

EL CRUNCHO—They turned Yoshimura loose again to run a 75-ton spent nuclear fuel cask carried upon a 75-ton railcar into a concrete wall at 80 mph. The event, which transpired on the sled track in the Labs' Area III, simulated "a very severe transportation accident." Once again, the cask survived nicely. That's Richard (5433) examining the remains of the railcar. Rig was run up to speed by battery of rockets (above, left). Action photo by Dick Petersen's people in Photometrics Division 9412. Next: the fire test—engulfing cask in fuel fed conflagration.



LAB NEWS

VOL. 29, NO. 20

OCTOBER 7, 1977

SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

**ECP Drive
Starts Today**

--See Page Two



PHYSICAL FITNESS training, part of an extensive program offered by the YMCA, holds the attention of Sandians Ed Torres (9631), Nadine Ortiz (9563) and Peggy Bonn (9563). About 240 Sandians participated in tours recently to learn about the work of various ECP agencies. Typical reaction: "How can they do so much with so little?"

'New Urgency' to Drive

ECP Campaign Starting Today

Annual Employee Contribution Plan drive starts today at Sandia. Directorate representatives and solicitors are holding meetings, contacting co-workers, distributing literature and showing films throughout the Labs.

"There is a new urgency to this drive," says George Samara (5130), chairman of the ECP committee. "The Albuquerque United Way goal is up 10 percent over last year to \$2,553,000. Besides the basic goal the United Way has established a 'plus' goal of \$34,000 which will allow the

support of three additional agencies if it is achieved. These are the Jemez House Children's Home, Albuquerque Rape Crisis Center and the Southwest Valley Youth Development Agency."

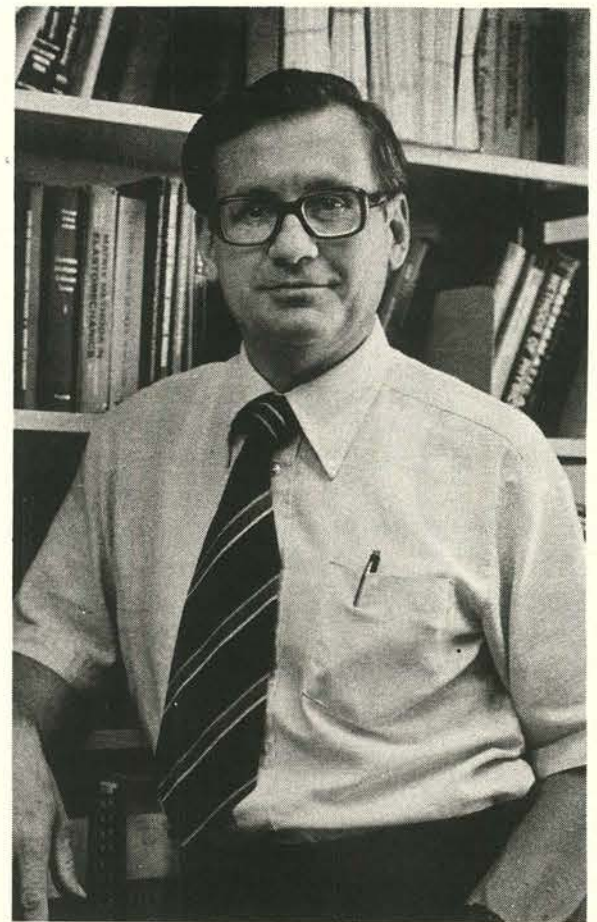
Sandia's ECP supports the 32 United Way agencies plus eight national health agencies. Currently 77 percent of Sandia employees contribute to ECP, 49 percent at the Fair Share or higher level. Goal of the Sandia ECP drive continues to be 100 percent participation.

"As a leading employer in the community," George says, "Sandia should, through ECP, lead the way in helping United Way achieve its goal."

ECP funds in 1978 will be distributed according to the following percentage allocation:

| | |
|----------------------------|------|
| United Way | 84.5 |
| Cancer Society | 3.5 |
| Heart Association | 3.0 |
| Cerebral Palsy | .6 |
| Muscular Dystrophy | 2.0 |
| Arthritis Foundation | 1.0 |
| Multiple Sclerosis | 1.9 |
| Crippled Children | 2.3 |
| Cystic Fibrosis | .7 |
| Reserve | .5 |

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LAB NEWS
OCTOBER 7, 1977



Walt Von Riesenmann (5431)

Supervisory Appointment

WALT VON RIESEMANN to supervisor of Design Technology Division 5431, effective Oct. 1. Walt joined the Labs in July 1960 as a staff member in the Engineering Analysis Department. With structural analysis his primary concern, he has worked on various weapons systems and in the underground testing program. More recently, his work has been in the nuclear fuel cycle program and has been concerned mainly with transportation systems. Walt will continue this work in his new position.

Before coming to Sandia, Walt was an engineer at Alcoa Research Labs. He earned a BS from the Polytechnic Institute of Brooklyn, an MS from the University of Illinois, and a PhD from Stanford—all in structural mechanics. Walt is a member of the American Society of Civil Engineers (past president of the N.M. Chapter), American Society of Mechanical Engineers (currently treasurer of the local ASME Section), and the American Nuclear Society. Off the job his interests include scouting, backpacking and gardening. Walt and his wife Doris have two sons and live in the Northeast Heights.

Retiree Deaths

July - September 1977

| | |
|---------------------------|---------|
| Antonio Baca | 9/9/77 |
| Edward Baldwin | 7/11/77 |
| Fidel Chavez | 9/26/77 |
| Glenn Haughness | 7/23/77 |
| Elmo Hubbard | 9/1/77 |
| Jacobo Peralta | 9/16/77 |
| Crissie Sanders | 9/6/77 |
| Luis Santillanes | 7/27/77 |
| Millard Taylor | 7/7/77 |
| Lydia Waldorf | 6/14/77 |
| Edward Wienczkowski | 8/27/77 |

LAB NEWS

Published every other Friday
SANDIA LABORATORIES
An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA
Editorial offices in Albuquerque, N.M.
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FTS 475-1053
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&
don graham ass't. editor

bruce hawkinson & norma taylor write
bill laskar does picture work
so does russ smith

&
lorena schneider reports on livermore

Supervisory Appointments

BOB KEE to supervisor of Numerical Applications Division 8322, effective Oct. 1.

Bob joined Sandia in July 1969 after graduating from the University of Idaho with a BS in ME. He entered Sandia's One-Year-On-Campus program and, in 1970, received an MS, also in ME, from Stanford. For four years he worked on gas dynamics and heat transfer studies in a weapons project group, while attending UC/Davis under Sandia's Educational Aids Program.

After receiving his PhD in ME in 1974, he transferred to the combustion organization where he did cam and valve analysis on the variable-displacement automobile engine and, most recently, modeling of laminar diffusion flames.

A member of the American Society of Mechanical Engineers, Bob's off-the-job interests include mountain climbing and racquet ball. He lives on Lucille Street in Livermore.

HENRY HANSER to supervisor of Engineering Division 8141, effective Oct. 1.

After joining Sandia in 1967, Henry's work for the next four years dealt with engineering design and analysis of structures. For the past six years, he has been a project engineer in the weapons development organization. Previously, he was a civil engineer for the Contra Costa Water District and a mechanical engineer for NASA/Ames Laboratory.

Henry earned a BS in ME from California Polytechnic State University and an MS in engineering mechanics from the University of Santa Clara, and has done graduate work at Stanford University. He is a registered professional engineer (both civil and mechanical) in the State of California.

For recreation, Henry enjoys skiing and tennis. He, his wife Penny and their three children live on Manor Drive in Ripon.

Retiring



Tony Norwich (8423)

LIVERMORE NEWS

VOL. 29, NO. 20

LIVERMORE LABORATORIES

OCTOBER 7, 1977



SUZI SCHOENUNG, Sandia summer hire, and Reggie Mitchell (8351) have spent the last three months making some of the most sensitive temperature measurements taken to date at Sandia. They used the laser Raman spectroscopy setup in SLL's ambient-pressure flame facility. Suzi returns to Stanford this fall.

Grad Student Enthusiastic About Summer at Labs

Suzi Schoenung, a Stanford graduate student and Sandia summer hire who is winding up a combustion diagnostics experiment, sees the three-month effort as "a great experience!" Sharing Suzi's enthusiasm over their joint effort was her co-worker and counselor for the summer, Reggie Mitchell of Combustion Research Division 8351.

Suzi, who is from Chicago, holds a master's degree in mechanical engineering from Stanford and this fall begins her doctoral studies there. Though her thesis subject is not yet fully settled, she says, "It will be in some phase of combustion, and it will probably involve lasers. So my summer project came at an ideal time and has been really helpful to me."

Reggie, whose doctoral study at MIT dealt with combustion and whose work at SLL since then has been in flame studies, agrees: "It gives people like Suzi a chance to work in realistic experimental programs and in close association with more experienced researchers."

The joint experiment that both carried out made use of laser Raman spectroscopy, a sophisticated optical technique to measure temperature in two modes of combustion: one, an ammonia-oxygen flame; the other, a methane-air flame. In the

Raman spectrum of the combusting gas the number of lines represents different molecular energy levels and, the higher the temperature, the more molecules at the higher energy state. So the shape of the spectrum is determined by temperature alone. The advantage of the Raman technique is that it is highly accurate. Also, measurements can be taken at isolated points in the flame and conditions being measured are not disturbed by the measurement technique itself. Thus Raman data are more likely to reflect real flame conditions. Reggie and Suzi are also making conventional thermocouple measurements in the flames in an effort to show how accurate the Raman technique is by comparison.

Reggie and Suzi jointly planned the Raman experiment. Suzi took major responsibility for Raman measurements, and she and Reggie are co-authoring a paper on the results. Suzi will give a brief overview of their paper in October at the Western States Section of the Combustion Institute. "My first professional presentation," she notes. The two plan to co-author a Sandia report as a detailed account of the work accomplished.



DIG WE MUST exclaimed this shovel crew—Orval Jones, Morgan Sparks and Herm Roser (head of DOE/ALO—as they break ground for the new Safeguards Heavy Lab just south of Bldgs. 894 and 892. Orval is leaving the Safeguards directorate (1700) to take over a new organization, Nuclear Waste & Environmental Programs 5300. Bill Myre, new 1700 director, is at left. Heavy Lab is scheduled for completion in April 1978.

Sandia Safeguards Go International

Sandia is now working with the world organization which insures that nuclear material from reactors and other nuclear power facilities is used only for peaceful purposes. Representatives from the International Atomic Energy Agency (which is headquartered in Vienna, Austria) have met with people from Sandia and other U.S. agencies to define appropriate tasks, and Sandia responsibilities in this area now include the following:

- Safeguards systems studies for reprocessing and enrichment plants, for fast critical facilities, and for power reactors
- development of unattended surveillance and containment instrumentation.

The Labs is directly responsible for completion of 18 specific tasks.

The overall effort is managed by DOE's International Safeguards Project Office located at Brookhaven Laboratory. Its budget for last fiscal year (FY77) of \$2.7 million is expected to triple this year.

Sandia has been asked to develop three containment and surveillance devices: an unattended TV surveillance system; an irradiated fuel bundle counter; and two versions of an improved seal that shows whether a device or storage area has been opened during an inspector's absence.

The TV surveillance system will be battery operated and weather resistant, and will be so designed as to reveal any attempt at tampering. It includes features from the existing Sandia surveillance camera, a super 8 mm movie camera modified to take single frame photos at random intervals (so that an intruder doesn't know when he's on-camera). The camera can also be set to record by an optical actuator that senses a light density change, such as would occur when a person moved in front of the camera. Each photo includes a day and time label.

The irradiated-fuel-bundle counter verifies a reactor plant's records of fuel bundle

movement. The device employs Geiger-Muller tubes to detect the characteristic gamma radiation of the fuel bundles. A digital logic apparatus reads the pulse rate from the G-M tubes and determines whether the bundles are single or double and in which direction (to or from the reactor) they are moving. Like the camera, the unit includes a tamperproof cover.

Sandia is responsible for the development of two sophisticated versions of seals, each one easily monitored so that an inspector can tell at a glance whether the seal has been cut and rejoined or replaced by another.

Both versions utilize a fiber optics loop. One, completely passive, provides security by the random orientation of the fiber optics. Sandia has contracted with Fiber-Lock Corp. for development of this passive seal. Light passes through a portion of one end of the bundle to create a distinctive light pattern at the other end; this is then photographed. Inspection of the seal verifies that the pattern has not been altered. In the second version, a Sandia development, an electronics detector module continuously monitors the integrity of the fiber optics loop. The electronic module is programmed with a code which changes at preselected intervals and is known only to the inspectors. Inspection of this seal consists of reading the liquid crystal display.

Jim Ney (1754) heads the division within Facilities Protection Department 1750 that is working on these tasks. Within the division, John Aragon, Jim Campbell and Larry Hermesmeier are working on seals; Charles Johnson and Arlen Weishuhn are working on the TV system; and Don Habing on the fuel bundle counter. The circuitry for the seals is being developed by Divisions 2112 and 2116.

ISPO funding of Sandia work in FY77 amounted to \$257,000; FY78 funding is expected to be about three-quarters of a million dollars.

Events Calendar

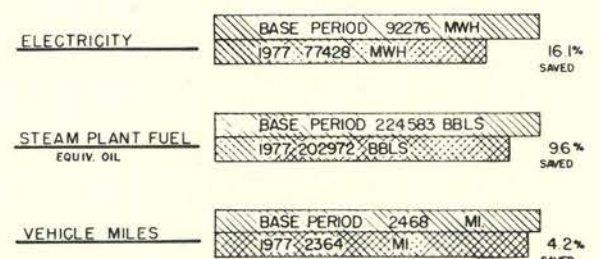
- Oct. 7-9, 14-16, 20-22—"MacBett," by Eugene Ionesco, Vortex Theatre, 106A Vassar SE, 8 p.m.
- Oct. 7-9—Greek Festival, St. George Orthodox Church.
- Oct. 8-16—Albuquerque International Balloon Fiesta.
- Oct. 8—"Take Us Through Yosemite," Audubon Wildlife Film Series, Popejoy Hall, 7:30 p.m.
- Oct. 9—"Out of Step," one man play, Popejoy Hall, 8:15 p.m.
- Oct. 14-16—49er Celebration, Socorro.
- Oct. 14-30—"Spin Off," Albuquerque Little Theatre, 242-4750.
- Oct. 16—"All Aboard for Siberia," Sandia Kiwanis Club Travel-Adventure Film, Popejoy Hall, 7:30 p.m.
- Thru Oct. 23—"Two and Two," Barn Dinner Theatre, 281-3338.
- Thru Oct.—Canadian Eskimo Art, Maxwell Museum of Anthropology.



SOPHISTICATED SEAL is held by John Aragon (1754), right. The breadboard version of the new seal's electronics, which require over 80 integrated circuits is displayed by Larry Hermesmeier (1754). Sandia is incorporating these functions into a single integrated circuit and a small package that cannot be opened without detection. Any tampering with the fiber optic loop causes a change in the sequence of code symbols visible in the seal's window (here an 8).

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD - JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING AUG '77



ACPR Reactor Undergoes Upgrade

Sandia's Annular Core Pulse Reactor (ACPR), possibly the hardest working research reactor in the country, was shut down Oct. 1 to undergo a complete upgrade. Pulsed power and output of the reactor will be tripled—from 15,000 megawatts of peak power to 45,000 megawatts and neutron fluences from 2.3×10^{15} to 6.5×10^{15} neutrons per cm^2 . Steady state mode will increase from 600 kW to 2mW in the new ACPR.

Upgrade of the ACPR has a dual purpose—to conduct weapon effects simulation experiments at greater energy levels for DOE and DOD programs and continuation and broadening of the Advanced Reactor Safety Research Program for the Nuclear Regulatory Commission.

A new reactor core design utilizing uranium dioxide ceramic dispersed in a beryllium oxide matrix make possible increased output with only a slight increase in operating temperatures—from 1000°C to 1400°C.

Other improvements to the ACPR facility include:

- a new control system incorporating a flexible system of programmed operational modes, and all modern safety features.

- a capability to test multiple reactor fuel pin bundles and to accommodate pins perhaps up to 70 cm in length.

- new instrumentation, including a very sophisticated fuel motion diagnostics system with a coded aperture imaging device which uses gamma rays to produce a three-dimensional pseudohologram of an emplaced experiment. The system provides high spatial and time resolution.

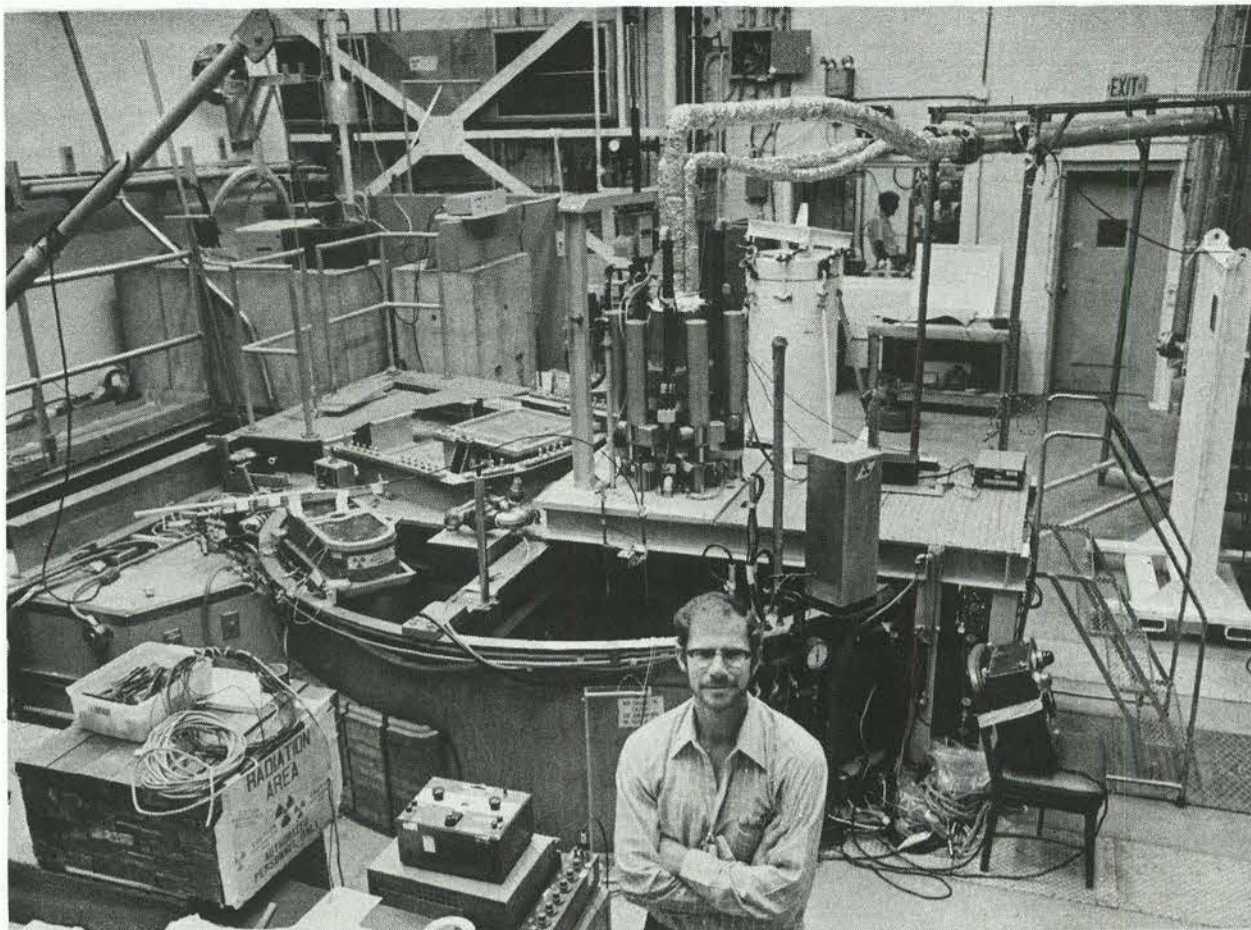
The ACPR facility will be shut down for approximately five months while the old reactor is disassembled and the new core and control system are emplaced. The new ACPR is expected to go critical in March 1978 and become fully operational by mid-summer. Total cost of the project, funded by DOE and NRC, is about \$7 million.

The old ACPR, first operational in 1967, is currently averaging from 1500 to 2000 operations per year.

"It was a very hardworking reactor," says Jack Walker, manager of Advanced Reactor Research Department 5420. "The new ACPR upgrade will offer even more flexibility.

"What is gratifying," Jack continues, "is that an enormous number of scheduled experiments have been completed in the last quarter, the shutdown came on time, and we are within budget. Experimentors, reactor operations staff, the safety review committees, health physics and fabrication labs people have been great. We've met a demanding schedule these past few months."

Most of the new mechanical components for the ACPR upgrade have been fabricated and delivered ready for installation.



HAROLD WALLING (1136) is in charge of the day-to-day installation activities upgrading Sandia's Annular Core Pulse Reactor (ACPR). A new core, which will triple the reactor's output, will be installed at the bottom of the 30-ft. shielding tank. The new ACPR is scheduled to go critical in March 1978, become operational in midsummer.

Both LLL and LASL are contributing to the fabrication of the new fuel which should be on hand early next year and EG&G has been instrumental in preparing the Safety Analysis Report. Contract divers, working behind radiation shields and experienced in underwater operations involving radiation, are scheduled to remove portions of the old reactor hardware from the bottom of the reactor tank pool starting next week.

The ACPR project was initiated in 1975 and has involved a number of Sandia organizations. The project is managed as part of the Advanced Reactor Safety Research Program under Jack Walker (5420). Jon Reuscher (5450) is the project leader, Charlie Karnes (5835) is task leader for the fuel development and fabrication, Jim Powell (5423) for the control system and Jim Davis (1136) for mechanical design.

Paul Pickard (5420A) leads the nuclear and core design team, Bill Sullivan (5423) is the engineer in charge of the control system design and installation, and Harold Walling (1136) the mechanical design. Furthermore, Harold will be in charge of day-to-day installation activities during the upgrade effort.

Marv Beckett (5200A) and his staff have been instrumental in keeping the project on schedule through their PERT analysis. Plant Engineering people made significant contributions in both design and acquisition of contractors for facility modifications. Dick Coats (5422) and his staff were heavily involved in the early definition phase of the project and in early conceptual design studies.

"Cooperation from throughout the Labs for the project is outstanding," Jack says, "And we are cautiously optimistic that, due to the hard work of many Sandians, this project will be completed on schedule and within budget."

Authors

E. P. EerNisse (5133), "Stress in Ion-Implanted CVD Si_3N_4 Films," Vol. 48, No. 8, JOURNAL OF APPLIED PHYSICS.

P. J. Slater and W. Y. Velez (both 5121), "Permutations of the Positive Integers With Restrictions on the Sequence of Differences," Vol. 71, No. 1, PACIFIC JOURNAL OF MATHEMATICS.

F. R. Norwood (5166), "Response of an Acoustic-Elastic System to a Transient Source in the Acoustic Medium: Analytical Modelling for the Air-Coupled Wave," Vol. 15, No. 6, INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE.

J. S. Pearlman and J. P. Anthes (both 5214), "Closure of Pinholes Under Intense Laser Radiation," Vol. 16, No. 8, APPLIED OPTICS.

K. D. Bergeron (5241), "Equivalent Circuit Approach to Long Magnetically Insulated Transmission Lines," and "Theory of the Secondary Electron Avalanche at Electrically Stressed Insulator-Vacuum Interfaces," Vol. 48, No. 7, JOURNAL OF APPLIED PHYSICS.

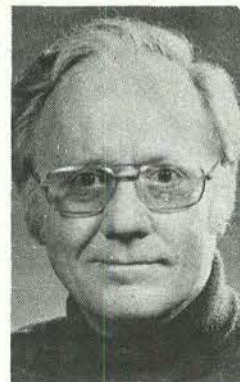
R. M. Biefeld (5154), G. E. Pike and R. T. Johnson (both 5155), "Percolative Ionic Conduction in the LiAlSiO_4 Glass-Ceramic System," Vol. 15, No. 12, PHYSICAL REVIEW B.

New Staffer on LAB NEWS

Following writer Bruce Hawkinson's transfer to Sandia Livermore, Chuck Cockelreas has moved from his job as writer/director in the Motion Picture—Video Services Division 3153 to join the LAB NEWS.

Chuck came to Sandia in the early 60's after gaining his MFA degree in creative writing from the State U. of Iowa. Earlier, he had received his undergraduate degree in journalism from the U. of Washington.

After several years with the technical writing group at Sandia, Chuck moved to the motion picture area in 1965 and has been there since. His transfer to LAB NEWS is effective this month.



Fun & Games

Skiing—First meeting for the coming season of the New Mexico Ski Touring Club is set for Oct. 13 at 7:30 p.m. at St. Timothy's Church on 211 Jefferson NE. The Club offers instruction to beginners in cross country skiing and sponsors trips during the season to good areas for touring.

The Sandia Peak Ski Patrol's Ski Swap is scheduled this year for the last weekend in October, Oct. 28-30. Next issue of LAB NEWS will carry more details.

* * *

Sandia Bicycle Assn.—The August issue of *Bike World* carries a major feature on bike helmets, including evaluations of those on the market. We haven't read the report yet, but it appears to be reasonably definitive.

LAB NEWS has a new supply of city bikeway maps.

* *

Sandia Runners—The October issue of *Runner's World* contains a 60-page guide on running shoes, with rankings of the many shoes now available. No. 1—the Brooks Vantage, No. 2—the Adidas Runner and No. 3—the Nike Waffle Trainer.

* * *

Friends of the Bow—Sandia Crest Bowhunters, Sandia Archers, and Albuquerque Field Archers will host the Bowhunter's Jamboree, Saturday, Oct. 8, and the State Broadhead Championship, Sunday, Oct. 9. Both competitions will be held at the AFA range east of the city on I-40 (watch for SCBA signs once you pass the South 14 intersection). Jamboree registration is \$2, and archers are invited to compete in novelty shoots, a broadhead clinic, animal target rounds, and after sundown shoots using either field points or broadheads. A cookout at \$2.50 per person will be held Saturday night. Registration for the Sunday State Broadhead championship will be from 7:30 to 8:30 a.m. at \$6 for adults, and \$15 for a family. A camp lunch will be served at noon.

A Sandia Archers meeting will be held at 7 p.m., Monday, Oct. 10, in the East Breakaway Center. Corry McDonald (9636) will present a talk and film on backpacking. Visitors are welcome. For more information call Dean Pershall (1244) at 264-7528.

* * *

Hockey—Dave Williams (1735) reports that the 30/30 Hockey Club hopes to expand the league this season and is looking for six to ten players of 30 or more years vintage. Play is under rules of limited contact, and slap shots are verboten in this strictly recreational league. Cost: \$30. Contact Dave on 4-4105 or Roland Hewitt (9414) on 4-2349 if you're interested.

* * *

Swimming—The Olympic pool behind the gym will be closed down for repairs on Oct. 8. Projected reopening: March, 1978 (honest).



THE WINNAH! Actually, Dick Basset and his electric aren't quite ready to race Terry Mason's (9571) 600 hp sprint car. But Dick's electrics get hotter every year (up to 60 mph). So maybe one of these days, John Jewell's (9571 and part owner of Speedway Park) checkered flag will be a reality.

Bassett Builds Second Electric Car

Must an electric car perform like an anemic Volkswagen? That's the question Dick Bassett (2354) asked himself as he contemplated his first electric car (LAB NEWS, Sept. 27, 1974). The answer is no—if you don't mind sacrificing a little range for quite a bit of power.

"What I wanted," says Dick, "was a car that would keep up with the traffic, one I could commute in." Since he lives in a nearside suburb of Corrales, that was something of a challenge.

But he's driving to work these days. His route takes him down Second Street, on the freeway, and into the Base on Gibson. He can drive the speed limit on all three, arousing some incredulous reactions from the drivers of cars he passes. No one curses him as he moves out from a traffic light either. "In fact," says Dick, "first gear has so much torque that I always start out in second."

The car began as a Chevy Vega. Dick pulled the engine and installed three banks of batteries that, by working in either series or parallel, can deliver 24, 48, 72, or 96 volts. It takes 8 or 9 KWHS for a trip to Sandia, less for the downhill trip home. At today's utility rates, operating costs are about 1½ cents per mile. Maximum horsepower is 110.

With the batteries, the car weighs about 3140 pounds and has a range of 28 to 30 miles of normal city driving. "If I kept it under 25, I could make 50 miles," says Dick, "but the whole intent of this project is to come up with a car that I can drive just like a gasoline-powered one, and this one tops out at 60 mph."

Its performance makes it easy to forget that there's *not* an internal combustion engine under the hood. The whine of a none-too-good differential, in fact, provides a reassuring yes-we're-moving sound. The only tip-offs are the clicks of the relays and, of course, the dead silence at a stop sign.



DICK BASSETT'S NEWEST ELECTRIC CAR allows him to commute from the far North Valley to Sandia. And back. Below, Dick fingers a fuse which permits temporary overloading of system for brief bursts of power.

Death

Charles Mayer, a draftsman in Org. 9658, died on Sept. 27 after a long illness. He had worked at the Labs since 1950.

Charles was 53 when he died.

Survivors include his wife and two daughters.



Romance, Travel, Adventure: Well, Travel Anyway

"I've tried jogging during these trips, but it's difficult to work in. And once, in Jacksonville, Fla., the police stopped me for curfew violation while jogging late in the evening. Then I took a jump rope along, but the other guests in the motel complained about the noise."

Convoy commander Bert Vendel is the speaker and he was talking about the physical rigors of being a courier of nuclear material for DOE. Bert had just returned from a fairly typical 5800-mile jaunt "across the top" (the northern transcontinental route), down the east coast and back to Albuquerque. The long, long hours of confinement in a moving vehicle are difficult to cope with physically, as anyone who has driven several hundred miles can testify. Couriers sometimes put in as much as 72 hours in one stretch on the road, alternating with each other in four-hour driving stints. When not driving, a second man occupies the seat next to the driver, acts as observer and handles the radio while the third man relaxes or dozes in the back.

DOE couriers, headquartered here, now number 115 and are charged with responsibility for shipment security of nuclear material. Besides Albuquerque, couriers work out of Livermore, Amarillo and Oak Ridge. Most shipments are by tractor/trailer, but the couriers also accompany rail and air shipments. The travel is confined to the 48 contiguous states.

We hitched a ride to Moriarty with courier Bob Feeney in one of the big 18-wheelers. Bert Vendel and Willie Gardener (newly appointed chief of the Albuquerque Courier Sect.) came along in the escort vehicle, a Chevy carryall. Sitting up there above the rest of the traffic gives one a certain lordly feeling, but that sensation is quickly submerged as the truck picks up speed and settles into its dominant mode: a bounce reminiscent of a hard-sprung amusement park ride. On the interstate with its concrete slabs and seams, it seemed as if the entire universe were beset with the jiggles.



ON THE ROAD—All DOE couriers are trained initially to drive a tractor/trailer on a simulator before they take a rig out on the road. Engineering and modification work on these tractor/trailers is done by Org. 1714. Note antenna on cab. Couriers can communicate with Albuquerque headquarters from anywhere in country via SECOM II, a radio system developed by Org. 1715.

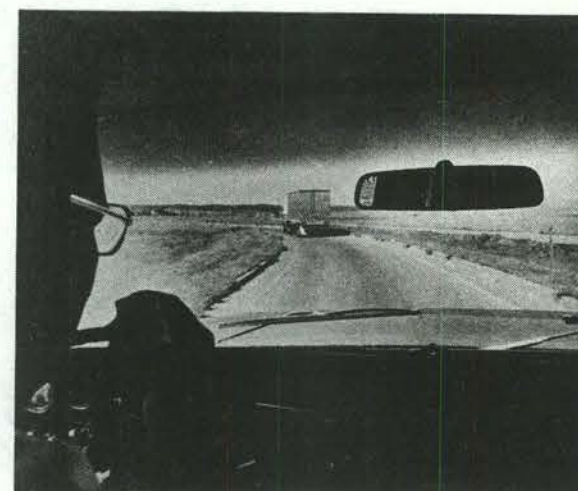
Over coffee at a cafe in Moriarty (while one courier stayed with the truck), Willie Gardener acknowledged that the trucks provide something less than a joy ride. "But you do get used to it," he noted.

Bob Feeney agreed. "That's true—after 22 years I still like the work. And the money." A courier's income is considerably enhanced by overtime payments. In fact a promotion to an off-the-road job may mean an actual loss in income.

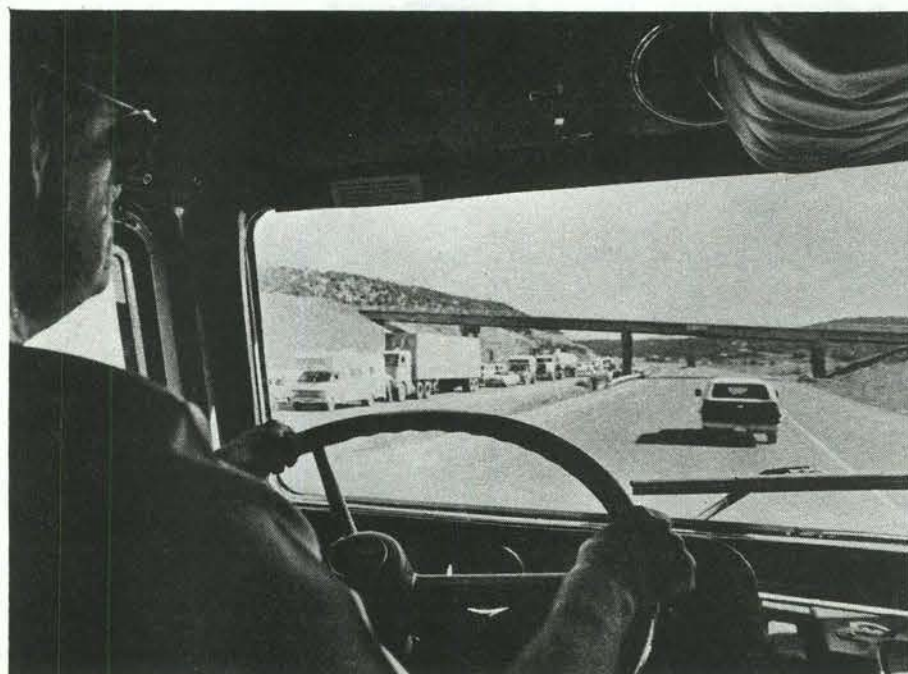
With the increased concern for security of nuclear material, the courier's job has been upgraded in the past few years. Each receives intensive training over a six-week period in the use of firearms, radio communications, first aid and physical fitness. Escort vehicles which accompany the tractor/trailers are virtual armories with automatic rifles, shotguns and pistols, and both types of vehicles have elaborate radio gear to maintain contact with Albuquerque during a trip.

We returned from Moriarty in the escort vehicle, relatively comfortable with bucket

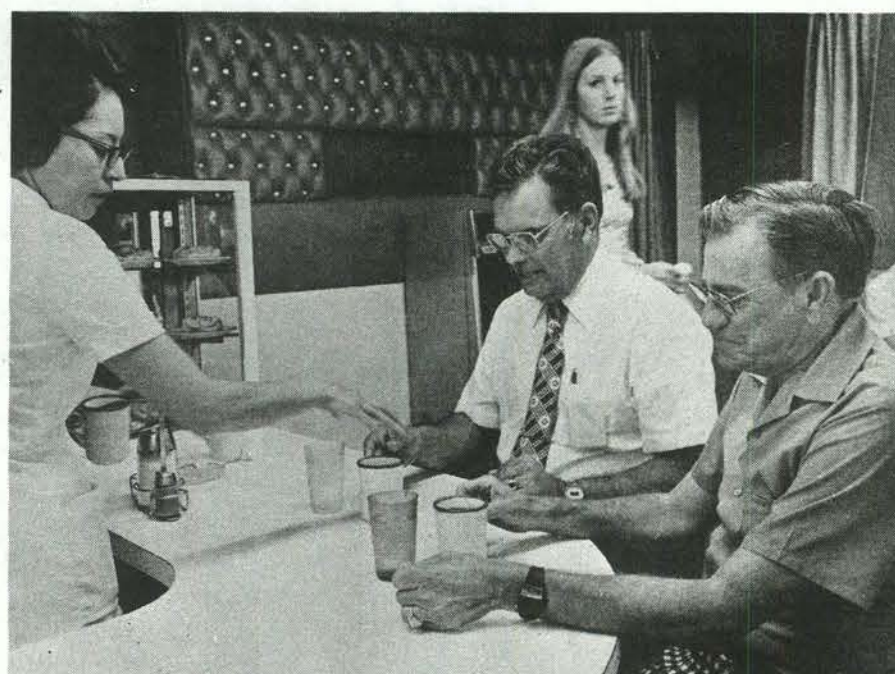
seats and air conditioning. We asked about other new developments on the courier scene. "Well," said Bert, "we understand a number of women have applied for this kind of work. A woman on the courier force would be a first."



ESCORT talks to tractor/trailer. Courier vehicles are equipped with CB radios, but all communications are conducted on non-CB channels.



TRUCKER'S VIEW is sweeping. Courier Bob Feeney eyeballs escort just ahead. Convoys vary in size. Some trips range over several thousand miles.



CUISINE—Willie Gardner and Bob Feeney, with some 40 years of road experience between them, can relate stories of food at roadside diners which ranged from barely acceptable to just tolerable.

Canyon de Chelly, Interesting But Exclusive

For the twenty-plus years of our residence in New Mexico, we've many times resolved to visit the famous Canyon de Chelly, locale of those spectacular *Arizona Highways* shots of towering cliffs with ruins nestled at the bottom. The Canyon, in Arizona, is just across the New Mexico border and some 40 to 50 miles north of Gallup. Taking a 3-day weekend, we finally made Canyon de Chelly and, with a few caveats, recommend a visit.

Briefly, Canyon de Chelly (pronounced "d'SHAY") National Monument consists of a V-shaped pair of canyons, running east to west, each about 15 miles long, joining at the apex at monument headquarters in Chinle, Arizona. The canyons are deep, up to 1000 feet, and vertical, which makes for spectacular overlooks. A stream of sorts runs along the bottom, and this presence of

water is thought to account for Canyon de Chelly's long history of human habitation—back to 350 AD and, variously, by the Hopi and the Navajo.

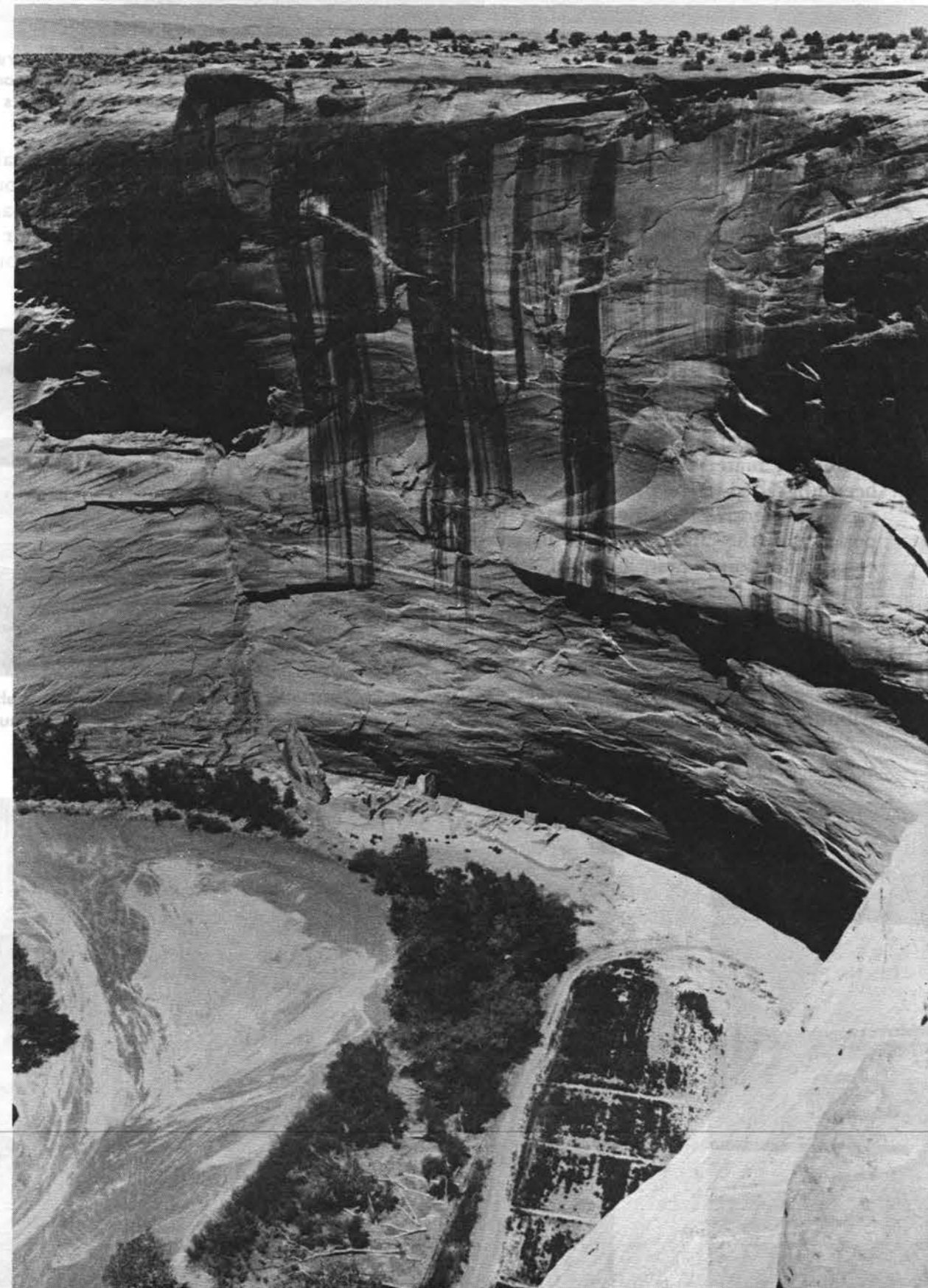
The Navajo and the Canyon share a bloody history. An aggressive people, their raids on Pueblo Indian villages and on the settlements of the white man led to a series of reprisals by both Spanish and American authorities. In the most draconian of these, in 1864, Kit Carson and a detachment of the US cavalry entered the Canyon, subjugated the Indians and forcibly removed all 8000 of them to new lands in eastern New Mexico. The experiment failed, and after four years the Navajos were permitted to return to their homeland. The Kit Carson legend, since developed, enjoys little currency in Navajoland.

You can do Canyon de Chelly a number of ways. We elected to approach along the north rim, which has many well situated overlooks, stopped briefly at the headquarters and campground at the head of the Canyon to secure one of the camping spaces, then continued along the south rim for a few miles to the White House ruins trail—the only trail to the bottom of the Canyon that non-Indians are permitted to use. It's a good trail, a mile or two long, and leads to some apartment-house style ruins. Their masonry construction and location at the base of the escarpment typify all the ruins found in Canyon de Chelly.

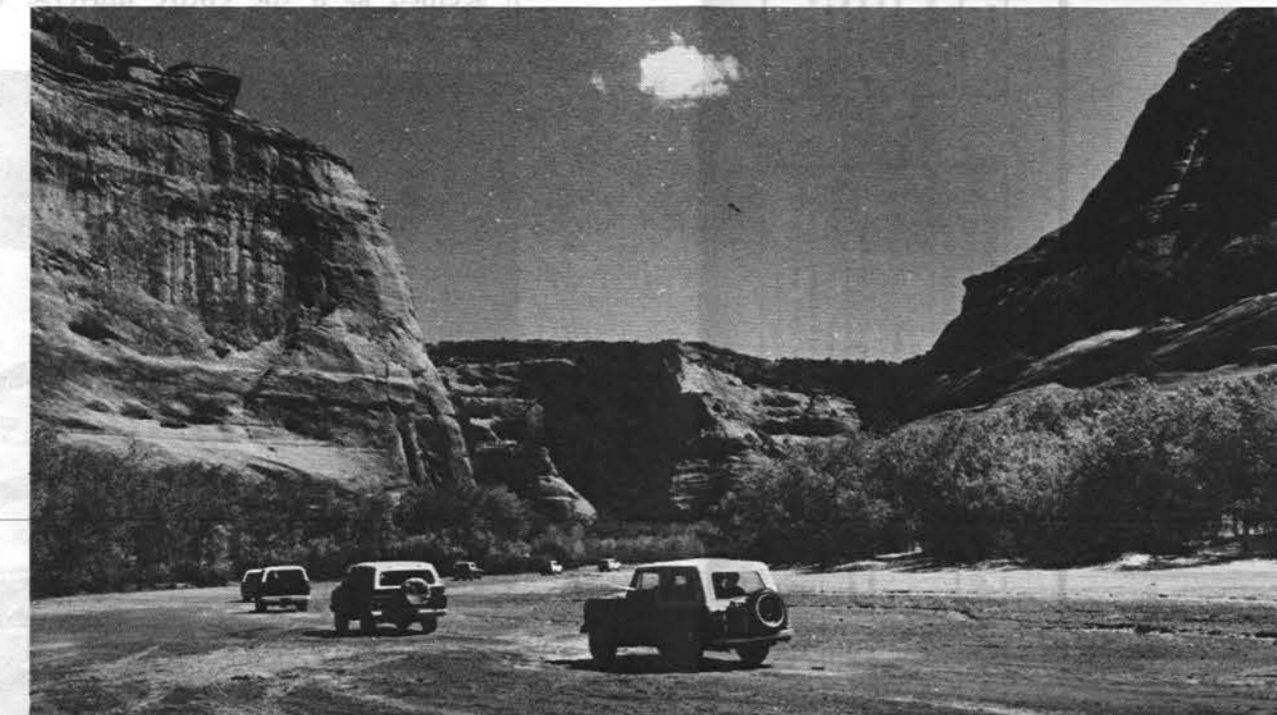
If you wish to travel the Canyon floor, which would be an interesting trip, you may not do so on your own. If you have a 4-wheel drive vehicle, you can engage an Indian guide at Monument headquarters to accompany you on a day or overnight tour. Otherwise, you may join with other tourists in the back of a 6x6 truck, at \$10/head, for a morning or afternoon drive up the Canyon. No hiking on your own, no trail bikes, no camping overnight in the Canyon except with a guide. Too bad—there appeared to be many delightful camping spots and an ordinary pickup could readily negotiate the Canyon floor.

The campground at the head of the Canyon lies in a cottonwood grove, has water and toilet facilities, quite a few spaces, and is pleasant and free. Teeny boppers from nearby Chinle don't have much to do of an evening and regularly cruise the campground, a minor annoyance.

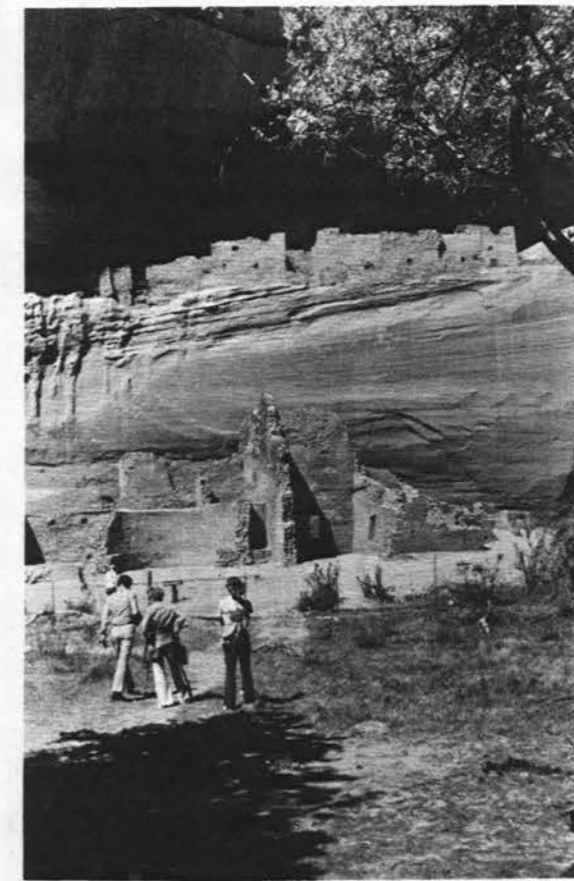
In late May, the time of our visit, temperatures were in the 70's and 80's during the day. June through August would tend to be hot, and the best time for the Canyon is probably in the spring and fall. On your return to Albuquerque, you might consider dropping south of Gallup to visit El Morro National Monument (Inscription Rock). After passing El Morro the good, 2-lane highway returns you to the Interstate near Grants. •js



ANTELOPE HOUSE ruins can be seen at the base of this escarpment. Canyon de Chelly is dominated by vertical walls. Note land under cultivation; many Indian continue to live in the Canyon.



ONLY WAY non-Indians can traverse Canyon floor is with 4-wheel drive vehicle and Indian guide. This caravan managed with one guide. A 6x6 truck loads up tourists without 4WD, making morning and afternoon forays into Canyon.



WHITE HOUSE ruins are reached by scenic trail from rim to Canyon bottom.

J. A. Reuscher (5424), C. H. Karnes and R. H. Marion (both 5847), "Development of a (U,Zr)C-Graphite Pulsed Reactor Fuel Element"; H. J. Sutherland (5167) and L. A. Kent (9337), "Acoustic Wave Measurements in Reactor-Grade Concretes"; D. L. Wesenberg and M. J. Forrestal (both 5233), "Dynamic Expansion and Fracture of 304 Stainless Steel Cylindrical Shells"; R. W. Rohde (5832) and J. C. Swearengen (5846), "Mechanical Equation of State Analysis of Elevated Temperature Cyclic Deformation of Austenitic Stainless Steels"; C. M. Stone and R. E. Nickell (both 5431), "Evaluation of Computational Techniques for LMFR Safety Analyses," 4th International Conference on Structural Mechanics in Reactor Technology, Aug. 15-19, San Francisco.

A. C. Switendick (5151), "Electronic States in the Vanadium-Ruthenium System"; J. E. Schirber (5150), "Self-Consistent, Relativistic, Ferromagnetic Band Structure of Gadolinium," International Conference on Physics of Transition Metals, Aug. 15-19, Toronto, Canada.

D. J. Kuehl (5713), "Five Megawatt Solar Thermal Test Facility," Los Altos Kiwanis Club, July 14.

M. M. Newsom (5735), "Drilling Research," Host Lions Club, July 26.

L. P. Robertson (1756), "Hawaii," Downtown Optimist Club, July 29.

T. R. Schmidt (5451), "Safeguards Experience at the Sandia Laboratories Reactor Site," ERDA Reactor Safety Conference, Aug. 7-12, Chattanooga, Tenn.

R. L. Iman (1223) and W. J. Conover (Texas Tech Univ.), "Use of the Rank Transform in Regression," Annual meeting of the American Statistical Assoc., Aug. 14-18, Chicago.

C. J. M. Northrup (5824), W. J. Kass (5846) and A. J. Beattie (9352), "Acoustic Emissions During Hydride Formation," International Symposium on Hydrides for Energy Storage, Aug. 14-19, Bardola Hoyfjellshotell, Geilo, Norway.

A. Owyong (5214), "CW Raman Gain Spectroscopy," Nonlinear Optics and Lasers Conference, Aug. 14-19, Plymouth, N.H.

L. W. Goldstein (2142), "Multiple Fault Analysis in Synchronous Sequential Circuits by Means of Vector Boolean Difference," 20th Midwest Symposium on Circuits and Systems, Aug. 15-16, Lubbock, Texas.

G. J. Simmons (5120), "An Application of Maximum-Minimum Distance Circuits on Hypercubes," International Conference on Combinatorial Theory, Aug. 16-27, Canberra, Australia; "Surface Penetrators: A New Type of Planetary Probe," Aug.-Sept., 1977, School of Earth Sciences, Institute of Advanced Studies, Canberra, Australia, and University of Sydney, Sydney, and Monash University, Clayton, Australia.

D. M. Mattox (5834), "Solar Selective Coatings," Solarcon Seminar, Aug. 18-20, San Francisco.

G. F. Derbenwick (2144), "Radiation-Hardening of MOS Structures"; W. D. Brown (2144), "MNOS Device Characterization Using MNOS Capacitors," "Radiation Effects MOS and MNOS Capacitors Fabricated on 111 Silicon," "HCl Annealing of MNOS Memory Oxides"; H. J. Stein (5112), "Charge Loss from Ion-Bombarded MNOS Under Ionizing Radiation," IEEE 1977 Non-Volatile Semiconductor Memory Workshop, Aug. 23-25, Vail, Colo.

R. L. Ward (5441) and J. R. Brandon (5445), "Effect of Heat on Pathogenic Organisms Found in Wastewater Sludge," 1977 National Conference on Composting of Municipal Residues and Sludge, Aug. 23-25, Silver Spring, Md.

J. W. Nunziato (5131) and P. Yarrington (5166), "A Continuum Theory of Porous Materials with Application to Wave Propagation Calculations"; L. Davidson (5131) and R. J. Lawrence (5162), "Analysis of Nonlinear Plane-Wave Propagation in Piezoelectric Solids"; F. R. Norwood (5166), D. L. Hicks and M. M. Madsen (both 5162), "Transient Analysis of a Two-Dimensional Plate by Numerical and Analytical Techniques," Symposium on Applications of Computer Methods in Engineering, Aug. 23-26, Los Angeles.

L. W. Davison (5131) and M. E. Kipp (5162), "Calculation of Spall Damage Accumulation in Ductile Metals," Symposium on High Velocity Deformation of Solids, Aug. 24-27, Tokyo, Japan.

J. R. Freeman (5241), "Shock-Initiated Instabilities in ICF Targets," Gordon Research Conference on Laser Interaction with Water, Aug. 8-12, Tilton, N.H.

R. E. D. Stewart (5742), G. Aronson (2613), H. M. Dodd and S. G. Varnado (both 5742), "An Assessment of Mechanical Energy Storage for Solar Systems"; M. Edenburn (5719), "Optimum Operating Conditions for a Cylindrical Parabolic Focusing Collector/Rankine Power Generation Cycle System," 12th Intersociety Energy Conversion Conference, Aug. 28 - Sept. 2, Washington, D.C.

B. L. Butler (5844) and R. B. Pettit (5842), "Optical Evaluation Techniques for Reflecting Solar Concentrators," SPIE annual Technical Symposium, Aug. 22-26, San Diego.

W. D. Drotning (5842), "Thermal Expansion of Molten Materials by the Gamma Attenuation Technique," International Thermal Expansion Symposium, Aug. 29-31, Winnipeg, Canada.

J. P. Brannen and J. R. Wayland (both 5413), "Applications of Absolute Reaction Rate Theory to Biological Models"; Wayland and Brannen, "An Absolute Reaction Rate Model for the Response of *E. coli* to Microwave Radiation"; Wayland, W. D. Brown (1353) and L. T. Ritchie (5413), "Modeling of Rainstorm and Plume Interaction for Atmospheric Release of Effluents"; Wayland and Brannen, "An Absolute Reaction Rate Model for the Response of *B. subtilis* to Microwave Radiation"; L. A. Bertram (2613), "A Mathematical Model for Vacuum-Consumable-Arc-Remelt Casting," First International Conference on Mathematical Modeling, Aug. 29 - Sept. 1, St. Louis, Mo.

B. Granoff (5731), "Mineral Matter Effects in Coal Liquefaction"; J. W. Nunziato (5131), invited presentation, "On the Use of Acceleration Waves to Characterize the Dynamic Response of Nonlinear Viscoelastic Materials"; P. H. Holloway and G. C. Nelson (both 5825), "Deactivation Mechanisms for a Cobalt Molybdate Coal Liquefaction Catalyst," American Chemical Society meeting, Aug. 29 - Sept. 2, Chicago.

C. L. Schuster (5733), "A Status Report on the MHF Mapping and Characterization Program"; C. G. Huff and M. M. Newsom (both 5735), "Drilling Technology Research Program"; L. D. Tyler (1111), W. C. Vollendorf (1133) and D. A. Northrup (5732), "In Situ Examination of Hydraulic Fractures," Third Annual ERDA Symposium on Enhanced Oil and Gas Recovery, Aug. 30-31, Tulsa, Okla.

J. A. Panitz (5114), "Depth Profiles of Low Energy Deuterium in Tungsten," 24th International Field Emission symposium, Sept. 5-9, Oxford, England.

G. E. Pike (5155), "Conductivity of Thick Film (Cermet) Resistors as a Function of Metallic Particle Volume Fraction," Conference on Electrical Transport and Optical Properties of Inhomogeneous Media, Sept. 7-9, Columbus, Ohio.

W. P. Schimmel, Jr. (1261), "Interpretation of Optical Interferograms Using a New Theory for Refractive Index-Temperature Dependence," and "Application of Laser Holographic Interferometry to Natural Convection in Enclosures"; P. Wagner (LASL) and R. U. Acton (9337), "Experiences in Thermophysical Properties Measurements"; T. Y. R. Lee (Purdue Univ.), A. B. Donaldson (2513) and R. E. Taylor (also Purdue Univ.), "Thermal Diffusivity of Layered Composites"; R. U. Acton (9337), "Thermal Conductivity of S.E. New Mexico Rocksalt and Anhydrite"; W. P. Schimmel, Jr. and C. E. Hickox (1262), "Thermal Transport Studies in the Deepsea Sediments"; A. C. Ratzel, C. E. Hickox (both 1262) and D. K. Gartling (1261), "Energy Loss by Thermal Conduction and Natural Convection in Annular Solar Receivers"; A. B. Donaldson and B. D. Fabian (Purdue Univ.), "Thermal Diffusivity Measurement of Temperature Sensitive Materials by an Extended Pulse Technique," International Thermal Conductivity Conference, Aug. 24-26, Ontario, Canada.

R. M. Jefferson (5430), "The Current Power Crisis," Men's Club, Harwood Methodist Church, Aug. 9, Albuquerque.

G. W. Hughes (1243), "The Metric System and the Citizen," Heights Optimist Club, Aug. 10, Albuquerque.

F. Norwood (5166), "Applications of Spectral Theory in Elastic Wave Propagation," IUTAM Symposium on Modern Problems in Elastic Wave Propagation, Sept. 11-15, Evanston, Ill.

D. E. Grady (5163), "Dynamic Tensile Fracture in Rock," Invited Seminar, California Institute of Technology Seismological Laboratory, Sept. 13, Pasadena.

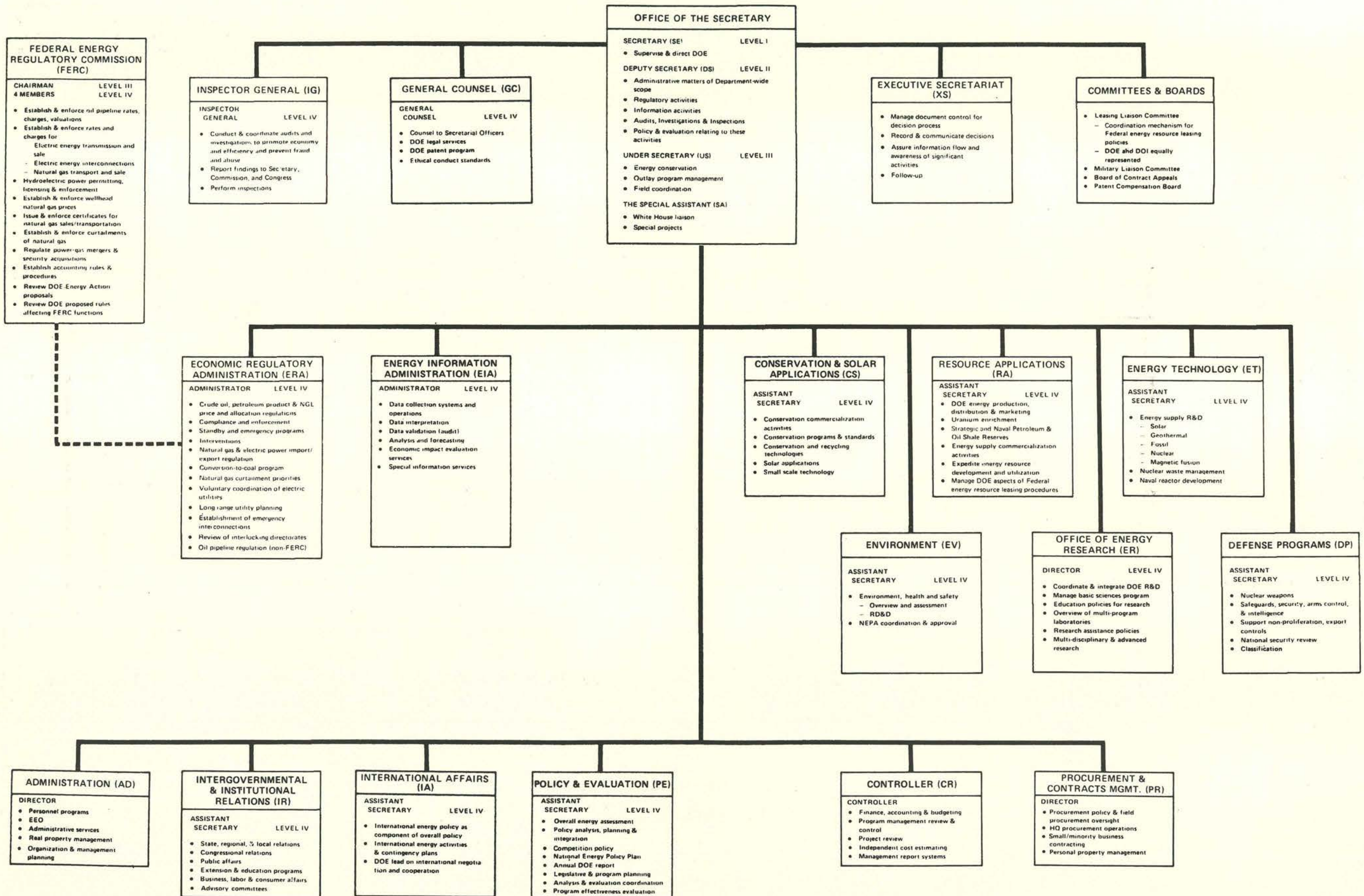
N. J. Magnani (5831), "The Effect of Heat Treatment on the Stress Corrosion Cracking Behavior of U-6 wt % Nb in Laboratory Air," Uranium JOWOG-22 Meeting, Sept. 13-15, Rocky Flats, Colo.

W. Herrmann (5160) and D. E. Grady (5163), "Stress Wave Related Effects in Rock"; L. Davison (5131), invited presentation, "Formation of Porosity in Solid Materials by Crack and Void Growth," Workshop on Mechanics Problems Associated with the Mining and Processing of Energy Related Minerals, National Science Foundation, Sept. 14-16, Asilomar Conference Grounds, Pacific Grove, Calif.

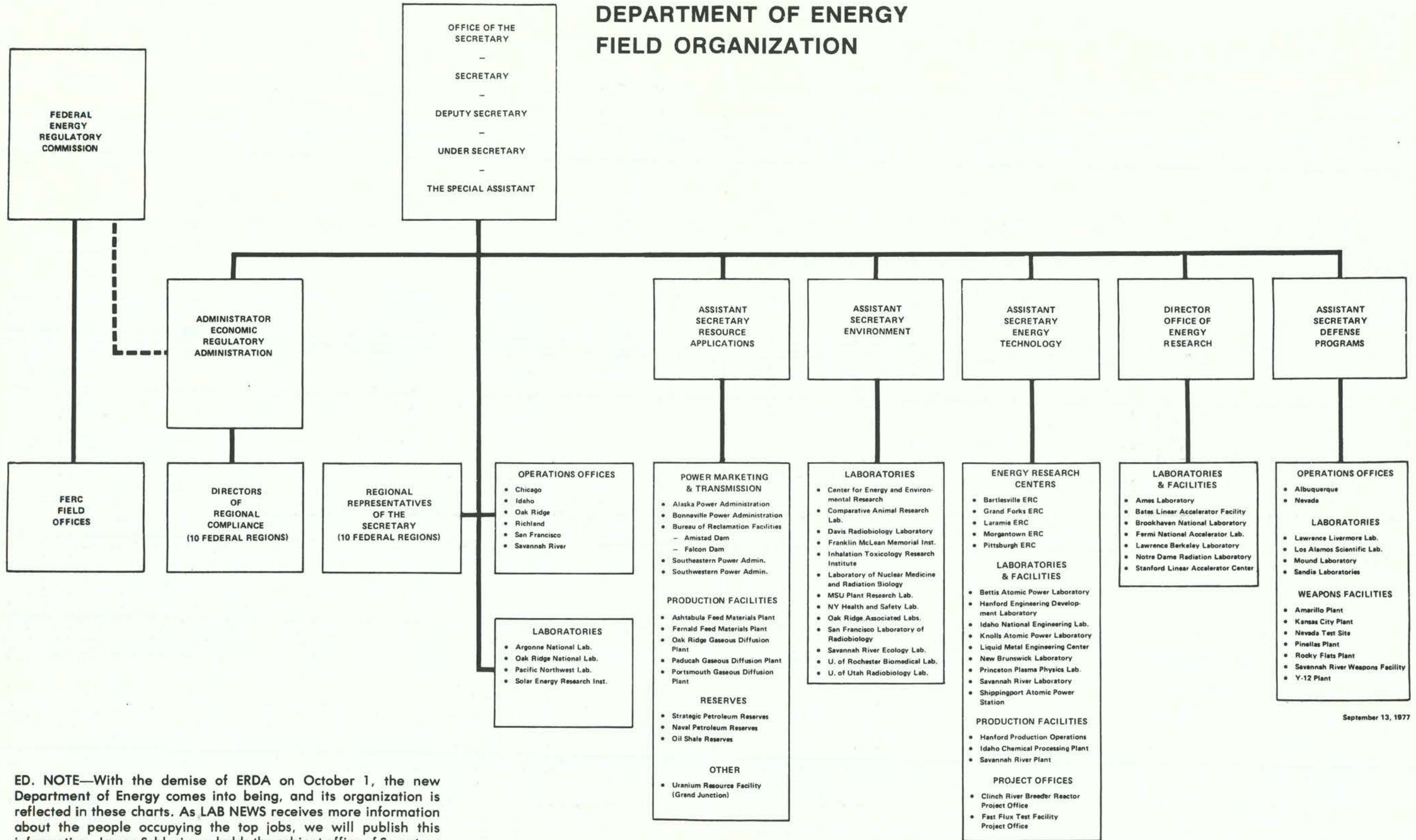
T. V. Nordstrom (5832), "Sintering Behavior of Reactively Bonded Thick Film Gold," American Ceramic Society Electronics Division Fall Meeting, Sept. 18-21, Montreal, Canada.

L. W. Beckham (5732), "Estimating the Extent of an In Situ Coal Gasification Process Using Passive Seismic Signals"; H. D. Garbin (1152) and L. W. Beckham, "Borehole-Borehole Seismic Delineation of an In Situ Coal Gasification Process"; L. C. Bartel (5732), "Mapping of the Reaction Zone in an In Situ Coal Gasification Experiment Using an Electrical Technique," SEG 47th Annual International Meeting, Sept. 18-22, Calgary, Alberta, Canada.

DEPARTMENT OF ENERGY ORGANIZATION & FUNCTIONS



DEPARTMENT OF ENERGY FIELD ORGANIZATION



September 13, 1977

ED. NOTE—With the demise of ERDA on October 1, the new Department of Energy comes into being, and its organization is reflected in these charts. As LAB NEWS receives more information about the people occupying the top jobs, we will publish this information. James Schlesinger holds the cabinet office of Secretary of DOE, while John O'Leary, late of New Mexico, is his deputy.

Retiring

Fit Is Better

Let Your Pulse Determine Your Effort

No one can be a hero everyday.

In matters of physical fitness, each of us can come up with an occasional heroic effort, like completion of the La Luz Trail Race, but if we try to run, or bike, or swim regularly on an all-out basis, then our level of distress is such that we soon find ourselves not running, biking or swimming. We can't cope with it psychologically. The activity decidedly isn't fun—in fact, it's just plain painful.

Most drop-outs on the fitness scene became drop-outs because of a self imposed too-ambitious program. They start jogging, stop watch in hand, and return from workouts glassy eyed and wheezing for breath. At each outing they plan to do better than the last, cutting seconds off their times and, for a while, they succeed. But after a few weeks the reduced times come harder and harder, they begin to get discouraged and, shortly, begin to find reasons for not continuing. Later, they explain that they've given running a shot but found it too monotonous, too hard on their feet, or too something.

The fact is that any person with a clearance from his or her physician can pursue a fitness program that, if not actively enjoyable, is at least not physically distressful. The key: take it easy. You're not running/biking/swimming to get in shape for the Olympics—cardiovascular fitness is your goal and this can be attained at much less than maximum effort. Many of us approach exercise still infused with

the competitive spirit of school days, feeling we have to *beat* someone or something (like yesterday's time). Why? Your goal is fitness, not a letter for a sweater.

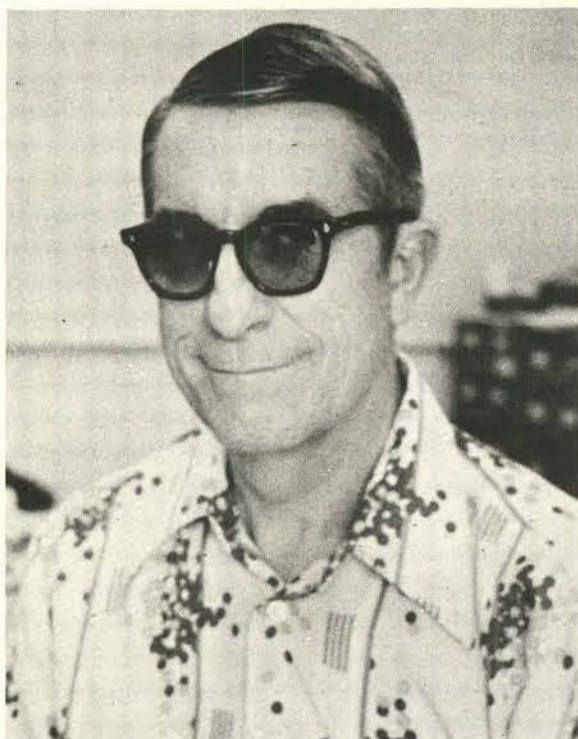
If you've taken up jogging, there's an easy rule of thumb about how fast you should be going. If you can't carry on a conversation with a fellow jogger without undue difficulty, then slow down. The heart of the matter, of course, is your pulse rate. Exercise physiologists generally recommend a training regimen that brings your pulse up to 75 to 80% of maximal. What's maximal? Subtract your age from 220 for a value that, while approximate (plus or minus 12%), gives you something to work with. Say you're 40; then your maximal heart rate is 180 and you should aim at a pace that brings your pulse up to around 140 beats per minute.

Also, consider these words by Jack Wilmore, exercise physiologist at the Univ. of California: "From results of studies, it appears that you can obtain a substantial 'conditioning effect' by exercising at a level which is comfortably between 60 and 80% of your capacity (i.e. maximal oxygen consumption). Below 60% results in little, if any, conditioning, and above 80% the gains are small relative to the level of work you are performing." In a healthy person, 60% of this "maximal capacity" is about equal to 75% of maximum pulse.

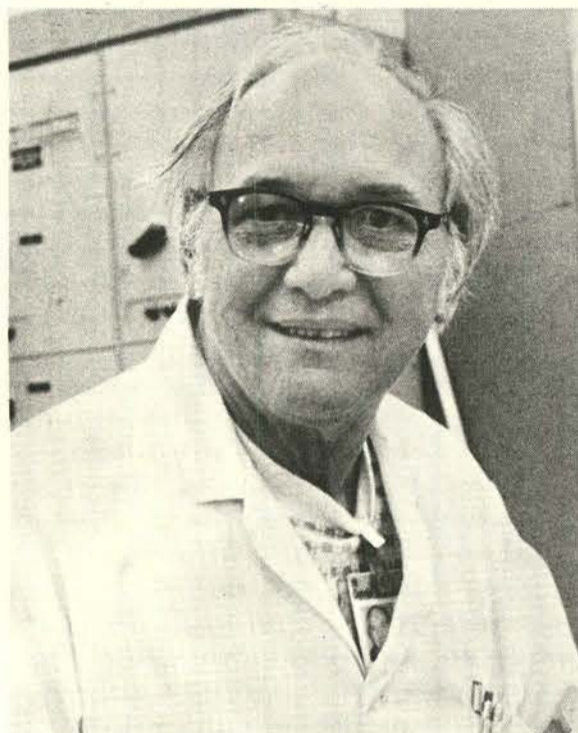
Keep track also of your resting pulse rate. Most healthy but unconditioned people have resting pulse rates in the 70's. After conditioning, your's will drop to the 60's or even to the 50's. The lower rate means that your heart is now able to pump a greater volume of blood with each stroke—that's good. The medical advisor to *Runner's World*, Dr. George Sheehan, feels strongly about the resting rate, saying: "The most important pulse determination is the length of time it takes to return to the resting rate after exercise." How quickly the pulse returns to its resting rate after exercise depends on a number of factors, including temperature/humidity, and duration and intensity of exercise. As you might expect, the pulse rate returns to the resting note sooner for those who are fit.

Finally, there's the matter of actually taking your pulse. Some runners claim they can take theirs *en route*, which has to be a neat trick with all the bouncing around. I have a hard enough time taking it immediately upon stopping and have had greatest success feeling for the pulse in the carotid artery on either side of the Adam's apple. The wrist pulse is more elusive.

The simplest way to calculate pulse rate is to count the beat for six seconds and add a zero to the results. There's some gadgets on the market, worn like a wristwatch, which purport to give your pulse rate while you are underway, certainly the optimum arrangement. But Lovelace-Bataan's Ralph LaForge has tested several models in his exercise programs. His verdict: "subject to considerable error." Ralph recommends sticking with traditional pulse-taking methods. • js



Carl Hoffman (1247)



Fritz Wettin (9573)

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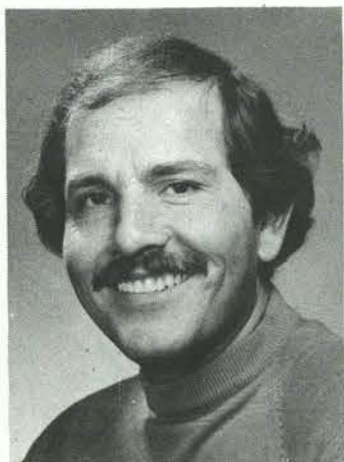


Jessie (4131) and Dick Hodges (3171)

MILEPOSTS

LAB NEWS

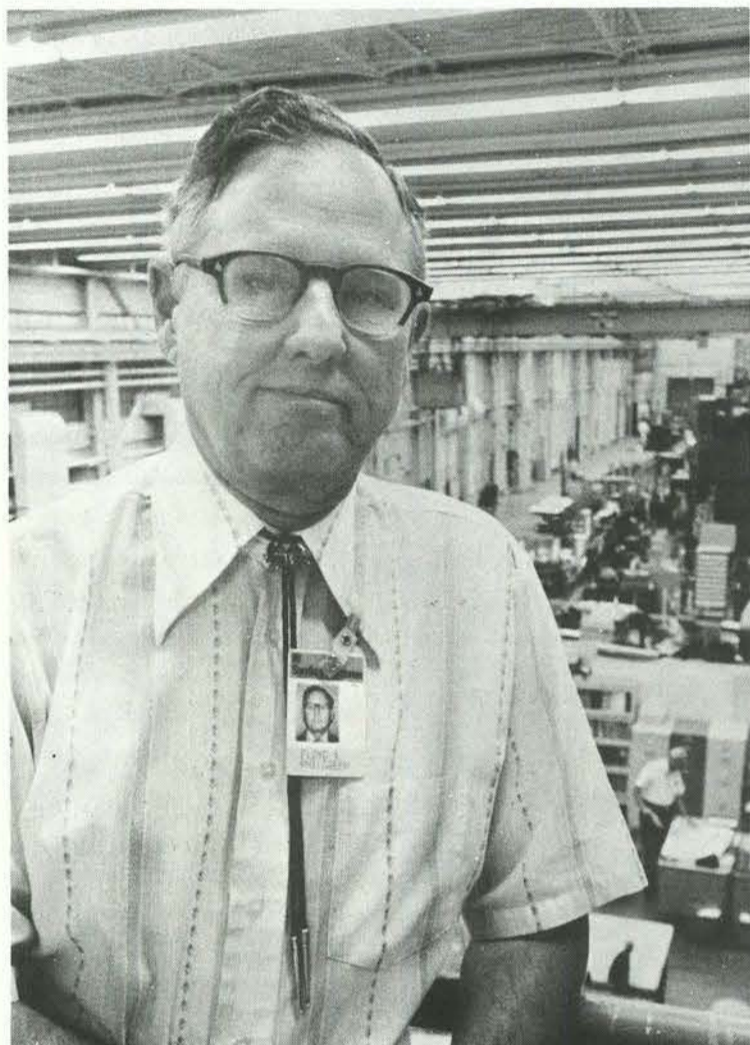
OCTOBER 1977



Jerry Silva - 9484 10



Dick Zaluga - 3341 25

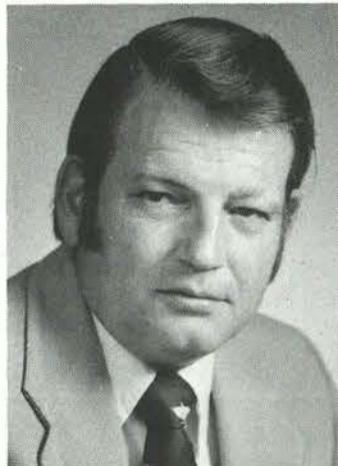


Floyd Philgreen - 9572

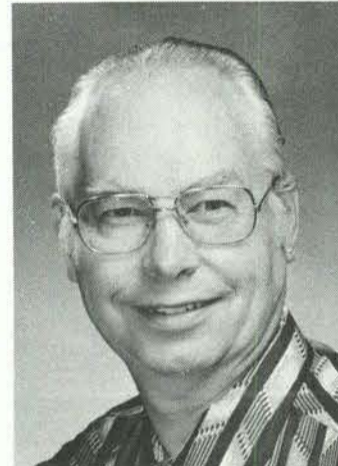
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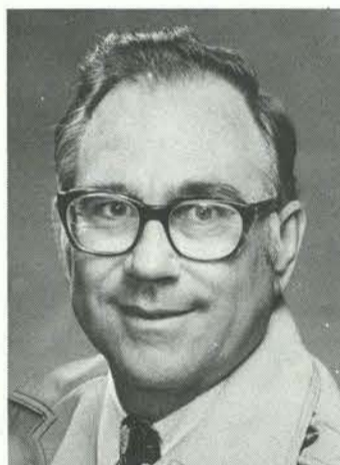
Mattie Williams - 2631 10



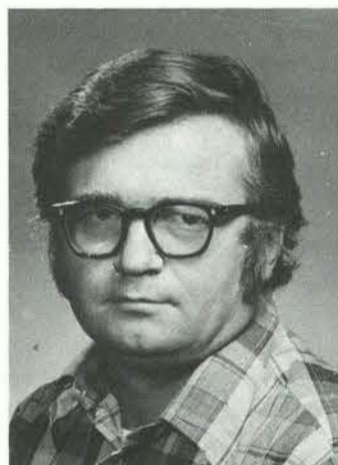
Bill Zinke - 8123 20



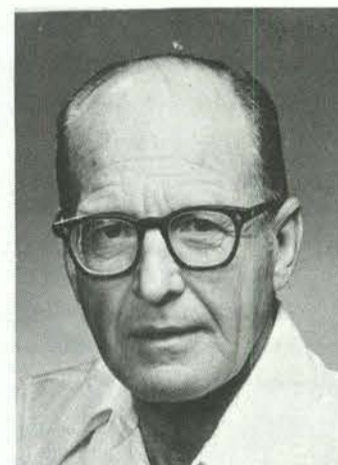
Ralph Fisher - 5833 30



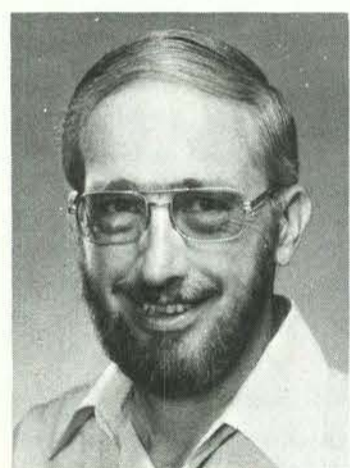
Bryan Cason - 9335 20



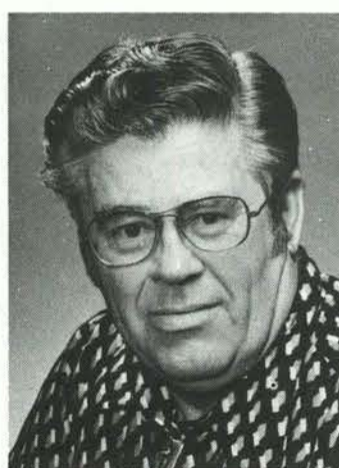
Roger Edwards - 5423 10



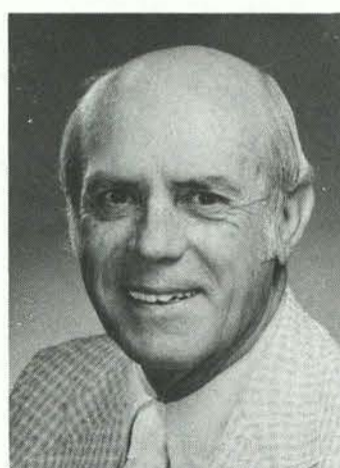
Verne Christy - 3442 20



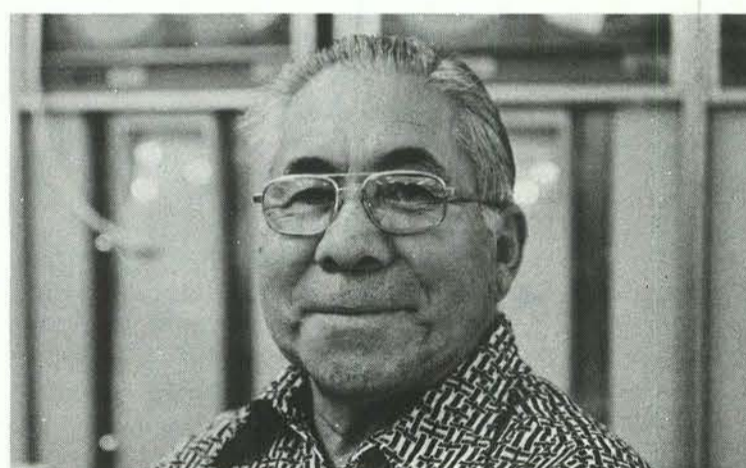
Fred Deiber - 9652 30



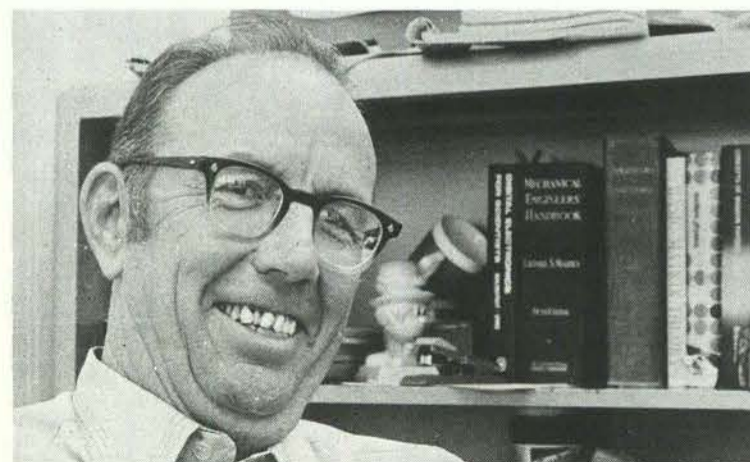
Gilbert Wallace - 2314 25



Bob Thompson - 3212 25

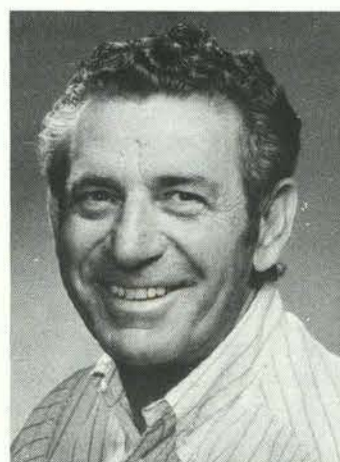


Marty Quintana - 2632 10

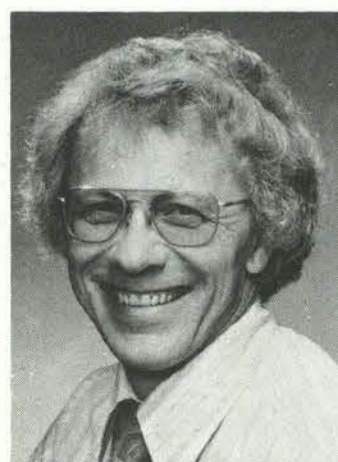


Jim Harrison - 9657

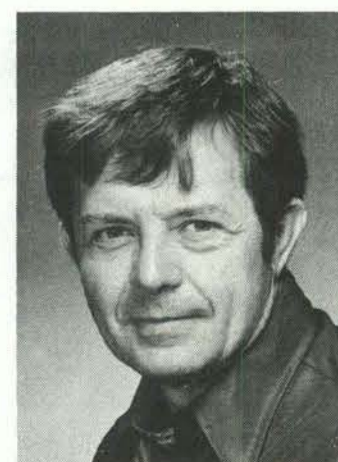
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Robert Fortin - 9344 10



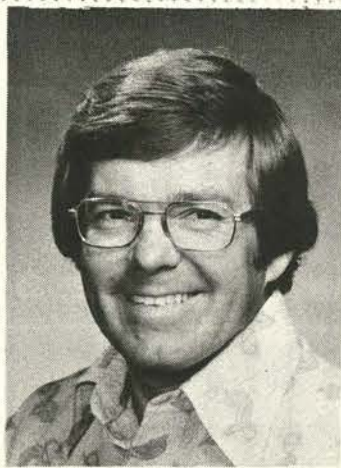
Stephen Ross - 5000 10



Ronald Bentz - 2123 20



Andrew Ellingson - 9525 25



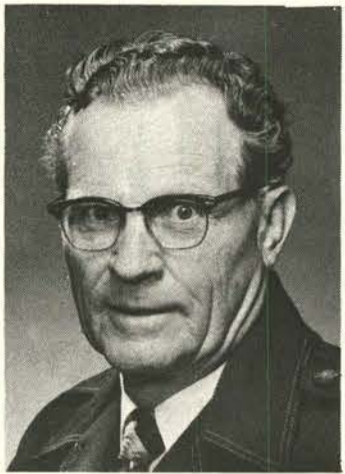
Derek Snyder - 1312 10



Tim Taylor - 1242 10



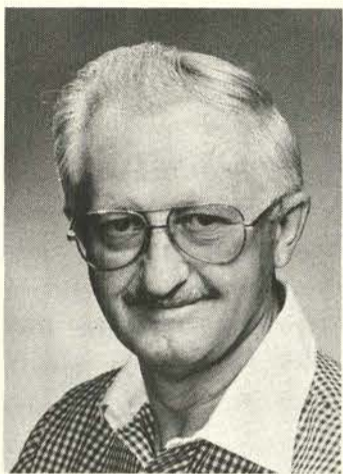
Luis Sandoval - 3413 15



Cliff Olson - 9411 20



Robert White - 2317 25



Neal Howard - 9753 25



Louis Flores - 9343 25



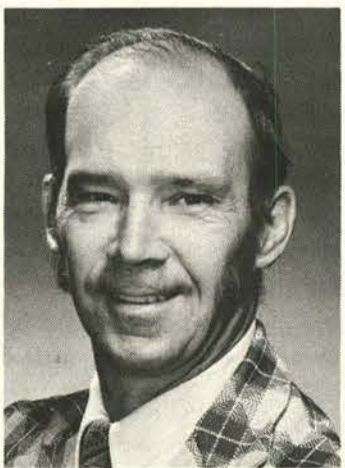
Dave Schafer - 9342 15



Forrest James - 9584 10



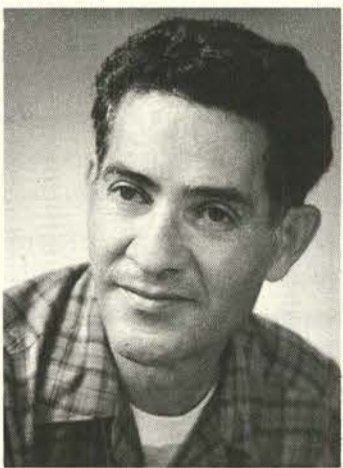
W. C. Scrivner - 8400 30



Floyd Elder - 9753 25



Mildred Johnson - 9343 20



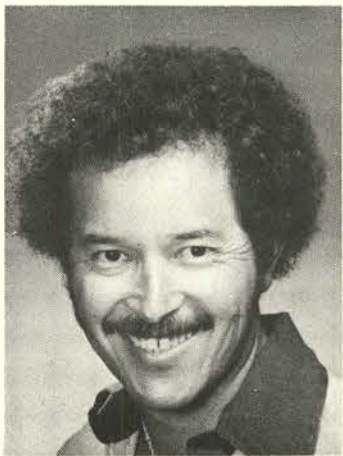
Frank Maestas - 8433 20



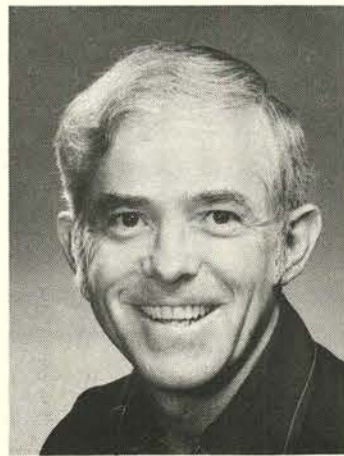
Jose Guzman - 1712 20



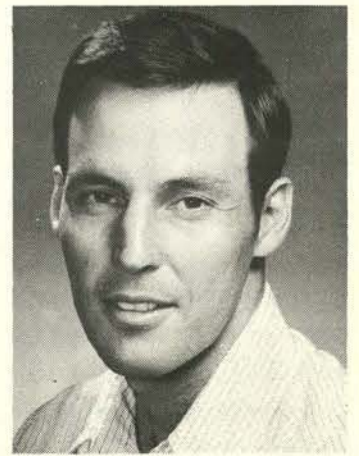
Bill Sundt - 1222 30



Kenneth Ronquillo - 1332 10



Paul Gaither - 4320 25



Mathias Sagartz - 5233 10

A second "Smoking Modification" course will be offered by Medical if enough people sign up. The success rate was high with the first course, which was completed last month. The course consists of six sessions, 4:45 to 6:00 p.m., and involves concepts of behavior modification, group interaction and reinforcement. Enrollment is limited to 20 people, and the sessions will be held in the Medical Bldg. If you're interested, call Wanda Cupp in Medical on 4-7169. Spouses are welcome too, subject to the limitation of 20 people.

* * *

A few issues back we carried a photo of a recreational vehicle whose sides had been blown outwards by an LP explosion, and we stated that the explosion probably could have been averted if holes had been drilled at some low point, allowing the pockets of gas to drain out. An outfit which manufactures a gas alarm has sent us some interesting data to the effect that the notion that LP gas "pockets" is erroneous. They include results of tests conducted by Underwriters' Laboratories which show that LP gas diffuses and mixes with air at all levels within a closed area. Conclusion: don't depend upon holes in the floor to get rid of leaking LP gas.

* * *

The IRS has come up with an interesting

program of volunteerism under which you can help an elderly taxpayer or someone with low income and give a little help to the government as well. Called VITA (Volunteer Income Tax Assistance), the program calls for the volunteer to attend a two-day course in income tax procedure and then to help the elderly and/or low income taxpayer complete his or her tax form, usually the fairly simple Short Form 1040A. VITA assistance is given at convenient hours within local communities, usually at community centers, church halls, or neighborhood meeting places. If you'd like to help give Janene Clark of IRS a call on 766-2753.

* * *

Attention camera toters: if you travel you'd better keep your undeveloped film

Take Note

out of those X-ray inspection machines at U.S. airports. Their signs say that the machines "will not harm ordinary undeveloped film" and this is probably true for a quick one-time pass through. But a recent study has shown that film has suffered damage as the result of power surges, inexact voltages and repeated examina-

tions when the attendant is unable to determine what's in the suitcase. And the effect of X-rays on film is cumulative. So either put your film in your checked through baggage (not the "carry on") or simply ask for hand inspection of your film containers.

* * *

The Albuquerque Philharmonic Orchestra is celebrating its fifth birthday with a change of name; formerly it was called the Albuquerque Lesser Symphony Orchestra. APO is conducted by Willy Sucre. Potential players who would like to join and enjoy the orchestra's activities should contact Gary Derbenwick (2144).

* * *

At the Oct. 12 meeting of ASME, Orval Jones (5300) is featured speaker. His topic: "Engineering of Safeguards for the Nuclear Fuel Cycle." The meeting will be held at 7:30 p.m. in room 147, Woodward Hall, UNM.

* * *

"Images," a New Mexico Watercolor Society exhibit, opens Oct. 9 with a reception from 1 to 6, then runs through Oct. 23. It's at the Albuquerque Garden Center near the Lomas Entrance to Los Altos Park. Tillie Pierce (3155) is current president of NMWS.

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

CLASSIFIED ADVERTISING

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

RULES

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

MISCELLANEOUS

- TRASH BAGS**, city-approved, \$4. So. Hwy. 14 Project. LAB NEWS, Bldg. 814.
- IVC COLOR** video tape recorder, 1" tape, dual sound tracks, slow motion etc.; Sanyo 19" color TV, 3 mos. old; Spectro acoustic power amp. Redding, 294-2928.
- INNER TUBES**, \$1.25 ea. Stuart, 299-9190.
- SELL OR TRADE**: geese, ducks, pigeons and chickens. Lackey, 898-6638.
- 3 DOZ** new golf balls, \$8/doz.; poker table, seats 8, \$95; western saddle & bridle, never used, \$250 or best offer. Salazar, 420 Graceland SE, 255-1301.
- 36" RHEEM GAS RANGE**, \$90; sofa, \$40; car luggage carrier, \$5; kitchen sink, \$20; children's school desk, \$7; steel containers, \$7. Garcia, 256-7606.
- TWIN BEDS**, frame, box springs, mattress, \$40 ea.; green swivel chair, \$15; wood desk & chair, \$15; Skitique skis, length 185, Miller bindings, \$45, size 7 ski boots, \$10. Caster, 299-1239.
- DOUBLE BED** w/steel frame & home-made legs, \$35. Bishop, 299-5749.
- 14" STEEL WHEEL**, 5-hole, fits Ford Mustang and others, \$6; tire, F70-14, 4-ply nylon tubeless, whitewall, \$4. Daut, 255-2529.
- SKI BOOTS**, size 9, worn 3 times. White, 299-6411.
- METAL bookshelf**, \$8; projection screen, \$20; 2 room divider screens; traverse rods, \$3 to \$10; serving cart, \$4. Collins, 292-0495.
- POLAROID SX-70** Land camera, \$100.

- Montano, 864-3372.
- REESE equalizer hitch**, \$50; LaFayette C.B. base stations, new, 23-channel, \$75; sleeping bag & backpack, \$20. Sample, 296-1771.
- NIKON FTN** photomic camera, body only, \$225. Laval, 898-9112.
- VOLKSWAGEN BUG PARTS**: new bumper, 68-73, \$15; luggage rack, \$8; two wheels w/tires, 68-72, \$20. Klimas, 293-9694.
- GIRL'S 20"** bike, racing type handlebars, chrome fenders, \$40. Stuart, 265-7315.
- PUPPY** (small breed and beagle); king-size mattress/box springs; twin size bed; avocado bar stools; 8mm movie camera; wall clock. Chandler, 296-3323.
- TV GAME**: has tennis, hockey, doubles & singles handball, AC adapter included, \$30. Bennett, 299-1144.
- RICKENBACKER** stereo bass, \$400; Leslie 125 single 12" spkr., \$150; folded horn bass cabinet w/o speakers, \$75. Whitham, 836-1216.
- DOORS**: 6' sliding glass door; sliding glass, 2 panels 48"x80" w/screens, \$45. Lujan, 299-4820.
- LADIES** diamond & ruby cocktail ring, Mindlin Jewelers appraisal, best offer. Bogdan, 293-9304.
- UTILITY TEMP POLE**, \$80 or trade; aluminum boat, 14' l, 5' w, V bottom w/trailer, \$500 or trade for canoe plus boot. Haskell, 898-9431.
- SKATEBOARD**, Banzai board w/grip tape, ACS 650 trucks w/shock pads & precision wheels, \$45. Gallegos, 298-3589.
- COSCO** mesh playpen; baby bicycle seat; 2 artificial 5' plants; fold-over wardrobe suitcase; trailer tire, 4.80-12, never used. Linnerooth, 299-6154.
- SINGER** Fashion Mate sewing machine & cabinet, \$50. Bisbee, 293-0356.
- CALCULATOR**, Hewlett-Packard HP25C programable, remembers program & 8 memories when turned off, still under warranty, \$125. Fisk, 294-7252.
- PENTAX LENS**, 150mm F4 Auto Takumar, \$75. Stixrud, 298-0478.
- POOL TABLE** w/7/8" slate bed, including accessories, \$250; Fozzeball table, largest non-pro model, \$50. Jefferson, 293-3529.
- REYNOLDS** school trumpet, \$85; two L-78-15 snow tires, \$30; elec. counter-top range & built-in oven, \$50. Fitz-

- gerald, 298-4143.
- REFRIGERATOR**, RCA, Ice Magic w/ cold water tap, 11.7 cu. ft., \$45; Wards sound proofed food disposer, \$25. Atkins, 298-5762.
- IRONRITE IRONER**, \$75; girl's 20" bicycle, \$20; unicycle, \$15; Sears rock tumbler kit, \$10; boy's 3-sp. bicycle, \$15. Mills, 299-2130.
- KING SIZE BED FRAME**, twin box springs, mattress, \$75. Troy, 292-2579.
- FLUTE**, 1974 Armstrong, case & music stand, \$85. Still, 299-8825.
- MOTOR ANALYZER**, Allen, cabinet type w/removable units, tac & dwell, press. & vac., elec., etc., \$200. Lenz, 298-9121.
- STEREO**, Fischer, compact, \$150; Bundy cornet, \$75. Dyckes, 299-7280.
- EAZ-I-LIFT** equalizer trailer hitch, \$65; elec. brake control, \$10; marine toilet, \$10; Realistic stereo phonograph, \$25. Sasser, 298-1439.
- 9" STEEL** sectional door w/track, \$75; 2 15" int'l. rims, \$3/ea.; 4 int'l. hub caps, \$1 ea. Luikens, 881-1382.
- GOLD COUCH**, 3-cushion, \$75; prof. coin-operated Fozzeball table, \$375 or trade for sail boat, dirt bike. Lasiter, 298-2461.
- TWO NEW VAN BUCKET SEATS**, \$25 ea. or 2/\$45; 78-15 radial steel belted tire & rim, \$25; new auto. bike rack, \$9; Reyolts, 299-0932 after 5.
- MATTRESS**, firm Kantwet, crib, \$10; Sears lg. shop vac w/attachments, \$25. Caskey, 294-3218.
- PORT. PHONOGRAPH**: elec. heater; new kitchen vent fan; reg. 8mm movie camera; projector; screen; white ceramic tile; old Coke cooler. Caskey, 296-6372.
- MOBILE HOME**, '72 Lancer, 14x75, 3-bdr., 2 bath, 4-axle, WBFP, carpeted, appliances, unfurnished, well insulated, \$1000 down, assume \$163.65 payments. Liguori, 256-3613.
- 17' TRAILER**, stove, refrig., heater, elec. brake control, equalizer hitch, 2 gas bottles, sleeps 6. Thunborg, 898-0863.
- SKIS**, 175cm, \$20; men's plastic ski boots, 10M, \$15; dbl. kitchen sink, used, porcelain, single handle faucet, \$15. Schubeck, 294-5666.
- ROLLEIFLEX**, twin lens reflex, f3.5, \$200. Hill, 255-6538.

TRANSPORTATION

- 75 VW Rabbit**, low miles. Humiston, 821-3548.

- 76 HONDA CB750F** w/luggage rack, Bates fairing, bars, 13,900m. Redding, 294-2928.
- '66 CHEVROLET**, 4-dr. Bel Air, recent tires & upholstery, AC. Schwoebel, 298-4295.
- '71 BUICK** Electra Limited, full power, 4-dr., new tires, green w/white vinyl, 17 mpg highway, \$1950. Kelly, 293-7871.
- '72 YAMAHA** 125 Enduro, 6700 miles, expansion chamber, high compression head, high fender, fork brace. Komarek, 281-3826.
- '65 INTERNATIONAL** Travelall, 1200 series, 304 V8, 4-sp. AC, PS, PB, \$750. Sample, 296-1771.
- '63 CORVAIR** 95 van, \$500; dual heads glass pack mufflers, \$50; 2 mag wheels w/tires, \$70. Self, 296-9117.
- '75 PINTO**, AT, CB, below book. Nance, 299-1935.
- '70 FORD** Maverick, 3-sp., 6-cyl., rebuilt engine, \$750. Bisbee, 293-0356.
- '61 RAMBLER** 4-dr., \$250. Burnett, 299-6770.
- '70 1/2 IH** 4-wd, AT, PS, PB, buckets, utility body, FM, 62 gallons, 78,000 miles, more extras, \$2500. Barnette, 298-9225.
- 10-SPD. BICYCLE**, woman's frame, 27" wheels, centerpull brakes, \$70. Ginley, 299-1935.
- 3-SPD. BICYCLE**, Breeze Schwinn, dbl. baskets on back, \$45. Robertson, 299-7561.
- '72 CHEV** Impala, 4-dr., AT, AC, PS, new tires, \$1300. Maloney, 821-6661.
- '72 SUZUKI** Enduro 250cc, 9500 miles, \$425. Gravning, 299-0117.
- '64 CHEVY**, 3-sp., 283, V8, make offer. Axline, 293-3809.
- 10-SPD. BICYCLE**, boy's 19", \$35; full size, conventional ladies bike, \$15. Fitzgerald, 298-4143.
- '74 PINTO** wagon, many extras, plus luggage rack, larger engine, hd bumper, cassette player, manual, 4-sp., 22-28 mpg. Shurtleff, 299-0401.
- '64 DODGE** 1/2-ton pickup, new paint, \$600. Dyckes, 299-7280.
- '72 PINTO** Runabout hatchback, AT, AC, chrome wheels, ww tires, 52,000 miles, radio, well under book price. Harris, 299-6664.
- HONDA TL** 125 Trails, low mileage, \$445; Yamaha 175 Enduro, 8000 miles, \$260. Watterburg, 294-6759.
- '71 PINTO** 2-dr. sedan, blue book, new tires, R&H, rebuilt engine. Cordova, 299-1652.

FOR RENT

- NEWLY REMODELED** 3-bdr, 1 1/2 bath home, fenced backyard & landscaped with deciduous trees, Hoffmantown, NE, near shopping, schools & churches, \$375/mo. Young, 256-1349 or 299-6160.
- UNFURNISHED** 2/3 bdr., Kathryn-San Pedro area, w/w carpet, dishwasher, garage, enclosed backyard, covered patio, access, immediate occupancy, \$285/mo. Saunders, 268-5380.
- 3-BDR. HOME**, 2 baths, near Lomas & Wash., \$345/mo. Grady, 296-4077 after 6.

REAL ESTATE

- ONE ACRE**, Edgewood, view, community water line, power, restricted, no mobile homes, \$6000, corner lot. Miller, 292-0631 after 5:30.
- 40 ACRE** wooded tracts, close in, will consider trade, or will sell outright on easy terms. Causey, 881-7534.
- 16.9 ACRES** approx. 3 miles below ski run in Sandias, panoramic view, 6800' elevation. Clement, 298-4994.
- WORKING RANCH** near Durango, Colo. w/modern home, several outbuildings, irrigated fields, timber, approx. 62 acres. Kane, 881-7672.

WANTED

- CONCRETE MIXER** in good condition, electric or gas. McDonald, 836-6787.
- STURDY** bunk beds w/mattresses, under \$45. Bishop, 299-5749.
- BORROW** to record tapes: good country western records: Pride, Arnold, Tillis, Cash, etc., will use good needle. Souder, 281-3121.
- LIONEL 0 GAUGE** TRAINS. Roth, 1-864-4080 (Belén).
- WINCHESTER** 1894 carbine, old model, trade .22 Winchester rifle or 8mm movie camera & cash. Smitha, 881-1001.
- PAIR** of camper jacks. James, 344-7854.
- TWO SEASON** TICKETS for UNM basketball. Bisbee, 293-0356.
- STUDENT'S** table-top refrigerator, 3-4 cu. ft.; TV recorder, reel or cassette; TV camera. Stixrud, 298-0478.
- GAS** kitchen stove, relatively new, good condition & cheap. Schubeck, 294-5666.
- TIRE CHAINS** for 6:15x13 tire. Stuart, 299-9190.
- OSCILLOSCOPE**. Boverie, 255-1071.

Coronado Club Activities

The Prisoners Are Loose Tonight

HAPPY HOUR TONIGHT—The Prisoners are loose tonight on the bandstand while roast beef is served on the buffet line. Adults \$3.50, kids under 12, \$1.92.

TEEN DANCE TOMORROW from 7:30 to 10:30. ZIPPER is the name of the group. Member parents should pick up tickets (50 cents for member teenagers, \$1 guests) at the Club office.

NEXT FRIDAY'S Happy Hour features beef stroganoff and shrimp Creole; Frank Chewiwie plays for dancing.

SKI CLUB will hold its annual ski equipment exchange and haggle Oct. 11 beginning at 7 p.m. in the ballroom. The Dryland Ski School, free to members, is set Oct. 15 at 2 p.m. on the patio.

LOBO BUSES to the games Oct. 8 and 15 depart the Club parking lot at 6:45 p.m. Fare is 75 cents members, \$1 guests.

TRAVEL—Disneyland, Oct. 27-30, Adults (dlb. occ.) \$175, kids age 3 to 11, \$125. Caribbean Cruise, during Christmas vacation or Jan. 7-14. Prices start at \$810. Hong Kong, Nov. 18 - Dec. 4, \$909. Details from Ed Neidel (2316) in the lobby tonight from 6 to 7.

ORGANIZATIONS (Sandia and DOD) planning Christmas parties should check with the Club office about dates and facilities available. After Oct. 25 it's "first come, first served."



SINGLE MINGLE TONIGHT starting at 4:30 p.m. in the El Dorado room features entertainer Denny Gallegos (3735). Happy Hour prices, chips and dips plus good company—Ed Shoaf (9584), left, and Elveta Patrick (3251). Members (and one guest) 50 cents, non-members \$1.

YOUNGSTERS from 7 to 17 are invited to join the Coronado Club Jr. Bowling League which meets Saturday mornings at 8:45 at San Mateo Lanes. More info from Ciss Kelly (4112), 4-6989 or Charlie Kaspar (KAFB), 4-1496.

UPCOMING EVENTS—Smoothie plays at Soul Session Oct. 22. The Oktoberfest biggie is set Oct. 29, tickets (\$6.25 members, \$7.25 guests) should be purchased by Oct. 22. Kid's Halloween Party and House of Horrors is set Oct. 31 at 6:30 p.m.

Sympathy

To Pat DeTevis (3521) on the death of his son, Sept. 9.

To Frank Valencic (9582) on the death of his wife in Albuquerque, Sept. 28.

To Les Cole (9563) on the death of his wife in Albuquerque, Sept. 17.

feed back

Q. Why was the Coronado Club bar closed during lunch period?

A. The decision to close the Coronado Club bar during lunch hour was made by the Board of Directors of the Coronado Club.

The bar was originally opened at lunch to provide those that chose to eat at the club an opportunity to have a beer or glass of wine with their lunch. The Board has been monitoring the lunch time use of the bar for the past several months and became convinced that it was not economical nor in the best interest of the club membership to continue limited bar service at lunch.

N. M. Newsom - 5735
Coronado Club President



PAT LYNN (9718) saw this car in his head about two years ago. It's now a completely homebuilt reality with parts from Jaguars, Fords, Plymouths, half a dozen others—"plus a whole bunch I made myself," says Pat. Under the fiberglass hood is a 327 Chevy engine with 400 horsepower. "With its Model A coupe lines, it resembles a dry lakes racer from the 40's and 50's, but it's much more advanced—disc brakes all around and independent rear suspension, for example." P.S. It's for sale.