

**O Tannenbaum, O Tannenbaum,  
Wie treu sind deine Blätter.  
Du grünst nicht nur zur Sommerszeit,  
Nein, auch im Winter, wenn es schneit.  
O Tannenbaum, O Tannenbaum,  
Wie treu sind deine Blätter!**

 **LAB NEWS**

**CHRISTMAS 1983**

# Antojitos

**Bah! Humbug!**--I called my mother the other night and told her that I'm not coming home for Christmas this year. She laid a guilt trip on me. I've had it with Christmas, and I don't need the guilt. I think it's time we told the truth about Christmas in America late in the 20th century.

Christmas is no longer a religious holiday. In fact, we lie to our kids about Santa Claus. To me, modern Christmas is more an exercise in greed than anything else. Americans are manipulated and motivated to buy endless quantities of junk. Who needs a cabbage-headed doll? Or the travail of the crowded parking lots and store aisles? The short tempers? The surly clerks? All of that, plus the insincere "merry Christmas" which I put in the same category as the inane "have a nice day." Scrooge is believable only when he's saying, "bah, humbug." He's looking at his over-the-limit charge card notices.

Christmas should be celebrated in public only in church. Take the merchants and organizations out of it. Make it a very private observance--at home, with family, and friends. Invite your mother.

•dg

\* \* \*

**'Tis the Season to be Jolly**--It is a bit difficult to sustain that culturally prescribed euphoria from Thanksgiving through New Year's Day (see above). But I argue, I hope convincingly, that Christmas is worth it. I'm talking about the entire holiday season, including Hanukkah and pueblo feast days and luncheons with co-workers and parties and the whole ethnosocioreligious cultural heritage package.

I'm not talking about packages, per se--I deplore the "who's giving gifts to whom, and how much do I have to spend?" ethic too. But, like it or not, Christmas in our society means we have a way to say "I like you." It's a time to remember, or even be with, the people we find special. And we can do it because we have some time off from the yearlong hustle of doing the things that have to be done--an opportunity, maybe even an urge, to slow down and share ourselves somehow with those special people.

Besides, I like holly and Christmas carols and family gatherings and ethnic foods and generations-old traditions and saying "Merry Christmas"--so I'll make myself feel good right now by saying "Merry Christmas, Sandia, and a Happy New Year!" •BH

\* \* \*

Paz en la tierra, buena voluntad a la humanidad. (Peace on earth, good will toward men.)



DORIS STEIDER

## Our Christmas Cover

# Paint Misty For Me

The original painting reproduced on this year's Christmas edition of LAB NEWS was done by Doris Steider. She calls it "Misty," and says that it doesn't represent any particular location--"just a landscape that I wanted to paint."

The painting was done in egg tempera--fresh egg and pigment on a gesso panel--the medium for which Doris is best known.

The wife of retired Sandian C.B. McCampbell, Doris has a BS in applied design from Purdue and an MS in fine art from UNM. She exhibits her work in galleries in Houston, Abilene, Lubbock, Tucson, Red River, Farmington, and Albuquerque. In addition to painting, Doris does small bronzes; from clay, she sculpts figures of Indian children and then works closely with a foundry in Santa Fe to complete the lost-wax, bronze casting.

She has been honored with more than 70 awards in local, regional, national, and international juried competitions, and her work has been shown in more than 200 major exhibitions.

LAB NEWS is honored to share her talent with its readers--thank you, Doris!

\* \* \*

*(The traditional translation of the German carol stanza on the front cover: Oh Christmas tree, Oh Christmas tree, How lovely are your branches; Not only green when summer's here, but in the coldest time of year; Oh Christmas tree, Oh Christmas tree, How lovely are your branches.)*

## Sympathy

To Lynn Barker (1534) on the death of his mother in Chula Vista, Calif., Nov. 25.

To Julian Silva (3618) on the death of his mother in Albuquerque, Nov. 27.

## Congratulations

Timothy (2551) and Althea Moss, a daughter, Rebecca Marie, Nov. 26.

Frank (3426) and Debbie Lujan, a son, Dominic, Nov. 8.

Dave (1154) and Lucy Ginley, a son, Arthur Norman, Nov. 21.

Harold Gough (7551) and Florence Horner of Thomaston, Ga., married Nov. 19.

Bob Manhart (3151) and Karen Davis (DOE) married today in Albuquerque.

Charles (3612) and Lydia Dalton, a son, Lucas Brett, Dec. 1.

Pamela (3612) and Jerome Mincey (3612), a son, Damon Alexander, Nov. 17.

## EXPERTISE REVISITED



"What, Sir, would you make a ship sail against the wind and currents by lighting a bonfire under her deck? I pray you excuse me. I have not time to listen to such nonsense." (Napoleon to Robert Fulton, circa 1810)

## LAB NEWS

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### SANDIA NATIONAL LABORATORIES

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## A First on the Factoring Front

We may all have done some factoring of numbers in high-school algebra and thought nothing about it since, but to mathematicians the factoring of very large numbers has in the past year or so become a very hot — and significant — topic. (To factor a number is to find two numbers whose product is equal to it; 15 is factorable into  $5 \times 3$ .) Factoring especially large numbers is of both basic and applied interest — the latter because of its use in, among other things, two-key cryptography (see box).

Mathematicians in Sandia's Applied Mathematics Department 1640 are in the forefront of this work worldwide. They recently found some clever ways to break through the formidable barriers that had prevented the factoring of numbers much beyond 50 digits in length.

As a result, Jim Davis and Diane Holdridge (both 1641) recently set a new world's record for the longest number ever factored by a general purpose factoring routine — 63 digits long. No sooner was that disclosed — in scientific presentations and in a lengthy news article in the Dec. 2, 1983, *Science* magazine — than the same Sandia team extended that record by successfully factoring a 67-digit number on Sunday, Dec. 4.

Things have been moving very fast on the factoring front. As recently as one year ago, it seemed that numbers of more than 50 digits were computationally beyond reach. Each addition of three digits doubled the amount of computing power or computing time necessary to factor a number. Mathematicians involved in this business had on their lists of "wanted" and "most wanted" numbers certain lengthy numbers inordinately difficult to factor that were 60 digits long. They looked at them wistfully, as an astronaut might look upon a journey to Alpha Centauri. Everyone was about ready to give up the quest.

"It was thought that no one in the foreseeable future could whittle off much larger numbers," says Gus Simmons (1640). Now all that has changed.

What brought the leap forward was not more powerful computers — although the Sandia mathematicians used the Lab's powerful Cray I. It was discovery of a way to exploit a particular and fortuitous aspect of the Cray's architecture — its internal organizational structure.

But first a few words about the way large numbers are factored. It certainly is not by trial and error division by successively larger numbers. Even at a billion divisions a second, it would take anywhere from 100 million years, for a 50-digit number, to  $10^{19}$  years — a billion times longer than the age of the universe — for a 71-digit number (see box).

What is needed is not just any method for factoring but a particularly *fast* one. To begin with, the method, called an algorithm, breaks the problem down into smaller parts: it factors hundreds of thousands of smaller numbers on its way to the big solution. It takes many time-saving shortcuts in doing so. If one of the numbers doesn't factor easily, it instantly goes on to the next. "If at first you don't succeed, quit,

and go on — that's its strategy," says Gus. Particular numbers may have to be factored only partially; it doesn't waste time factoring them completely.

Diane and Jim used a particular factorization algorithm, called the quadratic sieve (developed by Carl Pomerance of the University of Georgia), and found that it may be faster than any other one known. This one substitutes a faster subtraction process for the multiple precision division process necessary in the other leading contender.

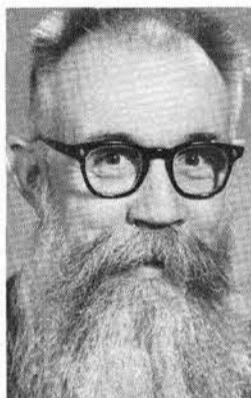
The big breakthrough came over a beer at a conference at Winnipeg, Canada, a little over a year ago. Gus Simmons and some other mathematicians were discussing the enormous difficulties in factoring large numbers. The killing problem was that very long number components, or vectors, must be modified many millions of times. The time it took to make each change was pro-

(Continued on Page Six)



MATHEMATICIANS Jim Davis and Diane Holdridge and the Cray computer they used recently to factor a 67-digit number, the largest number ever factored thus far.

### Gus Simmons on Factoring Significance



It is hard for the layman to appreciate the significance of factoring — even for a state-of-the-art result — for two reasons. First, factoring is so difficult that even the largest numbers that can be factored don't look that impressive. For example, the number consisting of 71 ones, which is only two-thirds of a typed line in length, is the current target for the Sandia researchers, and if factored will set a new world's record for the largest number ever factored by a general purpose factoring routine. To gain some insight into why factoring is so difficult, consider the straightforward approach to factoring a number by successively dividing by 2, 3, 5, etc., until a factor is found by trial divisions. If one had a computer that could complete a division every billionth of a second, it would still take  $10^{19}$  years to factor the Sandia test number by trial divisions. The age of the universe is less than  $10^{10}$  years! Compared to these almost incomprehensible times, the estimated 20 to 25 hours of Cray time needed will be an impressive accomplishment. The bottom line, though, is that factoring is so difficult that even the largest numbers that can be factored just aren't very big.

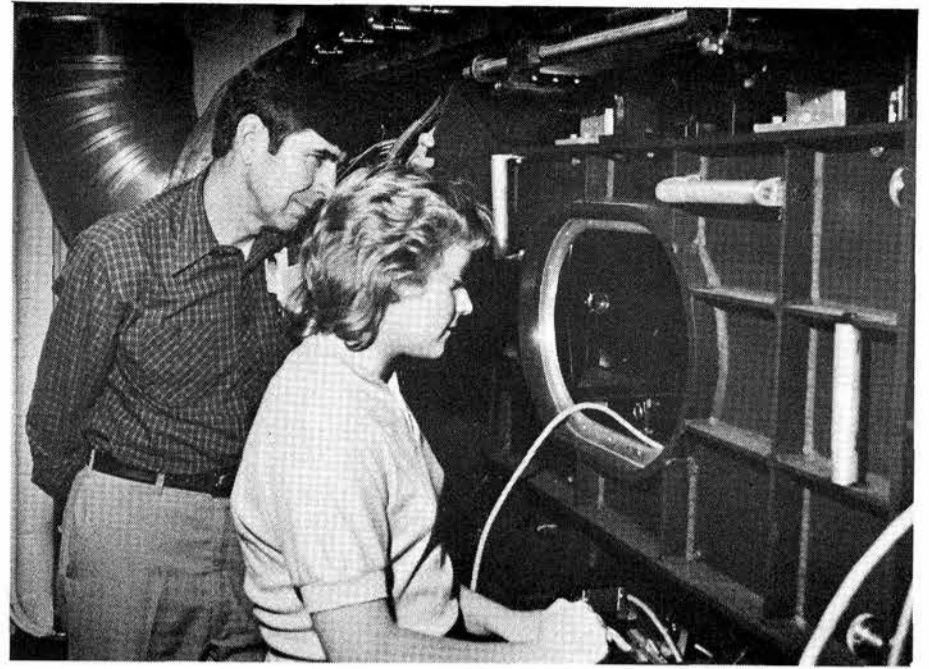
The second question for the layman is: "Who cares?" This question, fortunately, has an easy answer. In our increasingly "information intensive" society in which electronic funds transfers, "smart" credit cards, direct debiting sales systems, automatic teller machines, remotely accessible data

bases, expert systems (for dial-up medical diagnosis, for example), etc., are increasingly commonplace, data integrity is synonymous with personal liability, credit, privacy, and, indeed, welfare. Data integrity in turn ultimately depends on cryptographic-like schemes, mostly on two-key (aka public key) techniques. The main contender for a national standard for a two-key cryptographic algorithm — which is also the algorithm used by Sandia — is the RSA (named after the inventors Rivest, Shamir and Adleman) that depends on the difficulty of factoring for its cryptosecurity. Most of the industry is currently betting on a "key" size for the "standard" RSA algorithm of 154-digits (512 bits). In other words, if one could factor an arbitrary 154-digit number he could "break" these cryptosystems to impersonate bank customers, read private files, intercept electronic mail, etc. Research on factoring is the only way to determine how large the numbers must be in order for data encrypted with the RSA technique to be secure. There is of course a compelling reason not to make the numbers much larger than needed since the cost (time, complexity of equipment, and money) increases exponentially with the size of the numbers.

The bottom line is that factoring is likely to be indirectly important to everyone — especially so if the National Bureau of Standards chooses the RSA algorithm as the national two-key cryptographic standard. And it's important to Sandia's work with, for example, the National Seismic Stations, which must authenticate seismic data that detect any nuclear detonations in the area they cover.



INTRICACIES of a modern parachute are explained to Socorro Middle School student Jennifer Campbell (right) and her teacher, Sarah Haigler, by Carl Peterson, supervisor of Parachute Systems Division 1632.



WIND TUNNEL offers Jennifer an insight into aerodynamics theory. Don McBride, supervisor of Experimental Aerodynamics Division 1634, explains the facility's features.

### Going for the Flow

## Socorro Student Sees Sandia

A letter from an aerodynamically involved middle school student from Socorro led to several potential research projects as well as a visit to some Sandia facilities.

The student is Jennifer Campbell, an eighth-grade student who obviously wanted the jump on her competition in an upcoming science fair. Her letter requesting help in selecting an appropriate aerodynamics project was routed to Mary McWherter (1636) and Terry Jordan (1635). They not only provided Jennifer with a list of possible projects—a water or smoke tunnel that would make aerodynamic flow visible, a model glider or parachute—but they also invited her to visit Sandia's wind tunnel, parachute lab, and flight simulator.

"Jennifer was very interested in our work here," reports Mary. "Although she didn't understand everything we showed her—and how could she be expected to?—she certainly gained far more understanding of aerodynamics than I had at her age. Her teacher, Sarah Haigler, accompanied Jennifer, and I'm sure she'll do a good job of sharing what Sandia is doing with all the students in her classes."



SOMETIMES high technology can be just a bit hard to follow.

### VIA

## Retiree Aids Job Corps

"Mr. Bert" is a familiar figure on the well-kept grounds of the Albuquerque Job Corps Center. As he walks about the spacious campus, students and teachers warmly greet the man many Sandians remember as Bert Quelle.

"Mirtha, a girl from Tamaulipas who came to the Job Corps via the Texas onion fields began calling me that a few years ago," he explains. "And 'Mr. Bert' caught on — now everyone here knows me by that name." For the last six years, Bert has been a volunteer teacher providing one-on-one tutoring two days a week at the Job Corps campus near 12th Street and Indian School Road.

Established in 1966 by the federal government to provide academic and vocational training to young people, the Job Corps program is open to any U.S. citizen or permanent resident between 16 and 21 years of age who is out of school and unemployed.

State employment offices across the U.S. refer applicants to Job Corps recruiters. Students receive an allowance, room and board, and complete medical and dental care. The Albuquerque campus has over 400 students mainly from Texas and New Mexico.

"The students are mostly high school dropouts who've decided to bring their

basic skills up to an acceptable level so they can get and hold a job," says Bert.

Albuquerque's Job Corps school was first established in 1966 in the El Fidel Hotel (later Cole Hotel) and moved to its present campus in 1972. The site was formerly St. Anthony's Orphanage and, before that, St. Joseph's College (now University of Albuquerque).

Bert is evidently proud that the students maintain the well-tended landscaping and the spic-and-span appearance of the grounds. He points out that they do building and maintenance work if the project matches up with the trade they're learning. "All projects are approved as a learning function by the Department of Labor. Vocational teachers — electricians, carpenters, masons, welders — come to us from industry. Some are provided by the National Association of Homebuilders."

Bert points to a busy construction site: "See over here, the students have completely renovated this old building in the style of an Old Town restaurant. They converted it, inside and out, into a new office building."

Director of Training Marty Hess explains that the operation of the center is

(Continued on Next Page)

RETIREE Bert Quelle believes that *al fresco* tutoring sheds light on most academic subjects. Here he's conducting class with his "portable desk" on the grounds of the Albuquerque Job Corps Center as students Irma Ruiz and Gonzalo Murillo pay close attention.



## Retiree Aids

subcontracted by the Department of Labor to Teledyne Development Corporation — just as Western Electric administers Sandia for DOE. She adds that Job Corps students in the past have been placed in six-week "work experience" programs at Sandia (although there are none now): "Currently though, we have a number at the Kirtland BX. Sandia's continuing interest is demonstrated by Bob Garcia's [3500 director] participation on our Community Advisory Council."

"We greatly appreciate Mr. Quelle's services," continues Assistant Director of Training Sarah Turney. "A recent review by the Department of Labor's regional office rated Bert as the best volunteer in the region. He has patience and the unique



ability to establish a rapport with these young people. We're lucky to have Bert and we can use many more just like him."

Bert recalls some outstanding students; Lydia, a girl from Honduras is one; "When she arrived at the Center, she couldn't speak any English. She wanted to be a nurse until we convinced her she could aspire to more. Lydia is now in premed at the University of Oklahoma.


"Another is Mirtha — the Tamaulipas girl who first called me 'Mr. Bert.' After completing her studies here, she joined the Air Force and is now stationed in Hawaii.

"The first day I met Larry, I asked him to read a paragraph from TIME magazine. He was unable to read the first word, 'Now.' After two years he was reading very well and he now works for a parts company in Houston, his home town.

"Nobody had ever told these kids that they're capable," Bert continues. "All their lives it had been drummed into them that they couldn't succeed. It's amazing what they can discover about themselves here. If you show these kids you believe in them then they'll believe in themselves."

In his spare time, Bert works on his newly purchased home and gardens. He's also kept busy by nine grandchildren — and by talking long distance with many ex-students around the country, like Lydia, Mirtha, and Larry. • cm

### NEWS McNUGGETS

 USA Today is really setting the trend in abbreviated journalism. Someone was overheard at the Association for Education in Journalism and Mass Communication conference in Corvallis, Oregon, remarking: "Gee, I read a great investigative paragraph the other day..."

—Communications World



# SANDIA LIVERMORE NEWS

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## Awards for Solar Sandians

Two Sandians, Al Skinroad and Jim Bartel (both 8452), were honored by the Solar Thermal Division of Solar Energy Industries Association (SEIA) at its annual meeting recently in Phoenix. Awards of merit were presented in recognition of their "professional, energetic and effective support of the Government/Industries solar thermal programs in the 1970's and 1980's." SEIA is the national industrial association, which represents manufacturers, designers, and financiers for all solar industries.

Operating under a contract with the DOE, Sandia holds the prime responsibility for technical management, testing, and performance evaluation of Solar One, the 10MWe Solar Thermal Central Receiver Pilot Plant near Barstow. Al is the supervisor of the Systems Evaluation Division of Sandia's Solar Central Receiver Department, which supported the DOE in the design selection of this solar electric pilot plant. Jim participated in the Sandia activities during the past four years and was the on-site technical director for the past 14 months.

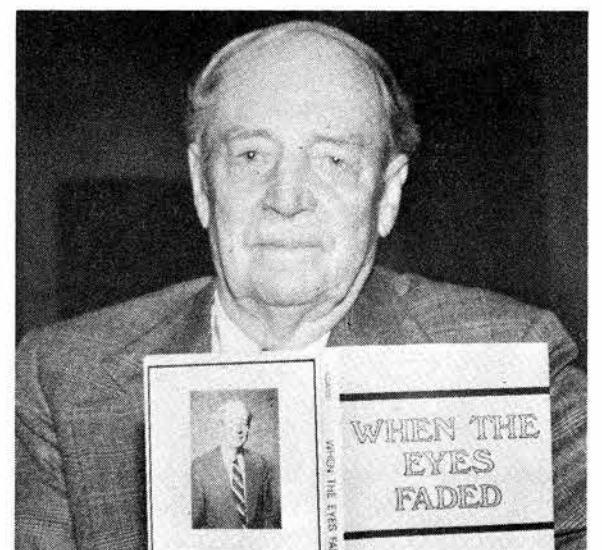
Al was quick to point out that the awards were symbolic of the work performed by the 80-plus Sandia and contractor people directly involved in Solar One. In addition to Sandia staff, the plant team includes members from Southern California Edison, the utility partner; the Department of Energy; and the principal Sandia contractor, McDonnell Douglas.

"The Solar One project exemplifies the fundamental strengths of an engineering laboratory — the capability to plan and execute a large-scale research development project and to interact on a technical level between the private and public sectors," Jim said. "The SEIA recognition was particularly satisfying because it reaffirmed that the industrial sector and a national laboratory can work together in developing new technology."



RECIPIENTS of the awards of merit for their work on solar thermal programs are Al Skinroad, left, and Jim Bartel (both 8452). They are also holding a photo of Solar One, for which Sandia is technical manager.

Al adds that several accomplishments at Solar One remain to be completed. Engineering testing will be finished in August 1984, and Solar One will then be turned over to Southern California Edison for routine power production. Operation of the plant as a standard utility will be another major step in the development of this new solar technology.



RETIRED SANDIAN Roy Adams of San Francisco recently had his book "When the Eyes Faded" published by Carlton Press. It is an inspiring story about his wife and her love and heroism as she was losing her eyesight. The book details her fading vision, a brain tumor operation, the struggle for survival in the cardiac care unit of a hospital and her partial recovery of sight. Roy said he wrote the book "to help others cope with problems of limited vision and the need for people to deal with brain tumors 'early and promptly.'" Sandians in Livermore interested in obtaining the book can contact the Public Information Office (8201) for details.

## Retiring



Jack Hubner - 8264

## Factoring First

portional to the length of the component even though only a small number of places on each was involved. A Cray research engineer in the group, Tony Warnock, said the architecture of the Cray was such that a shortcut was possible.

What was special about the Cray's architecture? Gus explains with a story. Suppose you had a roll of stamps and you wanted to mark every seventh one. You'd count it out — 1, 2, 3, and so on. That's method No. 1. In method No. 2, suppose that instead you folded the stamps into groups of seven and simply marked down the edge. Obviously the second method is faster, and just as accurate, and therefore preferable.

It turned out that the architecture of the Cray made it possible to factor in a way that resembles method No. 2. In factoring, it doesn't have to go through a sequence of numbers slavishly. It's able to cut corners. "It was pure serendipity," says Gus. "Nobody had designed the Cray for that purpose. This was the chance for a sudden leap forward."

The Sandia mathematicians at first weren't sure it would work. Gus, Jim, and Diane set to work on the Cray to see. They first used the basic quadratic sieve algorithm without the modification. They factored a 55-digit number in 4.4 hours, a 58-digit one in 8.8 hours.

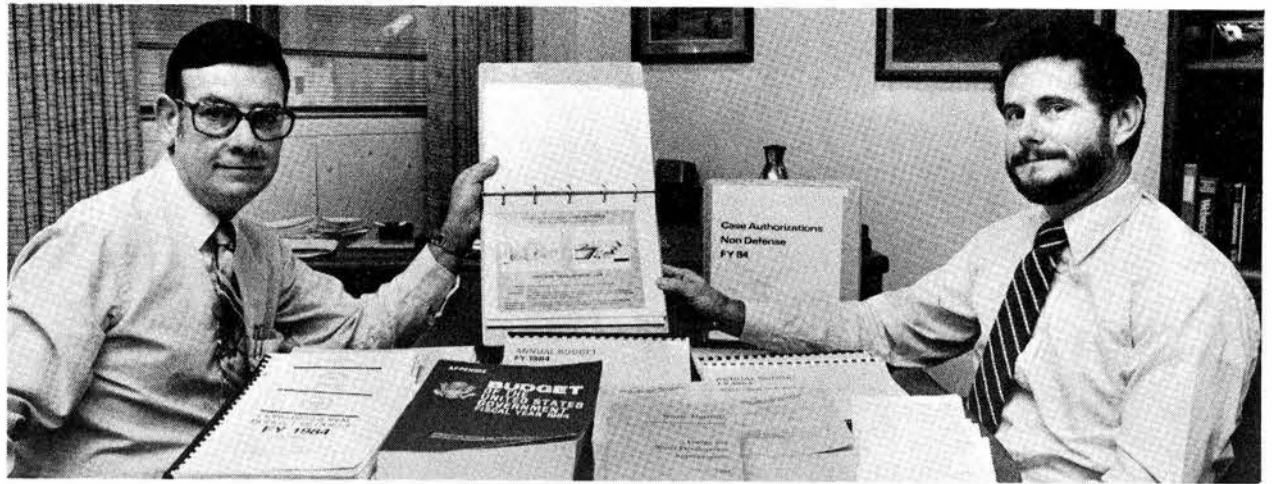
Then Jim modified the algorithm to exploit the Cray architecture. The same 58-digit number now took only 1.8 hours! A 60-digit number, which had been only half factored after 18 hours of computation before the modification, was completed in only 4 more hours. Their (for a short time!) world record number of 63 digits took only 5.4 hours total.

What Gus calls the "intimate matching" of the factoring algorithm to the architecture of the Cray was indeed a tremendous computational shortcut. Complex factoring operations could be completed many times faster than had ever before been anticipated.

On the first day of December Gus said he was confident that his Sandia colleagues would be able to factor a 67-digit number by Christmas. But Jim and Diane were already preparing the Cray for the task, and they put it to work that weekend. (The operation takes virtually the entire million-word memory of the Cray — in fact, Diane had to do some manipulating to make room for everything. They usually run their calculations on weekends, when the Cray is less busy.)

Before they did it, Gus said he expected the factoring of a 67-digit number would take 19 hours. On Sunday, Dec. 4, after 13.7 hours of computing time, the Cray successfully completed factoring the number. The number can be represented as  $4.4975 \times 10^{66}$ . (The 44975 are just its first five digits!) The machine factored it into a 15-digit and a 53-digit number. The latter, it informed them incidentally, was also factorable and has since been found to be the product of two prime numbers.

The Sandians had set another new world's record for longest number factored. They now have their sights set on a 71-digit



FY 84 BUDGET, as represented by the documents that went into its creation, and two of the many people who helped to formulate it—(l. to r.) Paul Stanford (100) and Paul Brewer (140).

Says Paul Stanford

## FY 84 Budget 'Looks Good!'

The word "budget" has a negative connotation for most of us. But not for Organization 100.

LAB NEWS talked recently with Paul Stanford, Comptroller 100, about the FY 84 Labs budget. The talk was enlightening — the budgeting process became less of a mystery. And heartening — "The budget this year generally looks good," says Paul.

The 84 weapons budget, for example, had its genesis way back in late 1981 when Sandia proposed \$495 million. That figure became \$463 million a year later when guidelines for an updated submission were acted on.

Early in 1983 Sandia conservatively estimated that affordable "manpower" or employees (measured in FTEs — full time equivalents) would remain approximately the same in FY 84 as it was in FY 83 — about 8000.

After discussions between the vice-presidents and directors on the Energy and Reimbursable Committee, headed by Al Narath (10), and those on the Weapon Committee, headed by Tom Cook (20), Sandia began preparing for an 84 budget that would meet the targeted manpower level while allowing some growth in "direct support," most of it earmarked for an expansion of our computing capabilities.

In mid-83 the 100 organization made some best-guess assumptions: the weapon program would be reduced by 50 FTEs because of a likely Congressional reduction in manpower and because Sandia's \$27 million New Mexico gross receipts tax liability would have to be absorbed by the overall budget; at the same time, energy programs would stay level and reimbursable programs would rise by 75 FTEs. Small Staff essentially confirmed those assumptions, but added a few new positions.

"Then, in July, a miracle happened,"

number. A task that only a few months back seemed almost inconceivable may now be achieved, they say, during the coming holidays.

"The state-of-the-art in factoring has increased from 50- to 70-digit numbers in a little over a year," notes Gus. This is an enormous jump, and Gus emphasizes, given the importance of factoring in codes that affect everyone, it is a highly significant realization.

says Paul. "The energy and water resources appropriation bill was signed. That bill funds about 97 percent of our DOE programs — both weapons and energy — and in prior years that bill wasn't signed until the 23rd hour of the last day of the fiscal year — or even later, thanks to a Congressional ploy known as a Continuing Resolution. And, as opposed to the earlier assumption, Congress authorized President Reagan's entire budget for weapons programs."

Based on this appropriations bill and the fact that the Office of Military Applications partially funded the gross receipts tax liability, Sandia was able to restore 25 FTEs to the weapon program in September.

A comparison of FY 84 with FY 83 (adapted for comparability) in terms of manpower:

Program	FY 83	FY 84
Weapons	2269	2251
Energy & Research	1520	1633
Direct Support	1497	1503
Indirect Support	2664	2699
Exec VP Reserve	0	20
TOTALS	7950	8106

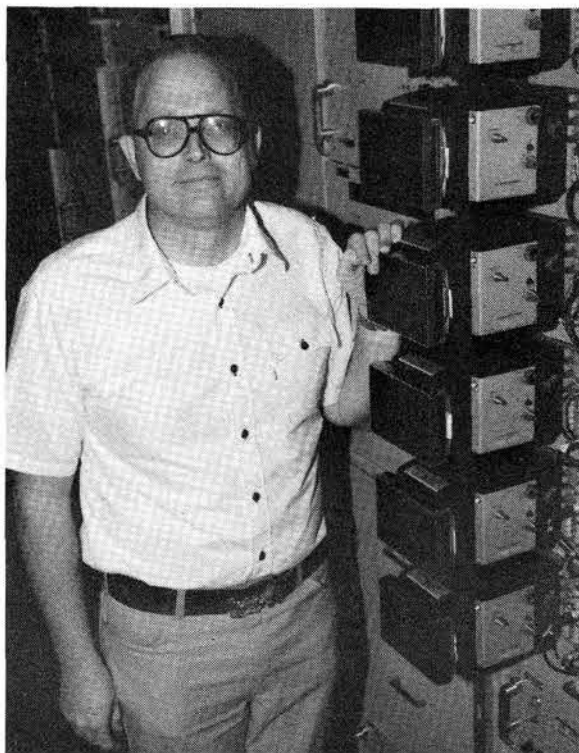
The same comparison in terms of millions of dollars (estimated):

Program	FY 83	FY 84
Weapons	\$420	\$467
Energy —		
DOE-funded	\$162	\$185
Reimbursable	\$175	\$96
TOTALS	\$757	\$848

That's a 12 percent increase in dollars. In addition to the \$848 million for operations, there's some \$47 million for construction (including a Radiation Hardened Microelectronics Facility and continued funding for the Simulation Technology Laboratory, PBFA II, and the Technology Transfer Center) and \$42 million for capital equipment (including a CAD-CAM system, purchase of a Cray computer in Albuquerque, a major Cray upgrade in Livermore, and a mobile C-band radar system at Tonopah). The grand total for the Labs is then \$937 million. "To put it another way, roughly \$1 out of each \$1000 of the 84 federal budget goes to Sandia," Paul points out.

The budget includes some new starts, a cancellation or two, and further funding for equipment and utilities restoration and for new construction — but those are subjects that President Dacey will cover in his State of the Labs message in an upcoming LAB NEWS. Stay tuned.

## Supervisory Appointments



BILL PETERS (7264-1)

BILL PETERS to supervisor of Test Operations Section 7264-1, effective Nov. 18. His work location is at Pantex.

Bill joined the group that he now supervises as a technician in May 1976. Before joining Sandia at Pantex, he was an Albuquerque businessman.

He received an associate degree in EE from the North American Technical Institute in Albuquerque. Bill served in the Navy from 1959 to 1966, spending the last years of his naval service as an instructor in special weapons; he was stationed on Sandia Base, the predecessor of Kirtland East.

Bill has an advanced amateur radio certificate, and he enjoys his home computer. He and his wife Patricia have two sons and live in Amarillo.

\* \* \*

FRANK FOX to supervisor of Electrical and Mechanical Section 3618-1, effective Dec. 2.

Frank joined Sandia in March 1951 as an explosives assembler. He later transferred to Plant Engineering where he completed numerous assignments in electrical work, estimates and, most recently, construction inspection.

Frank served two years in the Air Force before coming to the Labs. Most of his leisure time involves work around his home in northwest Albuquerque.

\* \* \*

ALICE MORGAN to Assistant Treasurer and Manager of Financial Department 4020, effective Jan. 1.

Joining the Labs as a secretary in Purchasing in July 1963, she later served as an assistant personnel representative. In 1968, she took an educational leave of absence and completed her MBA. Alice returned to Purchasing as a Buyer in 1969, and transferred to the Accounting Department in 1971.



FRANK FOX (3618-1), ALICE MORGAN (4020), LEROY GARCIA (3613-4), and (standing in back) FELTON BINGHAM (6313)

Two years later she was promoted to supervisor of Payment Control and Accounting Section. She completed section supervisory assignments in various combinations of travel, relocation, and payroll. She was promoted to supervisor of Travel and Relocation Division in 1980 and, since July 1981, has headed Employee Accounting Division 152.

Alice earned both BBA and MBA degrees from UNM. As a community service, she has served on the Family Counseling Board of Directors; she's held various offices with the organization, including president. Other interests include skiing and sewing. Alice's husband Al works for the Federal Aviation Administration. They live in the NE heights.

\* \* \*

LEROY GARCIA to supervisor of Support Services Section 3613-4, effective Oct. 28.

Leroy joined the Labs in September 1974 as a millwright carpenter in the structural apprentice program. His work has included welding, rigging, set-up and repair of equipment, modifications, and test support.

He attended UNM and completed T-VI's electronics program. Before coming to Sandia, he worked for local electrical and plumbing contractors. Leroy has been an instructor in the apprentice program in general millwright courses and power tool safety. He's a weekend farmer at his place in the NW valley where he has completely remodeled his house and is now planning a solar addition.

\* \* \*

FELTON BINGHAM to supervisor of NNWSI (Nevada Nuclear Waste Storage Investigations) Repository Performance Assessments Division 6312, effective Nov. 25.

In September 1964, Felton joined Sandia's research group, working in the field of atomic physics. He later worked for several years on high power gas lasers. Most recently, he's been with Environmental Assessments Division 6333, preparing environmental documents pertaining to the WIPP program and to the disposal of uranium mill tailings.

Felton earned a BS in physics from Tulane and his MS and PhD — both in experimental nuclear physics — from Indiana University. He is a member of the American Physical Society. He was named a Distinguished Member of the Technical Staff (DMTS) by Sandia earlier this year.

Felton and his wife Eddine have four children, two still at home. They live in the NE heights.

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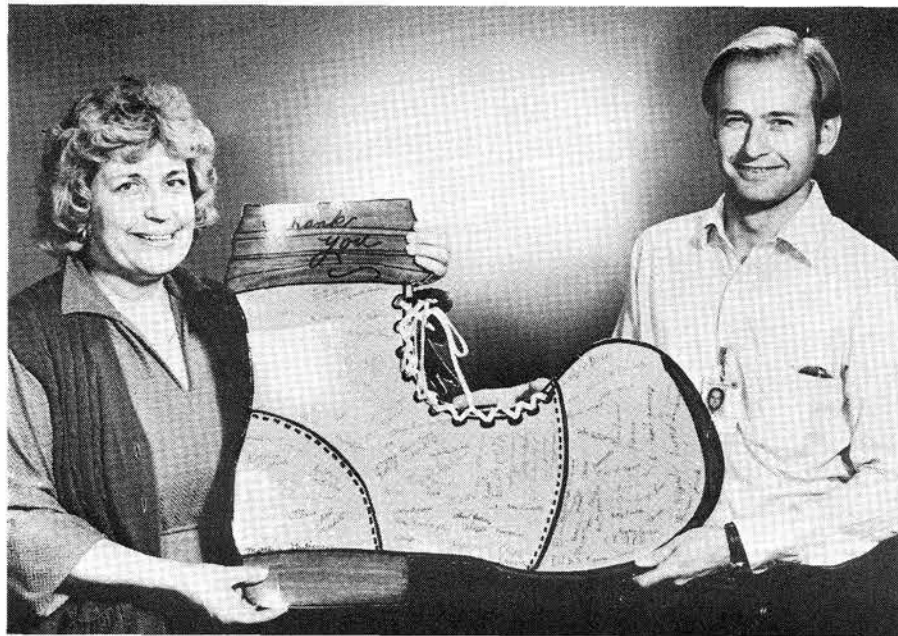
## A Bit of Good News

Premiums for the Second Supplemental Group Term Life Insurance Plan will be waived for the months of January through April 1984 for all coverages (one time and additional) with coverage remaining in force. This waiver of premiums applies only to employees and retirees who were plan participants before May 1, 1983.

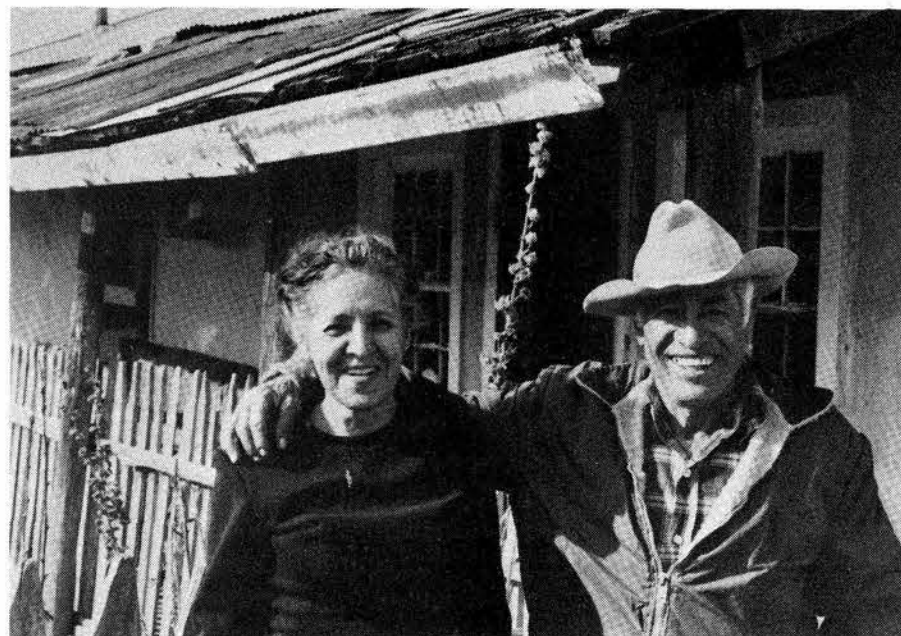
This waiver of premiums is a result of favorable claims experience during the policy year that ended last April; there is no assurance that an additional waiver will occur in the future.

The first waiver of deductions for employees will be reflected in the Dec. 22 payroll for both weekly and biweekly paid employees. The first waiver of deductions for retirees will be reflected in the Jan. 2 pension payment.

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LAST YEAR'S "Shoes for Kids" chairman, Bob Keeling (5310), was presented with this giant autographed shoe from more than 100 grateful kids at the Dolores Gonzales Elementary School by teacher Cris Hastings. This annual Christmas charity, conducted by employees in the 7200 Directorate, is in its 26th year of providing shoes to needy children. Last year, Kinney Shoes in Coronado Center gave the group a significant discount on the purchase of the shoes, and provided refreshments for the children. Sanchez Bus Company provided two buses to transport the children. Chairman for this year's campaign is Don Rohr (7212).



THE MONTOYAS of the village of Escabosa are among the families being helped this Christmas by the South Highway 14 Village project, which sells books, T-shirts, and belt buckles out of the LAB NEWS office. In operation for 18 years, the project has identified some 80 families in need in the villages (besides Escabosa, Chilili, Tajique, Torreon, Manzano, and Punta), and the budget this year will enable assistance to 35 families. Big plus this year is contribution of canned goods from Coronado Club's children's Christmas party: price of admission was a can of food for the South 14 Project.

### **Advice: Bassett Has It**

## **Jump That Battery — Don't Let It Jump You**

Jump-starting your car in the winter is as New Mexico as piñon-burning in the fireplace. Both of them can give you a warm feeling. But beware — the warm feeling you can get from jumping a battery may not be what you had in mind. In fact, jump-starting can be hazardous to your health.

LAB NEWS asked Dick Bassett (2564), Sandia's expert in electric vehicles and, by extension, automotive batteries used in conventional vehicles as well, to comment on the procedures to follow in using booster cables to get on the road again.

"Lead-acid batteries, the kind used in vehicles, fail because of age, misuse, lack of maintenance, or faulty modules," says Dick. "With all these causes of failure, it's not surprising that your car won't start some cold morning."

But before you attach those booster cables, remember that batteries, especially weak batteries, produce hydrogen — and hydrogen is explosive! A battery can blow up and give you a warm feeling you'd rather not experience. Even the "maintenance free" batteries, the ones without vent caps, can explode and turn the battery into a kind of bomb. (To minimize the threat, be sure the water level in your battery is kept at the recommended level.)

To reduce the hazard of battery blow up when jump-starting:

- make sure both batteries (jumper and jumped) are the same voltage (most modern vehicles use a 12-volt system but old vehicles often have 6-volt);
- keep sparks, flames, and cigarettes away from batteries;
- protect your eyes (preferably, wear safety goggles);
- don't lean over batteries.

Then follow these instructions carefully:

- position both vehicles so the cables can reach easily from one battery to

the other;

- but do *not* allow the vehicles to touch;
  - turn off all electrical loads on both vehicles;
  - set both parking brakes, and put automatic transmission selectors in "park," manual transmissions in neutral;
  - determine whether the discharged battery, the one you're giving the jump to, has a negative (marked -) or a positive (marked +) terminal (or "post") connected to "ground" (that is, to the engine block or the frame, not to an electrical device).
- NOTE: The battery terminal connected by cable to the starter relay is the one that is *not* grounded. All cars manufactured in the USA in the last 20 years have the negative terminal grounded; all European and Japanese passenger cars have negative ground since 1971.

- be sure that the vent caps, if any, are tight on both batteries;
- place a damp cloth over any caps on both batteries — but be sure the cloths are clear of fan blades and other moving parts;
- then make the booster cable connections — *in this sequence* in order to keep any sparks produced by the cable connectors from occurring near either battery:

1. connect the ends of one cable to the positive terminals of the two batteries;
2. connect one end of the other cable to the negative terminal of the booster battery (the good one);
3. IMPORTANT — connect the other end of that cable to the bumper or the frame or other metallic ground (but not the carburetor) on the vehicle with the discharged battery, *not* to

the negative terminal; in other words, keep it away from the battery;

- make sure that all cables are clear of fan blades, belts, and other moving parts on both vehicles;
- start the engine of the car with the good battery;
- wait a minute; then attempt to start the engine of the other car;
- if the vehicle doesn't start after engaging the starter for 30 seconds, STOP (an engine that won't start in 30 seconds probably needs some mechanical adjustment before it will start);
- if it starts, allow it to return to idle speed and remove the cables in reverse order — last on, first off — with the last disconnection that of the positive terminal of the good battery;
- discard the damp cloths;
- thank the person who helped you — and plan to replace or recharge (perhaps some extended driving may do it) your battery immediately.

Cut out these simplified instructions and tape them to your jumper cables or under vehicle's hood near your battery.

1. Be sure vehicles don't touch.
2. Allow no sparks or flames near batteries.
3. Shield eyes and face from batteries at all times.
4. Place damp cloths over battery vent caps.
5. Connect positive (+) terminal of charged battery to positive terminal of discharged battery.
6. Connect second cable to negative terminal of charged battery.
7. Make final connection AWAY from battery of stalled vehicle.
8. Start vehicle; then remove cables in reverse order.
9. Discard damp cloths.



# Distinguished Members of Technical Staff



**Horace Poteet (311)**

For his consistently demonstrated qualities of leadership in a very wide variety of engineering programs, original contributions to technology and theory in these programs, and exemplary record of resourcefulness and insight.



**Dean Wolf (312)**

For his outstanding contribution to Advanced Parachute Technology and for a sustained record of technical contributions and leadership on programs of national importance.



**Jack Houston (1134)**

For his inception and development of soft x-ray appearance potential spectroscopy and his pioneering work in the use of Auger electron spectroscopy as a probe of local chemical environment.



**Gene McGuire (1231)**

For his sustained and original theoretical research on many aspects of atomic physics in support of Sandia programs on nuclear weapon effects, ion beam fusion, and x-ray lasers.



**Joe Black, Jr. (1522)**

For his sustained contributions in the form of structural mechanics support for weapons design, in particular his applications of fracture mechanics, and of his introduction of comprehensive engineering design procedures, including preferential failure mode concepts.



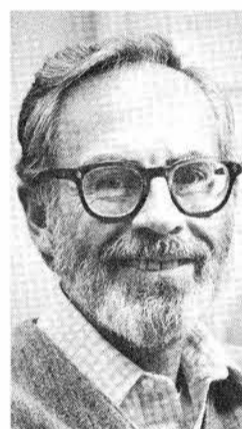
**Dennis Grady (1534)**

For his fundamental contributions to knowledge of the mechanisms underlying deformation and fracture produced when solids are subjected to intense shock loading, and his application of this knowledge to the solution of practical weapon engineering and energy-resource recovery problems.



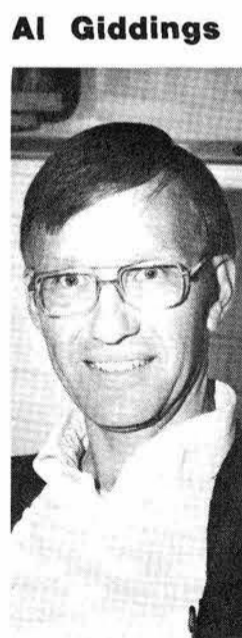
**Ted Krein (1651)**

For his sustained contributions in the form of innovative mechanical design. His achievements have been important to successful designs of nuclear weapons, weapon safeguards, diagnostic rockets, reentry vehicles, and rocket payloads.



**Charles Arnold, Jr. (1811)**

For his outstanding and sustained scientific contributions to the field of polymer synthesis, polymer degradation, and ion exchange membranes for storage battery separators.



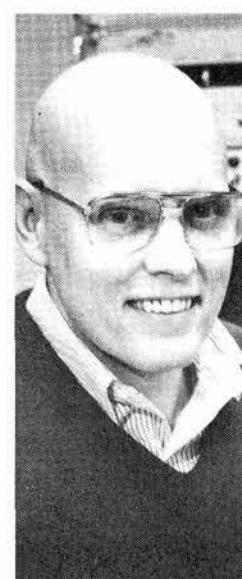
**Al Giddings (2115)**

For his significant contributions to nuclear weapons subsystem development, including design of radiation-hardened electronics, analog and digital circuits, and computer systems. His consistent outstanding performance has included development of advanced inertial reentry systems, the SANDAC navigation computer, and microelectronic circuits.



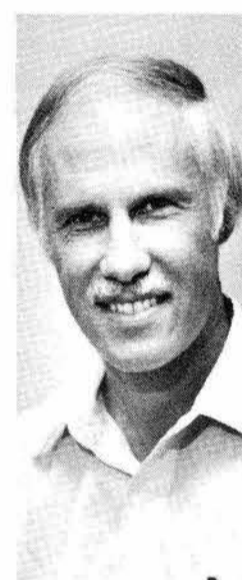
**Bill Clement (2335)**

For his continuing and outstanding technical and project leadership in the area of nuclear weapon command and control, and exceptional contributions to the development of ground and aircraft controllers, especially the automated PAL controller.



**Ted Dellin (2146)**

For his contributions to understanding radiation effects in materials and components, the development of surface analysis methods, the system analysis of the solar central receiver, and process development of nonvolatile VLSI memories. His work is directly applied to Sandia missions, both in energy and weapon areas.



**Keith Treece (2115)**

For his outstanding contributions in the areas of digitizing transient waveforms, high field varistors, and integrated circuit memory design. His performance has consistently been of the highest quality and in many diverse disciplines, all directly applied to the prime mission of Sandia.



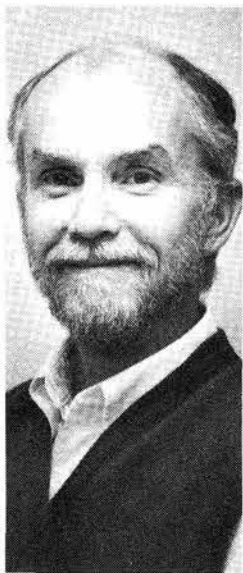
**Gerald Cessac (2363)**

For his outstanding significant technical contributions on a wide variety of fireset-related assignments. His individual contributions include material compatibility issues, stress analyses, computer-aided engineering, and development of new encapsulation and configuration for enhanced nuclear safety.



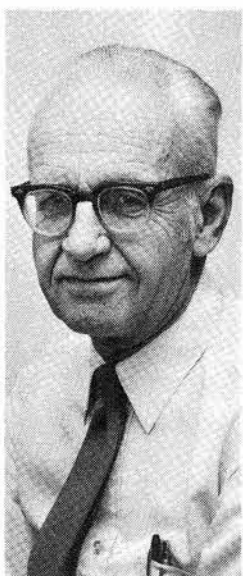
**Don Carnicom (2545)**

For his consistently superior performance in the field of electromechanical components, displaying innovative design, sound organization, technical depth, and inspiring leadership that has contributed significantly to the accomplishment of the Laboratories' mission.



**Dale Koehler (2534)**

For his nationally renowned contributions to the understanding of radiation effects in quartz, development of radiation-hardening techniques, and innovation in hardness assurance methods, and for continued creativity and leadership in quartz device design.



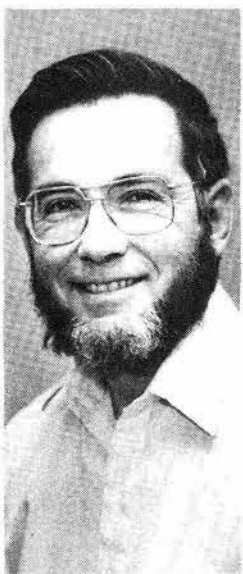
**Ralph Hampy (2562)**

For his outstanding technical contributions to a broad spectrum of component technologies and for exemplary technical and professional leadership during a career devoted to the development of state-of-the-art components for the US nuclear weapons program.



**Lee Bertram (2646)**

For his outstanding work in analytical mechanics, particularly his work on theoretical modeling and solidification theory development, which significantly contributed to the understanding of the arc physics and fluid flow in the vacuum consumable arc remelt process and led to improvements in a critical production process within DOE.



**John VanDyke (2641)**

For his outstanding contributions in scientific computing, particularly his exceptional computational competence as a research physicist in studies of electron properties of solids, critical phenomena of special materials, and cluster calculations of hydrogen in metals; and his outstanding technical and leadership capabilities as a systems programmer of large-scale computers.

**John Middleton (5138)**



For his sustained and significant technical contribution to the national nuclear weapons program, including pioneering design work on fluid-filled inertial safing devices, which have exhibited 19 years of trouble-free stockpile history; participation in the successful design of two integrated arming, fuzing, and firing systems for Navy re-entry bodies; design of mechanical aspects of a fleet defense warhead; and participation in various weapon concept and feasibility studies.

**Larry Johnson (5123)**



For his sustained and significant technical contributions to the nuclear weapons programs in aircraft compatibility. He is one of the nuclear weapon community's most recognized weapon compatibility experts and has made major contributions in providing a nuclear capability for all current operational aircraft authorized to carry U.S. nuclear weapons.



**Jerry Freedman (5161)**

For his sustained and significant technical contributions to the national nuclear weapons program, including contributions in the areas of engineering analysis, nuclear materials transportation, and Phase 1 and 2 system design.

**Clayton Erickson (5215)**



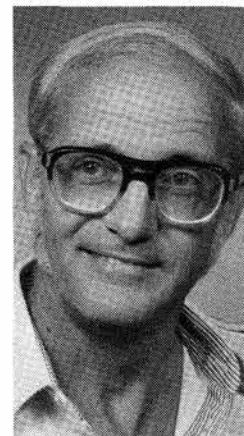
For his continued outstanding service in the national nuclear weapons program, including the design and development of electronic systems for the transportation safeguards program; the development of analysis and display equipment for intrusion sensors; and the planning and fielding of experiments for the Aerospace Nuclear Safety program.

**Cec Sonnier (5254)**



For his sustained outstanding service in the development and implementation of domestic and international safeguards; in the COIN, JTF-2 and JTF-8 activities; and for professional contributions to the defense, security, and international communities.

**Mel Perkins (5235)**



For his sustained outstanding technical contributions to nuclear weapons programs, including security systems designs, weapon safety studies, and the design and testing of weapon components and systems.

**Cliff Fisk (5262)**



For his continued outstanding technical performance, including nuclear security and weapon instrumentation and testing; and major contributions to all phases of computer research and development at Sandia.

**Bill Hartman (5256)**



For his sustained outstanding technical contributions to the mission of the Laboratories, including NEST explosive containment; Safeguards systems analysis; transportation accident severity probabilities, including the NWSHEG study; and artillery shell ballistics analysis.

**Cliff Jacobs (5322)**

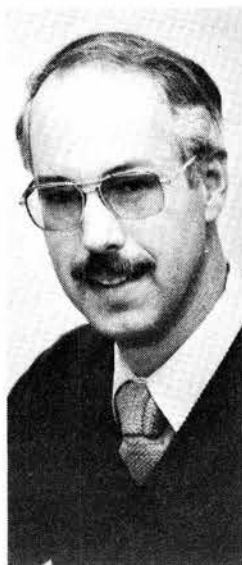


For his outstanding technical contributions and dedicated project leadership in the development and implementation of electro-optical sensor instrumentation systems for satellite deployment. His efforts have been, and continue to be, essential to the success of Sandia's space sensor programs.



**Emil Kadlec (6225)**

For sustained technical contributions that include technical project management of the engineering and testing of mechanical systems for nuclear weapons, the technical oversight and coordination of reimbursable projects for DARPA and the U.S. Navy, and the coordination of development activities for the vertical axis wind turbine project.



**Howard Stephens (6246)**

For sustained, outstanding technical contributions that include the development of state-of-the-art calorimetric techniques, the assessment of geologic data for selection of nuclear waste storage sites, and an understanding of solvent hydrogenation mechanisms and the operation of novel catalysts in direct coal liquefaction.

**Rick Beasley (6257)**



For sustained, outstanding technical contributions that include unique mechanical and electro-mechanical designs of weapon delivery systems, the coordination of the testing of advanced weapon systems, and the development of innovative analysis technique and special purpose hardware for oil shale fracture technology and underground oil storage technology.



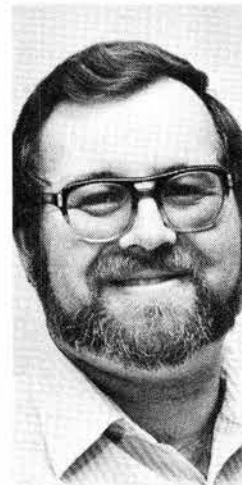
**Bob Klett (6334)**

For his sustained and significant technical contributions in leading experimental efforts and conducting system analyses in support of weapons and nuclear waste management programs.



**Joe Rivard (6420)**

For sustained outstanding performance and conspicuous contributions to reactor safety with exceptional insight and through the thorough interpretation of research results.



**Larry Buxton (6444)**

For sustained outstanding performance and conspicuous contributions to reactor safety research through the conduction of experiments and the development and applications of computational methods.



**Luke Vortman (7111)**

For his outstanding research and analysis of nuclear explosion airblast, cratering, and ground motion phenomena.



**Ray Reed (7116)**

For his continuing contributions to understanding the instruments used in field measurements, and for the effective use of these instruments in support of the weapon effects and energy programs.



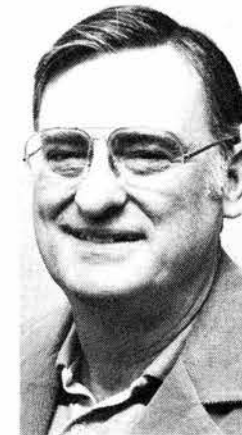
**Bill Kampfe (7535)**

For his sustained superior performance in planning rocket sled testing programs, designing innovative test vehicles, and organizing the personnel and equipment to meet test objectives for the evaluation of weapons, space, and energy systems being developed by Sandia and other government agencies.



**Bill Sundt (7222)**

For his major contributions to the field of nuclear weapon reliability technology.



**Alan Swain (7223)**

For his major contributions to the field of human reliability analysis.



**Jess Bozone (7253)**

For his major contributions in the field of component evaluation technology.



**Bob Beasley (7172)**

For his outstanding contributions to the weapon development program in the fields of special instrumentation, test data acquisition, and telemetry.



**John Gieske (7552)**

For his sustained superior performance in the field of nondestructive evaluation and, in particular, creative contributions to ultrasonic testing and imaging, ultrasonic transducer and system design, and material properties evaluation.



**David Ryerson (5336)**

For his sustained outstanding technical achievements in the design and development of digital instrumentation. His contributions to reliable dense memory circuits have made possible measurement systems in use from the ocean floor to the upper atmosphere.



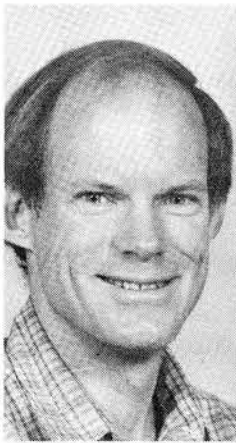
**Carlton Furnberg (8162)**

For his consistently high technical performance in the national nuclear weapons program, including the warhead electrical system design for the Ground-Launched Cruise Missile.



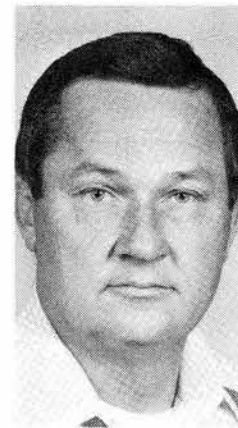
**Billy Pontsler (8162)**

For his significant and extensive technical contributions over a wide range of mechanical designs and development activities for the national nuclear weapons program.



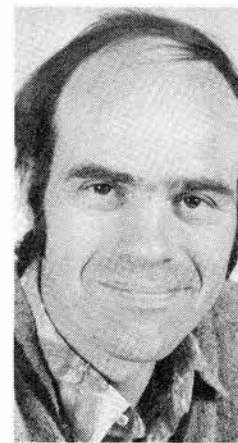
**Tom Jefferson (8335)**

For his sustained and significant contributions in mathematical software, and in planning and implementing the interactive computing network.



**Norm Breazeal (8328)**

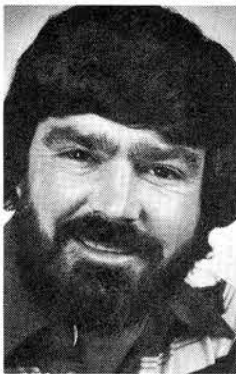
For his continued outstanding contributions in characterizing and modeling adversary threats to the United States and its allies.



**Charles Hartwig (8442)**

For his sustained and unusual breadth of contributions in applied research and engineering development in the weapons program.

**Pete Witze (8362)**



For his outstanding technical performance in developing velocimetry diagnostic techniques and applying them toward a new understanding of weapons and internal-combustion engine flow processes.



**Jack Bolen (8445)**

For his sustained contributions on a wide variety of assignments in weapons development and production projects.

## Take Note

The South 14 Bookstand — If you've lived in Albuquerque for years, it's likely that you have heard of William Keleher, one of the Albuquerque originals. Coming here in 1888 at age two with his family, Keleher rose from humble beginnings to become the city's leading lawyer. He was also a man with a sense of history, and he includes in *New Mexicans I Knew: Memoirs, 1892-1969* his observations of the people, both grand and humble, who figured in the colorful growth of Albuquerque and New Mexico. The book is written with wit and insight, and Keleher must have known just about everybody — the index alone includes nine pages of names. It makes good reading and is available as a reprint by the UNM Press, \$9.95, at LAB NEWS, Bldg. 814.

The South 14 Project also has a copy of the UNM Press catalog of books in print, and promises fast delivery on any order. See the catalog in the LAB NEWS office.

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The Albuquerque Museum is host to a traveling show that highlights four New Mexico artists. The exhibition, "The Second Western States/The 38th Corcoran Biennial Exhibition of American Painting," opens in the East Gallery on Dec. 18. The artists featured are Allan Graham, Albuquerque; John Fincher, Santa Fe; Jaune Quick-To-See Smith, Corrales; and R. Lee White, Questa. The work of each of these artists is also represented in the permanent collection of the Museum. This show of contemporary art from throughout the West will hang through March 4. Museum hours are: Tuesday through Friday, 10 to 5 p.m.; Saturday and Sunday, 1 to 5 p.m.; closed on Mondays and holidays.

If you've ever attended one of the Pueblo ceremonials you have probably either witnessed or experienced some moments of confusion about the actions of visitors. The Maxwell Museum of Anthropology at UNM can solve this problem. The Museum is presenting a public program on "Pueblo Feast Day Etiquette" from 6 to 9 p.m. on Jan. 18. The program is a workshop on the behavior recommended for visitors to the upcoming spring Pueblo ceremonial events and includes discussion of appropriate courtesy and a complete Pueblo feast. For registration information, call Maxwell Museum Education Division, 277-2924. The Museum is located at the northeast corner of University Blvd. and Ash N.E.

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Retiring this month and not shown in LAB NEWS photographs are Charlie Ross (6000), Jim Demas (5111), Virginia DeWitt (7658), Violet Fogleman (5210), Richard Lopez (7473), Rudy Lucero (3615), Carmie Sanchez (3532), Bertha Grant (3432), George Pacheco (3421), Eileen Young (7522), Doris Miller (5300), and Doris Spohr (2312).

\*\*\*

The Eubank gate will be closed from Dec. 26 to Jan. 2.

For the second consecutive year, Chuck Cockelreas (4000) has won first place in the National Writers Club Poetry Contest. Final poetry judge Charles Ghigna, poet-in-residence at the Alabama School of Fine Arts, compared Chuck's winning entry, "I Will Not Sleep This Night," with Andrew Wyeth's painting: "He uses words the way Wyeth used a paint brush," said Ghigna. "His poems are rich with finely honed synesthesiastic imagery, causing a vibrant aura and mood around each scene. I am sure we will all see more of his poems in print." Quite likely — Chuck retires at the end of the year and intends to write poetry and fiction full-time.

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The 20th annual symposium of the New Mexico chapter of the American Vacuum Society is April 17-19 at the Albuquerque Hilton. Technical sessions on surface science, thin films, and other topics in vacuum science and technology will include speakers from all over the country plus New Mexico. Those who wish to contribute papers, attend any of the short courses offered, or receive a flyer describing the symposium should contact Jerry Nelson (1823).

### EXPERTISE REVISITED



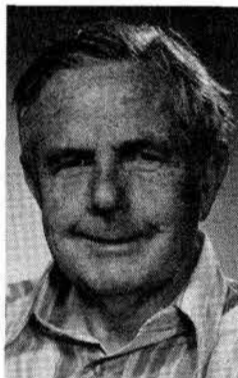
"Space travel is utter bilge." (Sir Richard van der Tiet Wooley, The Astronomer Royal, 1956)

# Tom Harrison Remembers

We're into another holiday season, and we're still a free people who enjoy at least a relative peace on earth, goodwill toward mankind. Our freedom stems at least in part from the sacrifices of defenders like Tom Harrison (6221). Tom is a quiet, thoughtful man. Known at Sandia as a consummate engineer, totally professional, Tom joined the Labs in April 1954 and worked first in manufacturing engineering, then in quality control, in systems development, and now in solar energy projects.

He graduated from West Point in 1943 when he was 21 and, after fighter pilot training, joined the 14th Air Force in China, the Flying Tigers. He flew P-40's for a while, then P-47's. He was still a fighter pilot flying F-80 jets when the Korean conflict started. Stationed on Okinawa in 1951, Tom transferred to Korea as a squadron commander. He flew 38 missions before ground fire brought him down. He was blown out of the aircraft and used his parachute. He spent the next 27 months in a North Korean prisoner of war camp. LAB NEWS believes his insights into the nature and philosophy of his captors — and those of others behind the Iron Curtain — are worth sharing.

During July and August 1983, the anniversaries marking the end of World War II and the Korean War were overshadowed by peace demonstrations and antinuclear protests that viewed with horror the bombings of Hiroshima and Nagasaki. August 1983 also marked the thirtieth anniversary of my release from 27 months in a North Korean prisoner of war camp.



The attention given a handful of protesters caused me to think back on one feature of the POW camp — compulsory classes on the theory of communism. These classes went on for 10 hours a day six days a week for several months.

The instructors were well educated — and well indoctrinated in communist theory — and spoke excellent English. They taught us that as yet true communism does not exist. True communism is the third step in a three-step process. The first step is revolution, the overthrow of existing governments. The second step is the dictatorship of the proletariat, and the third step is the millenium, or true communism.

It is this third step that makes communism attractive to many. Its motto is "to each according to his needs and from each according to his ability." Therefore, according to communist theory, there will be plenty of material goods to satisfy the wants and needs of everyone; there will be no need for armies and police forces because there will be no enemies and no crime; there will be no envy, no covetous-

ness, and no hatred. Everyone left will love each other and will instinctively act in perfect harmony to fulfill the needs of the community.

The communists are not the only ones to have such noble goals. Our own political system has established laws, taxes, and social philosophies that tend to aim us in the direction of the millenium.

But there's a major difference between communists and us — a dictator tells them how to achieve the millenium. We choose by free consensus, a point my captors didn't dwell upon.

The communists recognize that some people will object to living in the millenium. Therefore, one of the first objectives of the revolution is to get rid of these people — the leaders of the governments, religious leaders, captains of industry, educators, and other political dissenters.

Those left going into the second phase, the dictatorship of the proletariat, are the leaders of the revolution and the masses. This second phase has two goals — the spread of revolution across the entire globe, and the re-education of the masses. The first goal requires a military capability second to no other nation on earth.

To accomplish the first goal, there is a master plan. New strategies for world conquest are developed, tried, and re-evaluated. If a particular move encounters too much resistance, the rule "two steps forward and one backward" is invoked. The Truman Doctrine caused the Russians to back out of Greece. President Kennedy's show of force in 1962 kept nuclear-tipped missiles out of Cuba.

(One of the more disturbing revelations unveiled in these classes more than 30 years ago was the communist plan for conquering the United States — to take advantage of dissatisfaction and unrest in the countries of our Central and South American neigh-

bors, foment revolution, take over, isolate the United States, and allow it to fall of its own weight.)

The second goal of the dictatorship of the proletariat, to re-educate the masses, requires the establishment of an elite group, which considers itself omniscient and infallible.

Because the elite are always right — down to the smallest detail — they cannot tolerate any opposing thoughts. Russia and China, each of which has its own group of elite, can never get along because one group is bound to conceive ideas in opposition to the other. Since each group considers itself omniscient, it cannot tolerate opposing ideas or practices advanced by the other.

Each group does have in common the idea that the end justifies the means — that which helps to meet their objectives is moral. By this reasoning the invasion of Afghanistan is moral, the invasion of Grenada is immoral.

In addition to the creation of an elite group, my captors pointed out that the second goal requires that the masses be completely isolated from all ideas that oppose those of the elite. Through pressure, the masses can be induced to react in the manner deemed best by the elite. Future generations would inherit the characteristics acquired by their parents. The process would continue until all acquire the characteristics that would make the millenium possible.

It was acknowledged in advance that there would be left after the revolution people who would be untrainable and also that there would be mutations — people whose pattern of thinking regressed to the old ways. These had to be eliminated. Stalin is said to have ordered more than 100 million such people executed.

(Continued on Next Page)

## Citation Accompanying Harrison's Distinguished Service Award

Lt. Col. Thomas D. Harrison distinguished himself by exceptionally outstanding service to the United States from 21 May 1951 to 6 August 1953 while a prisoner of war in North Korea. Despite a deteriorating physical condition resulting from the unskilled amputation of one injured leg, six primitive operations on the remaining one, inhumanly brutal beatings, long periods of sadistic torture and ruthlessly incessant interrogations, Col. Harrison remained absolutely steadfast in his refusal to divulge security information to the enemy. In November 1951, during a forced winter march of 140 miles from Kandong to Pingchong-Ni, Col. Harrison, although compelled to hobble along on crude, makeshift crutches, and clad only in lightweight

clothing, with a singular display of selfless humanitarianism, frequently surrendered his own place on the one small ox-cart to other prisoners whom he considered in worse physical condition than himself. Col. Harrison was hated and feared by both the North Koreans and Chinese communists for his aggressive belligerence to their demands. His exemplary conduct, in all places where he was confined, was an instrumental factor in inspiring other prisoners of war with the will to resist the enemy. The outstanding leadership, intrepid courage, tenacious determination and heroic self-sacrifice of Col. Harrison are worthy of emulation by his countrymen and reflect the highest credit upon himself and the United States Air Force.

## Tom Harrison Remembers

While I was a POW, I noted two examples of the communist idea of morality. Starting in January 1952, the communist nations launched an intensive propaganda campaign accusing the United Nations forces of waging germ warfare. Pilots captured after that date were subjected to the most brutal treatment. The truth of the matter was that an epidemic of typhoid, typhus, and cholera had broken out among the civilians, that is, the older people, in North Korea. This epidemic could have been controlled by inoculation. Most of the young people were in the North Korean armed forces and were inoculated. The deaths of more than two million older people from this epidemic served two purposes — their deaths made good propaganda material, and the communists got rid of the people who would be hard to re-educate to the mold desired by the North Korean dictator.

The second example, a more personal one, occurred in April 1953 when the UN and the communists reached an agreement to exchange sick and wounded prisoners. Because I had lost a leg, I clearly qualified for exchange.

One bright April day I was removed from camp and placed alone in a small room where I heard the communists announce over the camp loudspeaker that I

had been exchanged and even listened to the fictitious details of my joyful reunion with my family in San Francisco. That's communist morality.

As I write this, I am reminded that I have seen the horrors of two wars. I have seen suffering, death, and destruction. I saw what remained of Hiroshima and Nagasaki immediately after they were bombed. Lest I forget, I have an uncomfortable wooden leg and more than 50 bullet scars to jog my memory. I also remember vividly that we got into World War II and Korea because Hitler and Kim Il Sung saw signs that we lacked the national will to resist them. In North Korea I saw what the North Koreans did to their own people who dissented. It was not pleasant. I do not want another war because I know from firsthand experience its horrors.

I believe that the anti-nuclear protesters are very sincere in not wanting war. In that respect we think alike. We differ in what we think it takes to prevent war. I was taught by the communists themselves 30 years ago that they will try to conquer the United States in a manner which we see unfolding to the south of us.

I believe that all of us in our society want the same thing — peace. We are more likely to achieve it working together toward a rational solution than if we are at odds with each other.



TOM HARRISON (6221) as he appeared in early 1952 in a North Korean POW camp. His weight was up to about 120 lbs. from a low of 75 lbs. following a 140-mile march (on makeshift crutches) from Pyongyang to the Yalu River.

### Foreign Scientist

## 'The Learning Is Important' — Wiktor Frid

*(Ed. Note — This is another in a series of articles about the foreign scientists working under various international agreements in Jack Walker's Advanced Reactor Department 6420.)*

Wiktor Frid is a nuclear engineer with the Swedish State Power Board. He will spend the next two years working in Bill Camp's Advanced Reactor Safety Physics Division 6425. His work is sponsored, in part, by the Swedish Nuclear Power Inspectorate.

His Sandia assignment aims at understanding what happens if a reactor accident leads to melt-down of the fuel core and the molten fuel is ejected at high pressures from the reactor pressure vessel.

"We are doing a theoretical analysis of the event," Wiktor says, "concentrating on the mechanisms that could generate radioactive aerosols during the melt ejection. Also, we're studying the disintegration of gases and the hydrodynamic forces involved."

Wiktor is particularly interested in this problem since his last assignment in Sweden was the Filtra Project — a feasibility study on the effectiveness of a massive crushed-rock filter barrier between a light-water-cooled reactor containment building and the environment. The filter is designed to trap radioactive materials in the event of a severe accident.

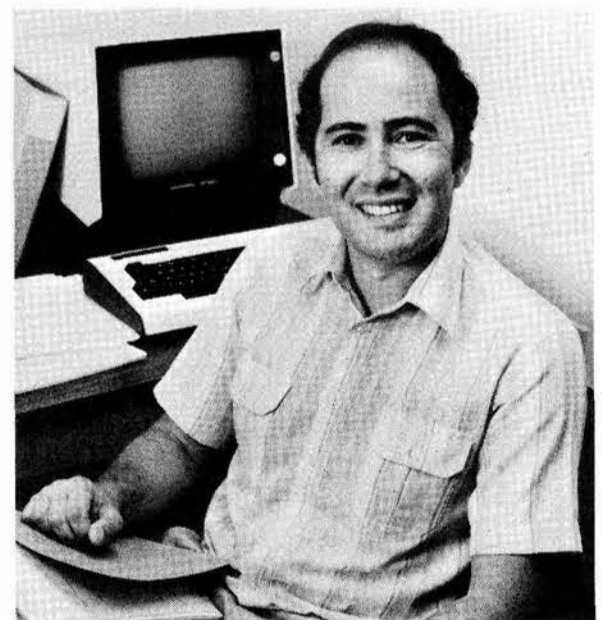
"Sweden recently had a national referendum on the question of nuclear power," says Wiktor. "The people voted to maintain our current 12 light-water-cooled reactor power generation stations. The Filtra Project is an additional safety feature."

Wiktor reports that Sweden has practically no oil or coal. About 60 percent of the country's electric power comes from hydroelectric installations. The remainder is produced by nuclear reactors. Seven of the reactors are operated by the Swedish State Power Board, five by private utilities. The Swedish Nuclear Power Inspectorate is the equivalent of the U.S. Nuclear Regulatory Commission.

"I'm happy to be at Sandia because Sandia is internationally recognized as a leading laboratory in reactor safety studies," Wiktor says. "In addition to my research project at Sandia, I have a responsibility to keep up with current technology and to report scientific developments in this area."

Wiktor earned his Master's degree in nuclear engineering at the Royal Institute of Technology in Stockholm in 1975. Currently, he is enrolled in an advanced transport phenomenon class at UNM.

Wiktor's wife Krystyna, an optometrist in Sweden, is attending English classes at TV-I while in Albuquerque. The couple has

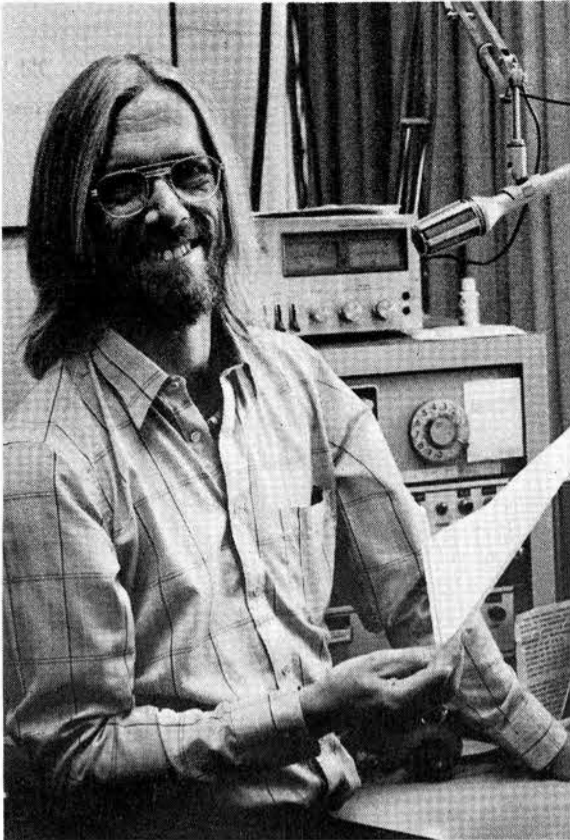


WIKTOR FRID of Sweden's Nuclear Power Inspectorate will spend two years working in Advanced Reactor Safety Physics Division 6425.

a 10-year-old daughter who loves Albuquerque weather and the opportunities for swimming.

The family has done some sightseeing in the Southwest, visiting the Indian ruins at Mesa Verde, and plans more sightseeing trips next summer.

"I appreciate the opportunity at Sandia," Wiktor says. "The work is stimulating: interesting research with qualified people. As a personal experience, the learning is important to me."



JAZZ LOVER Rick Granfield (1141) until recently hosted "Jazz Perspectives" on KHFM.

## The Jazz Speaker

*Jazz*: a uniquely American musical form that began around 1890 in the deep South. It encompasses such genres as the blues, ragtime, Dixieland (or New Orleans) jazz, swing, bebop, and, since the 1950s, progressive jazz.

Rick Granfield (1141) grew up to the mellisonant strains of jazz. Serendipitously, he also walked into the (for him) perfect job. For five years, Rick hosted "Jazz Perspectives" on KHFM (96.3 FM) — a three-hour program during which he played a wide variety of music ranging from Billie Holliday's doleful blues to the polyphonous intricacies of Stan Getz's progressive jazz.

"I'd been doing the show practically every Saturday night," says Rick. "It started when I heard that an old friend was station manager at KHFM. I dropped by to say hello, and he asked me to volunteer for Sunday evening classical programming. When their jazz fellow went on vacation, I filled in for him. When he didn't return, I just continued hosting the program."

Rick didn't just walk in on the job cold. In the 1960s, he formed a folk music group called "The Derridowners" — the name was derived from an old English folk tune. From 1963 to 1969, Rick also worked full-time as a disc jockey for various Albuquerque radio stations, playing everything from Top 40 to "middle of the road." In 1976 he came to work at Sandia.

But jazz is still Rick's first love: "It's the only musical art form that originated in the United States. The roots of jazz go back to the black work songs and Negro spirituals of the old South."

Rick feels that his "Jazz Perspectives" helped new listeners begin to understand what jazz is. "What better way to learn about it than by listening," he says. "And I was willing to receive feedback from listeners. I wasn't the least bit removed from my



ATTACKING THE BOSQUE during the recent Recovery Day was Sam Beard (1633), a member of Volunteers for the Outdoors, which is associated with Sandia's VIA program. Another Sandian who helped clean up the Rio Grande's trash-infested banks was Phillip Georg (7474). Plan is for the area to become Albuquerque's backyard recreation/relaxation/refuge site.

### Medical Corner

## The Health-Wealth Connection

by Paul Mossman, M.D. (3300)

*(The first two articles in this series described the general direction of preventive medicine and its partner—wellness. It is part of a relatively new movement that holds each of us responsible for choosing a healthy over a non-healthy lifestyle. With infectious diseases virtually conquered, our entire pattern of morbidity and mortality has changed drastically in the past 40 years. Our Medical Department has changed too—it's now oriented toward prevention.)*

audience — I was as close as the telephone.

"All jazz needs presentation. My biases were formed by my earliest experiences in listening to music — the jazz and big band sound of the late 1940s and 1950s, which included musicians like Duke Ellington, Woody Herman, Artie Shaw, and Dave Brubeck."

KHFM is the only station in Albuquerque that plays jazz on a regular schedule, Rick points out. And he says the audience for both jazz and classical music is growing.

"With the listener subscriber program, you can get program notes that'll give an hour-by-hour listing of the titles for the classical segment," Rick says. "My program, however, was free-form — you didn't know what I was going to play until you heard it."

"You listen to a few representative pieces of 'heavy metal' rock and you know what it's all about. But jazz is broadbased, constantly changing. Traditional instruments are used in innovative ways. The variations of jazz are literally endless."

And how does Rick, a bachelor, feel about having given up his Saturdays from 10 p.m. to 1 a.m. for the last five years?

"I missed a lot of things, I guess," he says. "But I also made many friends over the phone. The experience more than made up for any Saturday night socializing I may have missed." • cm

The primary reason that industrial medical departments emphasize wellness is their concern for their employees' well-being. But a secondary reason is economic—the subject of this article.

Medical costs are rising 10 to 20 percent annually for most companies; Sandia is no exception. Each year American business loses an estimated 52 million workdays to heart disease and an estimated billion dollars due to backaches alone. A sizable percentage of the working population at any given time is suffering from mild to moderate depression.

In other words, a good medical program—one that stresses prevention and wellness—may well be cost effective. Though the direction and emphasis of such programs will vary with the type of industry, they're not only good for employees but also good for employers—sound business practice, if you will.

Sandia's Medical Department has worked hard to establish a tradition of responsiveness to and concern for its employees. Certainly a well-adjusted, healthy, fit person feels better about him/herself and is, therefore, better able to contribute to the tasks Sandia expects outstanding performance on.

Introducing Sandians to the wellness concept, we feel, is one way to let you know that we're committed to enhancing your overall quality of life. In future articles, we'll describe some specific wellness programs.

### EXPERTISE REVISITED



"While theoretically and technically television may be feasible, commercially and financially I consider it an impossibility, a development of which we need waste little time dreaming." (Lee DeForest, inventor of early radio tube, 1926)

Quoted in Norman Augustine, *Augustine's Laws* (New York: American Institute of Aeronautics and Astronautics, 1982).

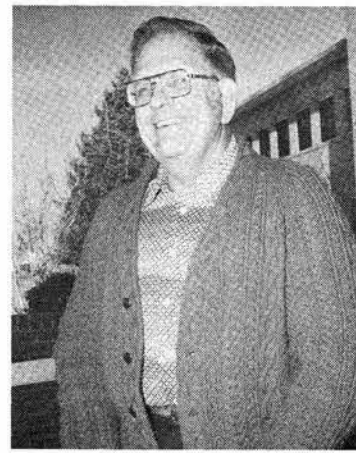
# Retiring



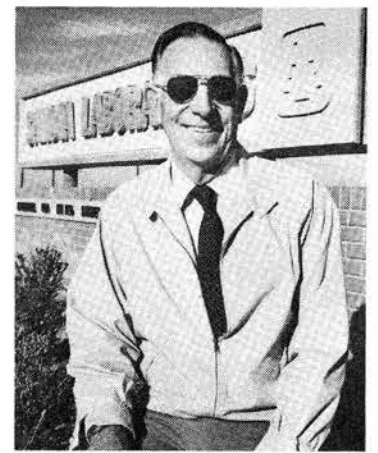
Bob Moll (5213), John Cunningham (2553)



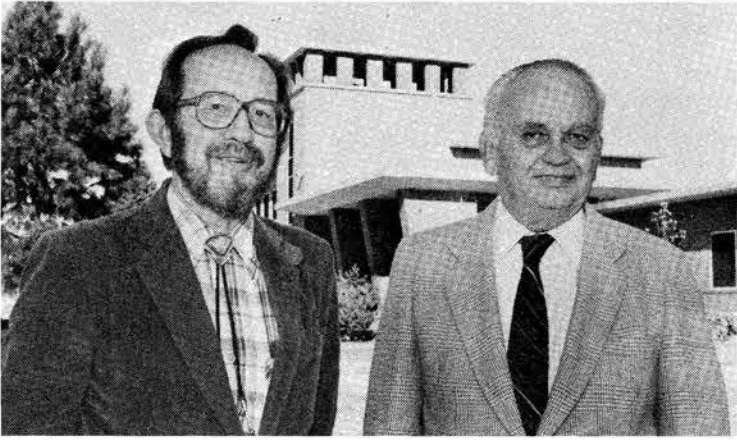
Chester Weaver (2522)



Vern Havo (3412)



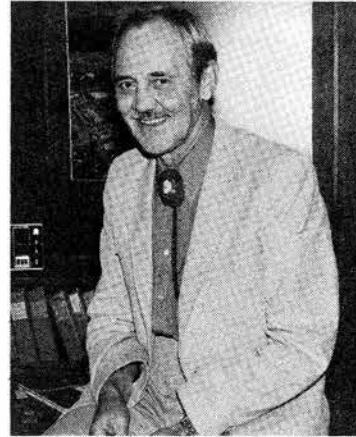
Andy Railey (3613)



Art Engquist (2156), Don Shuster (1600)



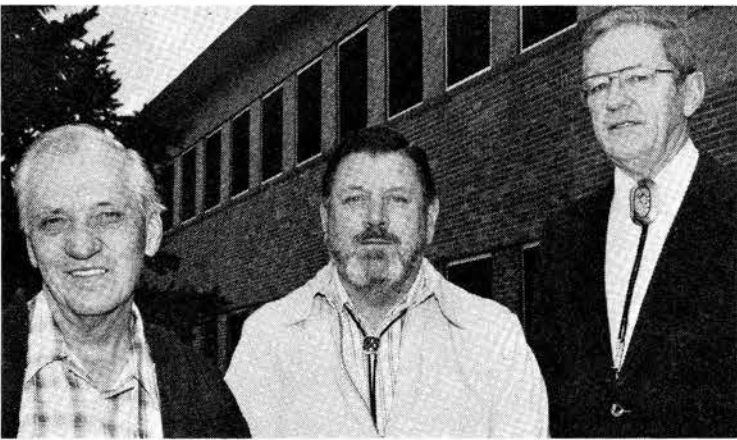
Leslie Minnear (5265)



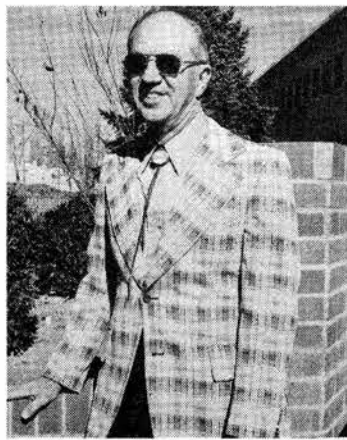
Dave Tarbox (3400)



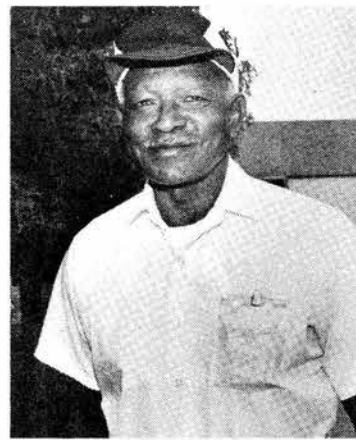
Bob Yoder (4020)



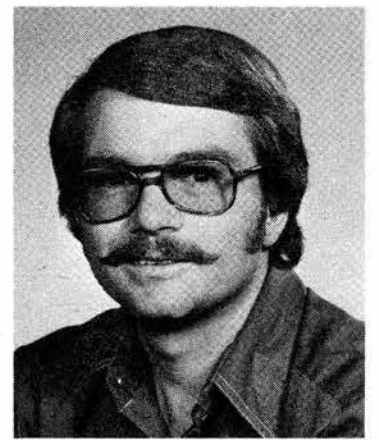
Emil Komarek (2122), George Stohner (144), Keith Smith (312)



Ralph Rayner (7472)



L.K. Renfro (3426)



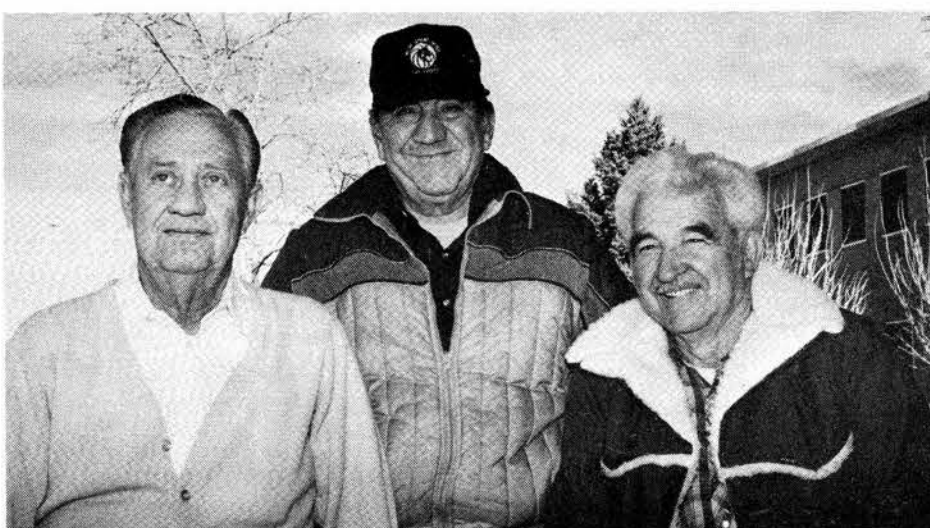
Craig Melville (1000)



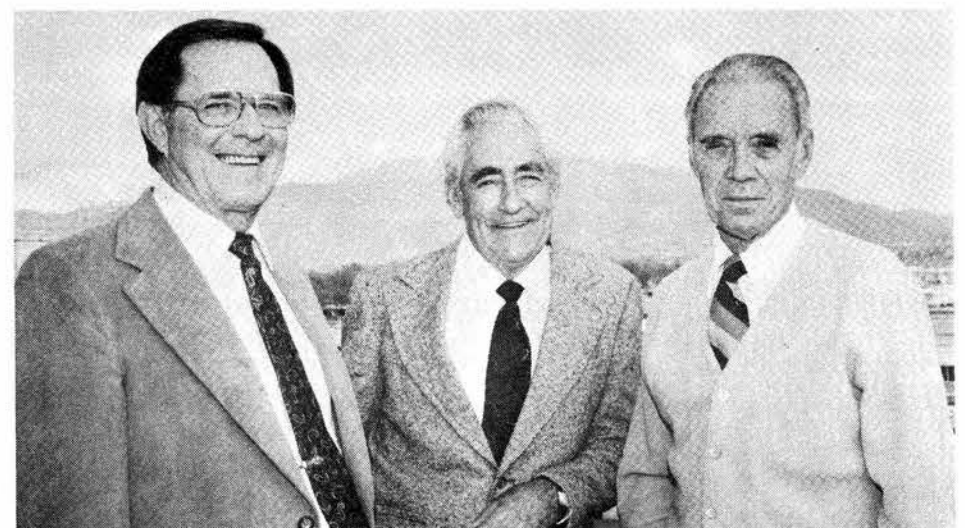
Chuck Cocklereas (400), Bob Ezell (3155), John Carroll (111)



Tom Thompson (5232), Delfino Jinzo (3423), Gene Frye (7472)



Homer Wilhelm (2618), Paul Silva (3618), Elfego Sanchez (3618)



Ken Sutton (3420), Bob Kindley (5116), Bob Hepplewhite (3650)



# Employee Benefits After Divestiture

AT&T has recently described the effects of divestiture on several employee benefits. The information may be of interest to Sandia employees and retirees as participants in these AT&T benefit plans.

## AT&T Stock Distribution

Perhaps no segment of AT&T's 3.2 million share owners displays a keener interest in the financial aspects of divestiture than Bell System employees. More than 50 percent of them own stock in the company through savings plans and in accounts registered with the company, and most have shares in the Bell System Employee Stock Ownership Plan (ESOP).

A package of descriptive and financial information will be mailed to all share owners by mid-December, subject to Securities and Exchange Commission action.

## Savings Plans

The Bell System Savings Plan (BSSP), the Bell System Savings and Security Plan (BSSSP), and the Bell System Voluntary Contribution Plan (BSVCP) for all employees will be restructured and renamed at divestiture. AT&T will continue to maintain such plans for its employees and those of its remaining group of companies, including Western Electric.

For both savings plans, the contributions by both employer and employee will remain at their current levels after divestiture.

For the Voluntary Contribution Plan, which is similar to an Individual Retirement Account, employees will continue to be able to invest up to \$2000 per year. The employer makes no contribution to this Plan.

In spite of name changes, the investment options in the AT&T plans will be the same as those currently offered.

## Diversified Telephone Portfolio

The post-divestiture savings plans and Voluntary Contribution Plan will contain a fund for those employees who had invested in the AT&T shares fund under related Bell System plans before divestiture. This fund, to be called the Diversified Telephone Portfolio (DTP), will continue to hold AT&T shares acquired before divestiture as well as Regional Holding Company shares received in the divestiture-related distribution.

The Diversified Telephone Portfolio will be a "frozen" fund. Employees will not be able to make additional investments in it. They will, however, be able to transfer funds out of it. Employees' earnings on the DTP fund will automatically be invested in the AT&T shares fund.

## Periodic Partial Distributions

Employees who elected in November 1983 to take a Periodic Partial Distribution under one of the current Bell System Savings Plans will receive that distribution in February 1984. They will receive cash for

their units in all but the AT&T Shares Investment Option. Employees receiving a distribution from the AT&T Shares Option in February will receive a combination of AT&T shares and related Regional Holding Company shares. If at least 10 but fewer than 500 AT&T shares are to be distributed, employees will receive an option card enabling them to:

- Make no change in their company holdings;
- Rearrange their holdings (for a fee) by selling shares in some regional companies and using the proceeds to buy shares in others; or
- Enroll in the Dividend Reinvestment and Stock Purchase Plans of any or all regional companies and AT&T.

This option card will be mailed to employees in February.

Employees will receive an additional option card in January if they have other holdings registered with AT&T that qualify for the company's Stock Consolidation Option. The cards must be returned by mid-April if employees want to rearrange their regional company holdings through AT&T's Consolidation Plan. If employees wish to have a regional company's first dividend reinvested in that company's Dividend Reinvestment Plan, the card must be returned by March 30.

Divestiture will not change the tax impact on distributions from the savings plans. Employees who elect to take a distribution will receive tax worksheets to enable them to determine the taxable portion.

## Bell System Employee Stock Ownership Plan (ESOP)

The Bell System Employee Stock Ownership Plan (ESOP) is a plan authorized under the Internal Revenue Code. The code permits a corporation to claim a credit against its federal income taxes if it contributes an amount equal to the credit to the qualified Employee Stock Ownership Plan.

The amount contributed to the AT&T plan is allocated to participating employees based on the proportion of an individual employee's compensation to the compensation of all participants in each plan year. The contribution must be the employer's common stock. The shares must be kept in trust for the employee for at least 84 months unless the employee becomes disabled, resigns, retires, or dies before the 84-month holding period expires.

The current Bell System ESOP will be split among AT&T and each of the Regional Holding Companies at divestiture, and each Regional Holding Company will establish its own ESOP. The accounts of employees will be transferred from the Bell System ESOP to the regional company ESOPs.

Immediately after divestiture, the AT&T ESOP and each regional company ESOP will hold the shares of AT&T as well as shares of each regional company.

The AT&T ESOP will dispose of all regional company shares it holds and will reinvest proceeds in AT&T shares.

Active employees will not receive a distribution of ESOP shares at divestiture.

However, employees who terminate their service before divestiture will receive a combination of AT&T shares and related Regional Holding Company shares.

Those employees who terminate their service during 1983 also will receive, in February 1985, an ESOP distribution based on 1983 compensation.

If at least 10 but fewer than 500 AT&T shares are to be distributed, employees will receive an option card enabling them to:

- Rearrange their holdings (for a fee) by selling shares in some regional companies and using proceeds to buy shares in others;
- Enroll in the Dividend Reinvestment and Stock Purchase Plans of any or all regional companies and AT&T; or
- Receive certificates for all eight companies and cash for any fractional shares.

## Take Note

"Christmas in New Mexico" is a timely TV special on "Somos Bilingües with Julia Gabaldón" (3163) on Dec. 18 at 8 a.m. on Channel 7. The show will include Las Posadas (a slide and live music reenactment of the search for shelter for the Christ child's birth) and a demonstration by Benie Aragón on tamale-making.

\* \* \*

As a one-time-only fund raiser toward the purchase of a permanent balloon launch site, the Albuquerque International Balloon Fiesta committee is selling for a dollar each the hot air and gas balloon pins and patches for the years 1982 and 1983 (the latter marking the 200th anniversary of balloon flight). Ruth Birdseye (7631) on 255-6328 will be happy to help you help the AIBF's plan get off the ground.

\* \* \*

The UNM Med School needs volunteers with high blood pressure for eight studies of new antihypertensive drugs. Volunteers must be between 21 and 70 (but no women of child-bearing age), have a diastolic (lower number) blood pressure between 95 and 114 when not on medication, be willing to make periodic visits to the UNM Med Center, and take medication as directed. All exams, lab work, and medication included in the studies are free. More info from Marti Brittenham on 277-4750.

\* \* \*

Limber up your vocal chords and head for the First United Methodist Church (4th & Lead) tonight at 7:30. It's a "Holiday Community Sing-Along" led by Ted Shure of the NM Symphony Orchestra with organ music by Joyce Hill and special music by The Accents, all of the Albuquerque Civic Chorus. Sponsored by the Divine Science Church of Truth, the events requires a \$2 "donation."

# MILEPOSTS

## LAB NEWS

DECEMBER 1983

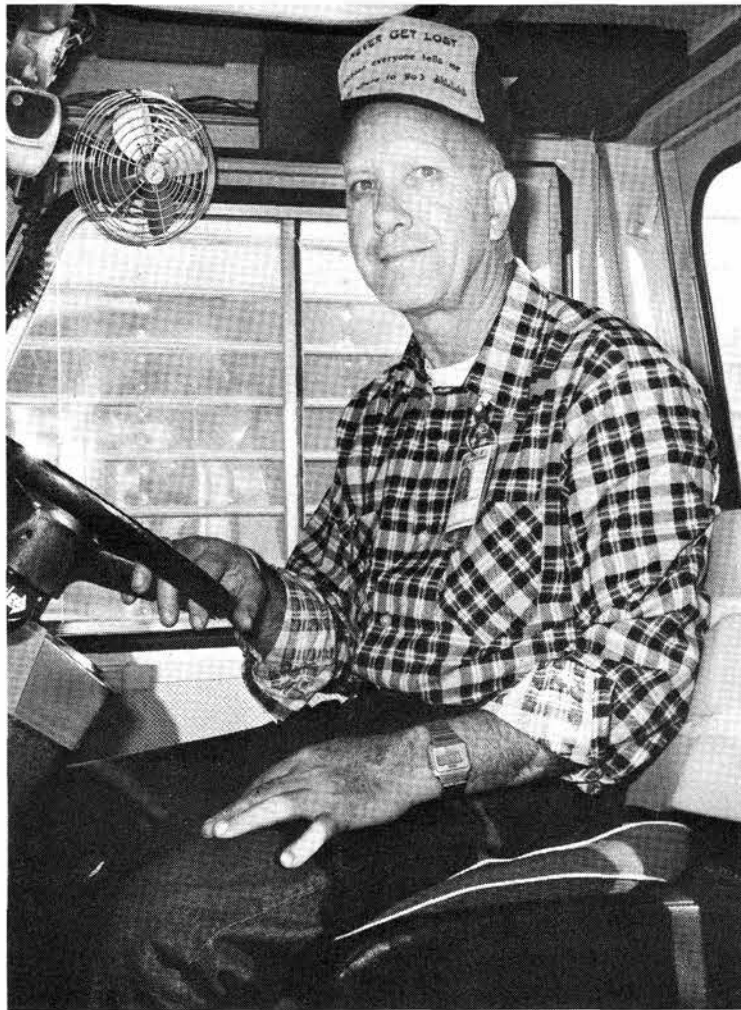


Connie Visbeck (8444) 25



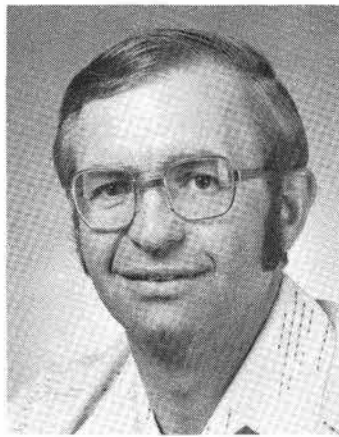
Jose Dominguez (3418)

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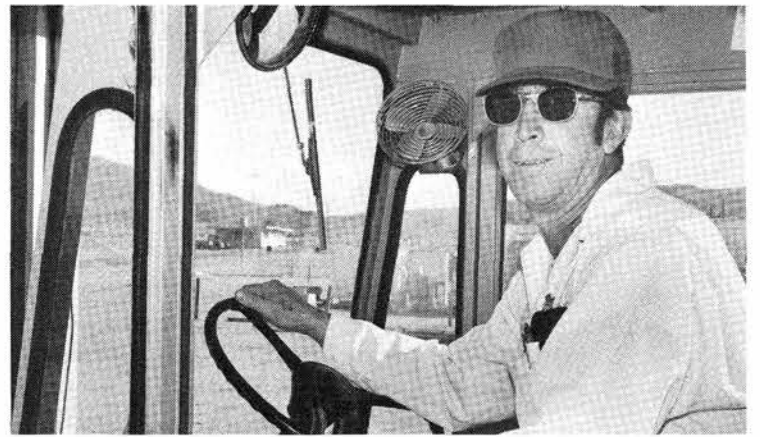


Charlie Eden (3423)

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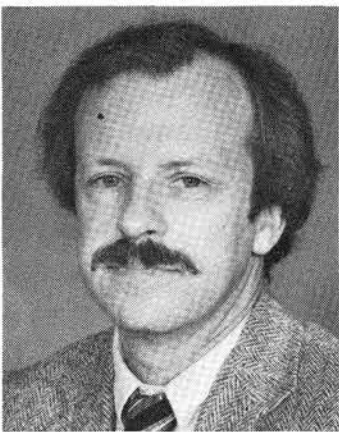


Bruce Nevin (8463) 20

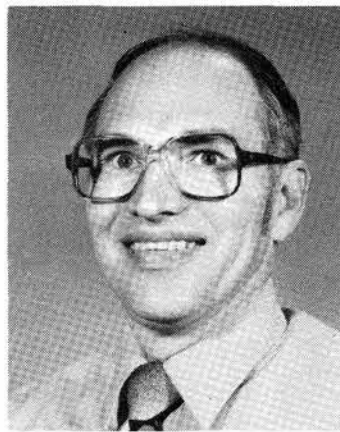


Seferino Sanchez (3418)

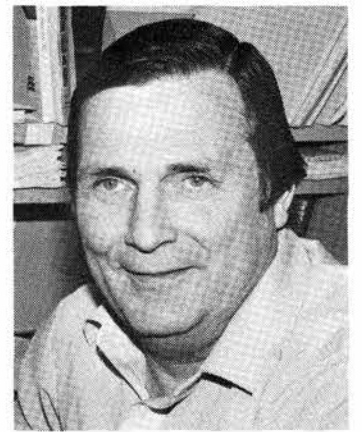
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Ed Cull (8445) 15

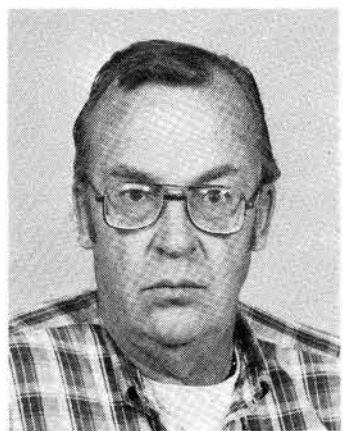


Art Key (6454) 20

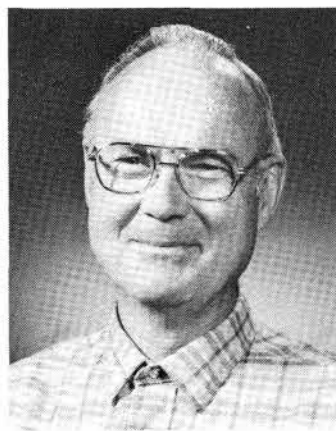


Howard Devaney (2542)

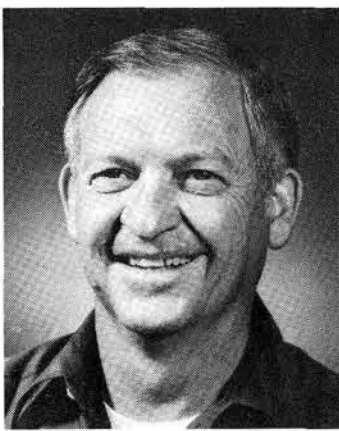
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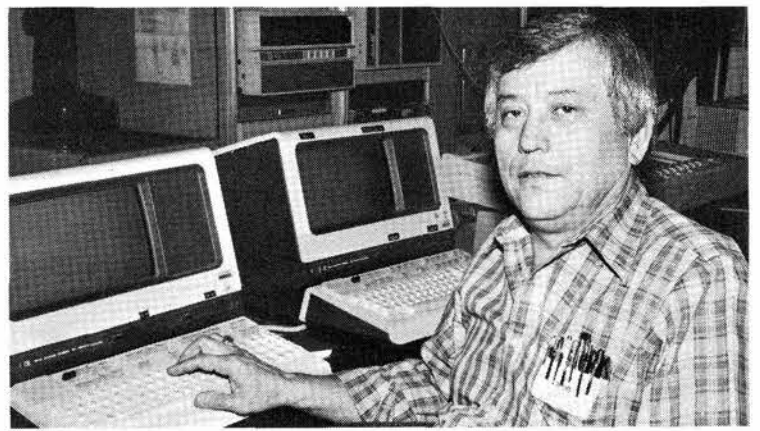
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Martel Boyer (7126) 25

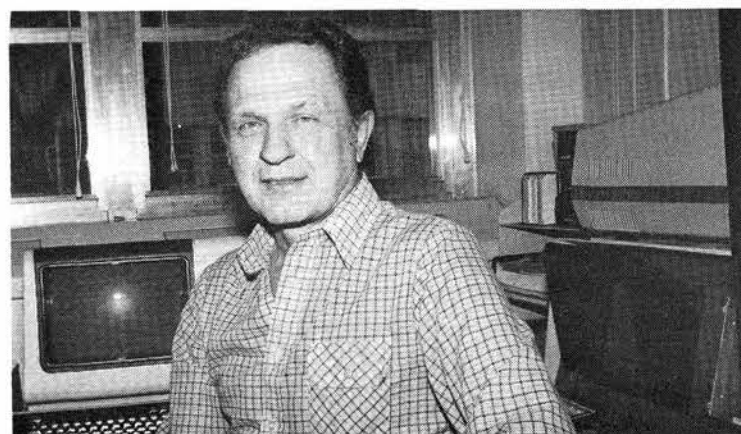


Billy Duggin (1221) 35



Luther Otero (7543)

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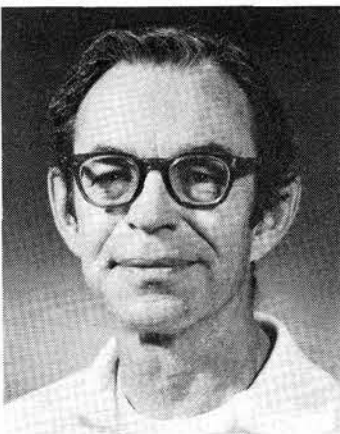


Jim Young (2542)

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Joe Genoni (8450) 25



Al Chabai (7112) 25



Bill Snyder (6400) 30



## Get New Year's Eve Tickets Now

DON'T WAIT any longer. Now is the time to get your tickets to the Club's end-the-year party on Dec. 31. There'll be dancing upstairs and downstairs and celebrating all around. Spinning Wheel plays upstairs while Bob Banks and the Trio hold downstairs. Tickets go for \$15 per person and include admission, hors d'oeuvres, a bottle of champagne, hats, horns, favors, noisemakers, a door prize drawing, and a breakfast buffet. Special drink prices — ranging from 25-cent draft beer to daiquiris (three flavors) for 75 cents.

STOP BY the main lounge tonight and take a look. The remodeling effort planned for the holidays is about complete. Dig the festive holiday decorations, the new paint, and the new carpet. Luncheon service from 11:30 until 1 p.m. resumes. Try it next week and enjoy the pleasant, attractive surroundings. The food is great, also.

CORONADO SKI CLUB rolls out its annual Snow Ball on Tuesday, Dec. 20. The event includes dancing to the W.D.C. band, a fashion show with ski apparel from Mountain Sports, happy hour prices, and door prizes. Mail your \$5 check (made payable to the Coronado Ski Club) to Sadie Hesseldon (7540) or call Gwen Gorman (3372), 4-5545.

THE NEW YEAR brings some innovations to the Club's dining room schedule and service. Starting Thursday, Jan. 5, Club manager Mitch Griffin inaugurates the first of a series of fresh seafood buffets on Thursday evenings. On Mondays, Mitch will call his hometown connection back in New England, discuss the seafood supply, how the current catch is going, availability, and prices. He will then make a decision and order his selection flown in for Thursday's buffet. He'll plan special goodies such as Oysters Rockefeller, clams, stuffed

flounder, baked halibut, scallops, or the best of what's available. Mitch knows about seafood. You can count on his serving a superb spread. Cost will be \$7.25 for adults, \$4.25 for children under 12. Dining hours will be from 6 to 8:30, and reservations are a good idea. The Sandia Jazz Corporation (formerly Arlen Asher Trio) will provide background entertainment.

For Friday night Happy Hours, Mitch will also plan a buffet and include a seafood entree along with a special beef offering. Price will be \$6.95. In addition, a new regular menu has been prepared with appetizers, steaks, diet selections, and even hamburgers. This menu will offer alternatives to the buffet. Soup and salad bar are included. After dinner, select dessert from a cart containing a terrific assortment of French pastries and other mouth-watering goodies.

VARIETY NIGHT on Saturday, Jan. 7, features the Walt Disney classic film, *Mary Poppins*, starring Julie Andrews and Dick Van Dyke. An assortment of super sandwiches and supper goodies will be available at 5 p.m. The movie starts at 6 p.m. (note new time). Admission is free to members and families.

TRAVEL — If you call the Club office, 265-6791, *right now*, there might be a couple of spaces left on the San Diego/Disneyland tour Dec. 26-31. Price of the package is \$339.

Travel director Shirley McKenzie (7632) announces a new trip to Hawaii March 24-31 for \$488. The package includes air fare and lodging (studio with partial kitchen). One-bedroom and two-bedroom lodging is available at higher prices.

Also scheduled is a trip to New Orleans during Worlds Fair time, May 25-29, for \$568.

## Fun & Games

**Cross-Country Skiing**—A unique cross-country ski program starts tonight at UNM and runs through Saturday and Sunday. Tonight at 6:30 is a gala X-C Skiing Film Festival with the latest in Nordic moves and movies. It's at Woodward Hall, and it's \$4. Tomorrow, starting at 9 a.m., US Nordic Combined coach Steve Gaskill leads a USSA Level I coaches clinic replete with films and demonstrations. It's at Johnson Gym, and it's \$7. Get out to the Sandias on Sunday for a technique race, tour, and clinic that begins at 9 a.m. and costs \$10. Price for the whole package is \$17. More info and signups—Tom Lenz at 4-8464.

**More X-C Skiing**—Still several openings for the intermediate cross-country ski clinic Dec. 20 (indoor at the C-Club, Rm. B-5) and Dec. 26 (outdoors, 4-5 hours of the on-the-

snow instruction, probably at Chama). Call Tom on 4-8486 for signups, more info.

**Still More X-C Skiing**—Get your kids involved in a vigorous lifetime sport that's fun too. Youngsters aged 10-19 are eligible to participate in Sandia Peak's junior Cross-Country Ski Racing Program Christmas Camp on Dec. 28-30 from 11-3 each day. Cost is \$25 if you sign up with Tom by Dec. 23. Kids have to provide their own equipment and transportation (but car pools will be organized). Signups after Dec. 23 must be handled by Klaus Weber on 277-5244.

**Therapeutic Massage**—If "you rub my back and I'll rub yours" sounds good, join the next class in Rm. B-5 of the C-Club on Jan. 10, 17, and 24 from 7 to 9. It's \$13 per couple. Tom Lenz will sign you up—4-8486.

## Events Calendar

Dec. 17. — KRST's "Smurf Christmas Show" with Smurf, Smurfette, Frosty, Rudolph, CoCo the Clown, and Santa Claus in song and dance; 11 a.m. and 2 p.m., KiMo.

Dec. 17 — Folk Play "Las Posadas"; refreshments and pinatas to follow, 6:30 p.m., Barel Community Center, 766-7802.

Dec. 18 — The Music Department at First United Methodist Church presents Vivaldi's "Gloria," a Christmas work for choir and solists, 243-5646.

Dec. 18 — "Music at the Museum" concert, all-Bach Christmas program, oboe, soprano, harpsichord, and cello, auditorium, 3 p.m., Albuquerque Museum.

Dec. 22 — Albuquerque City Parks and Recreation Department presents a Luminaria Tour of Los Altos Park — a drive-through tour of different Christmas scenes. The entire park will be lit up with lights, luminarias, and more; from dusk to 10 p.m., 766-4683.

Dec 22-Jan. 1 — Civic Light Opera, "Brigadoon," 8:15 p.m., Popejoy, 345-6577.

Dec. 24-27 — Annual Christmas Celebration at most pueblos; various dances, dusk pine torch processions, Spanish dance/drama "Los Matachines"; contact pueblos.

Jan. 1 — Annual New Year's Celebration at most pueblos; Comanche, Deer, Turtle, and other dances; contact pueblos.

Jan. 6 — Chamber Orchestra of Albuquerque, 8:15 p.m., Albuquerque Little Theatre, 247-0262.

Jan. 7 — NM Jazz Workshop Winter Concert Series: Stan Getz, tenor saxophone, 8 p.m., KiMo.

## feed back

**Q.** Since Sandia actively sells U.S. Savings Bonds to employees, why can't we cash them here, at the Credit Union, say?

**A.** The Credit Union is not authorized by the Treasury Department to cash savings bonds. The Board of Directors has considered the possibility of obtaining authorization; however, until the Treasury changes the present, rather involved, reporting and reimbursement procedures for bonds, we would prefer not to undertake the job. If the procedures are simplified, the Board will take another look at this service.

C.L. Turner, General Manager, SLFCU

### AUTOMATING SUSHI

The microcomputer has come to Toko sushi shops, reports Roslyn Hayman for the Kyodo News Service of Tokyo. At a chain called Sun Atom, "each seat at the counter has its own glass computer panel," she says, "and customers simply press a light pen on the relevant square to select what they want. These orders flash onto a command panel in front of the sushi chef... and in a flash he has rolled the sushi and slapped it down."

—World Press Review