

## Marx Generator Tests Successful

Pulsed Power Systems Department 1250 has made significant progress toward development of the energy storage section for Sandia's Particle Beam Fusion Accelerator-II (PBFA-II), scheduled to begin operation in 1986.

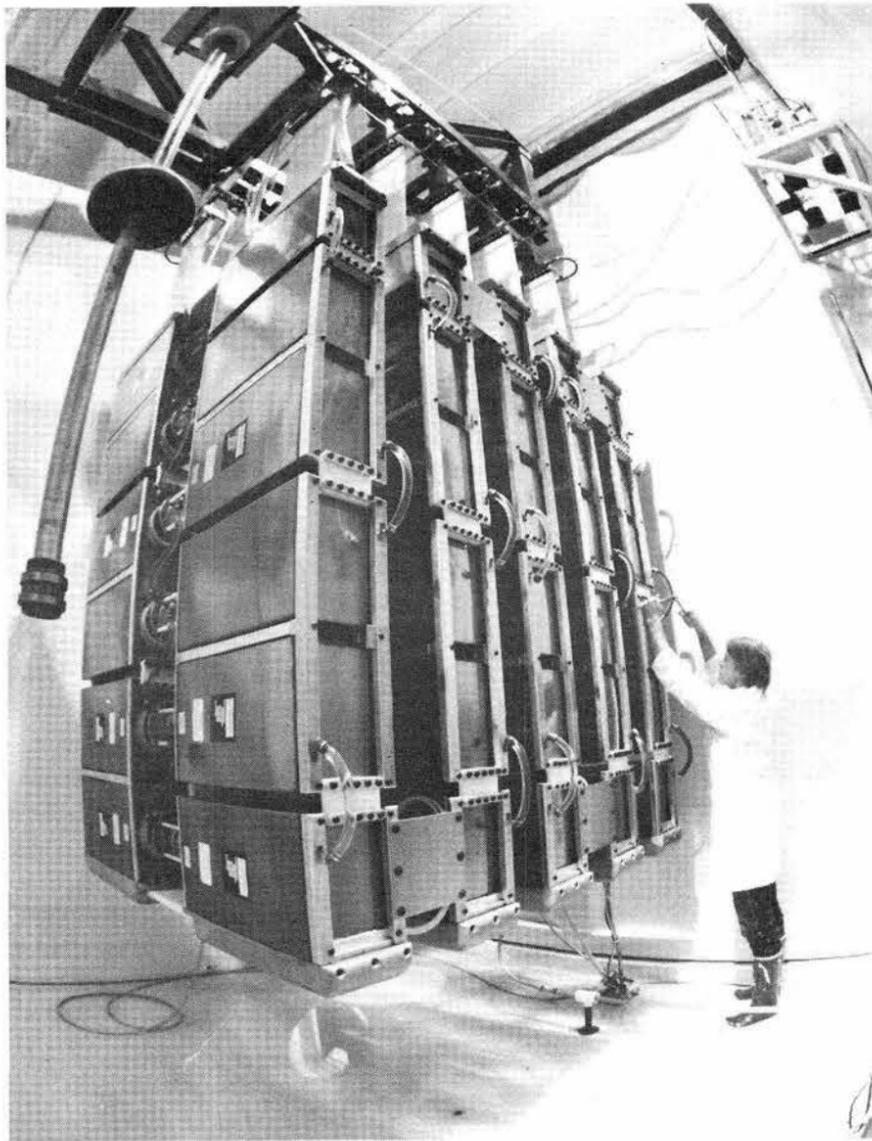
A series of tests with a Sandia-designed Marx generator — heart of the energy storage section — has been successfully completed, according to Tom Martin, Department 1250 manager. The tests verify that the device performs as predicted by computer models.

The tests, conducted at Sandia's DEMON accelerator facility in Area IV, involved more than 100 shots of the Marx generator at full energy (390 kilojoules), each delivered in a three-million-volt, millionth-of-a-second pulse.

Tests with the generator operating at six million volts, the design goal, are expected to be completed soon. Then, during 1983, additional tests involving another Marx generator design will be conducted.

Marx generators contain a number of identical stages, each an arrangement of capacitors, resistors, and triggering switches. The capacitors are charged in parallel and discharged in series, thereby multiplying the charging voltage by the number of stages. They also have very low inductance and are designed for extremely high reliability.

During PBFA-II operation, 36 Marx generators — each containing 60 stainless steel, 1.3 microfarad (a unit of capacitance), 100 kilovolt capacitors — will be  
*(Continued on Page Five)*



LARRY SCHNEIDER (1251) inspects a Marx Generator designed by the PBFA-II project team, of which he is a member. Thirty-six similar generators will form the energy storage section of the Labs' Particle Beam Fusion Accelerator-II, scheduled to begin operation in 1986. The nine-foot-high units will be capable of delivering a six-million-volt pulse of energy in a millionth of a second. Photographer Russell Smith (3155) took the photo with a fish-eye lens, which accounts for the distortion.



# LAB NEWS

VOL. 35, NO. 1

SANDIA NATIONAL LABORATORIES

JANUARY 7, 1983

### Sealed, Maintenance-Free

## Sandia Tests New Battery for Solar

A sealed, maintenance-free lead-acid battery designed to store energy collected by solar cells is undergoing proof-testing in Storage Batteries Division 2525.

The 6-volt, 100-ampere-hour prototype battery was developed by the Gould Research Center, Rolling Meadows, Ill., as part of DOE's Battery Storage for Solar Applications Program managed by Sandia.

The new battery, slightly larger than those used in automobiles, is capable of deep-discharge cycling, eight-hour nominal recharge, and operations and storage in a less-than-fully-charged condition.

Preliminary test results indicate an anticipated five- to seven-year life based on daily deep discharge, a weekly self-discharge rate of one percent or less at temperatures between 25°C and 50°C, operation over a temperature range of -17°C to 50°C, and ability to survive an open circuit stand (no load) in fully discharged condition at 50°C for up to a month. The new battery is expected to have an energy efficiency of 80 percent while maintaining rated capacity during normal charge/discharge cycling.

Prior to development of the new battery, commercially available sealed lead-acid

batteries had capacities of less than 50-ampere hours and a very limited life during deep discharge cycling.

"Because of the battery's unique performance characteristics, it is particularly well suited for photovoltaic (solar cell) applications," says Don Bush (2525). "A typical use of this battery would be in conjunction with an array of photovoltaic cells located in remote areas. During sunny days, the photovoltaic array converts sunlight directly into electricity, providing power and charging the batteries. At night or during cloudy periods, the batteries would be discharged to provide electricity."

Cells of the battery resemble those of a car battery — positive and negative electrode plates with separators between them to prevent shorting — but they have different electrolyte systems. A car battery uses a flooded electrolyte system with electrodes and separators submerged in sulfuric acid electrolyte. The new battery uses an immobilized, starved electrolyte concept that is the key to its maintenance-free character and long life.

The amount and concentration of electrolyte are carefully controlled during  
*(Continued on Page Five)*



DON BUSH (2525) prepares apparatus for deep-discharge cycling test of a new battery developed for solar energy applications. Almost 700 cycles have been completed on some batteries with only modest loss of energy storage capacity.

# Antojitos

I'm Dreaming of a Sideswiped Christmas--Last week's snowfall is merely the most recent reminder of the ineptitude of Albuquerqueans when it comes to driving under what is euphemistically called "adverse weather conditions." Actually the conditions were not nearly so adverse--3 inches of snow--as the drivers were perverse.

One large group observes the snow on the streets, then observes further that the longer they are exposed to it, the greater their chance for automatic disaster. It follows then that the quicker they can arrive at their destination, the less their exposure--so they double their normal speed. And they end up pirouetting along the pavement, caroming off the curbs, and ice skating across the intersections, stop signs or no.

The other half makes the same observation of the same meteorological matter and decides that caution calls for crawl speed--a barely perceptible forward movement in first gear that works only until the vehicle encounters an upgrade of, say, one degree. At that point, there's not enough momentum to keep the vehicle moving so the driver has no choice but to sit there spinning his/her wheels until the next major thaw.

Both groups tend toward bald tires and unusable tire chains (because they were purchased in 1967 for a vehicle with tires half again larger than those on their current vehicle, and they don't know how to put them on anyway).

Add to these groups a smaller one composed of four-wheel-drive pickups with bodies perched four feet above the chassis. These can go anywhere in snow; they just can't stop--locking the brakes turns them into top-heavy toboggans.

Put all these groups on the same streets at the same time, then settle back for sidesplitting slap-stick that would be comic if it weren't so damned dangerous. ●BH

Cocktail Napkin Graffiti--Just deliver the five gold rings and hold the rest of my true love's order.



DON STONE (3511) displays a copy of Sandia's Affirmative Action Program '83 now being distributed to all supervisors at SNLA. (Livermore Lab's Program will be issued this month.) Statistics show that in spite of a hiring slowdown in the first part of FY82, the numbers of minorities and women increased in almost all job categories. A new supplement distributed with the Program is designed to aid supervisors conducting employee meetings on Affirmative Action. A videotape by President Dacey discussing the Affirmative Action Program is also available. Don Stone is the principal author. Maureen Baca (3511) prepared the supplement.

## Retiree Deaths

(Oct. - Dec.)

Beulah Hansen (67)	Sept. 3	Lewis Pearl (62)	Dec. 15
Millicent Hulgán (72)	Oct. 1	Janet Shields (65)	Dec. 13
Clare Hewitt (75)	Oct. 28	Thomas Tate (75)	Dec. 21
George Lynch (87)	Nov. 8	Fred Mitchell (63)	Dec. 28
William Treharn (69)	Nov. 10	Betty Cordova (59)	Dec. 30
Leo Dunn (66)	Dec. 4		
John Callahan (64)	Dec. 11		

## Deaths

Aurora Molina of Custodial Division 3426 died Dec. 15 after a short illness. She was 52.

She had worked at the Labs since August 1975.

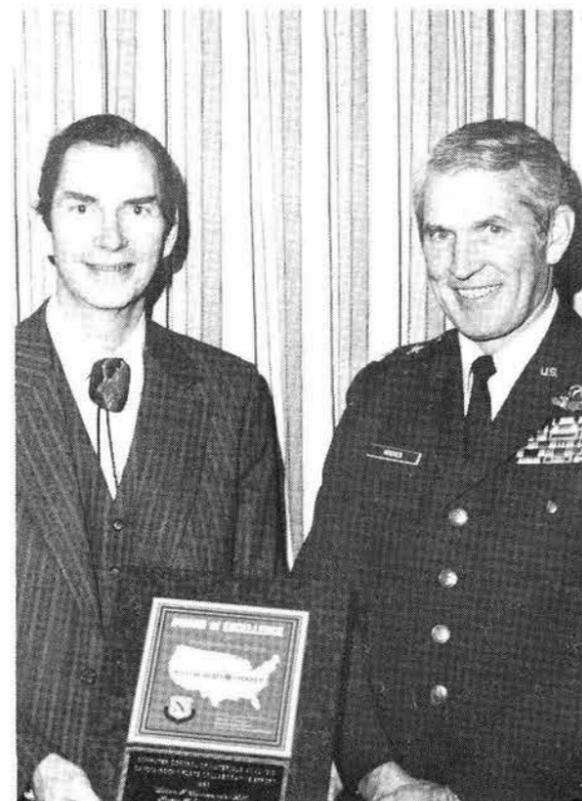
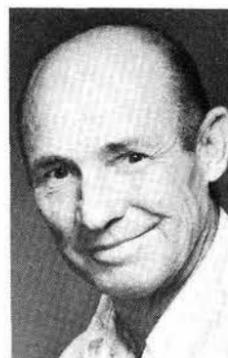
Survivors include two daughters and a son.



Woodrow Glasscock of Plant Utility Systems Division 3611 died suddenly Dec. 21. He was 66.

He had worked at the Labs since April 1951.

Survivors include his widow, three daughters, and a son.



DOE RECOGNITION AWARD was presented by Maj. Gen. William Hoover to Bill Chambers (1822) for his work in automating microprobes, devices that can perform quantitative analyses of material samples as small as a cubic micron. Bill developed the software to allow such automation and to aid in the analysis of electron diffraction patterns of a material. The program is now in use throughout the DOE complex, Bell Labs, and major universities. Several other Sandians are slated to receive similar awards this year.

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## Supervisory Appointment



SHARRON TYLER to supervisor of the Mail Distribution Section 8214-1, effective Dec. 16.

She began her career as a legal secretary and worked as a legal assistant in the Fremont and Hayward areas for 17 years, part of that time managing a law cooperative for 14 attorneys. Sharron joined Sandia Livermore in 1979, becoming division secretary in the Systems Development Department in January 1980. A year later she moved to secretary of the Personnel Department 8210, then in August 1981 became staff secretary of the Systems Development Directorate 8100.

She is a past president of the Southern Alameda County Legal Secretaries Association. Leisure activities include skiing, bowling, golf, and oriental cooking. Sharron has been a Livermore resident for four years and is a native of Fremont.

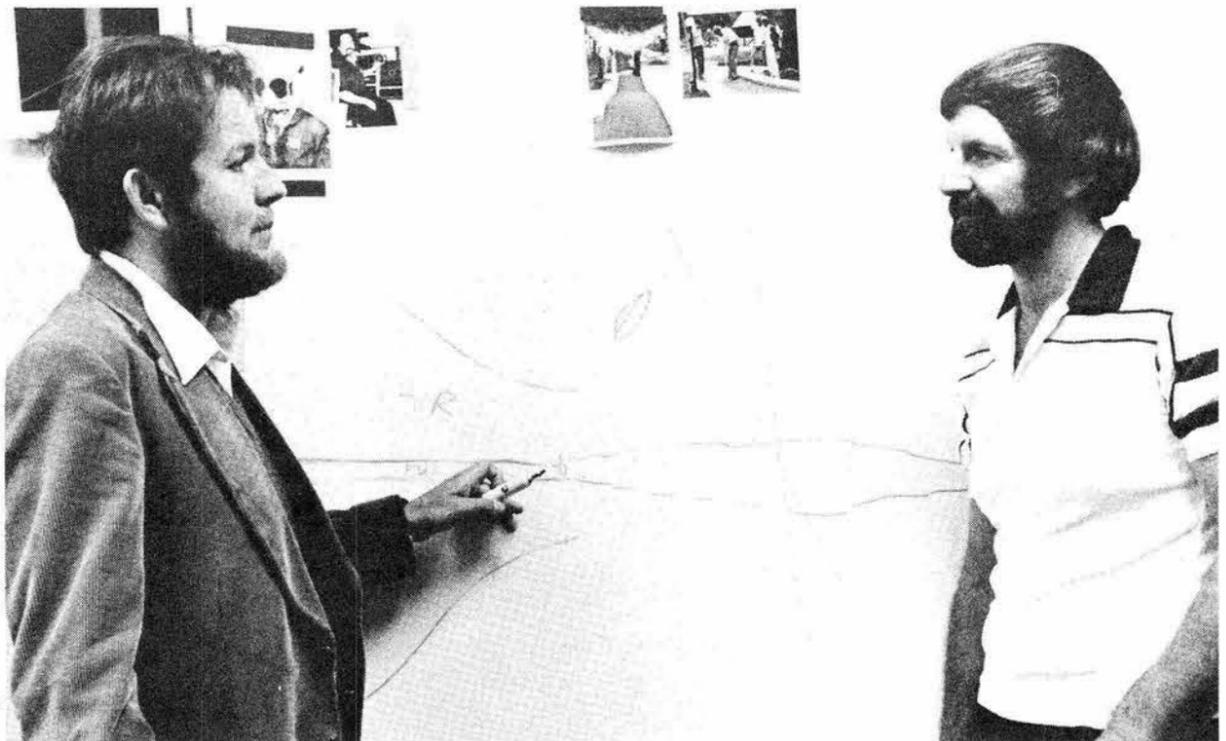


# SANDIA LIVERMORE NEWS

VOL. 35 NO. 1

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JANUARY 7, 1983



BOB DIBBLE and Bob Schefer (both 8511) discuss a project for the new Turbulent Diffusion Flame Facility in operation since October. They also designed the original flame facility five years ago in which they pioneered the application of nonintrusive laser-based diagnostics to the analysis of turbulent flames.

### New Turbulent Diffusion Lab

## Measurements Made Inside Flame

Since the Turbulent Diffusion Flame Facility was established five years ago, Bob Dibble and Bob Schefer of Combustion Physics Division 8511 have pioneered the application of nonintrusive laser-based diagnostics to turbulent flames. They succeeded in identifying and measuring parameters that are crucial to the development of turbulent reacting flow models.

"In mixing operations, turbulence is desirable because it greatly speeds up the entire process," says Dibble. "Stirring cream into coffee is a practical example of turbulence speeding up the mixing process. In combustion, the 'stirring' is often done by injecting fuel into air. The fuel stream flow breaks up into large lumps as it's forced out through the nozzle. The large lumps break up into smaller lumps and then into even smaller lumps and so on. All the while, the edges of these lumps are on fire."

"Most practical combustion devices operate with nonpremixed flames," says Schefer. "The fuel and air are introduced separately into the device, where turbulence drives large-scale mixing. There have been a number of efforts to develop mathematical models to predict the effects of the complex simultaneous interactions that occur in this mixing process. The models tend to be quite complex, containing a number of constants adjusted to fit empirical data over a narrow range of conditions. For a mathematical model to be useful to the designer of a combustion device, it must be more representative of, and applicable to, a broad range of conditions."

"To achieve greater generality in a turbulent reacting flow model, a broader data base is necessary. Such data can be ob-

tained from well-controlled, well-characterized systems capable of isolating the various effects."

"We designed the original flame facility," continues Dibble, "to conduct just this kind of research. Our facility provided a well-characterized, controlled flow field for experimental turbulent flames of practical size. It was basically an open-circuit, induced-draft wind tunnel with a centrally positioned fuel jet. To keep combustion chemistry fast, hydrogen was used, but in fact any gaseous fuel can be used."

Dibble and Schefer combined laser Doppler velocimetry and spontaneous Raman scattering to measure, in a single microsecond, concentrations of fuel, air, and combustion products along with the velocity, turbulence, and temperature in a turbulent flame. The correlations between these two sets of measurements are of fundamental importance to transport in turbulent flows.

"In October," says Dibble, "a second-generation turbulent flame lab became operational in the Combustion Research Facility. This new laboratory takes full advantage of the unique facility laser systems to further increase our diagnostic capabilities. Here we'll be making simultaneous measurements inside the flame. Ten years ago few, if any, simultaneous measurements existed. They covered just the mean properties of the entire flow or flame. Now we're interested in its smaller scale features. Bob and I pioneered this work in the old lab, and we're confident that the technique can be applied on a more routine basis."

Concludes Dibble, "Our work is suf-

ficiently fundamental so that it can apply to a wide range of combustion problems. We supply crucial data to develop new mathematical models and validate existing ones. These models are then applied to real combustion situations."

## Death



Leroy Haggmark, a member of technical staff in the Theoretical Division 8341, died Dec. 13 after an illness. He was 45.

He had worked at Sandia since 1969 and resided in Danville. Survivors include his widow and one daughter.

## Retiring



Jean Stuart - 8414

## Take Note

Sarah Weddington, former assistant to President Carter, will be the keynote speaker at "On the Way Up," a one-day seminar designed to increase career advancement potential for women through the use of effective communication, negotiation, and problem-solving techniques. The seminar is scheduled for Friday, Feb. 11, at the Albuquerque Convention Center. Registration fee including lunch is \$40 (\$50 after Feb. 1). Contact Marcella Florez (0310) at 6-1580 for more information. The seminar is sponsored by the Business and Professional Women's Clubs of Albuquerque.

\* \* \*

The Medical Department is re-running the life-style film series in Bldg. 880, Rm. C-11, from 12 to 12:30 on these dates:

Jan. 17 - Positive Approaches to Health and Life-Style

Jan. 19 - Weighing the Choices: Positive Approaches to Nutrition.

Jan. 21 - To Your Heart's Content: Positive Approaches to Fitness

\* \* \*

Wayne Burton (3631) has been appointed to the council for the village of Bosque Farms. A resident of the community and a Sandian since 1979, Wayne's term of office expires in 1984.

\* \* \*

Artists interested in competing for a chance to create an \$11,100 work of art at the entrance to the City's portion of the Elena Gallegos Land Grant are invited to a public meeting at the site on Jan. 7 at 1 p.m. Proposals are due on Jan. 31. More info from 766-4658.

\* \* \*

"The Art of Noticing" is the title of a public lecture and seminar sponsored by the local chapter of Parentcraft, Inc., on Jan. 20 and 21 at the Central Methodist Church, 215 Pine NE. The lecture is at 7:30 on the 20th, and the seminar from 8:30 to noon on the 21st. Registration deadline is Jan. 18, and a nominal fee is charged. Call 256-1191 for more info.

\* \* \*

Retiring this month and not shown in LAB NEWS photos are Henry Togami (2312), Arlin (3660) and Calla Ann (3140) Pepmueller.

SANDIA EMPLOYEES were presented the United Way's top award recently in recognition of the \$961,347 pledged by Sandians during the ECP campaign. Glen Kepler (1810), center, ECP chairman, accepted the awards. Morgan Sparks (right), United Way chairman, presented the award as President George Dacey, left, approved. Some 87.5 percent of Sandians pledged an average gift of \$162.63 to the drive. Of these, 49.8 percent pledged at the Fair Share or greater level.



RECENTLY APPOINTED assistant secretary of energy for management and administration, Martha Hesse, was briefed on all of Sandia's major programs last month. Here, she views models of a portion of the Particle Beam Fusion Accelerator II with President Dacey, Executive Vice-President Al Narath (10), and director of Pulsed Power Sciences Gerry Yonas (1200).

## Events Calendar

Jan. 8-9 — Rio Grande Zoo Photo Contest: half price admission for camera-carrying zoo visitors. Winning photos will be on display Feb. 26-June 1; 10 a.m. - 5 p.m., Rio Grande Zoo, 766-7823.

Jan. 12 — The Canadian Brass, 8:15 p.m., Popejoy.

Jan. 14 — Willie Nelson concert, reserved seating, tickets at Giant Ticket Outlets, 8 p.m., Tingley Coliseum.

Jan. 14-15 — NM Symphony Orchestra concert, guest pianist Nina Lechuk, 8:15 p.m., Popejoy.

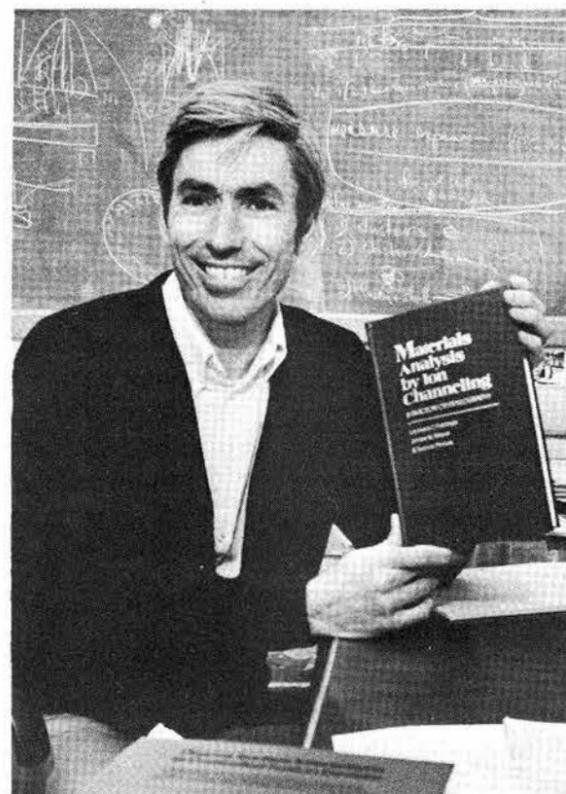
Jan. 14-30 — Albuquerque Little Theater, "Absurd Person Singular," 8 p.m., Tues.-Fri.; 6 & 9 p.m., Sat.; 2 p.m., Sun.

Jan. 15-Feb. 13 — "Winslow Homer and His Contemporaries," Fine Arts Museum, UNM.

Jan. 16 — Ballet Folklórico Nacional de México, 4 & 8:15 p.m., Popejoy.

Jan. 17 — Audubon Wildlife Film Series, "Barren Ground Summer," 7:30 p.m., Popejoy.

Jan. 18 — Kenny Rogers concert with guests Crystal Gayle and Lonnie Shore, reserved seating, tickets at Giant Ticket Outlets, 8 p.m., University Arena.



AUTHOR of a newly published textbook, *Materials Analysis by Ion Channeling: Submicron Crystallography*, is Tom Picraux, supervisor of Ion-Solid Interactions Division 1111. Tom and co-authors Leonard Feldman (Bell Laboratories) and James Mayer (Cornell University) have worked on the book since Tom's graduate days at Cal Tech. He has been at Sandia 13 years. Academic Press is the publisher of the book.

### Sympathy

To Ernest Fuentes (2551) on the death of his father, Dec. 13, in Albuquerque.

To Bernice Sanders (3533) on the death of her mother, Dec. 9, in Albuquerque, and her brother (L.C. Pearl, ret.), Dec. 15, in Albuquerque.

## Fun & Games

**Swimming** — Kirtland Aquatic Club needs more competitive swimmers age 7-14. If you are a boy or girl with prior competitive swimming experience, or know how to swim and would be interested in competing, come to the east indoor pool Monday through Friday evenings from 7 until 8:30 p.m. to learn about the team. All area residents are welcome to join — the team is not limited to Base personnel.

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**Female Fitness** — A 20-minute film on physical fitness and the working woman will be shown at the Coronado Club on Jan. 21 at noon in the Eldorado Room. The film may be the punch needed to get, and stay, in shape. Plan on lunch, then inspiration, at the Club that day.

\*\*\*

**Aerobic Dance** — If you don't need a film to convince you to shape up, join Jacki Sorensen's Aerobic Dancing program, as taught by Donna Ness. The new 12-week session has just begun, but there's room for some more people to learn that exercise can be fun. Classes are Mondays and Wednesdays at the Coronado Club from 9:30 to 10:30 a.m. and from 5:30 to 6:30 p.m. Donna can be reached at 255-6314. Or call either of two program veterans — Margaret Carroll on 4-1462 or Wilma Salisbury on 4-5308 — for relevant testimonials.

\*\*\*

**Table Tennis** — A tournament (singles with round-robin preliminary) is set for Jan. 15 at Monroe Jr. High School at 12:30 p.m. It's \$3 in advance. More info from Dave O'Brien (2451) on 4-5517 or David Sealey (2525) on 4-4475.

\*\*\*

**X-Country Skiing** — The annual Albuquerque Avalanche Ski Race will be held Sunday, Jan. 16, at Sandia Crest at 11 a.m. sharp. Open to males and females in seven age categories. For more info., call Stew Kohler at 294-7150.

**Continued from Page One**

## Marx Generators Tested

charged in parallel for two minutes. Gas-insulated switches will then discharge all 2160 capacitors in a 0.6-microsecond pulse that will deliver six million volts and a peak power per Marx generator of 650 billion watts.

PBFA-II will be used in DOE's inertial confinement fusion program to irradiate small fuel pellets containing deuterium and tritium (forms of hydrogen) with intense ion beams to create conditions leading to fusion reactions.

A key to producing such beams in PBFA-II is the machine's energy storage section, the first stage of the driver system that also includes sections for electrical pulse formation and transmission, and ion beam formation and propagation.

DEMON tests of Sandia's Marx generator — five rows of 12 capacitors, measuring seven feet deep and wide and nine feet high — demonstrated that during PBFA-II operation all Marx generators can be ex-



FIRST PLACE WINNERS in a recent father/daughter marathon run in Hawaii were Bonnie Roudabush (7223) and her father Ruben Vigil. Their average time on the 26-mile course on Oahu was 3:21 — Bonnie did it in 3:46 and the 55-year-old Ruben (an instructor at T-VI) completed the run in 2:56, fifth in his age group.

**Continued from Page One**

## New Solar Battery Tested

fabrication so that sufficient acid is available to achieve the desired capacity without completely saturating the porous separator between electrodes.

All available acid is immobilized by absorption in the highly porous separator, leaving no free electrolyte and enabling the batteries to be operated in any position.

Void space in the separator allows passage of oxygen from the positive to negative electrode where the gas is quickly reduced to water. Oxygen buildup is therefore prevented. At the same time, the negative active material oxidizes, keeping the negative electrode partially discharged and preventing hydrogen gas generation. This "oxygen cycle" virtually eliminates water loss from the battery. The fact that the battery is sealed also prevents corrosion.

Proof-testing of the battery has been underway at Sandia's Battery Evaluation Laboratory since early 1981. One series of

life cycle tests involves draining batteries from 100 percent state-of-charge to 20 percent and then recharging. Almost 700 cycles have been completed on some batteries with only modest loss of capacity. The design goal is 2000 cycles.

Additional batteries are subjected to a Sandia-developed Partial-State-of-Charge cycle test that closely simulates cycling expected in photovoltaic applications. Cycling is between 80 and 20 percent state-of-charge for extended periods without a complete charge. Some batteries have been cycled about 800 times without appreciable capacity loss.

Storage tests have demonstrated that the battery can remain idle at 100, 50, and 0 percent state-of-charge for extended periods at temperatures ranging from -17°C to 50°C.

GNB Batteries, Inc., a Gould subsidiary, expects to begin manufacturing these batteries for photovoltaic applications within two years.



### JOLLY OLD JOGGING!

Now that the benefits of jogging are in question, London's sedentary workers may like to be reminded that they can exercise vigorously on London Transport's Red Arrow buses.

Here the instructor (colloquially, the driver) attempts to throw his standing pupils (passengers) to the floor by means of sudden lurches of the vehicle. The pupils for their part strive to stay upright by clutching at bars and straps built in for that purpose . . . The weakest are often thrown to the floor or at best pitched against the surrounding bodies and briefcases. Escaping from the bus before the concertina doors snap shut presents a further hazard. All great fun and far cheaper than time spent in a gymnasium. Limber up on a Leyland lurcher.

Letter to *The Times* of London, quote in *World Press Review*

generators, an optimized PBFA-II Marx generator will be defined, and private industry will provide the needed units.

Sandia, the lead DOE laboratory for the pulsed power approach to fusion, is examining many other complex technical problems that remain to be solved before inertial confinement fusion power can become a reality. These include demonstrating net energy gain (the point at which energy released by the target exceeds the accelerator-stored energy), investigating target phenomena needed for high gain, and developing a technology base for the repetitive ignition of pellets in a power reactor.

*Q. Why are no management courses offered as part of Sandia's otherwise excellent in-house educational program? Courses such as technical program management and personnel management would be of great benefit to many people who are not currently in management positions.*

A. Three courses offered by Sandia's Education and Training Division 3523 are open to staff members: Stress Management Workshop, Time Management Workshop, and Managing Professional Growth Workshop. In addition, staff members who are in positions where they are managing projects and the like have been and still are supported by their line management if they wish to attend courses off site in areas that would be of benefit to Sandia and the employee in more effectively performing the job.

J. R. Garcia - 3500

*Q. Last October, a Sandia employee was escorting New Mexico gubernatorial candidate John Irick around the Sandia cafeteria to shake hands and talk with other Sandia employees. Isn't this type of political activity specifically prohibited on Sandia facilities by the Code of Conduct?*

A. Sandia policy on political candidates' visits has been the same for a number of years. Visits by candidates to the employee cafeteria are permitted, provided there are no speeches and no "forced" distribution of campaign literature.

Sandia will not seek out and invite all candidates for a given office, but will extend the above treatment to those who inquire. As a matter of fact, at their requests, Toney Anaya and Jan Hartke as well as Irick all visited the Labs for briefings on Sandia activities during the recent campaign. In each case, the visit also included a stop at the cafeteria to meet employees during the noon hour.

H.M. Willis - 3100

*Q. The parking lot near Bldgs. 821-823 has never been fully occupied. Nevertheless illegal parking near the streets, at the ends of rows, and on the dirt near intersections has created blind spots that result in hazards. Can't some signs be erected to remove the clutter and possibly prevent some future accidents?*

A. The Traffic Liaison Committee recognizes this problem. Signs are being made to restrict parking near Ninth Street.

R. W. Hunnicutt - 3600

*Q. I called Telecon to ask that two broken chairs be repaired or replaced. A Plant Maintenance man came to my office to say the chairs could not be repaired and would have to be replaced, and another order would have to be written. Apparently, two orders will have to be placed: 1) a*

*Telecon to pick up the two broken chairs, and 2) a request for office furniture to supply two new chairs. In addition, two sets of Plant Maintenance people will have to be involved, one to deliver the new chairs and another to pick up the broken ones. If the new chairs arrive before the broken ones are picked up, we have a storage problem because the only place to store the broken chairs awaiting pickup will be in the hall, creating a safety hazard, or outdoors in the weather. Is there not some way a single Telecon should accomplish this task? Surely it should not take three teams of Plant Maintenance employees to do it.*

A. Minor furniture repairs are made by Section 3612-4 in response to Telecon messages. If Section 3612-4 employees determine that a furniture item is unrepairable, they advise the employee to obtain replacement items by submission of a Request for Office Machines and Furniture Form (SA 6404-A) to Section 3615-2.

Section 3615-2 will then deliver the new furniture and at the same time will pick up the broken furniture.

It shouldn't be necessary for you to originate three orders. We could eliminate the new furniture request, but it is more reliable for you to originate this request than to depend on the craftsman to remember to do so when he gets back to the shop after responding to 10 or more Telecon messages.

R. W. Hunnicutt - 3600

*Q. The south half of Bldg. 800 has become even uglier, thanks to the myriad of "pipelines" being strung below the ceilings, as well as up and down walls in every direction. The place looks worse than any boiler room possibly could. Doesn't anyone realize that the general public frequents this area (suppliers, customers of SATO, and visitors to the public relations office)? It would be impossible to find a p.r. office anywhere in town that looks more dingy. We will be the laughing stock of every newspaper reporter and any other media types who may visit.*

*Please don't say that painting the pipes will change the atmosphere — it just ain't so!*

A. You are right. The conduits on the ceiling look terrible! You are also right in suggesting that paint won't fix it.

We don't deliberately make such a mess as this. The ceiling in the south wing of Bldg. 800 is not a type that permits easy removal and reinstallation. DOE regulations require that the conduits either be exposed or installed above a ceiling that can be easily removed to permit inspection. The terminal cabinets must be exposed and kept locked.

I have asked Plant Engineering to see whether they can figure out anything to improve this situation, but I am not optimistic.

R. W. Hunnicutt-3600

*Q. It would be nice to have a satellite Finance office in Bldg. 821 or 823 since a lot of people lose many manhours walking*

*back and forth from those buildings to 802. Even having such an office open only for a few hours each afternoon would be helpful. I realize tickets would have to have a special handling for this satellite, but it seems like it should be seriously considered.*

A. We have studied the feasibility of locating a satellite Finance office in the south part of Area I, but as yet have not been able to justify the expense necessary to establish and maintain a second Finance office. However, we are continuing to study this growing need, and we will try to resolve the problem when circumstances warrant.

R. B. Yoder - 6020

*Q. Today I arrived at Gate 10 without my badge. My friend had dropped me off at the gate before I realized that I did not have my badge. Since I could not go home or get into the area, I had to walk to Gate 6 in order to get a temporary badge. Would it be possible to have temporary badge facilities at Gate 10?*

A. Before responding to your question, please note that there are certain responsibilities attendant to being granted a "Q" clearance, one of which is to remember your badge. Failure to meet this responsibility may naturally result in some inconvenience to the employee, not to mention the additional work on the part of the security inspector and badge office personnel.

Now for your question — we are now issuing temporary badges at Gate 10.

D.S. Tarbox - 3400

*Q. Why was the "1800 Users Manual" distributed so widely when only a few in the Labs have any use for it? Every MTS I know discarded it. An abstract of the services provided by the 1800 organization and an order blank in the Weekly Bulletin would be a much more appropriate means of spreading this information.*

A. The Materials and Process Sciences Directorate 1800 is responsible for providing materials support to project and design groups, and some of our staff have liaison assignments to facilitate this support. A listing of the 1800 liaison assignments was issued in 1978; since that time there has been considerable turnover — both in 1800 and in the project and design groups.

The new "1800 Users Manual" was distributed primarily to the project and design staff to reacquaint them with Org. 1800 capabilities and to identify appropriate new contacts when help is needed. We feel that the information provided by the manual is far more valuable than the cost of printing and distributing it.

However, your suggestion about an announcement in the *Weekly Bulletin*, along with an order form, was certainly a good one, and we will consider that option in the future. We urge those who received the manual but have no need for it to return it to Dept. 1830 for redistribution.

R. L. Schwoebel - 1800



## Marlene Hyde Named VP Of AIPE

Marlene Hyde of Plant Engineering's Planning Division 3657 has been elected vice president of technical information development for the 9000-member American Institute of Plant Engineers (AIPE).

Marlene served as AIPE's vice president/region 9 director since 1980, and also as president and delegate director of Chaparral Chapter 124. She was instrumental in organizing a New Mexico/West Texas AIPE conference.

Before joining Sandia in April 1982, Marlene was the energy manager and staff architectural consultant for Presbyterian Center. She also worked for a consulting engineering firm, the City of Albuquerque planning department, and as assistant superintendent for a building contractor.

She earned her bachelor's degree in architecture planning and her master's degree in construction engineering and management in 1976, both from U.N.M.

*Q. I recently received enrollment information on the Bell System Savings Plan. When I called the phone number given for questions to obtain information on the rates of return of the various investment options over recent years, I was told that that information is not given out. Why is this information not made available so that I can make an informed decision concerning which investment option is right for me?*

A. With regard to both the Bell System Savings Plans, Sandia publishes information only if such information is provided by American Telephone & Telegraph Company.

The Company advised us several years ago that it was discontinuing the development of historical rates of return on the investment options of the savings plans. The unit value for each investment option is published each month in the *Sandia Weekly Bulletin*. The unit values can be used to develop a rate of return on each investment option.

Please contact Bob Eldredge (4-2739) if you have additional questions.

J.R. Garcia - 3500



NEW SUPERVISORS — Bob Kelly (3450) and Jim Yoder (2425)

## Supervisory Appointments

BOB KELLY to manager of Labor Relations Department 3450, effective Jan. 1.

Since joining the Labs in 1951, Bob has held numerous graded and staff jobs. He was promoted to supervisor in 1957 when he became the administrative assistant for the weapons systems directorate. He has held several division assignments including field test support, weapons development programming and scheduling, non-weapons administrative work, personnel placement, job evaluation and, most recently, Labor Relations Division 3451.

Bob has attended both UNM and the U of A. He enjoys camping, golf, hiking, and cycling. Bob and his wife Dolly have seven children and three grandchildren. They live in NE Albuquerque.

\* \* \*

JIM YODER to supervisor of Product Data System Planning and Development Division 2425, effective Jan. 1.

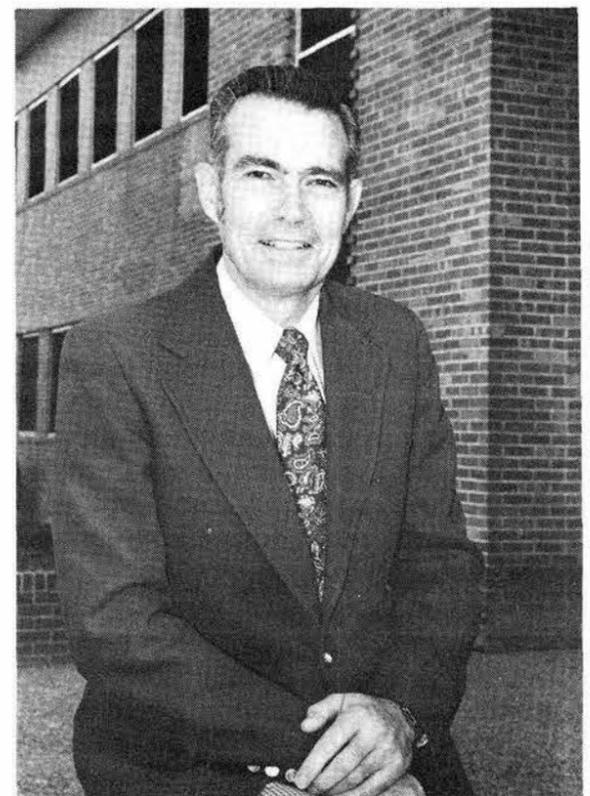
Since joining the Labs as a data engineer in 1966, Jim has worked in various areas of the Computer Aids & Product Data Department 2420.

He earned a BS in math and physics from the U of A, and has just completed the requirements for his MS in EE and computer engineering at UNM. A licensed pilot, Jim also enjoys working in politics at the local level. Jim and his wife Dolly (7473) have one son still at home. They live in the far NE heights.

\* \* \*

BRYON HOCK to supervisor of VAFB (Vandenberg Air Force Base) Operations Section 7137-4, effective Dec. 16.

Bryon joined the warhead systems design group in July 1956. He transferred to



BYRON HOCK (7137)

field test in 1959, where he has worked exclusively with instrumentation telemetry.

He graduated from the Capitol Radio Engineering Institute (now Capitol Institute of Technology) in Washington, D.C. Bryon enjoys hunting, fishing, and hiking. He and his wife Betty have two daughters. They will be moving to the Lompoc, Calif., area sometime in March.

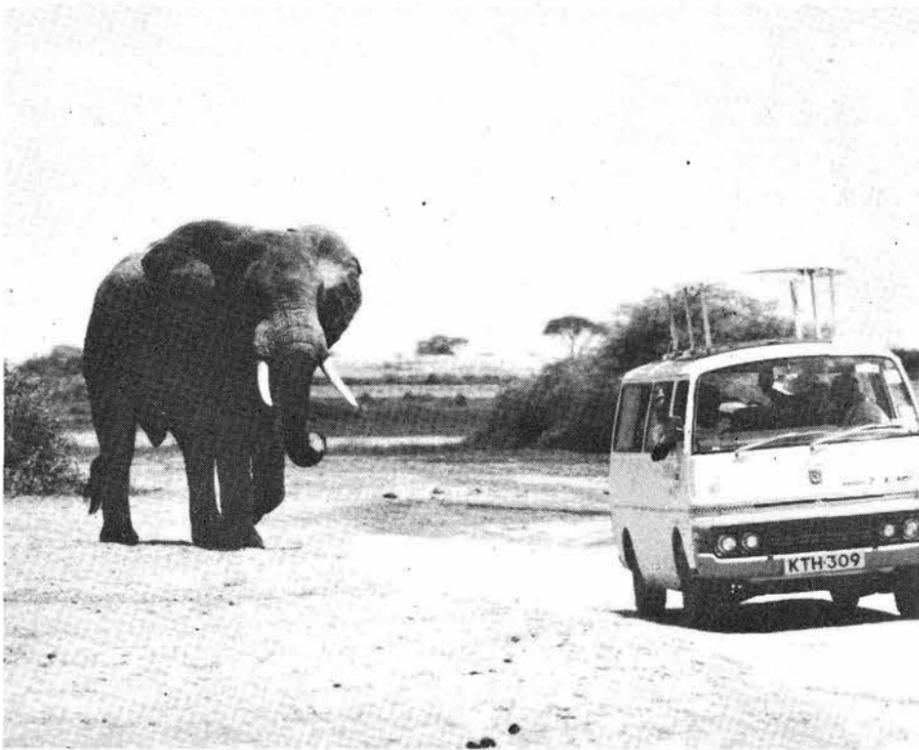
### Congratulations

Steve (2648) and Dennie Gossage, a son, Edwin Thomas, Nov. 24.

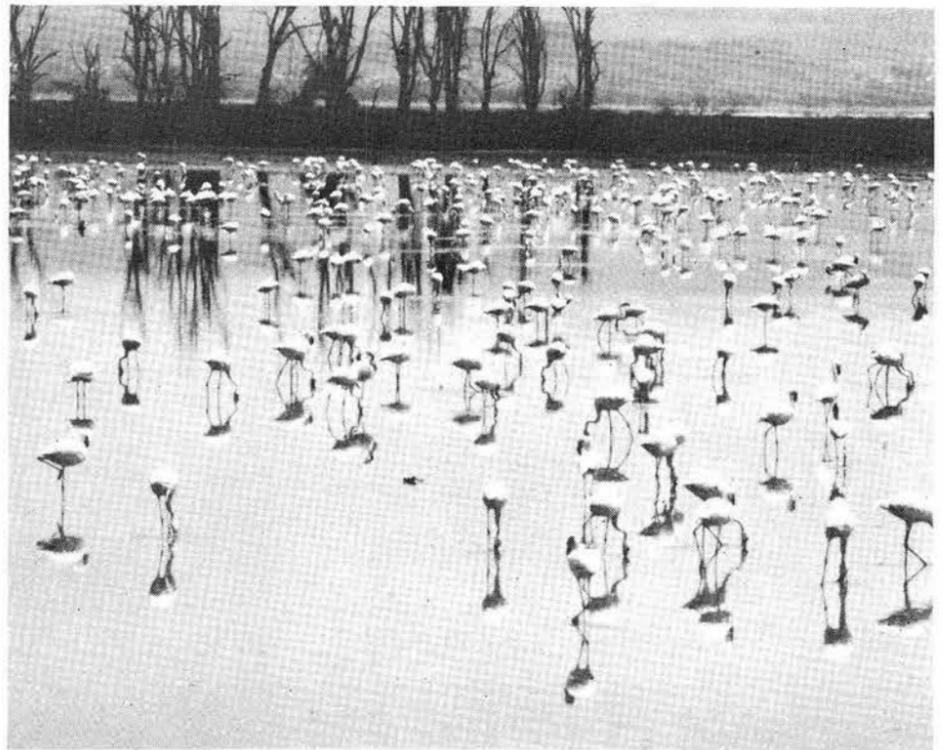
James (1845) and Diane Wilder, Jr., a daughter, Jennifer Lynn, Dec. 17.

Laura Brown (2335) and Jim Constantines, married in St. Thomas, U.S. Virgin Islands, Dec. 31.

Elizabeth Huffman de Dominguez (1134) marrying Jeff Sorrache tomorrow in Albuquerque.



THE TOUR VAN appears to be chased by an irate elephant, but he's friendly. If left undisturbed, most Kenya wild animals mind their own business.



FLAMINGOES quietly feed in the still, shallow water of Lake Nakura, a contrast to "murmuring" — a strange mating behavior observed earlier when the birds moved in circles dipping their heads and necks in unison.

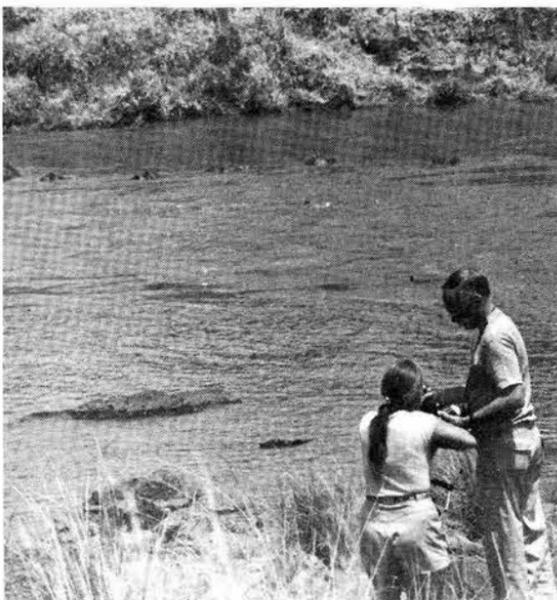
### Unusual Vacation

## Kenya: 'Totally Delightful, Totally Different'

[Ed. Note: Taken an unusual vacation lately? Tell us about it. Call 4-1053.]

Nineteen days on a photographic safari in Kenya with the New Mexico Zoological Society proved an unusual vacation for Don (2545) and Mina (1633) Carnicom recently. The Sandians and 14 others from Albuquerque flew to New York, then through eight more time zones to Nairobi, tiptoed through martial law and roadblocks of the capital city during tense days surrounding a coup attempt on the government, then spent almost three weeks visiting Mt. Kilimanjaro and eight game preserves or national parks in mountains, desert, swamps, salt flats, rolling grasslands, lake country, and lush jungle while watching and photographing literally a million wild animals and birds.

"It far exceeded anything we could have imagined," Mina says, almost breathless as she describes a continuously changing landscape populated by vast numbers of buffalo, wildebeest, gazelle, zebra, antelope, topi, impala, lion, hyena, jackal, vulture, stork,



MINA AND DON Carnicom photograph hippos in Kenya.

flamingo, hawk, elephant, hippo, rhino, crocodile, snake, wart hog, etc.

The group traveled in three vans, and accommodations ranged from primitive tent camps to luxurious resorts.

"The food was great, Mina says, "a remarkable variety even in the tent camps."

She remembers the striking and dramatic appearance of the nomadic Masai tribesmen. "They herded cattle, sheep, goats, and camels, carried long sticks, and wore bright-colored ponchos — and that's all. We took no pictures. They don't like that."

Two weeks into the tour, Mina was hurrying down the steps of one of the resorts when she slipped and fell, breaking her kneecap.

"I saved our remaining working camera," she says, "but I hated the thought of being out of action. There were no medical facilities available, but there was a doctor with the group. He told me to keep my leg rigid — I could still put weight on it — and fed me pain killers. I finished the tour being carried around on Don's back. Actually, it wasn't bad."

"She's just a little thing," Don says.

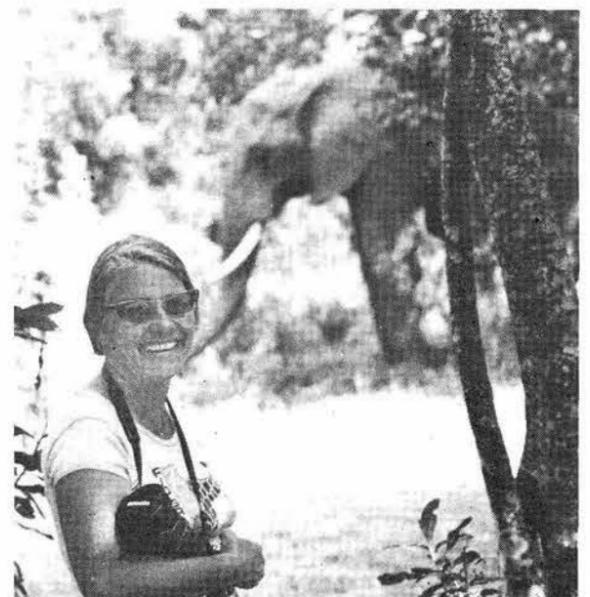
"I wish you wouldn't say that," Mina says. "In Africa, the weak and sickly are called lion bait."

After returning to Albuquerque, X-rays of the kneecap showed that it was healing nicely. Mina feels fine.

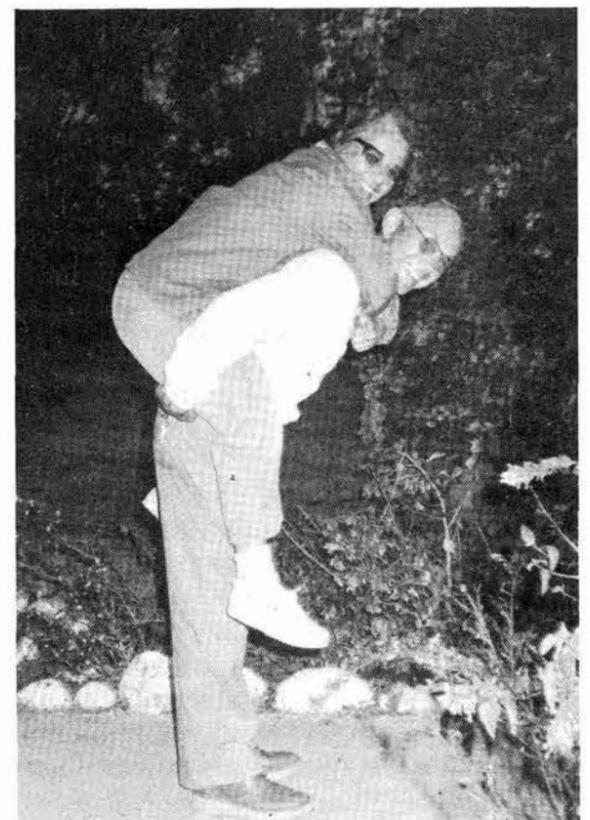
Don and Mina have been members of the New Mexico Zoological Society and strong supporters of the Rio Grande Zoo since 1969. Mina has served continuously on the board of directors and for seven years as treasurer.

"This trip makes it all worthwhile," she says. "It was totally delightful and totally different."

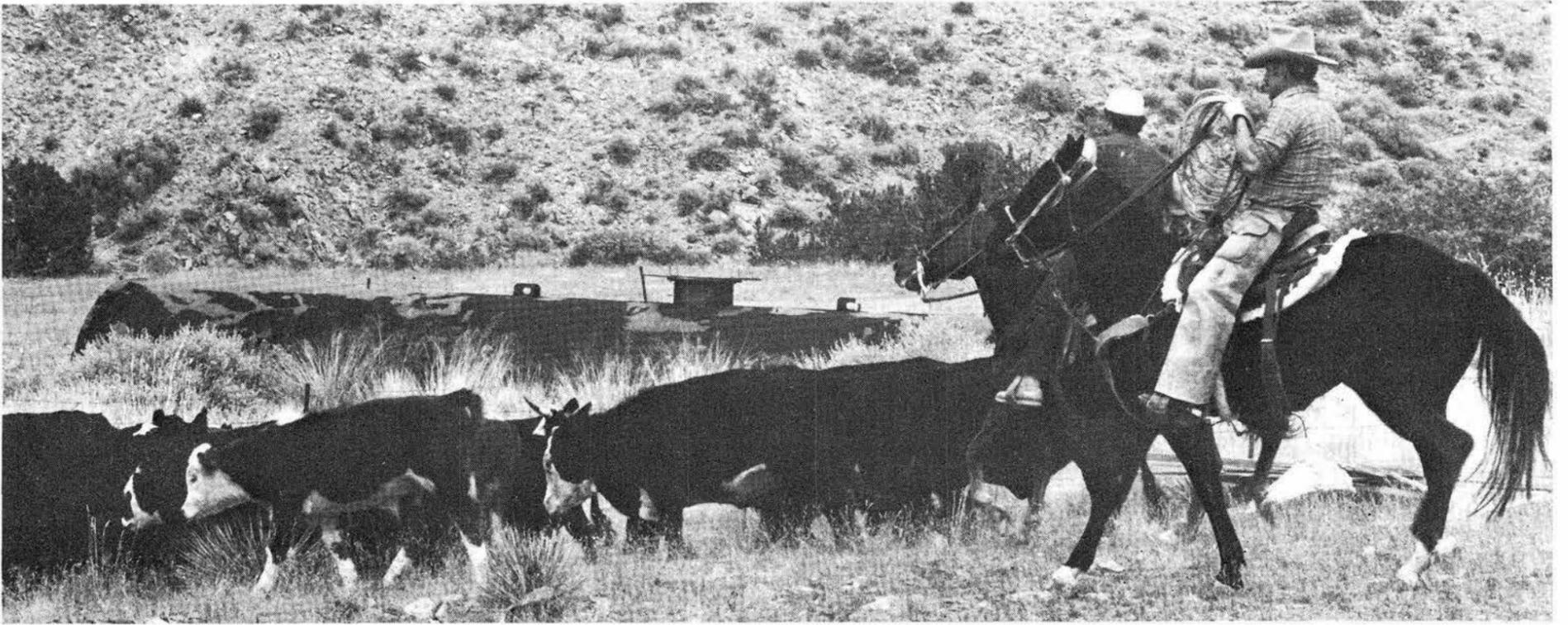
*Logistics:* All travel arrangements were made through an international agency by the Zoological Society. Total cost was \$2800 per person.



MINA CARNICOM likes elephants.



AFTER BREAKING her kneecap in a fall, Mina spent the last week of the Kenya tour on Don's back. They called her "lion bait."



**Fall Roundup**

**Chewie Baca Is Modern Cowboy**

Chewie Baca (3435) stands in a cleft in the Manzano Mountains about 20 miles southeast of Tomé. Behind him are holding pens, corrals, a water tank, and herd of cattle — mostly a mixed breed called Brangus with a few white-faced Herefords scattered among them.

In the west, across a vast vista of the Rio Grande Valley, Ladron Peak is visible on the horizon.

“I used to herd sheep here when I was a kid,” Chewie is saying. “I’d stay up here all summer. We grazed a herd of about 2000 sheep in these foothills in the days before WWII.”

Chewie has a special feeling for the land. His family roots go back some 200 years in Tomé. He owns a farm in the small community 35 miles south of Albuquerque on Highway 47 and leases the grazing rights to the land in the Manzanos from the U.S. Forest Service.

He and his friends have just completed the fall roundup. They spent four days on horseback moving the cattle from the high meadows to the lower foothills for winter

grazing. They check the herd, vaccinate, and brand the calves.

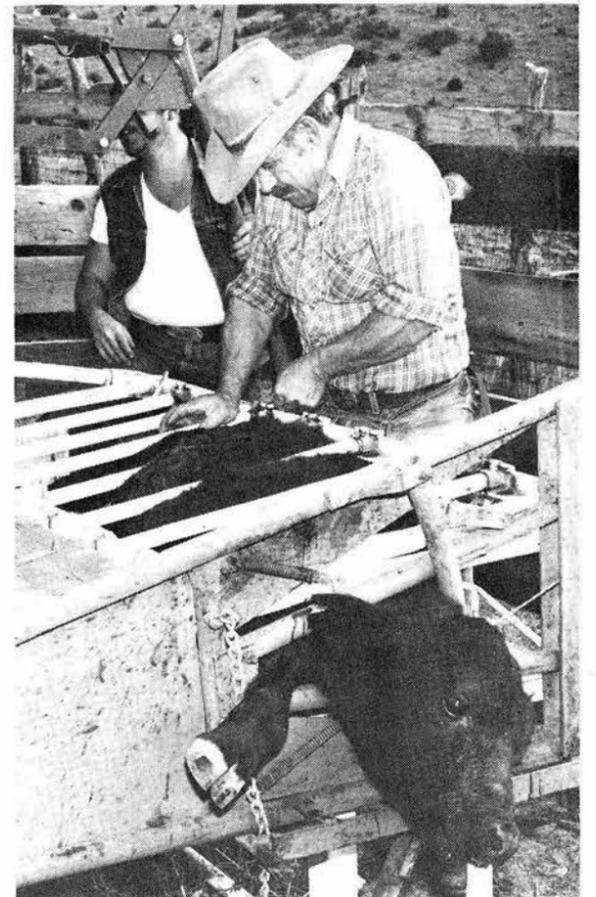
“Things have changed a little since the old days,” Chewie says. “We don’t rope and tie the calves for branding anymore — we use a tilting calf table which speeds up the work and makes it a little easier.”

A couple of years ago, Chewie bought a piece of private land adjacent to his leased area in the Manzanos. He plans to build a ranch house there to serve as headquarters for his ranching activities.

“Cowboying is hard work,” Chewie says, “and I hate to sleep on the ground. The house up here will add a little comfort and save some time.”

Chewie has worked as a security inspector on the swing shift at Sandia for 25 years. He likes it that way — he uses the daylight hours for his farming and ranching activities.

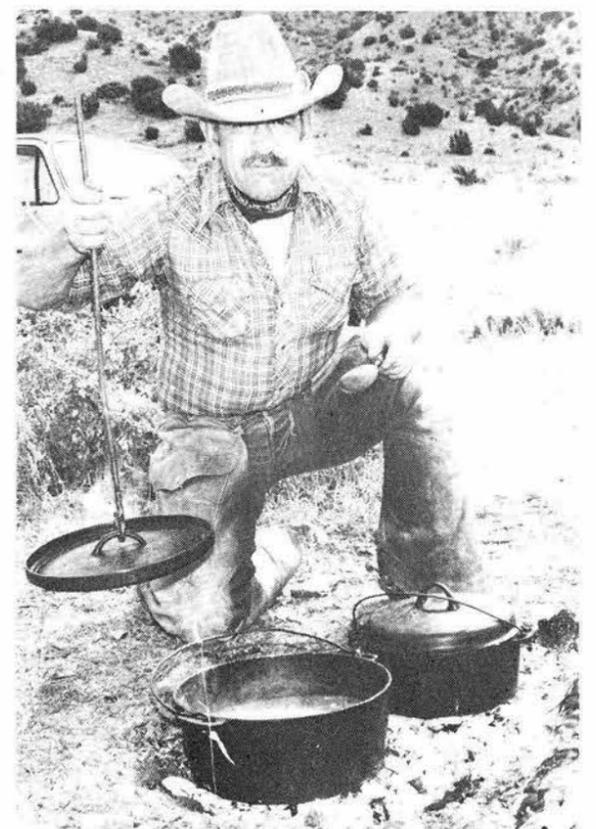
“Things change,” Chewie says, looking across the valley. “We have better roads now and a lot more people. But some things never change. Cows are still ornery and a cowboy still needs a rope and a good horse.”



A CALF is driven into the calf table from a chute, the sides of the table are closed, then it’s tilted to allow vaccinating and branding.



STRIDING across corral, Chewie heads calves into the chute that is the entry to the calf table.

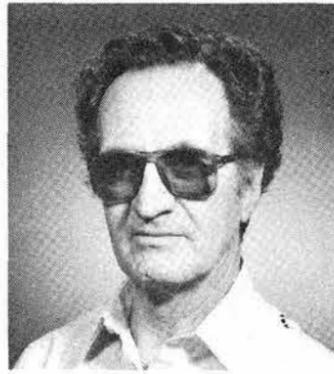


COWBOYS eat well during roundup. While steaks are grilling, Chewie checks the green chili stew.

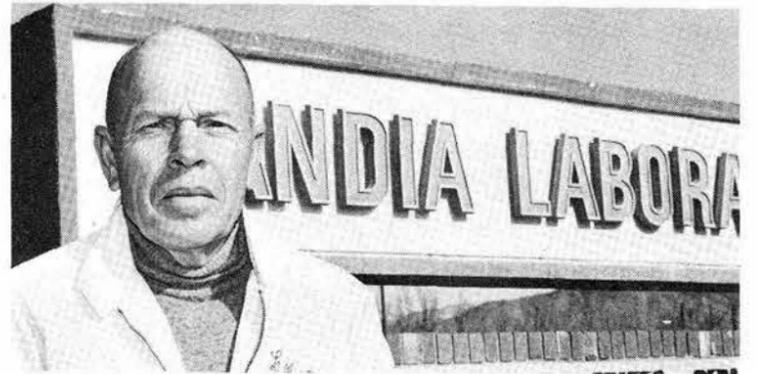
# MILEPOSTS

## LAB NEWS

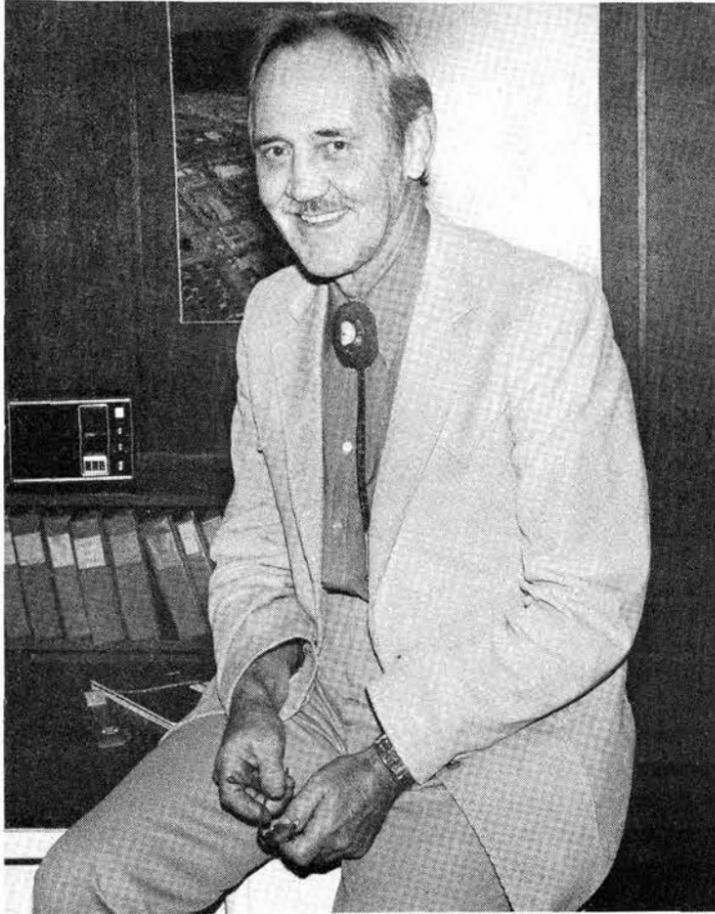
JANUARY 1983



Oreste Ganzerla - 3155 25



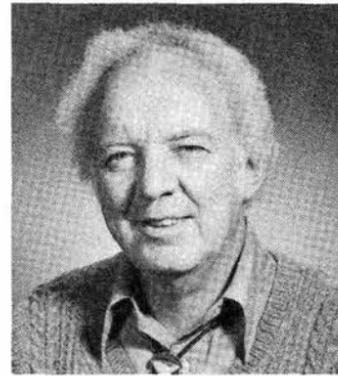
Lewis Larsen - 9721 30



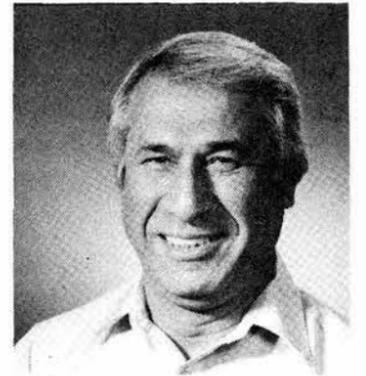
Dave Tarbox - 3400 35



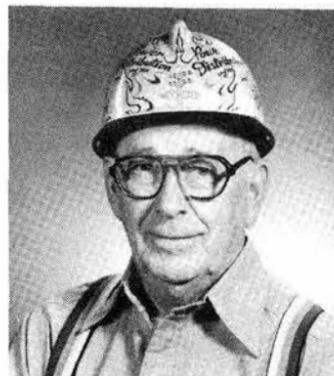
John Colp - 1541 25



Bill Atkins - 7213 30



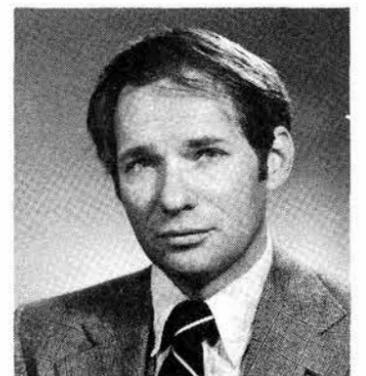
Joe Costales - 3413 30



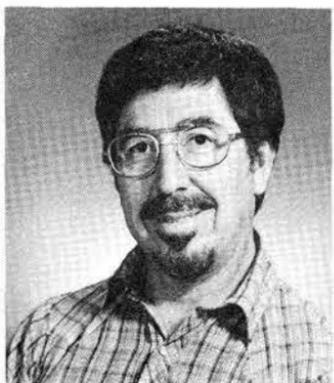
Dave Bailey - 3611 10



Russ Maxwell - 9252 30



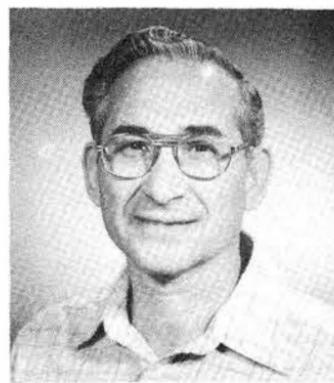
Ed Graham - 2101 15



Ed Coca - 2565 25



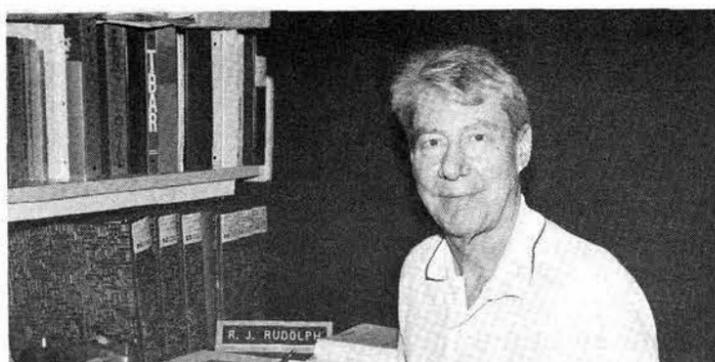
W.E. Tucker - 7424 30



Eugene Chavez - 7543 30



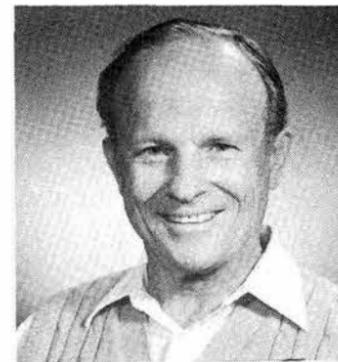
Walt Von Riesmann - 9442 20



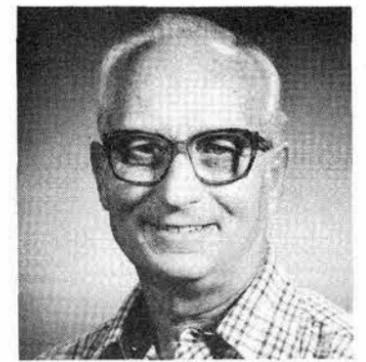
Rudy Rudolph - 7581 30



Marvin Moss - 1824 20



Winton Pafford - 7137 30



Floyd Mastin - 7133 30

## Health Physics Society Meets Here Jan. 9-14

The relationship between health and low radiation levels — whether it is significant and if so, how damaging it is — will be explored during the 16th mid-year national meeting of the Health Physics Society at the Albuquerque Convention Center, Jan. 9-14.

The meeting, "Epidemiology Applied to Health Physics," will include about 50 technical papers, exhibits, and tours of research facilities. It is hosted by the Rio Grande Chapter of the Health Physics Society and sponsored jointly by Sandia and Los Alamos National Laboratories, Lovelace Inhalation Toxicology Research Institute, and DOE.

Epidemiology — a branch of medicine that deals with the incidence, distribution, and control of disease — has been increasingly applied to the study of potential health effects from exposure to low levels of ionizing radiation, says Gloria Millard (3313), president-elect of the Rio Grande Chapter of the society.

"These studies have profound implications on the attitudes and acceptance of the peaceful uses of radiation," Gloria says. "It is important that radiation protection professionals like health physicists understand how epidemiological methods are used in radiation effects studies."

"This meeting also will allow non-medical professionals who deal regularly with radiation effects issues to become more familiar with ongoing research and development."

Presentations will be made by teaching experts in epidemiology and epidemiologists involved in radiation effects studies and development of risk estimates, standards, and criteria.

The keynote address will be by Margaret Maxey, University of Texas-Austin profes-

sor and expert in public perception of risk. Her talk is titled, "Radiation Risks and Benefits: Politics and Morality."

Several members of a National Academy of Sciences committee that prepared a 1980 report on "The Effects of Populations of Exposure to Low Levels of Ionizing Radiations" (BEIR III) will also speak. This federally funded report concludes that the major sources of radiation for the general public continue to be natural background (cosmic rays, rocks, soils, building materials, food, water, and air) and medical procedures (diagnostic x-rays); however, it emphasizes a difference of opinion by committee members on the proper techniques to determine risks associated with exposure to low levels of radiation.

Invited papers will address various risk estimate development techniques, public perception of perceived risks, limitations of epidemiology, follow-up studies of atom bomb survivors, and medical management of persons accidentally contaminated with radionuclides.

Contributed papers will address cancer mortality rates at various facilities that use radioactive materials, data requirements for meaningful long-term epidemiological studies of the commercial nuclear power industry, and radiation-induced breast cancer.

Technical tours of the Los Alamos and Sandia laboratories and the toxicology research institute will be conducted Jan. 14.

Meeting registration details can be obtained by contacting Gloria at Sandia's Health Instrumentation Division 3313 or A. Wendell Holmes, Emergency Preparedness Branch, DOE Albuquerque Operations Office.



F.E. Ramirez (7482)



Jarvis Bumgarner (9234)

### 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 (M0125).

#### RULES

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

#### MISCELLANEOUS

- BOOKSHELF stereo, \$50; elec. fry pan, \$8; elec. mixer, \$6; queen-size headboard, \$5. Robinson, 255-0114.
- TRUCK TIRES, 750-16 8 ply w/Ford split rims, \$25 ea.; complete set Ford truck repair manuals, \$18. Arana, 299-1214.
- BED SPREAD, queen size patchwork velvet, navy blues, browns, cost over \$200, sell \$100. Mason, 299-2836.
- ANTIQUE roll-top desk, oak, \$1000 firm. Trompak, 296-3114 after 6.
- DRAPES, 70 x 80" each panel, beige,

- lined, new, \$15. Woodrum, 266-5264.
- SKIS & BINDINGS, 5', \$110; ski boots, 6M, \$25; ski mittens, new, women's med., \$20; goggles, \$11; poles, 44", \$14. Pritchard, 299-3543.
- FLOOR PILLOWS, \$10 ea.; classic guitar, \$60; '73 Dodge Charger, needs work, \$350. Tolman, 296-8239.
- BOOKCASE headboard, fits king size waterbed, \$40. Schwartz, 294-1113.
- UKC American Eskimo, male or female puppies, \$150. Rimkus, 292-1258.
- SKIS, 130cm youth size, Elan Blueflex, Geze plate bindings, Tomic poles, \$65. Holmes, 292-0898.
- RCA console color TV, 25" tube type, walnut cabinet, \$100. Walker, 821-5938.
- SKI BOOTS, Trappeur, sizes 11 & 6, \$15 per pair. Shunny, 265-1620.
- FIREPLACE heat exchanger, from Sears, 2-spd. fan, \$75; Pocket Instamatic camera, electronic eye & shutter, \$50. Johnson, 299-2526.
- TWO working hard sectored disk drives (CPM included) plus many S100 boards 16K mem., etc., \$300. Hubbard, 842-9431.
- SAMSONITE LUGGAGE, Streamlite, tapered, tan, set of 3: pullman, 2-suit, overnighter, \$40. Chorley, 296-1454.
- PIMENTEL classical guitar, \$75; bumper pooltable, 34"x50", \$95. Lassiter, 299-1492.

- REMINGTON 870 12 gauge pump, almost new, \$160. Gonzales, 247-9406.
- WHEELS for small truck, 6:00x14, \$10/pr.; Reynolds cornet, \$100. Stirbis, 821-5344.
- GARAGE DOORS, 2 ea., 8'x7', metal roll-up, \$40 ea.; Freezer, frost, 15 cu. ft., needs work on inside door panel, \$65. Hansen, 898-3544.
- BOYS BICYCLE, 20" Schwinn, reflectors, std. handle bars, kickstand, \$25; window, 36x36", alum. frame, 2 fixed panes, \$10. Beard, 821-0309.
- COUCH, black naugahyde, \$100; recliner chair, \$75; phone-mate, \$60; 1/2" drill motor, \$35; power hammer, nails, charges, \$25. Falacy, 293-2517.
- TOWBAR, 5000-lb capacity w/safety chain, \$50; quick-connect tow-lights, \$5; hitch, fits 72-73 Torino or Montego wagons, \$50. Crowther, 821-0172.
- STEREO tape deck, Panasonic 8TK cartridge, plus 20 recorded & 4 blank 80-min. tapes, \$80 or make offer. Hughes, 299-6674.

#### TRANSPORTATION

- '69 VW bug, engine overhaul 20K miles; new radials, brakes, fuel

- pump, coil, wiring harness; fenders dented, \$1400. Neel, 821-4270.
- '82 DATSUN 280ZX turbo, all power, leather, "T" top, cassette Dolby, louver kit, \$16K, make offer. Mullin, 298-9060.
- BMX JMC racing Black Shadow, chrome frame & forks, Dura-Ace crankset, MKS-BM-10 pedals, alloy mags, all new, \$250. Sparks, 898-1252.
- '52 CHEV pickup, 4-spd. Garcia, 299-8778.
- '76 FIAT 128, needs radiator & body work, trade for larger car or pickup. Barton, 268-7349.
- '72 MUSTANG, classic model, V8 302 engine, white. Romero, 299-5189.
- '75 PONTIAC Gran Safari, 9-pass. stn. wgn., w/all power options, 8-TK tape, cruise control, 455 cu. in. engine. Sebrell, 821-4227.
- '78 MAZDA GLC 5-spd., 30 mpg, \$2600; '74 Opel Manta Rallye, auto, 20 mpg, \$1350. Bleck, 298-0504.
- '74 DATSUN 260-Z, 4-spd., new carb., \$3500. Gosler, 294-2324.
- '71 AMC Sportabout wagon, 6-cyl., 3-spd., \$850; Jeep hauling trailer w/folding ramps, \$900. Falacy, 293-2517.
- '64 BUICK Wildcat, 2-door, maroon w/white top, PS, PB, AT. Lang, 884-5288.
- '76 TRANSAM, 400 V8, AT, PS, PB, tilt, new paint. Gorman, 255-4431.
- '71 PORSCHE 914, new custom paint & interior. Cuderman, 884-8627.

#### REAL ESTATE

- NEW, Tijeras, 2-story, 2 sundecks, active & passive solar, 3-bdr., 2 baths, on 1 wooded acre, \$25K below appraisal. You finish septic well & carpet. Palmer, 281-2506.

#### WANTED

- LIGHT TABLE, lg. surface w/legs preferred, will consider port. model, for quilting & commercial art work. Stronach, 255-8315.
- TRADE 16", 5-hole Ford wheels for 15" wheels, prefer white. Trump, 299-5162.
- SOMEONE to share townhouse, near work. Dink, 293-0299 after 5.
- WOODEN wardrobe/armoire, good condition, any size or finish is acceptable. Campbell, 256-1015.
- HONDA WAGON, '80 to '82, low mileage. Shunny, 265-1620.

#### WORK WANTED

- TWO female medical students will house sit, care for pets, plants, lawn. Jan and May Bassett, 898-1840.
- HOUSE & apt. painting, UNM student Paintshop, estimates, references. Peter Shunny, 266-0266.

# Barbeque Tonight

TONIGHT at Happy Hour, an old-fashioned barbeque will be spread for the buffet with ribs and chicken, corn on the cob, baked beans and cole slaw. Borderline, a country western group, plays for dancing.

Next Friday, Jan. 14, the Club's famous prime rib is offered at a two-for-one special — \$12. Chisum, playing country and western, is on the bandstand.

BY SPECIAL arrangement with La Compañía de Teatro de Albuquerque, the Club will present a special evening of live theatre combined with a steamship round of beef or chicken buffet. La Compañía will perform "Cuentos Nuevo Mexicanos," a lively musical adaptation of New Mexican tales and folklore. Presented in both English and Spanish, "Cuentos" appeals to both children and adults. Dinner is served from 6 until 7:15, the play starts at 7:30. Following the show, pianist Alex Montoya entertains (with a portable dance floor) in the main lounge until midnight. Cost for adults is \$5, \$3 for kids 12 and under. Call 265-6791 for reservations.

SINGLE MINGLE '83, a bash for all singles on Base, is set for Saturday, Jan. 29. It's a "singles only" occasion starting at 7 with a variety group called Flashback on the bandstand. Goodies and munchies will be available. There's no admission charge. Invitations will be mailed, but you may not be on our list. You and your single friends are invited anyway.

CORONADO SKI CLUB meets for its regular monthly session on Tuesday, Jan. 18, at 7 p.m. in the ballroom. The program is

a discussion of common skiing equipment problems presented by the people from Mountain Sports, Ltd. Movies and door prizes are also on the agenda.

CORONADO GRAND SQUARES offer a new course for advanced square dancers (called plus dancing) starting Monday, Jan. 10. Call Ed Ehrman (2154), 4-2816, for details.

REDONDO ROUND DANCERS meet on Thursdays with a beginners class at 7, Club dancing at 7:30. To enroll, call Charlie (2611) or Betty Clendenin, 299-2071.

TRAVEL — The Club offers a low-fare, one-week package to Hawaii April 16-24 for either \$652 or \$580 depending on whether you stay at the Outrigger or the Beachcomber. See Shirley McKenzie (2432), travel director, in the lobby tonight between 5 and 6 for details. Also Shirley has a Disneyland/San Diego package on March 26-April 2 or April 4-6 for \$328 per person.



THERE WILL BE RAIN TOMORROW . . . AND YOU WILL WEAR YOUR RAINCOAT!

Since 1952, West German law has required that weather reports not only forecast the weather but also personalize it. In unusual detail they tell how weather is likely to affect people. That law in effect recognizes a traditional belief, supported by extensive European research, that weather affects health, well-being, behavior, and moods of most people every day . . . West German biometeorological forecasts are based on decades of experience, research, and statistical analysis of large populations . . . Hans Jurgen Swantes, a weather service biometeorologist who helped devise the system, says that physicians appreciate such advice because it reduces the incidence of unexpected problems in normal treatment, in post-operative care, and in preserving medications, for weather affects the quantity, and kind, of drugs taken. Rehabilitation programs after heart attacks may be attuned to weather conditions. Surgeons may schedule operations for favorable weather.

— Stephen Rosen in *New York Times*

# How Sweet It Is — and Isn't

by Susan Harris,  
Nutrition Consultant - 3300

Many Americans are trying to cut down on the sugar in their diets. The food industry is providing the sugar-conscious shopper with more and better fresh fruit, more products without added sugar, and low-calorie sweets made with sugar substitutes.

Consumers will be seeing these new sugar substitutes in a variety of products soon. Two new artificial sweeteners, aspartame and polydextrose, were approved by the Food and Drug Administration in 1981.

Aspartame is composed of two amino acids and is digested by the body as other proteins are. Aspartame, marketed under the trade name Equal, has the same calorie count per ounce as ordinary sugar but is 180 times sweeter, so it provides the same sweetening power for a fraction of the calories.

It has been approved as a table sweetener and as a tablet for hot beverages, as well as for use in cold cereals, powdered beverages, instant tea and coffee, gelatin, puddings, fillings, dessert toppings, and chewing gum.

It has some drawbacks. In baked goods and desserts, it does not have sugar's bulk, its effect on texture, or its ability to brown foods in cooking.

Polydextrose helps meet these requirements. Also approved by the FDA in 1981, it's made primarily of glucose, with small amounts of sorbitol and citric acid, and has only one-fourth the calories of sugar. It has the sugar-like properties aspartame lacks: bulk, water solubility, and browning qualities.

Still in the testing stage are two forms of sugar that contribute no calories at all because the body can't digest them: Poly-sugar is made by linking a sugar molecule to another longer, heavier molecule called poly (vinyl alcohol). It tastes like sugar, but the molecules are too large to pass through the wall of the digestive tract, so it travels through the body unchanged. Then there is left-handed sugar, which is identical to the sugar we know except in one respect — it's the mirror image of regular sugar. It tastes like sugar and browns like sugar, but the body can't digest it.

Someday maybe we can eat our cake and have our waistlines, too, with sweeteners that give us no calories.



ATTENTION ALL YOU GWYDDONYDDDS!  
A new science journal, every word of which is in Welsh, is being published by the University of Wales Press in Cardiff. Called *Y Gwyddonydd*

(Welsh for *The Scientist*), it appears three times a year. Says "Ariadne" in *New Scientist*, who was the recipient of a copy, "Treading carefully, I confess that I did not know that Welsh was a language supple and comprehensive enough to cope adequately with science, but it obviously can. From scrutinising the articles in *Y Gwyddonydd* I infer that there might be a slight problem from time to time, for instance with acronyms. They may not work out the same in Welsh, in which case English has to be resorted to. This is an example: 'Enwyd y ffactor yn globwlin gwrth-haemoffilig (antihaemophilic globulin — AHG) . . . GGH would not convey anything.'"



"Gee, 1983 already? Good heavens, that means I've got only three years to get ready for Halley's comet. What have I done since 1910?"