18 miles are available.

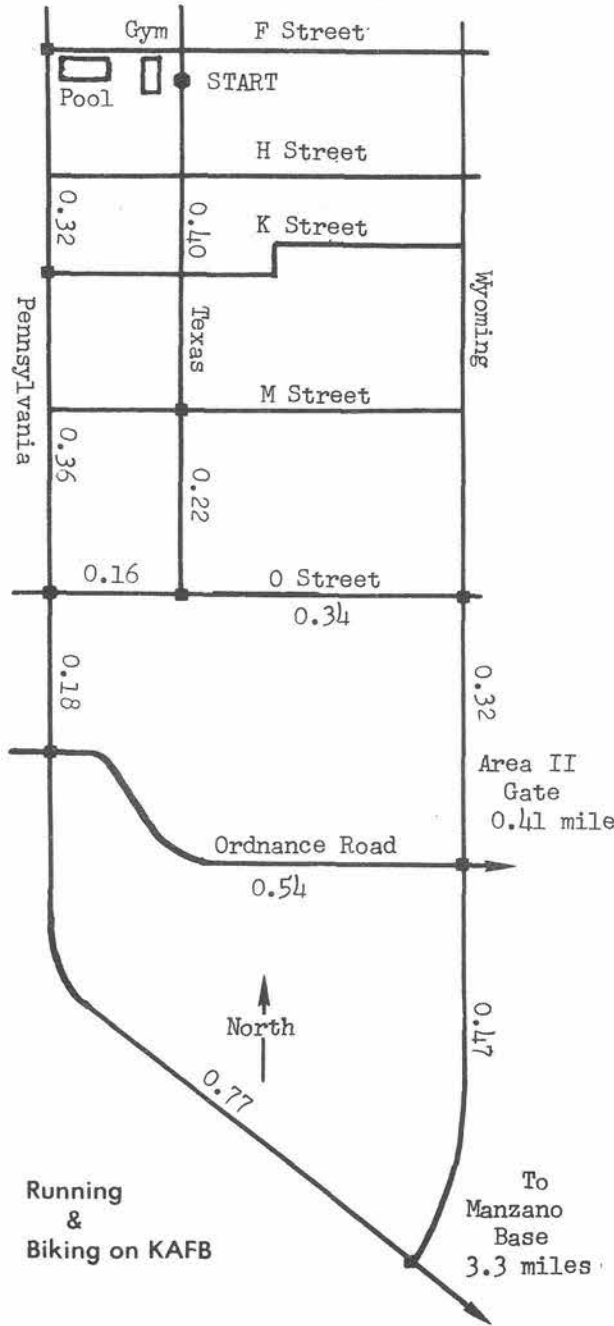
The map that accompanies this article shows principal running courses south of the gym. We have fairly high confidence in the figures, as they were compiled using a calibrated odometer. In general they represent the "inside" track, i.e., the shortest route. Here are a few courses:

Total Mileage	Course
1.1	S to "M", W to Penn., N on Penn. & return to gym
1.6	S to "O", W to Penn., N on Penn. & return to gym
2.8	S to "O", W to Penn., S to Ordnance, E to Wyo., N to "O" & return to gym
3.5	S to "O", W to Penn., S&E on Penn. to Wyo., return to gym via Wyo.
3.7	As above, but return via Ordnance Rd.

If longer courses are for you, we've obtained a scale map of the Base from the Base Engineer's office and, using dividers, have calculated distances from two intersections that you can locate on the accompanying map.

South From Intersection of Pennsylvania and Wyoming	
To	Cumulative Mileage
South end of bridge over Tijeras arroyo	.75
Golf course entrance	1.85
Turnoff to Area III	2.60
Manzano—fork in road	3.30
North end of bridge	3.90
Coyote Canyon Turnoff	4.40
Dirt road forks to west toward Power Tower	5.20
Intersection—Power Tower due west	5.95
Lovelace—pavement ends	7.15

West from Intersection of Pennsylvania and Ordnance	
To	Cumulative Mileage
Railroad track crossing	.60
Intersection—Igloo Area road	1.30
Fork (stay left)— F.A.A. turnoff No. 1	1.65
Fork (stay left)— F.A.A. turnoff No. 2	2.25
Fork (stay right)—just beyond firing range	2.55
End of pavement— South Valley Gate	3.10



These are all paved roads (with shoulders) so that bikers can follow the routes as well as runners. There are many, many miles of dirt roads on Base and, from study of the Base map, it's clear that some interesting marathon (26 mile) courses could be defined. Someday, perhaps, a Sandia marathon?

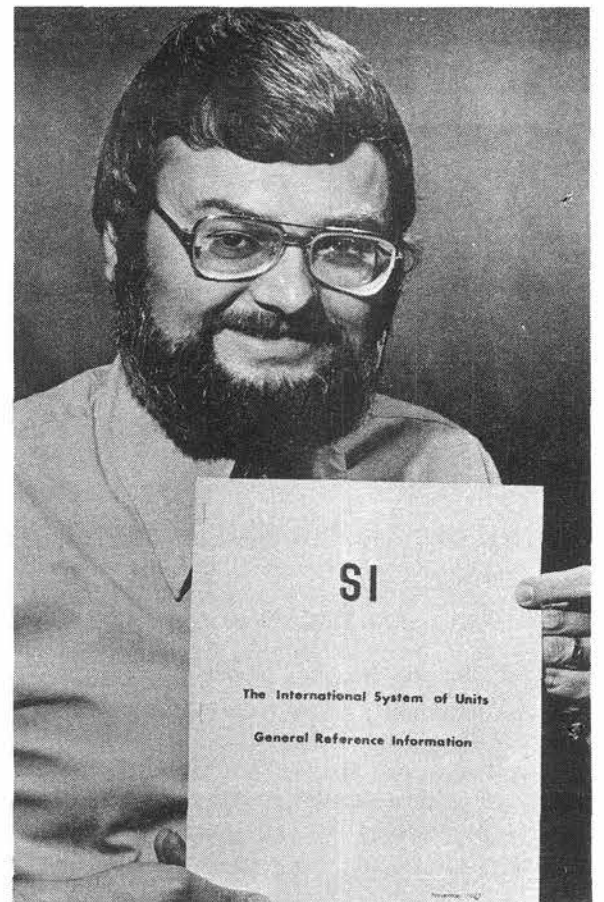
There is, of course, the quarter-mile track just north of the gym; and, if you just have to run indoors, 11½ laps around the gym make one mile. But these are pallid substitutes for the open road.

Note also Perimeter Drive, 1.7 miles, which circles the military housing area just west of the DOE complex on "K" St. On windy days you can gain some blast protection by running near the houses (but watch out for dogs).

One other point about the Base: it's high, 5352 feet. And, if you tote up aerobic points according to Dr. Ken Cooper, you gain extra credit for high altitude running. A formula has been derived to take into account this higher elevation:

Total aerobic points is equal to 42.5 times (no. of miles)² divided by the time taken in minutes.

If you're curious about other local running courses, the Base Engineer's detailed map may be examined in the LAB NEWS office.



KEN SWANSON (9636), SI metric system coordinator for the Design Information Directorate 9600, works with Labs draftsmen, engineers and machinists in promoting use of the metric system. He also presents programs on the subject to students in Albuquerque and Tonopah schools. A lover of crossword puzzles, Ken combined interests and worked out this puzzle at home. He calls it a "SI-O-Gram." The Solution is on page 16.

Find the SI units and prefixes (list below). Look for them forward, backward, horizontal, vertical, and diagonal.....35 is good.....45 is excellent and 55 is perfect.

SI-O-GRAM

P A M O N T H E L O H E C T O D
 H E C T A R E E K I L E I E A D
 A E T T N O R M L I T R E R N N
 K I N A A E T C O U L O M B U O
 E E G R U N Z E N A N O E O H C
 D I L Q Y T F I C E D E G R E E
 G R C V A G M A W A T T A R L S
 C E N T I E R T R D A L T A A N
 B L U M E N E A Z A U M C E A M
 A S H B A R D A Y O D S P I R N
 H O I I R A T K C C A N D E L A
 O E D E V B A I I P C A N D R K
 U A B O M L P L E A R J O U L E
 R E L N S E L O F E M T O R L E
 W T A E Y I N O T W E N Q O U W
 E R T E M X Z S O R C I M E X A

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SI-O-GRAM, METRIC UNITS:

ampere	deci	henry	mega	pascal	tesla
atto	degree	hertz	metre	peta	volt
bar	deka	hour	micro	pico	watt
barn	exa	joule	milli	rad	weber
becquerel	farad	kelvin	minute	radian	week
candela	femto	kilo	mole	roentgen	
centi	giga	kilogram	month	second	
coulomb	gray	litre	nano	siemens	
curie	hectare	lumen	newton	steradian	
day	hecto	lux	ohm	tera	

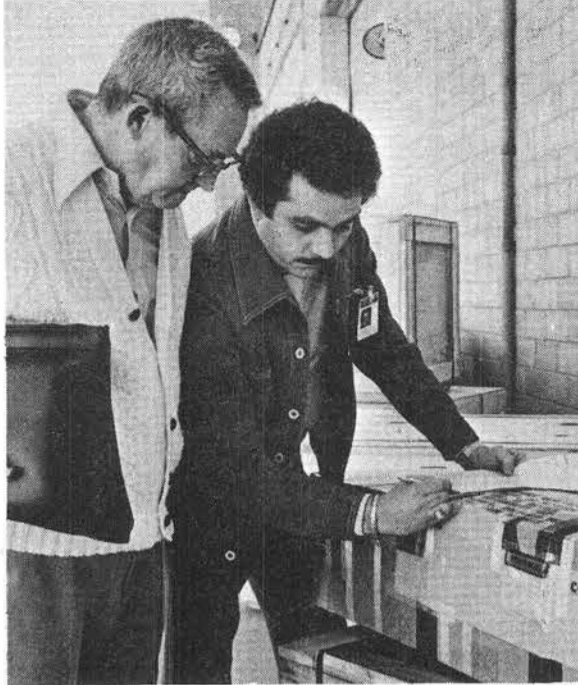


As it turns out, one cannot bite and run away... A British firebug was recently convicted on a sole piece of evidence—a half eaten Golden Delicious apple found at the scene of a fire.

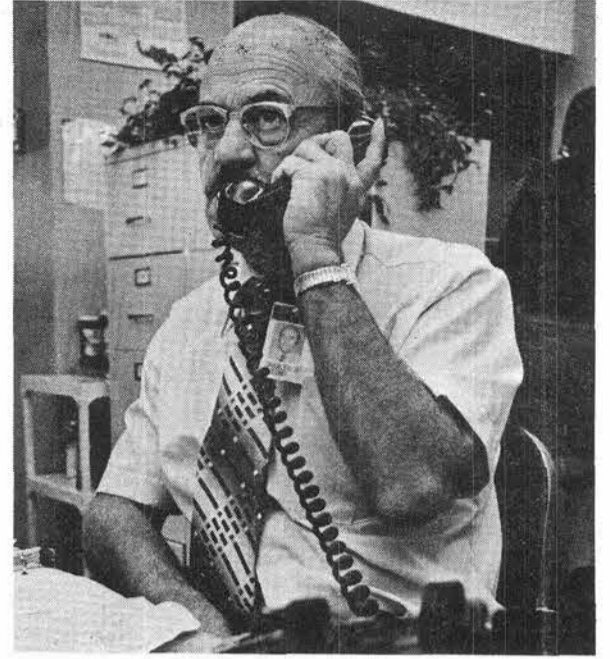
An authority on bite marks found 46 exact matches between the firebug's dental impressions and the teeth indents in the apple. As he put it: "People can lie through their teeth, but their teeth cannot lie."



TED TRUJILLO, Port Director of the U.S. Customs Office in Albuquerque, and Erwin Borkowski (3735), one of Sandia's transportation analysts, review documents required for overseas shipment. Complying with national as well as international regulations requires substantial supporting documents. It's all in a day's work for Erwin—he handles the Labs' export and import shipments.



DAN CALLAHAN (l) and PRO PADILLA (both 3735) frequently check out shipments at the Bldg. 894 shipping and receiving dock. Dan handles inbound, Pro outbound material.



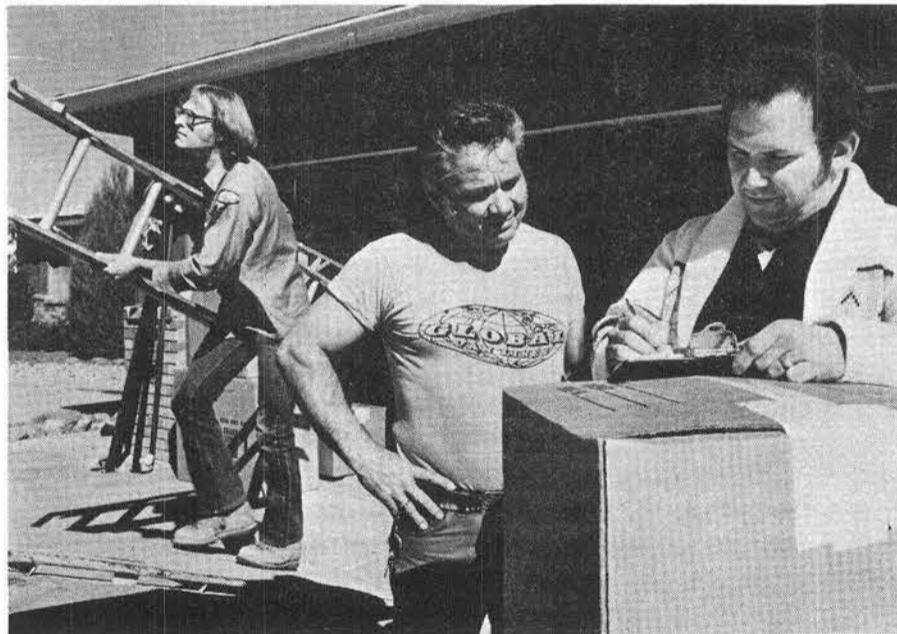
CHUCK FREUND is the traffic specialist of Division 3735. He coordinates all DOE courier shipments, and he writes the contracts for any specialized transportation requirements, e.g., movement between test sites of the locomotive used in the recent transportation accident tests conducted by Sandia for DOE.

Animal, Vegetable Or Mineral—

Traffic Management Moves

Traffic Management Division 3735 does just that—manages traffic. In FY 77 over 19,400 shipments, totaling more than 4350 tons of material were routed into or out of the Labs by the people in Ernie Bolton's division.

"It's a complex business," says traffic specialist Chuck Freund. "Our analysts work with buyers, suppliers and carriers to come up with the best solution in order to meet shipment and delivery dates. Freight movement is seldom routine. We may be scheduling classified or hazardous material which require special procedures; even common freight can give us problems. Perhaps a package is an odd size, say, a foot wider than the truck bed; or maybe the logical terminal to use for a particular shipment isn't equipped to unload it. But the job gets done, and we try to do it in the most economical and expeditious way."



DENNY GALLEGOS (r) is the people mover for Division 3735. He coordinates household moves for new hires, OYOCs, DSPs and both temporary and permanent transfers. "A move is unsettling," Denny says. "I try to make it as smooth as possible."

Volleyball—The season starts March 13 and players are needed for both the "A" (hot-shot & competitive) and "B" (co-ed & less competitive) teams. Play runs for seven weeks, and games are played between 5 and 8 p.m. at the Base gym. Contact: Al Spencer, 4-7885. Bob Giersberg, C-Club honcho, reports that officials are needed too. Call him on 4-8486 if you want to blow the whistle.

* * *

Sore feet?—Bob Giersberg at the C-Club has lined up podiatrist Dr. Bob Parks to conduct a talk plus clinic for Sandia runners, bikers and other athletes on Saturday morning, March 11, from 9:30 to noon at the C-Club. If you have, or contemplate having, foot, ankle, knee or other problems on account of your athletic pursuits, then plan to show up. It's free. Parks is well-versed on the subject, having co-authored *The Foot Book: Advice for Athletes*.

* * *

Boating—The annual boat inspection and registration will be held at the State

Fair grounds on March 11-12 and 18-19 from 9 to 4. Use Gate 9 on Lomas. Registration and inspection is required for all boats operating in the state. The operation is sponsored by the State Park & Recreation Commission. The Coast Guard Auxiliary will also be on hand to offer courtesy examinations, boating safety information and schedules for boating safety classes.

* * *

Biking—Before he retired last month, Don Bliss left with us a supply of brochures

Fun & Games

describing *The League of American Wheelmen*: "The national non-profit organization of bicyclists that is dedicated to promoting the use of the bicycle and protecting the rights of bicyclists. Founded in 1880, the LAW is not only the country's oldest bicycle federation, but the leading advocacy group today for bicyclists who are interested in touring, recreational riding, and commuting." It's a good outfit. If you want a brochure, call us on 4-1053.

Running—It's supposed to be good for you, but there's one Sandian (who prefers to remain anonymous) who has second thoughts about running. He was doing a turn around the school grounds west of the gym when a large white dog ran between his legs from the rear. In the ensuing melee, our runner fell to the ground, twisting his ankle and fracturing the fibula (the small bone behind the shin bone). The dog emerged unscathed. The Air Police commiserated but declined hot pursuit in the absence of tooth marks.

As we go to press, another horror story: A Sandia biker was zonked on the forehead by a golf ball as he cycled through Los Altos. The blow was softened by a fur cap, but seven stitches had to be taken.

* * *

Go-Karts—Mike Johnson (5216) reports that the Go-Karts will be out there again this Sunday, March 5, at the Triple T Kartway, 11,000 Central N.W., around noon. They will be racing, and spectators are invited. It's free, and the Albuquerque Kart Club is looking for new members.

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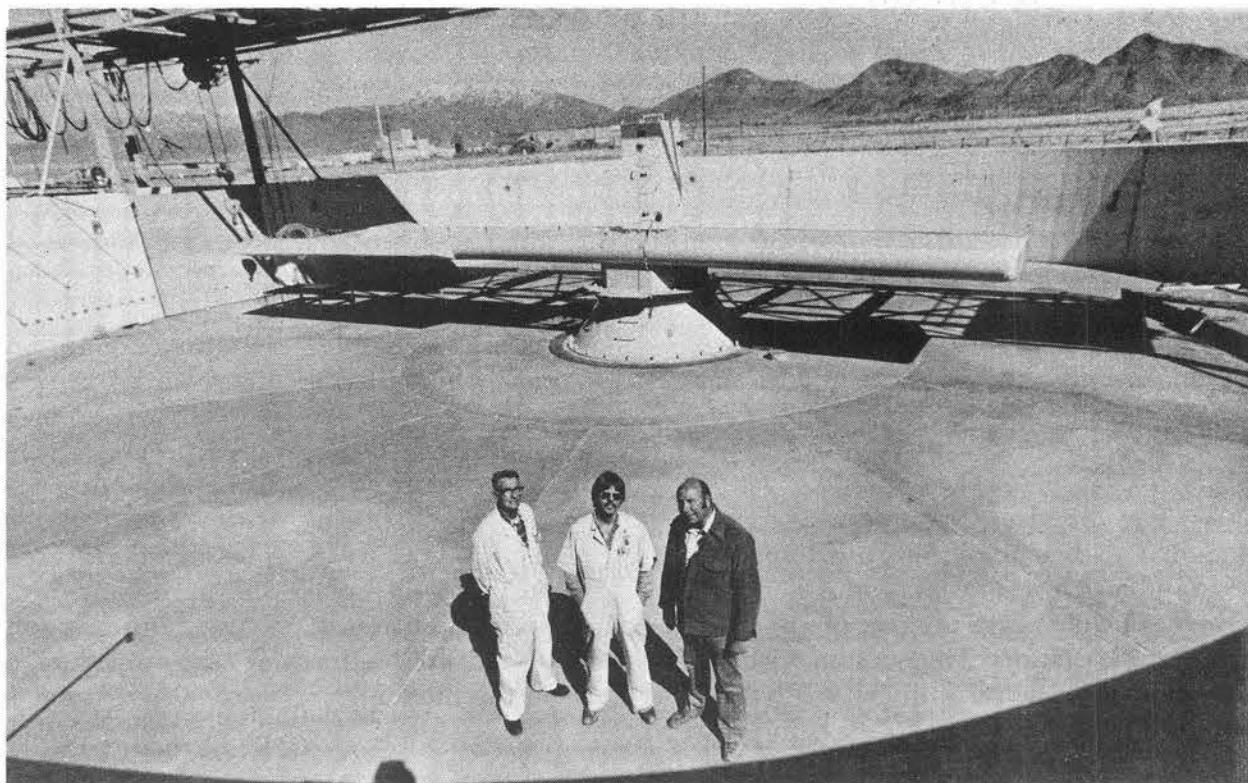
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SANDIA'S 11 METRE CENTRIFUGE facility was used recently as a sling for a series of mortar impact fuze tests into snow. From left are operators L. D. Hubbard and Chuck Draper. Don Fulton, right, is test engineer. (All are in 9331.)

Look Out, Goliath

Centrifuge Used As Sling

Little David slew Goliath with one. Using Sandia's 10.7 metre (35 ft.) centrifuge arm as a sling, David could probably knock off an Army tank.

The huge machine was rigged in this mode recently to hurl a series of 30 mortar rounds into snow. The reimbursable test program was conducted for the U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, N.H.

Purpose of the tests was to gather impact data as it related to various densities of snow, from new powder to hard pack. This data will be used in the development of a new mortar fuzing system.

Impact velocities ranging from 50 fps to 300 fps were achieved with the centrifuge spinning up to 78 revolutions per minute. Trajectories of the mortar rounds were remarkably accurate. The target box (entrance covered with a thin foil membrane to hold the snow) was only 24 inches square. Snow was packed in a styrofoam box to a depth of about one foot behind the entrance. All of the mortar rounds impacted in the center of the target.

Test engineer Don Fulton (9331) designed the release mechanism for the tests. He used a solid state trigger release incorporating a light source and a "black body" which broke the light beam at a predetermined point to energize the trigger circuit.

The mortar rounds traveled some four metres to impact into the target. An "umbilical" cord attached to the unit carried acceleration and impact data from sensors on board the unit to a computer in the centrifuge control room.

"Using the centrifuge as a sling has a number of advantages," Don says. "In the first place, it's extremely economical compared with the cost of a sled track shot. It's also quick. We can rapidly rig the centrifuge with the units and run a number of tests in one day. And, of course, we can precisely control placement of cameras and the instrumentation for data gathering."

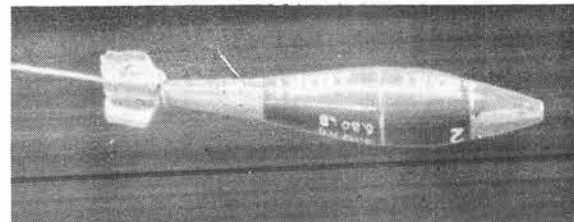


IMAGE MOTION CAMERA captures a mortar round in flight before it impacts into a target box packed with snow. Umbilical cord carries acceleration data. Unit was hurled from the 11 metre centrifuge in Area III.

John Risse (1713) first suggested using the centrifuge as a sling about four years ago, and the facility was used for a series of impact tests in the ARC (accident resistant container) program.

Chuck Wells and the men of Remote Areas Maintenance Division 9718 gathered the snow used in the tests from the Sandia Mountains. They rented a refrigerated truck to haul the white stuff and stored it in styrofoam boxes at the centrifuge facility.

Harold Rarrick (9414) is test program manager. Centrifuge operators are Chuck Draper and L. D. Hubbard (both 9331).

IEEE Meets March 10

"Microprocessors and LSI (Large Scale Integration) Technology" is the subject of the annual spring symposium of the Albuquerque Section of IEEE scheduled March 10 at the Four Seasons Motor Inn. Ed Graham (2112) is chairman of the Albuquerque Section. Dale Sparks, Sandia consultant and professor of EE and computer science at UNM, is symposium chairman.

"The program features a series of tutorial talks on microprocessor devices, operation and applications," Dale says, "so it will be a nuts and bolts—rather, chips—kind of meeting. In addition, 15 industrial exhibitors will have displays including working microprocessor systems."

Registration (\$12) will be held in the hotel lobby March 9 from 7 to 9 p.m. Call Ed, 4-6449, for more information.

feed riback

Q. Why does Sandia Management condone colloquiums like the one on Dec. 14 by Ben Abruzzo?

I am sure Ben gave an interesting talk but I certainly do not think time at work should be used by Sandia employees for such subjects.

A. The Sandia Colloquium series is intended to bring well-informed speakers to Sandia Laboratories for discussions covering a wide range of areas of interest to our technical staff. The vast majority of colloquia are scientific in nature but are not necessarily restricted to areas in which Sandia has a direct professional commitment at this time. A minority of colloquia are devoted to topics of nonscientific but wide general interest. All speakers are approved at vice-presidential level before being invited.

With specific regard to the colloquium on the attempted transatlantic balloon flight, the Colloquium Committee makes the following points:

1) The flight did involve engineering problems of interest to Sandia staff, in the areas of radio communication and balloon dynamics and design.

2) The same talk had been given at an earlier LASL Colloquium and the committee felt it would be equally or more relevant to a Sandia audience.

3) The committee prefers to maintain a flexible philosophy with regard to Sandia Colloquium topics even if it means very occasionally erring on the side of liberality.

C. J. MacCallum, Chairman
Sandia Colloquium Committee

Q. What method does Sandia use for reporting employees' earnings and withholding to the IRS? Is a computer printout or a computer tape sent? What specific information is provided on each individual [1] if taxes are withheld and [2] if he is exempt from withholding?

A. For calendar year 1977 each employee's earnings and withholding information is reported to IRS by submitting a copy of the employee's Form W-2, "Wages and Tax Statement." It is a computer-printed document containing data identical to that which appears on the employee's copy. In order to obtain the best in legible copies, the forms are prepared in two print passes. A copy of each set is attached. Boxes are self-explanatory, except for those without titles.

Box 6 is used to report the taxable insurance benefit resulting from group life insurance plans sponsored by the Laboratories.

Box 7 is used to report the amount withheld for California State Disability Insurance.

The box for name includes Sandia employee number and organization number, in addition to the required name and home address.

Box 1 is used to report the amount of Federal taxes withheld. For those employees who have filed a Form W-4 or W-4E with Sandia claiming exemption from withholding, zero is reported in Box 1:

Sandia has been granted permission by IRS to report W-2 information on magnetic tape, starting with reporting for calendar year 1978. The magnetic tape reporting will replace the hard-copy W-2 reporting currently in use. Information reported will be the same; the only change is in the medium.

C. R. Barncord—3200

Q. After reading the column in the January 6, 1978 issue of the Lab News, "The Benefits Of Recycling," it seems that recycling indeed has benefits to all. Since Sandia already does some recycling, how about a Sandia Recycling Center where Livermore employees could dispose of cans, paper and the like? The labs could cover costs through sale of the stuff.

A. The establishment of a recycling center outside the Livermore Tech Area, available for public use, isn't feasible for these reasons:

1. It would create a litter problem, which in turn would require us to provide manpower to keep the area presentable.

2. The gathering and sale of this material would be in direct competition with the Livermore Recycling Center.

Thank you for your interest in this subject.

C. H. DeSelm—8200

Q. If an employee becomes ill on a Friday evening following an earlier job-incurred injury, how should he seek medical help? How about a job-incurred injury while working overtime?

A. In answer to the first question, they should have their illness or injury treated the same as if it would happen at home or any place else over the weekend. If the incident is accepted as job incurred, then Sandia will pay the bill for whatever services were required.

In answer to the second question, in areas where employees work evening or night shifts, supervisors are aware of what measures to take. In addition, the security force, who operate the ambulance service 24 hours a day is well aware of the procedure involved in off-time accidents, injuries or illnesses that occur. Briefly, most are taken immediately to the Bataan Hospital Emergency Room.

It should also be kept in mind that a nurse is available in the Medical Department 45 minutes before normal work hours and for ½ hour after normal quitting time, in other words, from 7:15 a.m. to 5:00 p.m.

Paul Mossman, M.D.—3300

Q. Is it possible to have vacation information included in our end-of-month pay statements? This could include:

- 1] *The amount of vacation taken that month.*
- 2] *The amount of vacation remaining to be taken for the year.*

A. Your suggestion to report vacation taken and remaining eligibility on end-of-month pay statements has been considered previously. Until this month, vacation balances have been maintained on manual records, then keypunched periodically for verification. The payroll organization is now in the process of converting attendance records, including vacation balances, to a computer-based system. Computer-based records will be the first step toward more frequent verifications of vacation balances. Reporting on the pay statement would require extensive changes to computer programs and processing schedules. The data could not be current as of statement date, because monthly payrolls are prepared from one week to ten days in advance.

C. R. Barncord—3200

Q. I previously worked for a large corporation where all staff members had an annual physical examination for the benefit of the company and the individual.

I have been told almost annually that Sandia's medical department was going to launch annual physical exams for staff members over the age of fifty. When will this program be initiated?

A. Our periodic examination program is offered to all our employees according to the following schedule:

Age	Service	Interval
40 and under	5 years	4 years
41 through 49	3 years	3 years
50 to 60	None	2 years
60 and over	None	1 year

We feel that it is much better to offer this service to all employees rather than to make such a service available only to those of a certain job classification. In order to accomplish this, it is necessary to make less frequent examinations on the statistically younger, healthier age groups. At no time has Sandia ever considered providing annual examinations for staff members in only a particular age group. The arbitrary annual examination program is being looked at throughout the medical profession, and there is a great deal of data available that such frequent examinations are not as valuable as they were thought to be 10 to 20 years ago. I am sure that the individual who has raised this question would not want to have an annual examination and thereby deny some other employee this privilege.

S. P. Bliss—3300

MILEPOSTS

LAB NEWS

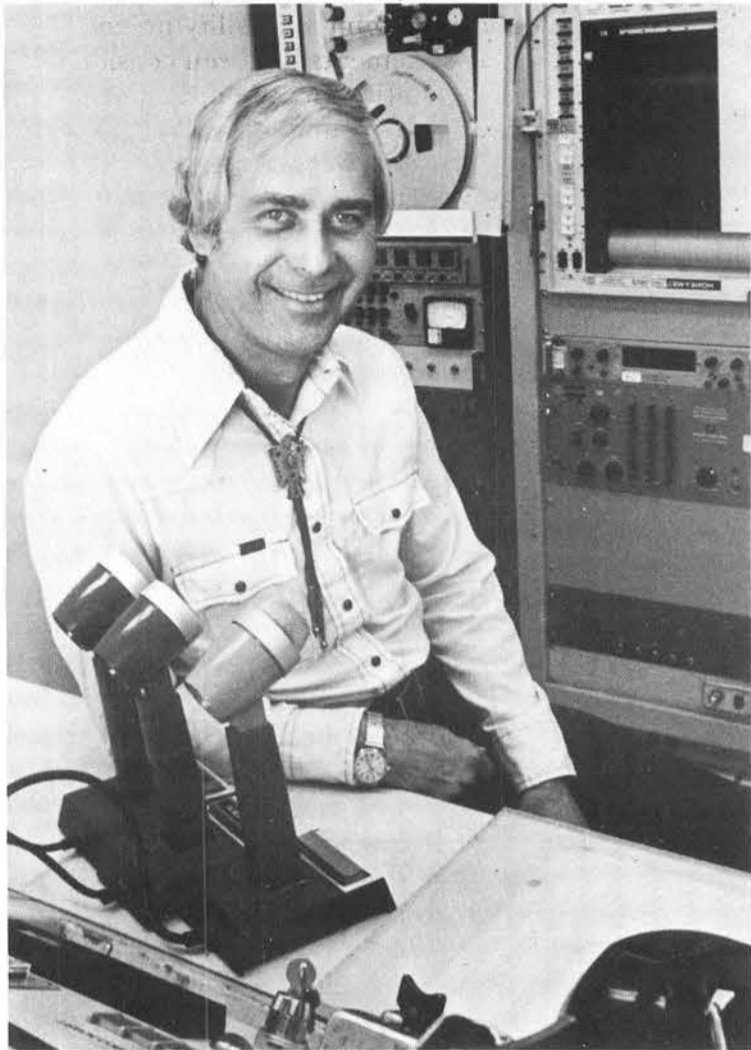
MARCH 1978



Julian Chavez - 3430 25



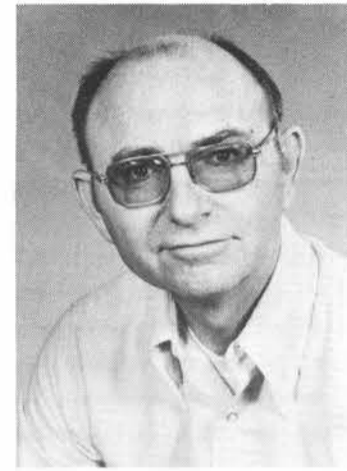
Dick Andes - 2625 20



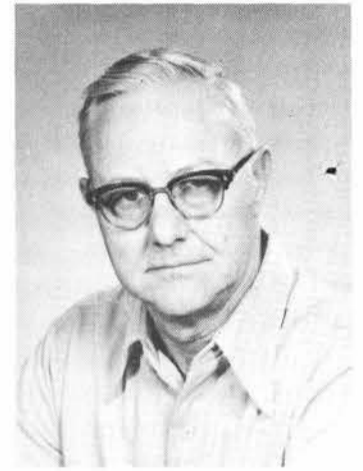
Gene Daniels - 9652 25



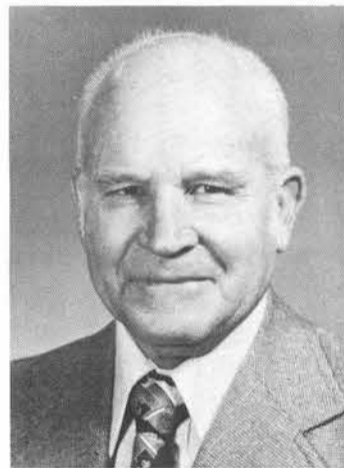
John Weydert - 1136 25



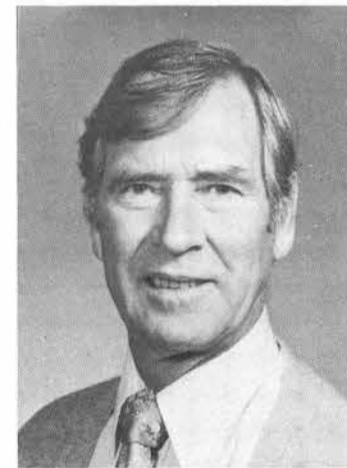
E. H. Boling - 3155 20



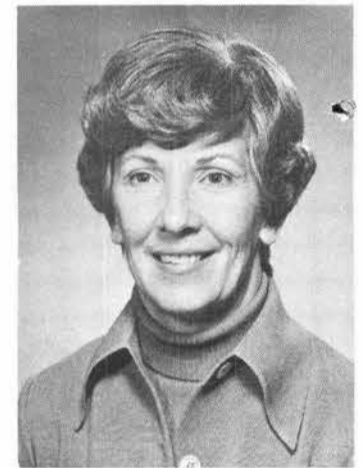
Warren Merritt - 2335 30



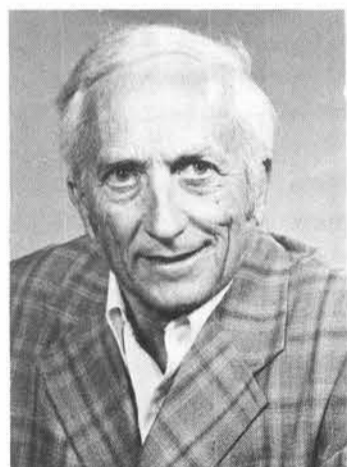
James Harrell - 9342 25



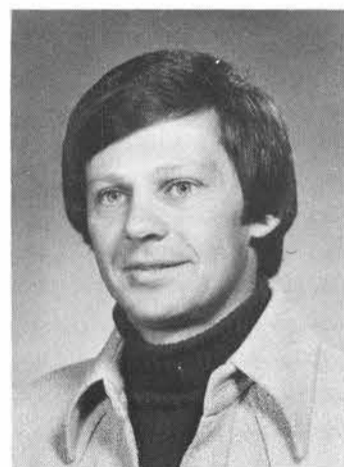
Harry Olson - 2145 25



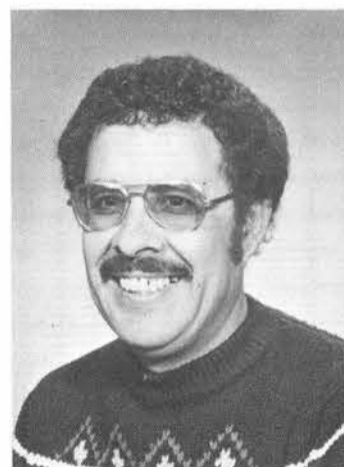
Eve Baughman - 4010 15



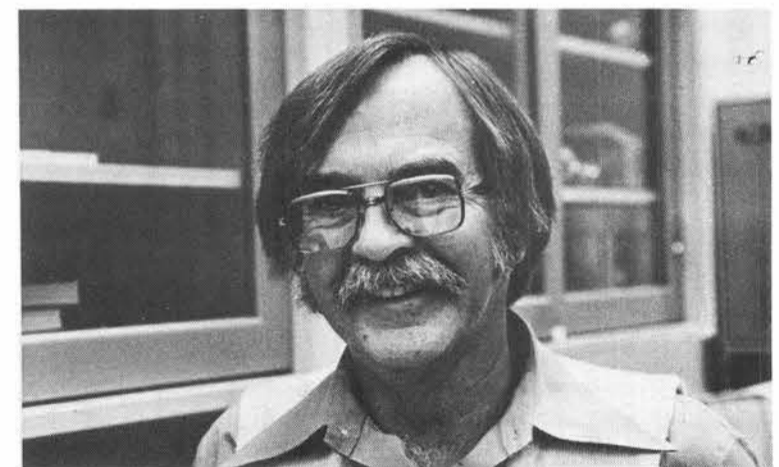
Herbert Webster - 2551 25



Ward Bower - 2167 15



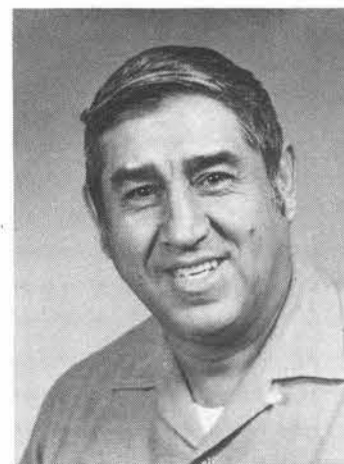
Jose Gutierrez - 3413 15



Lial Brewer - 3311 15



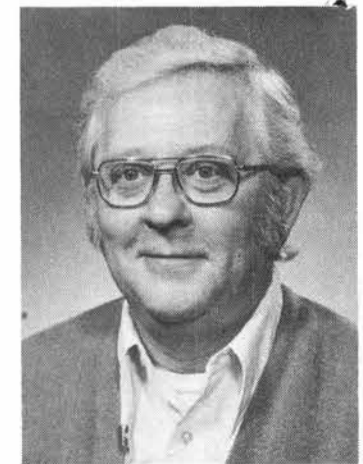
Bill Otero - 3423 30



Charles Garcia - 3421 30



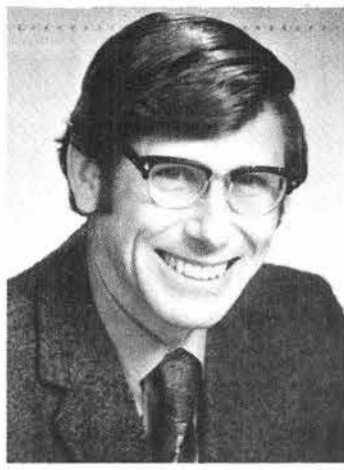
Vernon Easley - 9753 20



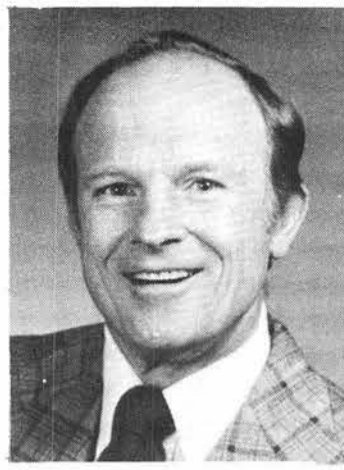
Cliff Magnuson - 1282 25



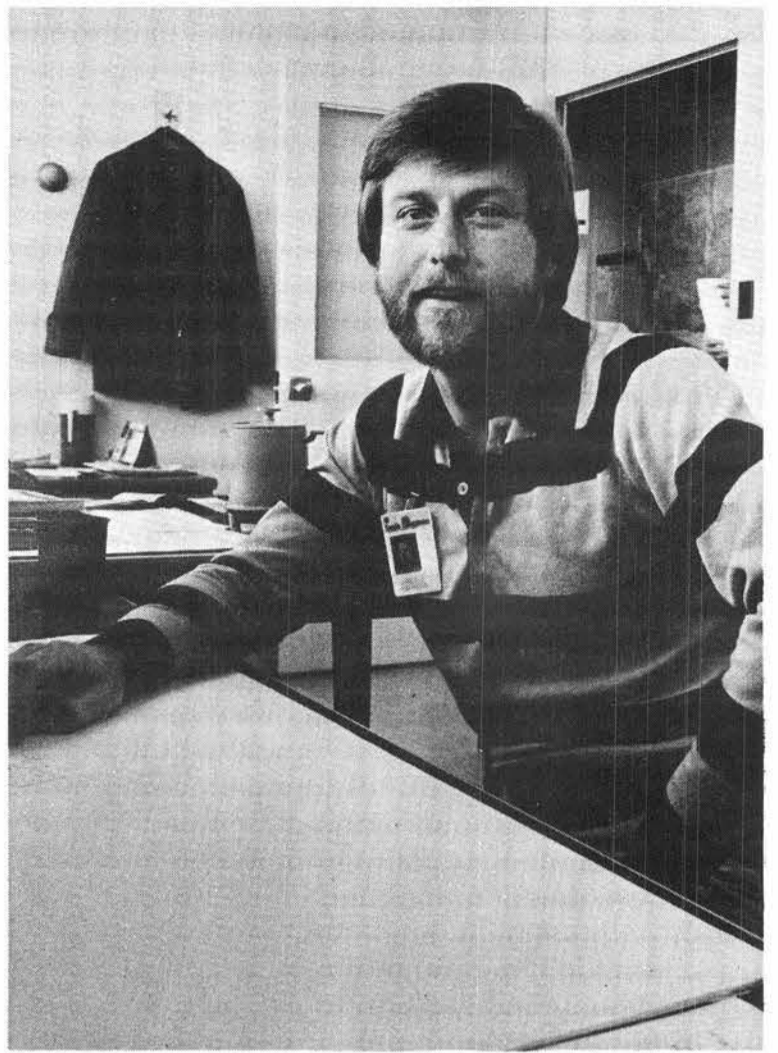
Jack Cannon - 9342 20



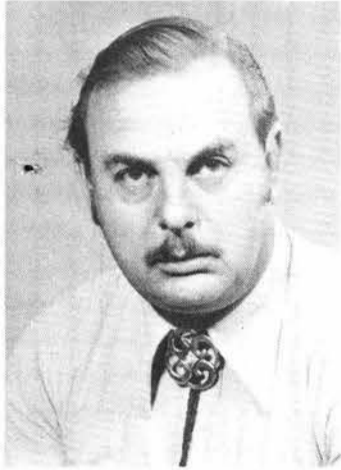
Steve Folkendt - 8413 15



W. B. Pafford - 9414 25



Jim Harrison - 4361 10



Gerald Gay - 5822 20



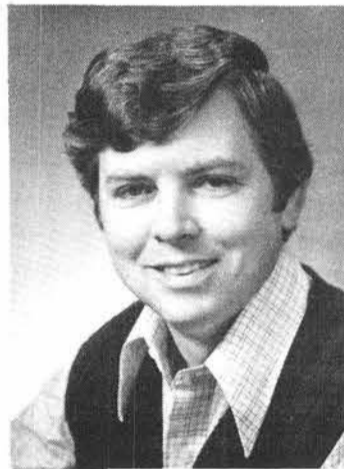
Bernardo Gallegos - 3725 30



Robert Roberts - 2534 25



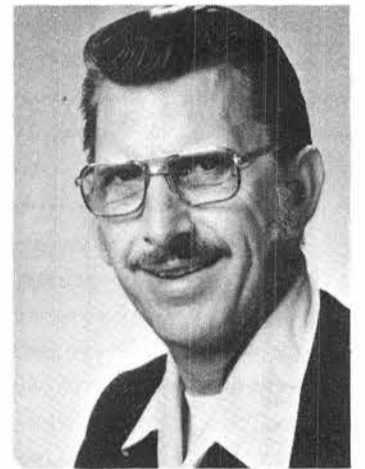
David Henry - 1241 25



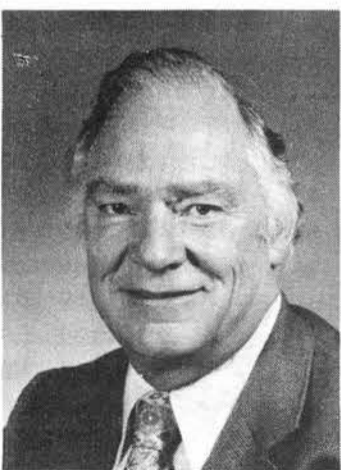
Ken Dolan - 8144 10



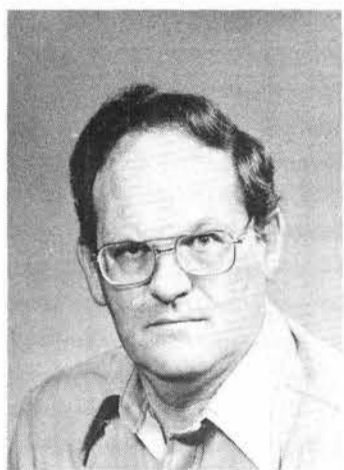
Ernest Bolton - 3735 30



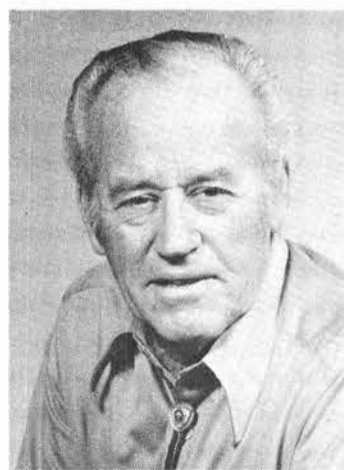
Billy Pontsler - 8167 25



Verne Blake - 1710 30



Dean Davis - 3243 20



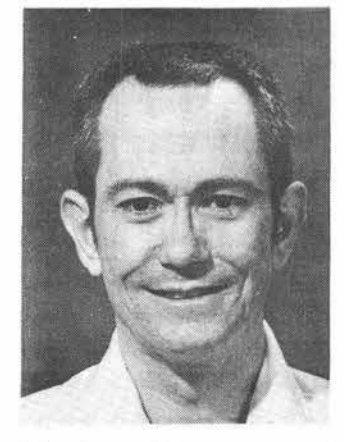
Monroe Blaylock - 3421 30



Richard Richards - 9621 30



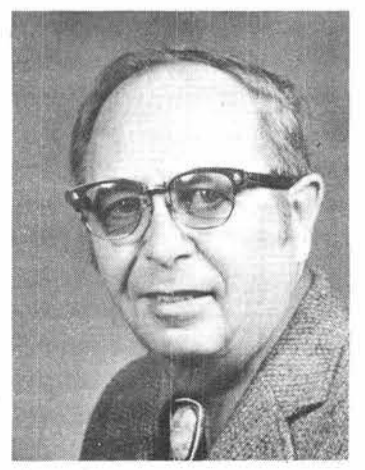
Robert Durand - 3725 30



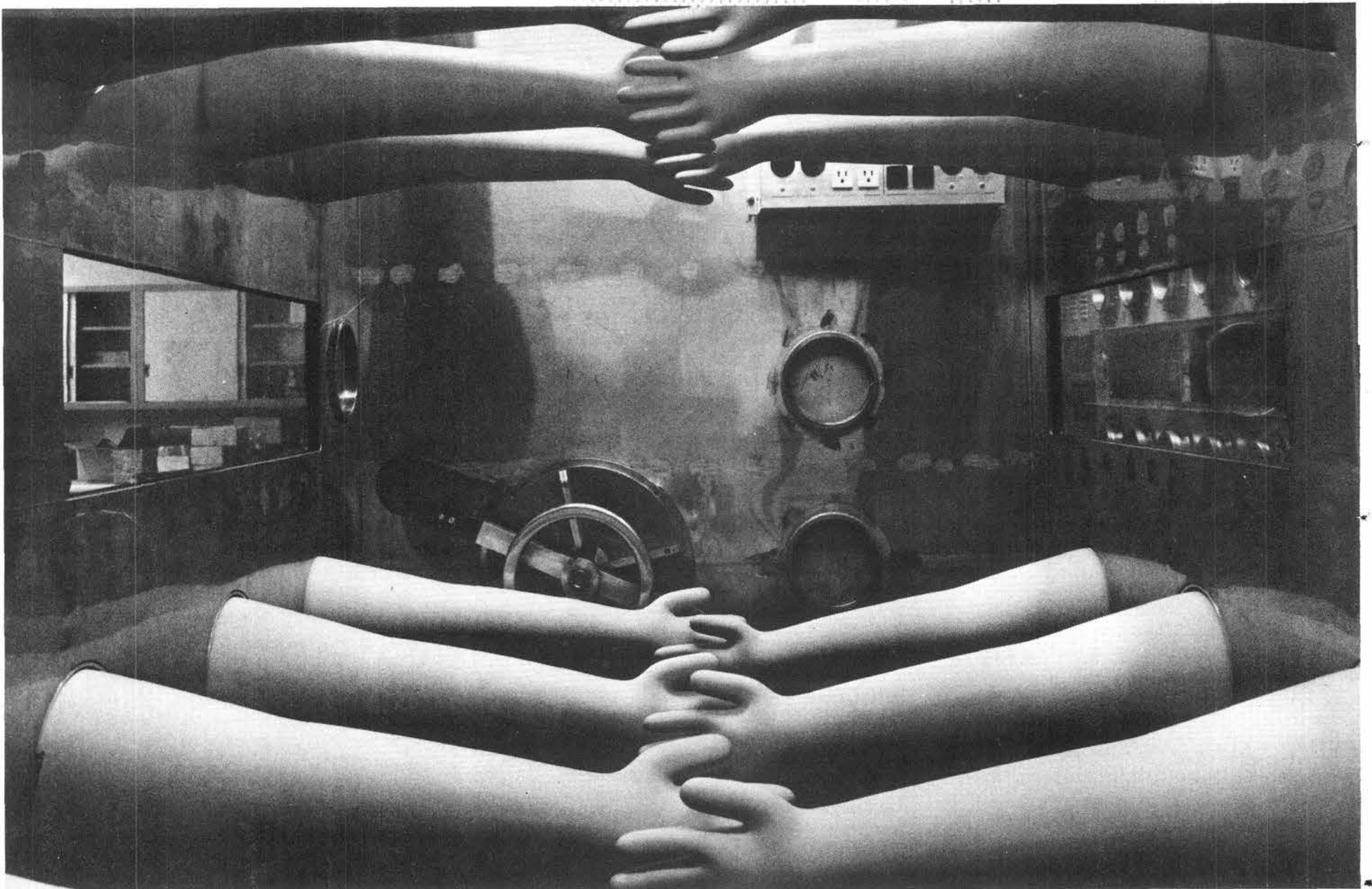
John Long - 2644 10



Dorris Tendall - 1111 25



George Austin - 9718 30



SANDIA LIVERMORE is such a friendly place—people reaching out, relating, touching. It even happens in one of SLL's glove boxes.

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

CLASSIFIED ADVERTISING

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

RULES

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

MISCELLANEOUS

SEARS humidifier, \$30; GE elec. stove, \$75. Casares, 877-0369 after 5:30.
 SPARE TIRE COVER, \$7; sump pump, \$25; auto. tuning FM radio, \$15; screens, \$1/ea.; stroller, \$6. Glaser, 293-8110.
 STUDIO COACH/single bed w/3-cushion bolster, tailored red floral cover, new firm mattress, box spring, frame, \$75. Moore, 268-9658.
 GE REFRIG. lt. blue, \$25. Gonzales, 867-2897.
 '77 SMITH-CORONA elec. typewriter, portable w/case, \$125. White, 293-2219.
 SEARS Kenmore 700 washer, 8 yrs. old, \$25. Detry, 821-9437.
 SLIDE projector, manual operation, Argus 538, 4" f3.5 lens, trays for 900 slides, \$35. Pike, 299-6153.
 TIRES, used, 6.15x13 for compact cars; Emerson port. cassette tape recorder. Perino, 268-8197.
 HUTCH TOP, 59w, 45h, 13 1/2 d, traditional style, nutmeg finish, lighted, \$60; upholstered swivel rocker, wing style, \$30. Holmes, 292-0898.
 ALFALFA HAY, \$2 to \$2.50/bale. Young, 865-7303 after 6.
 BLACK naugahyde recliner & ottoman, \$20; child's swing set, \$10. Stibis, 299-5363.
 FRIGIDAIRE stainless steel counter-top range, 32 1/4" wide x 20 1/4" long x 3 1/2" deep, 4 burners (1 needs replacing), \$40. Bruce, 298-2173.
 ORIENTAL RUG, 9x12', flower pattern,

1 yr. old, \$150. Chen, 821-6817.
 OAK CABINET, 32" wide, 34" high, 16" deep, 2 18"x15" doors, top opens. Shepherd, 299-9066 after 5 p.m.
 MAPLE bed, \$75; 4-dwr. chest, \$25; divider screens, \$3 & \$8; several lustra shelves, brackets & wall standards. Collins, 292-0495.
 COFFEE TABLE & end tables, solid wood, \$30; water pic, \$10; stereo record player for child, \$12. Lewjs, 296-7896.
 DINING TABLE, round, pedestal base, 1" solid maple top, new (still in carton), \$225. Kraft, 299-2157.
 OB MOTOR, 10hp Johnson w/6-gal. tank, \$150. Kuhn, 299-1898.
 DRUMS: bass, tom tom, snare w/cymbals, beginners set, \$100; Gibson guitar, EC-20 Madrid, w/case, \$125. Barnaby, 265-4363.
 GE 16" TV, color, 3 yrs. old, \$175; sell or trade ducks, geese, pigeons & roosters. Lackey, 898-6638.
 ALFALFA HAY, \$1.80 to \$2.50 per bale, all grades. Shock, 877-3728.
 SHOP MANUALS, Ford-Lincoln-Mercury, complete for 1969 and 1973, each set \$9. Meikle, 299-4640.
 BATHTUB ENCLOSURE, complete, \$10; 9' metal garage door, \$10. Jeys, 299-4197.
 OVERHEAD CAMPER, 1971 Rocky Mountain, brown & white. Granger, 869-2528.
 36" RHEEM GAS RANGE, white, \$90; dbl. cast iron kitchen sink, white, \$25; storage bins, steel, 2 sizes, \$5 & \$7. Garcia, 256-7606.
 PIONEER, Project 80 2-way loudspeakers, 10" woofer, dome tweeter, 35 watts, \$100 pair. Pastor, 266-9286 between 5-9 p.m.
 GE ELEC. RANGE w/dbl. oven, copper tone, \$75; twin size roll-a-way bed mattress, \$35. Smythe, 869-3864 or 247-9209 a.m.
 SOFA, 7', blues, greens & brown in woven stripes, \$95. Smith, 242-9576.
 ESTEY reed organ, circa 1910. Case, 296-9351.
 BED, trailer, 72"x46", 3" mattress, box spring has attached legs, \$25. McKay, 821-2469.
 GAS RANGE, 40", first reasonable offer. Liguori, 256-3613.
 BARGAINS POKER TABLE, \$25; sleeping bag, \$5; chains, 5.60x13, \$10; stove top, \$40; truck mirrors, \$25. Pilkington, 883-0223.
 JAY-THRUSH CAMPING TRAILER w/

extra equipment, lt. wt., sleeps 6, \$1650. Wagoner, 869-6791.
 GE Deluxe 18-lb. washer w/mini-basket, 1 1/2 yrs. old, avocado, \$200; new lg. metal kitchen cabinet, white, \$35. Paul, 299-6387.
 10-SPD. BICYCLE; small Whirlpool window air conditioner; British .303 rifle; Springfield model 67H pump shotgun. Lyons, 296-8866.
 COUCH, 78", 3-cushion, beige w/green & gold floral design, \$65. Van Deusen, 299-4328.
 WURLITZER spinet piano w/bench; Danish modern couch; Kenmore port. sewing machine & attachments; Hoover upright vacuum cleaner. Wells, 292-3364.
 BATHINETTE, \$9.50. Keck, 294-2887.
 GOLF CLUBS: Wilson 1200 woods (1-3-5), 1976, \$70. Adams, 881-6836.
 SCHWINN Varsity 10-spd., 19" frame, \$70; Fiat rims w/usable radials, \$15/ea.; typewriter stand, \$10; ping pong table, \$20; Red Ryder B-B gun, \$12. Lane, 298-3366.
 COUNTRY FRENCH dining room suite, table, 8 chairs, hutch, \$800; traditional sofa, 92", green/gold, \$150. Caskey, 296-6372.
 MARK TWAIN novels, 7 new hardback volumes, \$15. Cockerleas, 256-7570.
 BATHROOM SINK w/faucets & bracket, \$15; 2 compartment bathroom space saver, \$15; fireplace screen w/expandable mounting. Luikens, 881-1382.
 POOL TABLE, 3/4 size, hardboard, cue stick, balls, etc., \$50. Kadlec, 881-2543.

TRANSPORTATION

'74 MERCURY COMET, AT, AC, 6 cyl. George, 869-6225.
 '70 CHEVY CAMERO, sell or trade for pickup. Young, 865-7303, after 6.
 '63 VOLKSWAGEN, recently rebuilt engine, new yellow paint job, \$600. Gonzales, 867-2897.
 '72 CHRYSLER NEWPORT, 8 cyl., AC, PS, PB, dual exhaust, 6 way power seat, 4 dr. Pecos, 883-1461.
 '74 GRAN TORINO, 4 dr., 351W, AC, AT, PS, PB, \$2000. Cassidy, 881-3876.
 '72 BLAZER, 4 WD, PS, PB, AC, dual tanks, Posi-track, 8000 lb. electric winch, \$3700. White, 877-4149.
 '72 FORD LTD WAGON, DFRS, PS, PB, AC, AT, radial tires, \$1150.

Oglesby, 299-8174.
 '71 CHEVY NOVA six, 4 dr., white, AT, MADA low mileage retail \$1625, sell \$1400. Atkins, 298-5762.
 '76 GLASTRON GT-150, 15 ft., 85 hp Johnson with power trim. Neff, 265-0987.
 '71 CHEVY STATION WAGON, \$995. Nuttall, 821-2895.
 16' 1974 TRI-HULL ski boat w/75hp Chrysler outboard, \$3200. Padilla, 898-3115.
 '67 CAMERO, AT floor, bucket seats, recently overhauled V8, best offer over \$1000. Arana, 299-1214.
 '76 TOYOTA Corolla deluxe sport coupe, under 7000 miles, 4-spd. auto., R&H, \$3200. Phillips, 881-2450.
 '64 EL CAMINO, 283 V8, AT. Gonzales, 298-2164.
 '70 CHEVROLET wagon, mid-size Chevelle, V8-350, 63,000 miles, air. Klinetobe, 298-2315.
 '73 VOLVO 1800ES hatchback, 45,000 miles, leather interior, AC, AT, AM/FM stereo, \$5900 or best offer. Cockerleas, 256-7570.
 '72 CHEVROLET Beauville sportvan, V8, 110" wheelbase, std. trans., add-on Frigiking AC, Positraction, 56,000 miles, 3/4 ton, taking bids. Huff, 296-7977.

REAL ESTATE

0.4 ACRE LOT, view, cul-de-sac in Glenwood Hills Unit 1, all utilities, no rocks. Caffey, 296-3320.
 MOBILE HOME in adult park, double-wide Viking, 2 bdr. living, dining, family, island kitchen, carpeted, clubhouse, security. Clay, 821-8509.
 4-BDR., 1 1/2 bath, FR, carpeted, drapes, dbl. garage, shop, above-ground solar-heated pool, refrig., corner cul-de-sac, landscaped, sprinklers, \$51,500. Bell, 296-4478.

FOR RENT

2-BRD. APT. near base, unfurnished, carpeted, wash/dryer hookups, refrig., stove, disposal, \$185/mo. plus utilities. Clay, 821-8509.
 UNFURN. HOUSE, 2 bdr, study, \$195/mo., water paid, last month's rent deposit, S.E. Weston, 255-1196.
 GARAGE, single, within fenced area; open storage for what have you. Liguori, 256-3613.

UNFURNISHED, 1-bdr. apt., triplex w/attached garage, 1215 Solano Dr. SE (near Gibson & Carlisle), \$175/mo., water paid. Konnick, 265-1409.
 3-BDR. HOUSE, unfurnished, den, 2-car garage, near Eastdale shopping Center & bus, \$350/mo. Moss, 298-2643.

WANTED

BICYCLE, boys, solid or knobby tires. Shank, 877-4497.
 TV's, radios, old tubes, etc., will pick up. McConnell, 255-2488 or 299-7494.
 OLD LIONEL TRAINS, will purchase regardless of condition. Shepherd, 294-7297 after 5.
 Barrons back issues for '76, '77 in blocks of 6 mos. or more; occasional missing issues OK. Case, 296-9351.
 TWO FORD truck rims, 15", 5-hole, w or wo/6-ply snow tires. Shunny, 265-1620.
 '65 MUSTANG shop manual. Sayers, 877-8094.
 10 OR 12 INCH table saw. Tafoya, 865-5230.
 RIDE from vicinity of 300 Dorado Place SE between Juan Tabo and Western Skies to 880, 7:30-4:00 or 8:00-4:30. Eady, 294-8036.

LOST AND FOUND

LOST—Ladies' short black leather glove (RH), man's brown handsewn glove (RH), 2-blade pocket knife w/ scissors & nail file, key ring w/ approx. 10 keys, man's brown leather glove (RH), woman's short brown leather glove (LH), silver clip earring w/chains, leather key-case w/5 keys, small cameo ring setting, man's black vinyl glove (RH), man's fur-lined black glove (LH), Craftsman's 3" pocketknife, gold LaCrosse pen, diamond stick pin at O-Club East (reward).
 FOUND—Ladies' brown knit mitten, silver earring for pierced ears, bifocal glasses w/black & clear frames, ladies' white mitten w/tan & black design, gold-colored clip-on earring, ladies' brown leather gloves, Samsonite key on plastic string. LOST AND FOUND, Bldg. 832, 264-1657.

Coronado Club Activities

Singles Mingle Tonight; Yolanda On Bandstand

TONIGHT—Yolanda and La Ultima will play Latin, gringo swing and atavistic rock for dancing from 8 to midnight. A pot roast buffet will be spread from 6 to 8 p.m. and Happy Hour prices (cheap) will be in effect all evening.

Singles will mingle starting at 4:30 in the El Dorado room. The party will feature chips, dips and entertainment by Denny Gallegos and guitar.

DEADLINE for picking up tickets for the Shrimp Peel/Nostalgia Night event this month is March 11. Big band swing, the sounds of the 30's and 40's, will be played by Phil Lenk's 14-piece Seasonaires orchestra. The menu will feature three dozen Texas Gulf shrimp and fried chicken plus assorted goodies. Mark your calendar now for March 18.

SANADO CLUB meets for lunch at 1 p.m. March 14. Gene Ives (4360) and his daughter Kathy will present a musical program. Reservations from Barbara Gunderson, 298-2133.

RECENT CARIBBEAN TRAVELERS will meet Wednesday, March 15, at 7:30 p.m. to show movies and slides. Everyone is invited.

TRAVEL DIRECTOR Ed Neidel (2166) will be in the lobby tonight from 6 to 7 p.m. with the scoop on trips to Jamaica, the Holy Land and Greek Islands, Hawaii and Europe. Air fare only to Hawaii, departing Aug. 20, is \$279; departing Oct. 1, \$269. Ed has a handful of options for inter-Island tours.

Air fare to London or Frankfurt with options on the number of days spent in Europe starts at \$449. See Ed for more details.

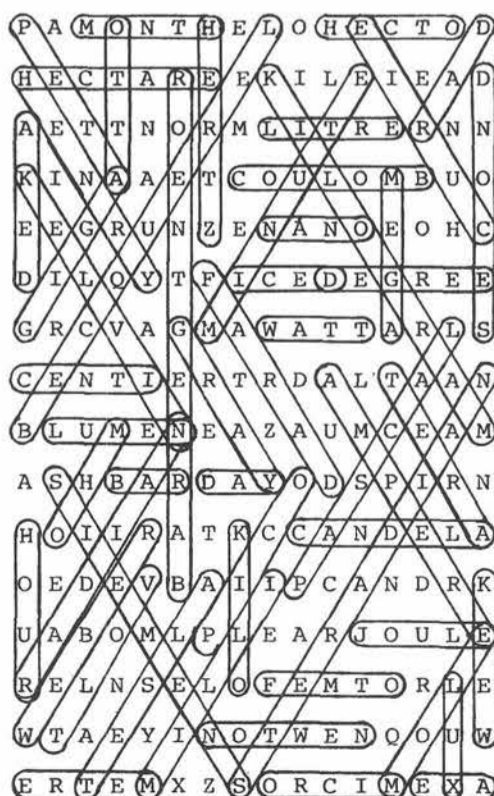
UPCOMING EVENTS—Easter Egg Roll for members' kids ages 1 to 6 starts at 9:30 a.m. March 25.



JUDY DAVIS, storyteller, will entertain at Variety Night tomorrow. "Almost Angels," a movie about the Vienna Boys Choir will be shown. It's free to members.

FRIDAY	SATURDAY
<p>3—HAPPY HOUR POT ROAST BUFFET</p> <p>Adults \$3.50 Under 12 1.92</p> <p>La Ultima</p> <p>SINGLES MINGLE 4:30</p>	<p>4—Variety Night Judy Davis Storyteller</p> <p>"ALMOST ANGELS"</p> <p>Food—6 Show—7 Free to Members</p> <p>Lobo Bus 6:55</p>
<p>10—HAPPY HOUR KITCHEN STEAK FRY BUFFET</p> <p>Adults \$3.50 Under 12 1.92</p> <p>Martha Kaye Trio</p>	<p>11—TEEN DANCE 7:30 to 10:30</p> <p>SEARCHIN</p>

SI-O-GRAM ANSWER
(From Page Nine)



TTR Hosts Visitors

Sam Moore, manager of Tonopah Test Range Department 9470, was host to two groups of visitors at the Range Feb. 15.

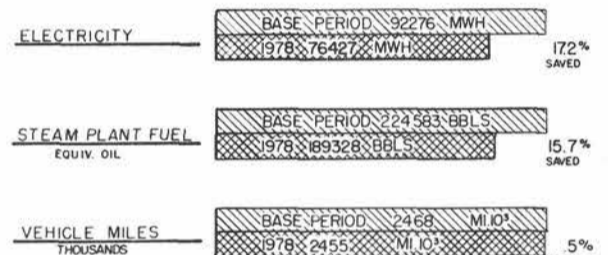
The visitors observed two low-level drop tests delivered from an A-7 aircraft operating from KAFB. The first operation was a preliminary test of a prototype parachute for the recently-authorized B-43 redevelopment program. The second was a pull-up delivery of a B-61 bomb. Both bombs, aided by precision flying, performed essentially as predicted. Following the tests, Ron Bentley (9472) briefed the visitors on range activities.

ALO visitors included Tom Clark, deputy manager; Hugh Leenhouts, assistant manager for logistics; Bob Scott, assistant manager for administration, and Dick Malone, Sandia Area Office manager.

The second group of visitors included Capt. James Hay, skipper of the New London Submarine Base; Tom Scholman, Associate J-Division leader at LASL, and Bob Peurifoy, director of Weapon systems Development 4300.

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD—JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING JAN '78



Two drivers in West Germany tried to keep going in a thick fog by craning their heads out the window for a better look. As Murphy's law predicts, they were traveling opposite directions on the same road. Result was a literal head-on collision that left both cars undamaged, both drivers with memorable headaches.

Perform a death-defying act.



Exercise regularly.

Give Heart Fund
American Heart Association

