

SITUATED on the mesa next to Area III, the Labs' reactor area (Area V) consists of a complex of reactors designed to support the research and development activities of Sandia. Annular Core Pulse Reactor (ACPR) plays key role in breeder reactor safety program described below.

Multifaceted Effort

Overview: Sandia's Breeder Reactor Safety Program

The breeder reactor, so named for its ability to transform the relatively abundant uranium isotope, ^{238}U , into usable nuclear fuel, is currently the focus of an extensive research program at the Labs. This program, now in its third year, is expected to run for a decade or more. Concentrating chiefly on safety aspects of the breeder reactor, the program is being conducted for the Nuclear Regulatory Commission (NRC), and is designed to establish a technology base upon which NRC can license and regulate the breeder throughout the 1980s and 1990s.

Reactor Research and Development Department 5420 under Jack Walker has primary responsibility for the program, whose Labs funding is projected to be \$7.5 million in FY '77 and over \$10 million in FY '78. In terms of overall funding, the breeder reactor continues to be the priority energy commitment for ERDA, which is constructing the country's first commercial breeder demonstration plant at Clinch River, Tenn. Acceptance, by the public and by industry, of the breeder reactor will to a large extent depend upon its safety of operation, now under study at Sandia.

"The bottom line on much of our work is accident containment," Walker says. "This means that the reactor must not be breached, either by pressure forcing an opening in the above-ground structure or by molten fuel burning a hole through the below-ground structure of steel and concrete.

"We know that the breeder power plant has to handle whatever pressures

and temperatures are generated in all credible accident scenarios. The question then is, 'How much containment must you design for?'

"The answer is based on our being able to completely describe the response of the reactor during all the hypothesized accidents, and this is the thrust of our research. Until this research provides the needed technical data, every breeder has to be designed very conservatively—over-designed, really.

"In doing that," Walker continues, "the efficiency of the reactor suffers, particularly in its production of nuclear fuel—plutonium. Theoretically a breeder can double its supply of plutonium every several years, but we won't attain this kind of efficiency until reactor design reflects a safety philosophy based on hard data, not conjecture."

Walker divides the Labs' breeder work into these major tasks: (1) fuel motion phenomena, (2) core disruptive accident energetics, (3) transition phase analysis, (4) molten core phenomena, (5) containment and structural studies, and (6)

safety test facilities and large-scale tests.

Fuel Motion

Sandia's work on fuel motion phenomena aims at developing a capability to provide time resolved pictures of fuel pin movement inside the reactor core. The core of a commercial power reactor will contain several thousand of these pins, each $1\frac{1}{4}$ metres in length and a half centimetre in diameter.

"Material motion is probably the one single phenomena in a Liquid Metal Fast Breeder Reactor (LMFBR) that most determines whether an accident will be major or minor," Walker says. "Our goal here is a visual image of some kind showing what happens to the molten fuel pins and other core materials if the core is disrupted. It can't be done with traditional optics—the temperatures are too high and our objective—the core region—is isolated from easy observation by containment shielding and other material layers.

"One idea we are pursuing would give

(Continued on page 4)

LAB NEWS

VOL. 28, NO. 18

SEPTEMBER 3, 1976

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

Computer Committee Is Established

Even though Sandia Labs now operates computing equipment worth well over \$50 million, a management committee recently completed a study which recommended that Sandia acquire a new major computer for the processing of administrative data. The study contained a number of other recommendations, including, as a priority item, the establishment of a permanent management committee to oversee, guide and coordinate all present and future computing activities at both SLA and SLL.

Small Staff has since established the new Sandia Computer Committee with Vice President Gene Reed (2000) as Chairman. The committee includes one director from each VP area as well as the Director of Computing. One of the first actions of the committee was the establishment of subcommittees in three primary areas of computing activity.

Bill Colborne (3220) heads the subcommittee on Administrative Data Processing. This group, composed of administrative department managers, has as its first task the development of a 5-year implementation plan for data processing in the administrative areas.

The Scientific Computer Subcommittee is chaired by Virgil Dugan (5740) and includes as members division supervisors from technical user organizations. This

group plans open meetings from time to time in which suggestions and complaints can be heard from Sandians who use the scientific computers.

The third subcommittee is chaired by Tom Pace (9420). This group will focus on stand-alone and minicomputers, of which there currently are about 250 throughout the Labs. This number is growing at the rate of about 25 per year.

The inventory of equipment at the central computing facilities at Albuquerque and Livermore is impressive. The scientific computing capability consists of five CDC 6600's and a recently acquired CDC 7600 which has the capacity of about four 6600's. Thus, the total on board 'computer power' is equivalent to nine 6600's. In addition, Sandia has negotiated for a share of the new CRAY-1 computer which is currently being evaluated at LASL. This computer has the capability of approximately four 7600's.

Commenting on the work of the Computer Committee, Reed notes, "in the last decade, our use of computers has increased at perhaps a normal rate for an R&D Laboratory, which is to say that it has grown dramatically. The Computer Committee wants to make sure that the growth is reasonable and reflects future Laboratory work load."

Audubon Film Series Offered

The Audubon Wildlife Film series opens its seventh season in Albuquerque next month at Popejoy Hall with "Coastline California," featuring the 150-mile stretch of coastline between San Francisco and Big Sur. The film will be shown Oct. 1 at 7:30 p.m.

The balance of the program includes:

"Hidden Worlds of the Big Cypress Swamp," 900 square miles of swamps, marshes and cypress adjacent to Everglades National Park, Fla.—7:30 p.m., Nov. 16.

"Papua New Guinea: Twilight of Eden," the world's largest island, and, perhaps one of the most primitive nations on earth—7:30 p.m., Jan. 5.

"The Vanishing Eden," Southern Florida's "river of grass"—7:30 p.m., March 8.

"Death Valley—Land of Contrast," variety of plant and animal life from the floor of Death Valley, 282 feet below sea level, to the tallest peaks of its bordering mountain ranges—7:30 p.m., April 8.

The films are sponsored by the Central New Mexico Audubon Society, the Albuquerque Group of the Sierra Club and the New Mexico Mountain Club. Season tickets, good for five admissions—single or in any combination of showings, (adult—\$7; adult over 62 and students—\$4), are available from Bill Stamm (retired), 255-2640.

Credit Union Reporter

By Marvin Daniel
Chairman, Education Committee

Two changes have been made in Credit Union loan policies:

1. The maximum loan limit to any one member has been eliminated. Previously, a maximum loan limit was established of \$50,000 plus share secured loans.

2. Real Estate Loan values for owner-occupied residential property: loan values may now be based on 80% of appraisal value or 80% of the assessed value for tax purposes. In addition, the Credit Committee may add 4% to the appraisal value for each full year since the appraisal was made to allow for appreciation. However, loan values established in this manner cannot exceed the original appraised value.



Etta Moore (3433-1)

Supervisory Appointment

ETTA MOORE to supervisor of Visitor Access and Administration Section 3433-1, effective Aug. 16.

Etta joined Sandia in 1968 as a division secretary. The following year she was promoted to department secretary and, until March 1975, worked with the test equipment and quality assurance departments. For the past year and a half she has been a management aide in document control in the security organization. Before coming to the Labs, Etta worked for the Albuquerque Realty Company.

She is a Certified Professional Secretary, and has a BS in business administration from the U of A. Etta will complete requirements for an MBA from New Mexico Highlands in December.

Retiring



Ralph Miller (9721)

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john shunny is editor
&
don graham ass't. editor

bruce hawkinson & norma taylor write
bill laskar does picture work
&
lorena schneider reports on livermore

Death

Don Munro, a technical staff member in Fluid Mechanics Division 8333, died suddenly Aug. 16. He was 50.

He joined Sandia/Albuquerque in July 1955 and transferred to Livermore in January 1961.

Survivors include his wife, two sons and a brother.



Retirees Take Note

The 11th annual get-together for Sandia/Livermore retirees is scheduled for Wed., Sept. 22, from 4:30 to 8 p.m. at Castlewood County Club in Pleasanton. Invitations have been sent to 204 retirees and their spouses; this includes all of the Livermore retirees and Albuquerque retirees who reside on the West Coast. President Morgan Sparks plans to be present, along with other members of Sandia management.

Congratulations

Deborah Burge (8168) and Tim Nordell, married in Castro Valley, Calif., Aug. 14.

Sympathy

To Don Pengelly (8344) on the death of his father in Grand Prairie, Tex., Aug. 12.

Authors

Rand German (8312) and Von Madsen (8344), "Quantitative Metallography Using a T.V. camera and Laboratory Computer," METALLOGRAPHY, Vol. 8.

Ted Dellin (8342), Bob Huddleston (8322) and C.J. MacCallum (5231), "Second Generation Analytical Photo-Compton Current Methods," IEEE TRANSACTIONS, NS-22, No. 6, pp. 2549-2555.

Jim Shelby (8334), "Molecular Diffusion in Glasses and Oxides," MASS TRANSPORT PHENOMENA IN CERAMICS, Plenum Publishing Corp., New York.

LIVERMORE NEWS

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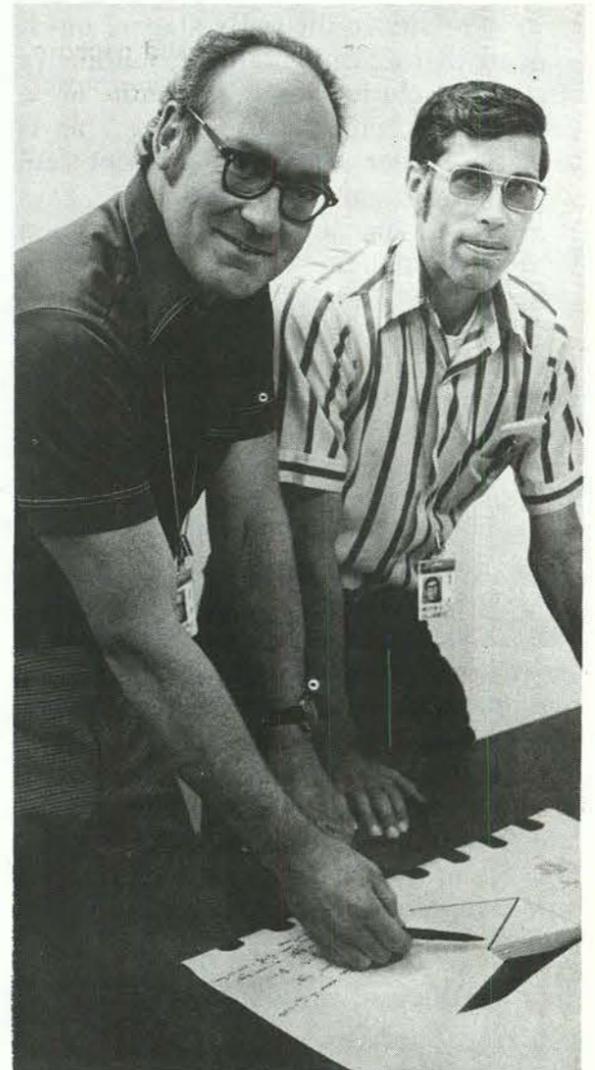
Weapon Designing — By The Numbers

Ben Benedetti and Mel Callabresi are engineers in Sandia Livermore's Applied Mechanics Department 8120 who have been working with the W79 project group to analyze the structural design of this weapon system (an 8" artillery shell). Because of the complexity of the weapon, Ben and Mel have developed a mathematical model using the finite element method of structural analysis to predict how the structure responds when fired from an 8-inch cannon.

The finite element method has been used for many years to analyze complex structural components; however, as new computers were developed, this method has become more sophisticated. Thus, the mathematical models of actual structures are now quite detailed and would not have been attempted 10 years ago. Essence of finite modeling is "discretizing"—a process in which the entire structure under analysis is broken down into a sort of grid of tiny elements. The behavior of each element is then algebraically defined.

"Designing is an iterative process," Mel states. "It's cut and try. In the old days, cut and try meant committing a design at a certain stage to hardware, then testing it and going back to the drawing board. With our model, it's possible to test a given design on paper, saving a lot of dollars."

The two added that hardware models are not eliminated because of finite element modeling. But the number of prototypes is minimized, and those that



THE STRUCTURE of things is analyzed by engineers Ben Benedetti and Mel Callabresi of Applied Mechanics Department 8110.

are fabricated represent designs optimized through reliance on data gained from the mathematical model.

The validity of that model is tested each time a prototype shell is fired. The shell's telemetry package (described in LAB NEWS July 23) transmits data on the strains being experienced. This data—what the shell actually saw—is then compared with the predictions based on the mathematical model. "We've had good agreement," says Ben, "usually without 10 percent of the experimental data. It's not exact, but it's close and the weapon designer thus has confidence in the structural analysis."

Structural considerations in this program, already complex because of the artillery shell environment, are made more so because of the shell's intricate design. In one cross-section of the shell some nine different parts interface. With this modeling technique, such boundary conditions are readily defined and understood.

Benedetti and Callabresi are enthusiastic about the present state of the art in finite element modeling. "It's good, but wait a bit," says Ben. "We have only two-dimensional analysis now, but with recent advances in computers we should be able to offer three-dimensional analysis in the future."

• js



LEAP '76—Plans are underway for the upcoming Livermore Employees Assistance Plan Campaign to be held the week of Oct. 3. Committee chairman Don Benton (8411) discusses this year's goal with directorate representatives (from left) Larry Weirick (8312), Bill Pontsler (8165) and Dwight Soria (8257) and vice chairman Cliff Potthoff (8185).

Breeder Reactor Safety

us a three-dimensional image of the fuel pin. The image aperture consists essentially of a collection of successively thinner rings which absorb or pass radiation, producing a shadowgram. Using a laser and framing camera photographs, we can then produce an image in 3-D.

"We're still in the early stages, but it appears that we can obtain one millimetre spatial resolution and a tenth of a millisecond temporal resolution. This is at least an order of magnitude better than any other system we know about," says Walker, adding that Sandia has been funded \$1 million to develop such a system.

"But coded aperture imaging is restricted to small bundles of pins. So we're exploring the use of electron beam flash radiography for looking at motion in larger assemblies as well as the use of tiny in-core neutron detectors in even larger experiments. We have several years of work ahead of us."

Aside from Radiation Physics Division 5423, and Optics Division 2541, Sandia groups making major contributions in fuel motion work are Beam Source Application Division 5232, Theoretical Division 5231, and Eclectic Division 2151. Systems Engineering Division II 1136 and Simulation Instrumentation Division 1126 are providing design and instrumentation support in this as well as other tasks in the program.

Core Disruptive Burst Energetics

Prompt burst excursion experiments, in which temperatures of 7000°C and neutron fluences of 3×10^{15} neutrons/cm² are produced in 1.3 milliseconds in the ACPR, bear directly on core disruptive energetics work by helping to determine the extent of transfer of energy from the breeder fuel to its sodium coolant, should an accident occur. Walker notes that it is questionable whether such a prompt excursion is even possible in an LMFBR power plant. However, with substantial heat transfer the sodium could vaporize, thus considerably increasing the system pressure which could damage the reactor core. This work is done in Reactor Studies Division 5422.

Early data from the experiments show that pressures generated are somewhat higher than predicted; however, experimenters are encouraged by data indicating that a rapid fuel-coolant interaction, leading to a large-scale transfer of energy from the fuel to the coolant, is unlikely.

Transition Phase Analyses

Transition phase work is a relatively new Labs undertaking. The transition phase occurs after a core has lost initial integrity but has not yet reached a stable sub-critical configuration. For instance, a molten fuel pool at the bottom of the core could conceivably lead to a second criticality with a large energy release. If such a second criticality can be shown to be physically impossible, the NRC licensing staff can modify containment requirements accordingly.

Walker explains: "The general goal of this work, underway in Divisions 5422 and 5423, is to define those factors which determine whether minor core trouble develops into something more serious."

Molten Core Phenomena

Molten core experiments address problems occurring if a significant core disruption leads to a totally disrupted core. The Sandia work, to include creation of debris beds (with support from Division 1283) and molten pools, will look at these in-core heated beds and pools to see if they can melt through the steel and concrete floor of the reactor. Some small uranium pools—10 or so centimetres in diameter—have already been produced in laboratory situations by Divisions 5423 and 5422. Larger pools are planned after the ACPR upgrade.

In other tests to be done "out-of-pile," the reaction between molten core materials and the breeder's concrete and steel containment structure will be studied to learn what gases may be created and whether the molten core would, in fact, be contained. This work is being directed by Reactor Safety Studies Division 5411, with major participation by Divisions 5167, 9337 and 5831. Divisions 5167 and 5232 have already been able to obtain equation of state data for UO₂ in the 5000°C to 8000°C range. This data represents the only high temperature data in the field and is currently being used to determine the best of several EOS models proposed for LMFBR mixed oxide fuels.

The final portion of the molten core work calls for production of plutonium aerosols by using, for the first time, fission heating in a reactor. The goal of this work, led by Environmental Research Division 5443, is to quantify the problem of plutonium vapor inadvertently released into the atmosphere.

Containment & Structural Studies

Containment and structural studies at the Labs are chiefly concerned with sodium/concrete and sodium/steel liner interactions. The sodium/concrete work focuses on exothermic reactions occurring when sodium is brought into rapid contact with concrete. Consequences of hot sodium spills or sprays on steel liners over concrete substructures will also be determined. The results of this work, being performed by Divisions 5411, 5167, 9337 and 5831, will have immediate application to licensing of the Clinch River Breeder.

In another important investigation, Design Technology Division 5431 will simulate long-term effects of high temperatures on materials used in the breeder's primary and secondary coolant loops. Creep and fatigue damage are two of the problems under study.

Safety Test Facilities & Large Scale Tests

In FY '77 work on a high fluence fast pulsed reactor will begin. It will be capable of completing large-scale experiments in short time periods. "By using

the existing hardware of the decommissioned Sandia Engineering Reactor Facility there is a good possibility that the new facility can be built with substantial savings in a relatively short time," Walker says. "Such a test facility would be the focus of our in-pile studies throughout the 1980s."

"One of the problems facing the breeder program is a lack of facilities to do large-scale testing. The Nevada Test Site's underground facilities are one possibility we are looking at," Walker adds. Field Experiments Division 1111 and Radiation Physics Division 5423 are heading up the work.

Upgrading of ACPR

Essential in many of the programs discussed above is the upgraded Annular Core Pulse Reactor. An upgrading project, now in full swing and due for completion by 1978, will increase peak power of the ACPR from 13,000 to 45,000 megawatts and its total energy from 100 to 300 megajoules. This work is centered in Division 5424, with major contributions by Divisions 5847 and 1136.

The modification, funded by both ERDA and NRC, will make ACPR by far the most powerful reactor of its type in the country, capable of producing the increased temperatures and neutron fluences which might arise in the unlikely event of a rapid breeder reactor to transient.

The upgrade is projected to cost about \$6.5 million, including \$3 million in fiscal 1977. Total breeder funding at the Labs, including that for reactor development, is projected to be \$7.5 million in FY '77 and over \$10 million in FY '78, making Sandia one of the major breeder safety research centers in the country.

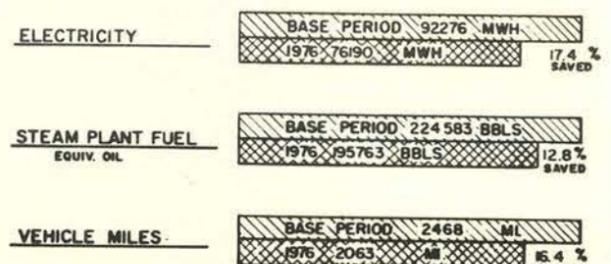
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"In summary," states Walker, "the Labs' capabilities are ideally constituted for these studies. The breeder, if commercialized, can go a long way in solving the energy crisis. Studies to date indicate that the risks from nuclear power are most likely many orders of magnitude lower than those routinely accepted by society. Perhaps the only question left to be resolved is whether the risks associated with this energy option are acceptably small."

"The work being done at Sandia will contribute significantly to the basis for this answer."

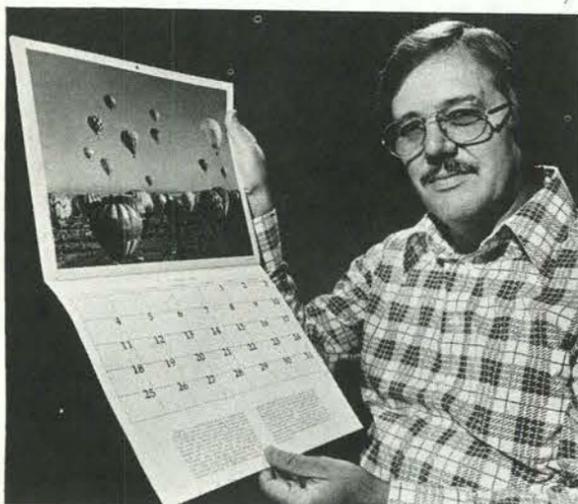
ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD - JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING MAY '76

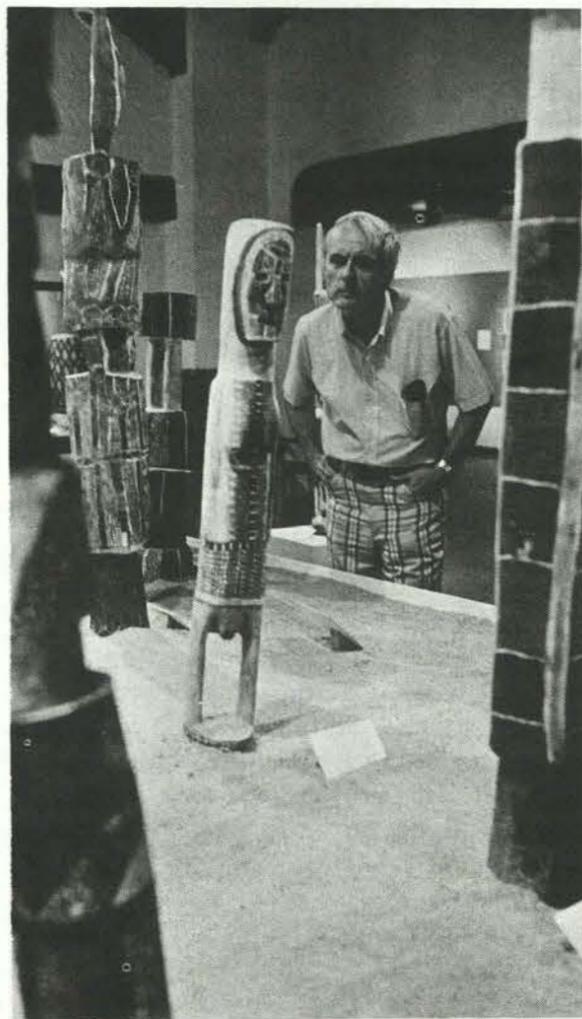


sandia PEOPLE Report

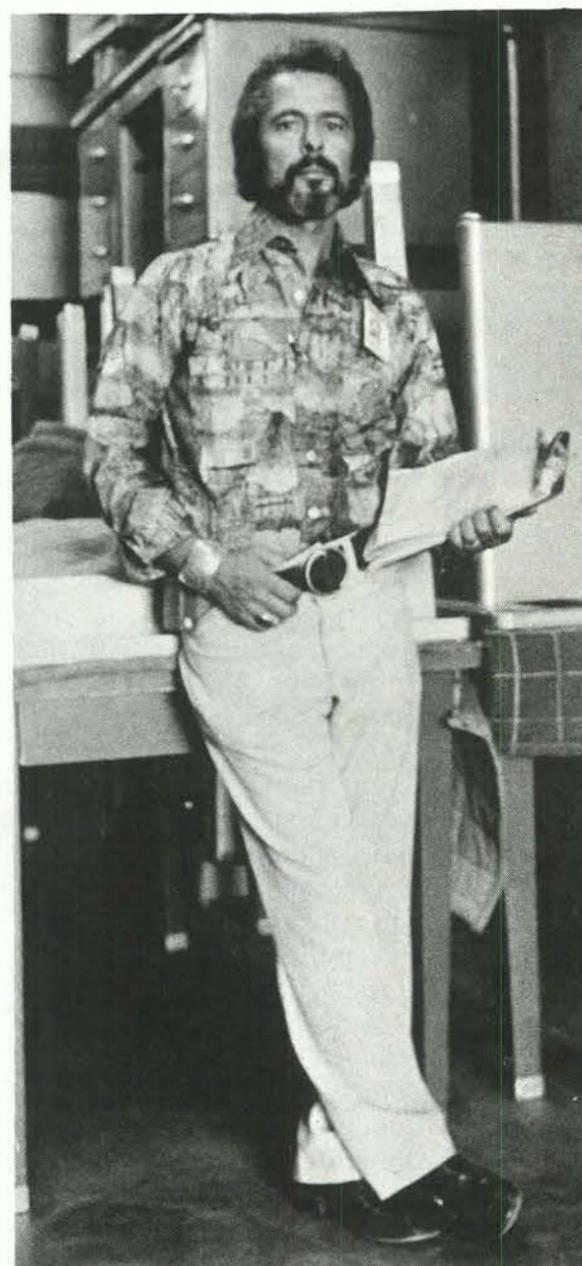
IT'S GETTING so you can't see the trail for all the Sandians. In last month's La Luz Trail Race this platoon charged up (more-or-less) the 7½ mile route: seated, Harris, Fox, Johnson, Souder, Percival & Kohler; standing, Shunny, Kass, Abbott, Keck, Richards, Walkington, Haushalter, Mapass & Ruggles. Pete Richards out-classed others with time of 78 minutes. Race to Sandia Crest attracted 195 entrants.



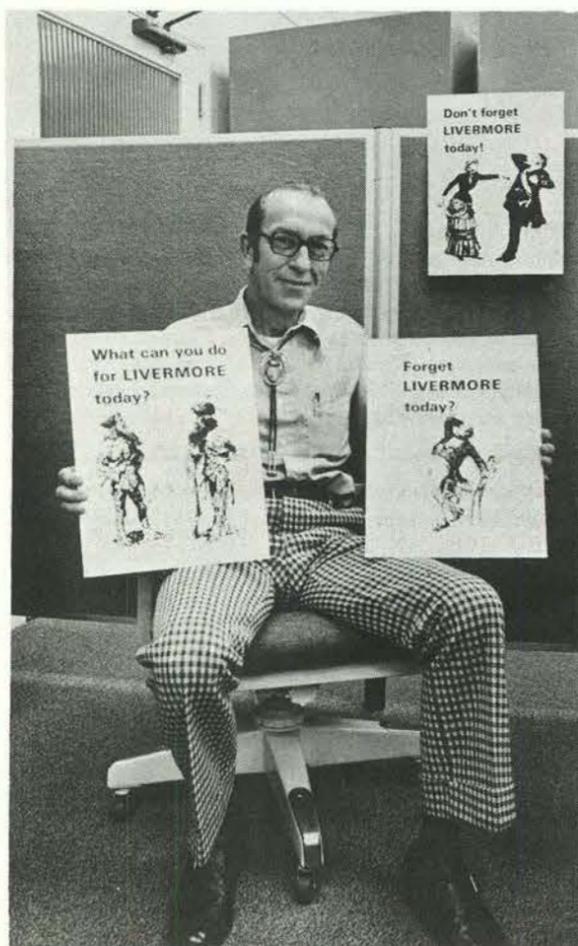
CHARLIE HINES (3171), president of the Albuquerque International Balloon Fiesta, displays one of the new 15-month calendars depicting in full color past balloon events. The calendars (\$4 each) are part of fund raising efforts by the group to finance the Fiesta here Oct. 8-17. Volunteers and chase vehicles are still needed, Charlie says. If you can help, call 4-2466.



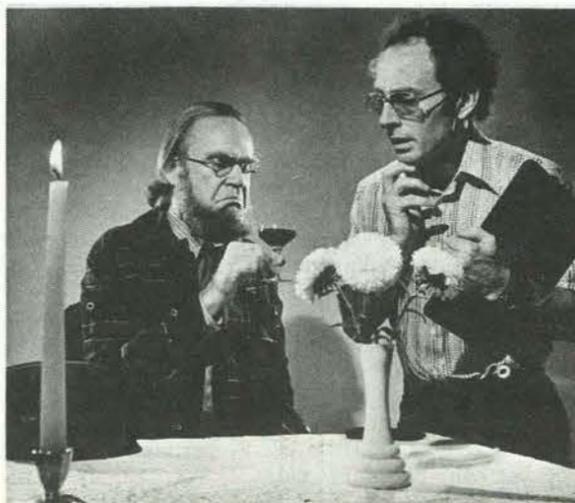
TECH ARTIST Yale Knox (3155) enjoys the exhibit of Australian Aboriginal Traditional Arts now at the Museum of Albuquerque. Scheduled for a national tour, the exhibit will be in Albuquerque through Oct. 10. On weekends, a group accompanying the exhibit performs Aboriginal dances and music.



RALPH PENA (9753) is the office furniture man. With the current shuffling of space at the Labs, Ralph's group is handling a heavy workload. Eventually, all the gray furniture will be replaced with more colorful units, he says, but it will take a while. In the meantime, call 4-6670 for help with orders for shelving, files, desks, tables and chairs.



ED DOMME (2627) reminds SLA types not to overlook our brothers and sisters in the West. Tech Artist Ed Spriggs (3155) turned Domme's ideas into the posters now sprinkled around Bldg. 880.



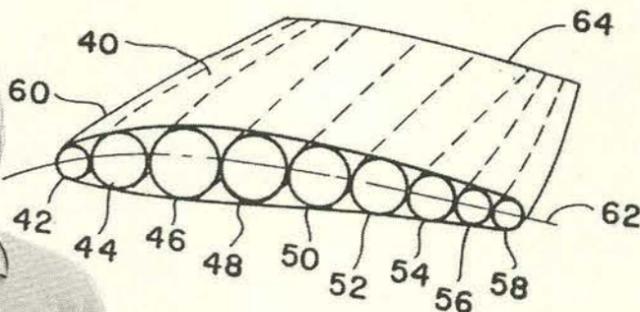
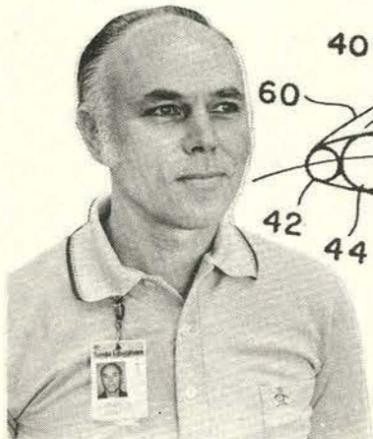
THAT INNOCENT-LOOKING elderberry wine has been poisoned by two of the nicest little old ladies (not shown) you ever met, Crawford. Here, corpse-to-be Crawford MacCallum (5231) gets direction (sort of) from Classics Theatre Company's John Gardner (3144) as they rehearse for comedy classic "Arsenic and Old Lace" playing Sept. 16, 17, 18 at 8:15, Sept. 19 at 2:15 at Popejoy Hall.

Inflatable Wing Device Patented

ERDA recently received a patent for an inflatable wing device invented by Wayne Sebrell of Applied Mechanics Division 1284.

The concept for the invention evolved from a requirement of an advanced weapon system—a small tube-launched anti-tank missile. The missile had to “fly” for some distance. Fixed wings were impractical because of the small size of the launch tube. Inflatable wings would overcome this constraint and also meet volume and weight requirements.

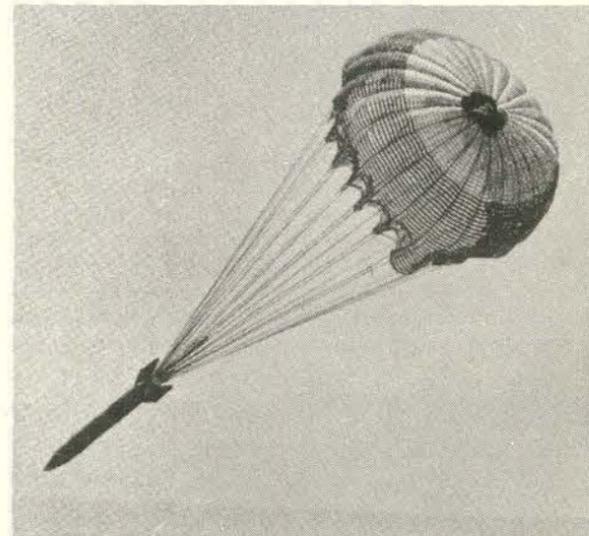
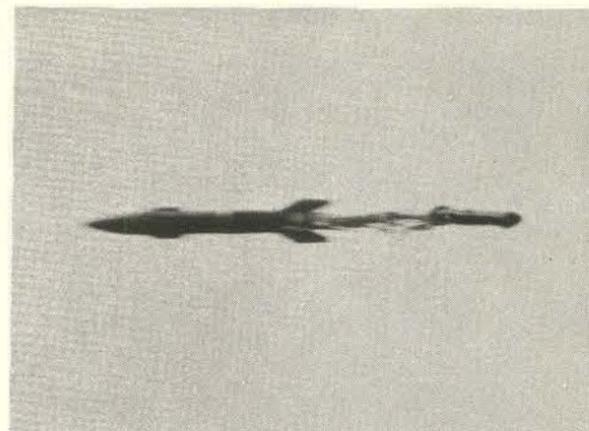
Wayne’s inflatable wing differs from other similar devices in that he uses compartmentalized cylinders covered by flexible smooth surfaces. The cylinders run perpendicular to the windstream. Made of neoprene-impregnated nylon, the varying-sized tubes are bonded along their length. After inflation (by a compressed gas generator) the tubes provide



WAYNE SEBRELL (1284) projects a drawing of his recently-patented inflatable wing. Numbers 42-58 consist of cylinders that are filled with gas to provide aerodynamic shape to the wing.

structural rigidity and support for the aerodynamic surfaces.

Although the weapon concept was abandoned, NASA pursued a patent for the device and awarded Wayne a certificate of recognition for the invention. He has been at Sandia 17 years, joining the Labs in 1959 after earning a Master’s degree in applied mechanics from Michigan State.



NEW PARACHUTE DESIGN for B61-3 has been undergoing testing at Sandia Laboratories. In this series of three photographs, the 24-foot-diameter parachute is subjected to a Mach 1.4 deployment and a load of 90,000 pounds at Sandia’s rocket sled facility. New material, Kevlar-29, is used in the chute. The project is centered in Parachute Systems Division 1332 under Dave McVey.

Take Note

Volunteer registrars from the League of Women Voters will be at the Labs on Wednesday, Sept. 8 from 8:30 a.m. until 4 p.m. They will be located in the main corridor of Bldg. 800. In order to vote in the November general election, new registrations or changes in registration must be made by Sept. 21.

Registration changes are required if (1) you didn’t vote in the 1974 general election, (2) your name or address has changed since you last registered, or (3) you just turned 18 (or will by Nov. 2). If you didn’t vote in the 1974 general election and are not sure if your name has been reinstated on the voter rolls, call the Voter Registration Desk at the County Courthouse, 766-4085. They can quickly give you an answer.

The Registrars will also handle changes in party affiliation. No documents are required for any of these actions; the act of registering to vote establishes your residency.

* * *

Two for arts-oriented Sandians: 1. If you work in painting, sculpture, graphics, drawings, prints, etc., and if you’re not affiliated with a gallery, you’re eligible for **Introductions '76**, a juried show sponsored by the Museum of Albuquerque and the Albuquerque Arts Council. Jurying begins Sept. 24 with the show running Oct. 17 through Nov. 28 at the Museum. More info at 766-7878 or 265-3271, or get a copy of the prospectus by calling **LAB NEWS**, 4-7841.

2. The Albuquerque Arts Council is the place you can help “all the arts in

Albuquerque.” Whether artist, crafts-type, or performer, you’re eligible to join. Call 265-3271 for more info.

* * *

The Sons of the American Revolution is looking for historically interesting documents, weapons, flags, etc. for their exhibit at the State Fair. If you have anything along this line, call retired Sandian Bill Bramlett at 883-1289. All items will be properly protected at the Fair.

Authors

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C.P. Ballard (5846), “Glass Formation in the Iron-Soda-Silica System,” Vol. 59, No. 5-6, JOURNAL OF THE AMERICAN CERAMIC SOCIETY.

P.J. Chen (5131), “Wave Propagation in Perfectly Electrically Conducting Inextensible Elastic Bodies,” Vol. 24, No. 3-4, ACTA MECHANICA.

R.G. Roosen (5741), et al, “Earth Tides, Volcanos and Climatic Change,” Vol. 261, No. 5562, NATURE.

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R.I. Iman (1233), “An Approximation to the Exact Distribution of the Wilcoxon-Mann-Whitney Rank Sum Test Statistic,” Vol. A5, No. 7, COMMUNICATIONS IN STATISTICS.

N.A. Sweeney (5241), “Cooling Times, Luminosity Functions, and Progenitor Masses of Degenerate Dwarfs,” Vol. 49, No. 3, ASTRONOMY AND ASTROPHYSICS.

In Situ Coal Gasification Project Completed Successfully

Phases II and III of the Second Hanna In Situ Coal Gasification Experiment are complete, according to Dave Northrup, supervisor of Underground Process Control Division 5732.

In situ burning of an underground coal seam to produce combustible gas at the surface was the purpose of the project, and "very successful results" were achieved, according to Dave. Sandia worked with ERDA's Laramie Energy Research Center in the experiment conducted near Hanna, Wyoming. Sandia's program involves developing instrumentation and control techniques for in situ processing of coal, oil shale and other fossil fuels.

The 9-metre-thick Hanna coal seam lies about 100 metres below the surface. Four process wells, located on the corners of a 18 metre square, were drilled into the formation. The idea was to connect a pair of the wells by a small burn at the bottom of the seam, then increase the flow of air and burn the entire coal seam between the linked pair of wells. This was Phase II, and results exceeded expectations.

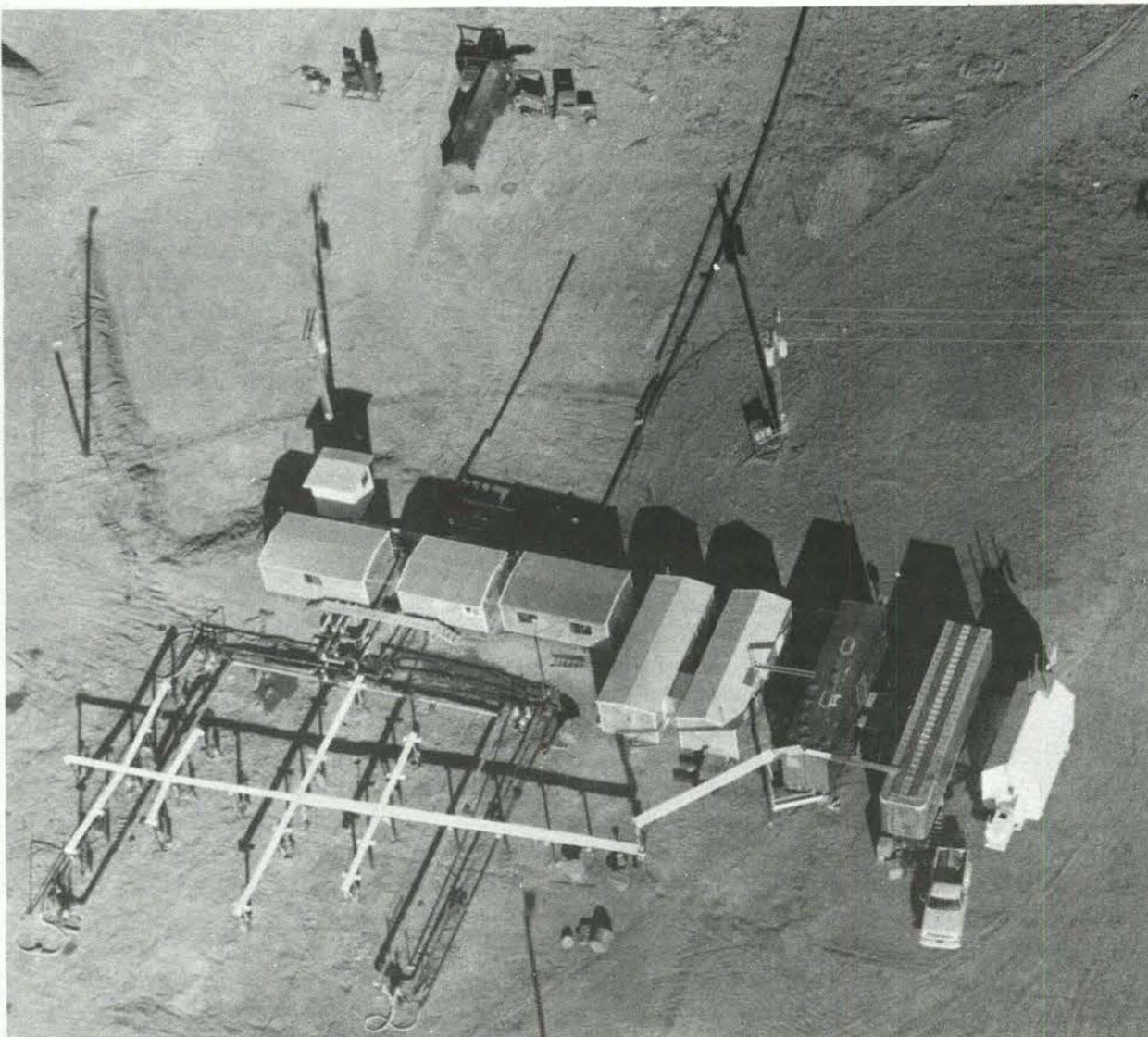
"The burn not only consumed the seam between the wells but extended in all directions in roughly an oval area containing the two wells," Dave says. "Phase III called for moving the burn in a front along the seam to the two remaining wells. This was not accomplished. However, the oval-shaped burn spread outward between the remaining two wells. Apparently good energy recovery can be produced by a simple two-well concept."

"Our instrumentation performed well and the preliminary results are promising," Dave continues. "Now we go into an extensive data analysis, evaluation and computer modeling effort."

Sandia's instrumentation was located both below the surface in 15 additional wells and in arrays on the surface. It included thermocouples, resistivity measuring equipment, geophones, gas sampling tubes, pressure gages, and tilt and displacement gages. Twelve separate instrumentation techniques were fielded. Voluminous data were recorded.

"Our most graphic data was derived from thermal instrumentation," Dave says. "This went into computer files and was converted into a movie showing the extent and progress of the burn. It's quite spectacular. The diagnostics determined that the coal seam was completely consumed from the bottom to the top. As the bottom of the seam burned, the 'roof' would collapse and fall into the burn. Our acoustic data confirmed this."

The project demonstrated that a combustible gas can be produced from an in situ burn of a coal seam with excellent resource recovery. Heating value of the gas was 180 Btu/scf, sufficient to fuel surface generators for the production of electricity. The gas flow exceeded the volume of air pumped into the wells by almost a factor of two. This quantity of gas could be converted to approximately six megawatts of electricity, sufficient to supply the daily needs of a town of 6000 persons. About 6600 tons of coal were utilized.



COAL GASIFICATION SITE near Hanna, Wyoming, where in situ burning of an underground coal seam produced combustible gas at the surface. Two Sandia instrumentation trailers are on the right; white lines are cable trays for both underground and surface arrays of instruments. Wells to the coal seam are at the corners of the square indicated by the pipes. Experiment was conducted in cooperation with ERDA's Laramie Energy Research Center.

Experimenters on the project include Sam Beard, Bill Beckham, Lew Bartel (all 5732), Ray Reed (1116), Bob Seavey (5733) and Doug Garbin (1152).

Field project engineer for the program is Jack Beyeler (1123). On-site personnel include Steve Winters and Rich Sanderville (both 1123), Dink Adkins and

John Lindman (both 1125), and Bill Wilson (1133).

Although field experiments are complete on the current program, the effort is funded by ERDA at \$1 million for FY '77 to complete data analysis and modeling and to plan and prepare for a larger field experiment to be conducted in FY '78.

Recreation Notes

Fun & Games

Boating—Want to reduce your boat insurance premiums? Then attend the Coast Guard Auxiliary's boating classes. For power boaters "Basic Skills and Seamanship" holds the first of 13 sessions on Sept. 14. For real sailors "Principles of Safe Sailing" begins Sept. 16, 7 sessions. Classes are held in the hospitality room of the 1st National Bank, East Central branch. The courses are free, but the workbook costs six bucks—two dollars for additional family members. Call Ben Gardiner, 298-0016 or Ed Bultman, 881-0672 to sign up.

* * *

Biking—Sharla Vandevender (5742), Chairman of the city's Bikeway Advisory Committee, has sent us an interesting summary of what the future holds for bicyclists.

"The term 'Paseo' will be used to denote bicycle trails isolated from motorized traffic. Eventually, it will include the Paseo del Bosque, Paseo del Nordeste, Paseo del Sur, Paseo del Vulcan, Paseo

de las Sandias and Paseo del Canon . . . Construction on the Paseo del Bosque should begin in December, with opening in February or March. The 8-mile recreational trail begins near Barelvas Bridge, runs north along Tingley Drive . . . ends at the park in Los Ranchos de Albuquerque. Cost—\$100,000."

The Paseo del Nordeste is still in the proposal stage and would make use of the flood control North Diversion Channel right of way, starting at UNM. The 6-mile route tunnels under I-40, which accounts in part for its high cost—\$250,000.

Note: Latest newsletter of the Sandia Bicycle Association was published last week. To get newsletter (and join SBA) send your name, org., E-number and phone number to LAB NEWS, 3162.

* * *

The Sandians (a social club for wives of Sandians) meets Sept. 13 at 7:30 p.m. at 14612 Hilldale NE. New members are invited. Call Linda Pickard at 298-8851 for information.

How To Impress Your Friends at The State Fair

The State Fair opens later this month and, as another LAB NEWS service, we offer this primer to our many transplanted flatlanders and city slickers. We can't guarantee your acceptance as a certified redneck, but your mastery of this primer will certainly enable you to snow your friends.

Assuming you're a novice around the livestock barns, speak of the inhabitants in the plural—as in **swine** or **cattle**—unless you're absolutely sure of yourself.

The word **cow**, for example, should be avoided unless referring to a female after calving. **Pig** is slightly more acceptable, but after you've studied this guide try **boar** or **gilt** on your friends. In the cattle world there are **beef cattle** and **dairy cattle**. Never confuse them, especially in the presence of a rancher. It is correct to call any young cattle, regardless of sex, calves. An orphan calf is a **dogie** (one "g").

Instead of cowpersons we have the term **heifer** referring to a female before she's calved, and **bull** meaning a male used for breeding. A castrated male is a **steer**, and a **bullock** is a young male slaughtered for beef. **Mavericks** are not little Fords but rather unbranded strays.

Major breeds of beef cattle are Angus, Hereford, Charolais and Santa Gertrudis.



In dairy cattle the most common breeds are Holstein, Jersey and Guernsey. According to experts, dairy bulls can be very dangerous; petting them is not recommended.

Events Calendar

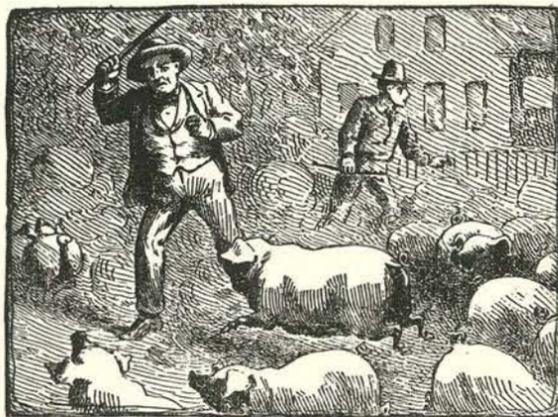
- Sept.—Barn Dinner Theatre, "Love on a Rooftop," Tue.-Sun. thru Sept., 281-3338.
- Sept. 3-4—Feast Day and Corn Dance, Isleta Pueblo.
- Sept. 10-11—Registration for Parks and Recreation tennis lessons, 9 a.m. to 12 at Barelax and Beverly Courts.
- Sept. 10-12—Albuquerque Little Theatre, "Busybody," 242-4750.
- Sept. 11—Free performance by the N.M. Symphony Orchestra, Civic Plaza, 4:30 p.m.
- Sept. 12—Mime Experiment, Montgomery Park, 3-4 p.m.
- Sept. 15-26—New Mexico State Fair.
- Sept. 16-19—Classics Theatre, "Arsenic and Old Lace," Popejoy Hall, 277-3121.

In case you're perplexed over the question of horns, here's the pointed truth: male and female cattle both have horns, but usually the ladies are dehorned to prevent injury to themselves and the cowboys. Bulls sometimes are dehorned, but more often the points are weighted so that they grow downward.

Now for the **swine**—the plural of pigdom. The youngsters are **piglets**, the mature female is a **sow** and the female after **farrowing** (giving birth) is a **gilt**. The male stud is a **boar** and the castrated male is a **barrow**.

For more polite persons, **hog** may be used interchangeably with **swine**. **Pork** refers only to the carcass, and **hog bellies** are the parts from which bacon comes.

Ranchers say that the swine industry has made great strides in producing hogs with more lean meat and less fat. Now efforts are being made to eliminate the extremely muscular meat which loses water and dries out in cooking.



In defense of the hog, we are told that swine are intelligent and easily trained, and (when allowed to be) are very fastidious.

Moving right along to **dairy goats**, as distinguished from **Angora goats** raised for mohair wool, the following terms apply:

Young male and female goats are **kids**. Females before being bred are **doelings** and after they've **kidded** (given birth)

they are **does**.

Male studs are **bucks** and a castrated male is a **wether** (whether he likes it or not).

Sometimes called "the poor man's cow," dairy goats are the most efficient milk producers in the world. Goat milk is purported to be easier to digest because of its smaller curd.

Finally, we come to sheep. Again, there are **mutton** breeds used for meat and **wool** breeds raised for fleece. Both breeds have fleece, but generally wool from mutton sheep is coarser and shorter. There are dozens of breeds of sheep all over the world.

As with goats, the castrated male sheep is a **wether**. The male stud is a **ram**, the female is an **ewe**, and males and females under one year are **lambs** (as if you didn't know).

When looking at one sheep at the State Fair (of the wool variety, of course), keep in mind you are seeing the equivalent of two men's wool suits.

An average sheep produces 14-16 pounds of wool in the grease (with lanolin still in the fiber). After washing, it equals about eight pounds of clean wool.

Sheep shearing is done yearly in the spring, except we're told that in Texas it's usually done twice.

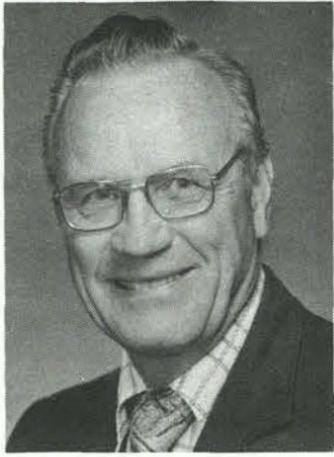
But don't put the sheep only in the meat and wool producing category. Think about the fleecy critter next time you use makeup (lanolin), or anti-freeze (glycerine), or a tennis racket (gut strings). The lowly sheep is a real supermarket on the hoof.

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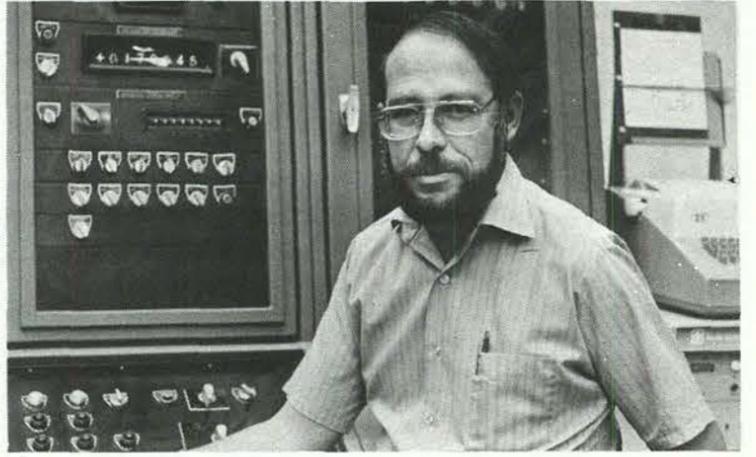


NATIONAL SCIENCE FAIR winners from midwestern high schools visited Sandia and LASL in August. They are Fred Adams, Joan Gjostein, Frank Johnson and Greg Weks. The young scientists are here shown with the Labs' vertical axis wind turbine.

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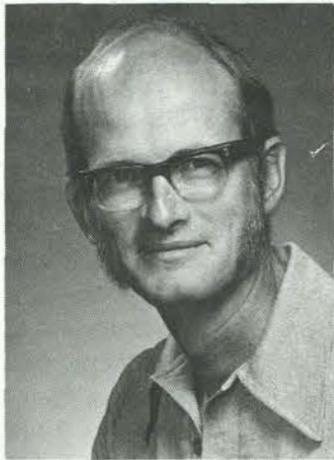
Mel McCutchan - 3163 25



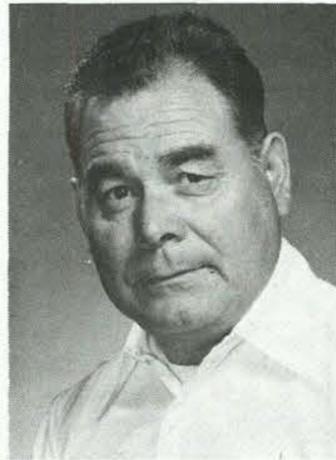
John Garcia - 3646 20



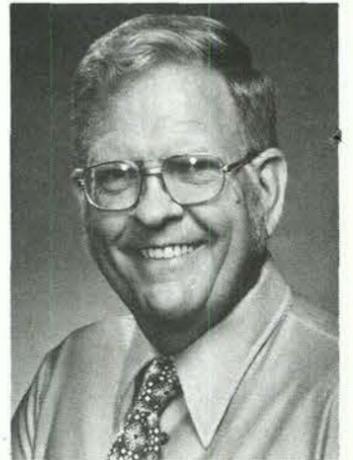
Margaret Lucas - 5000 10



Lewis Suber - 1754 15



Joe Trujillo - 9721 25



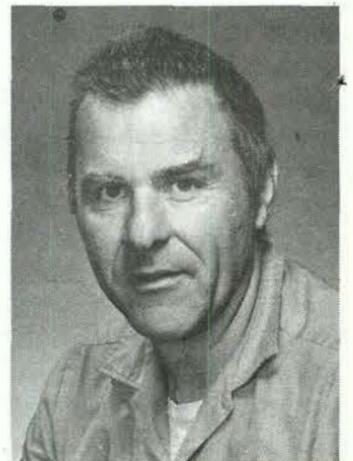
Vernon Havo - 2647 10



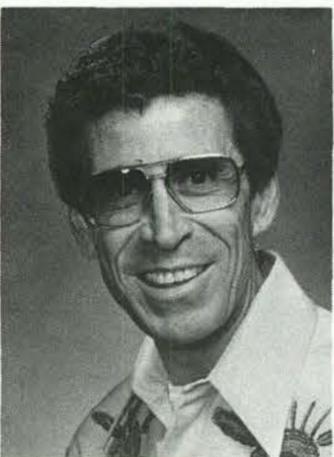
Adela Cooke - 3171 20



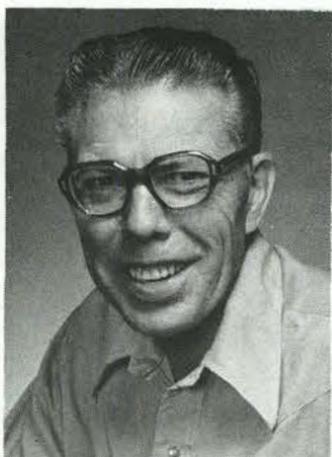
Chuck Corwin - 4211 20



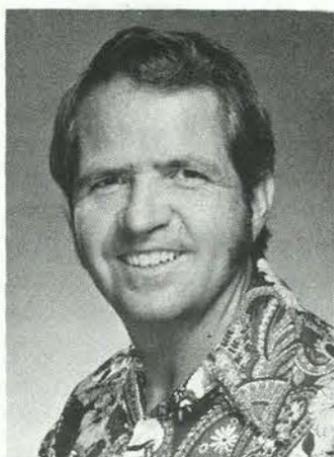
Fred Snyder - 9331 20



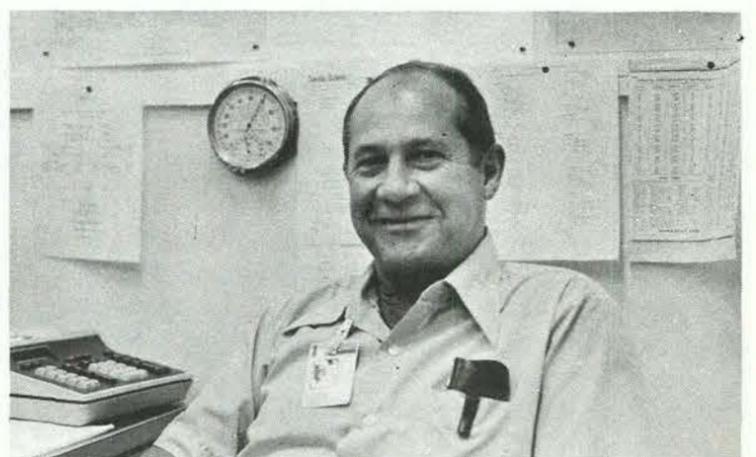
Luciano Mora - 3622 10



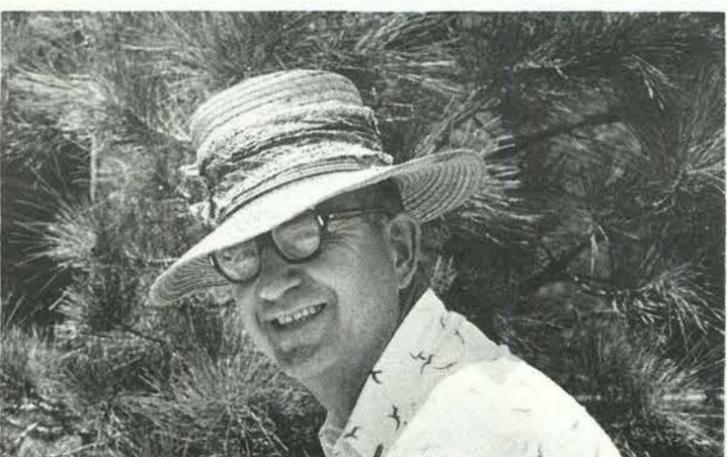
Otis Short - 3646 25



Thomas Tormey - 5842 20



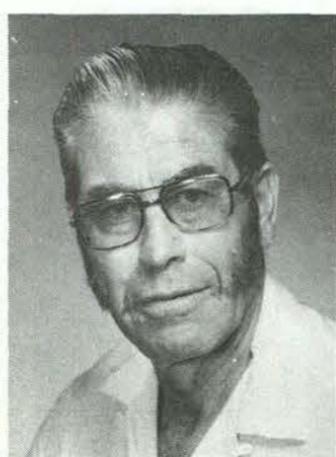
Lee Neeley - 1125 25



Baron Brumley - 2353 25



E.D. Zaffery - 1245 15



Hermenes Chavez - 9723 25



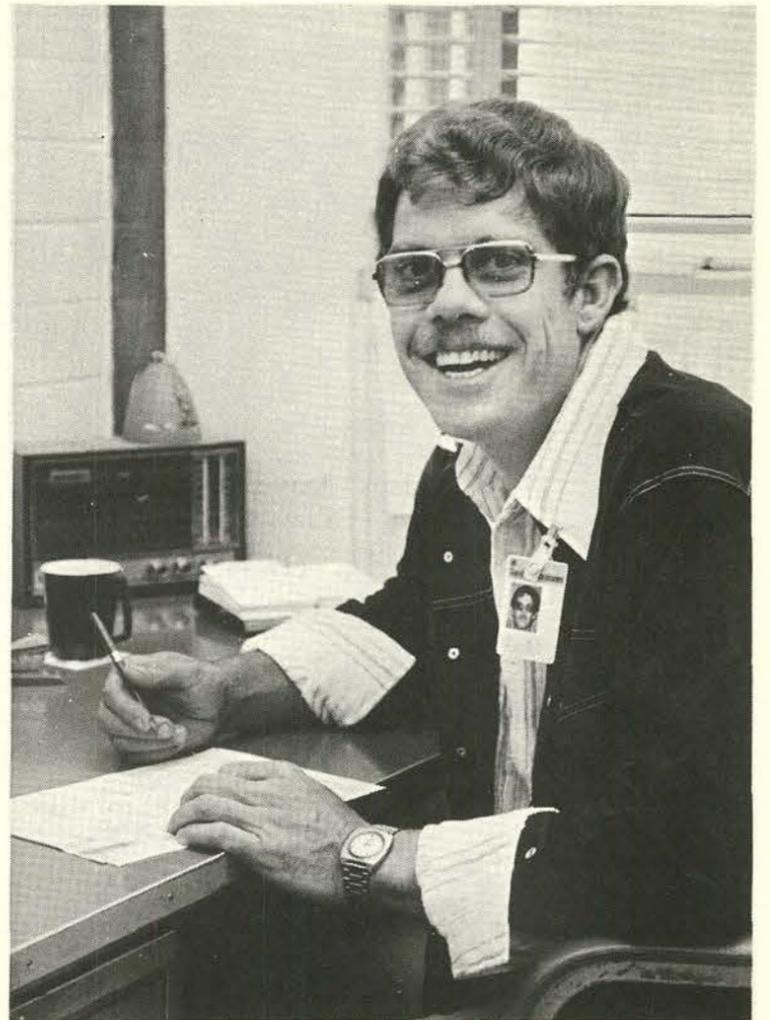
Joe Muench - 1222 30



Bonnie Montano - 9721 25



Mary Wood - 5844 10



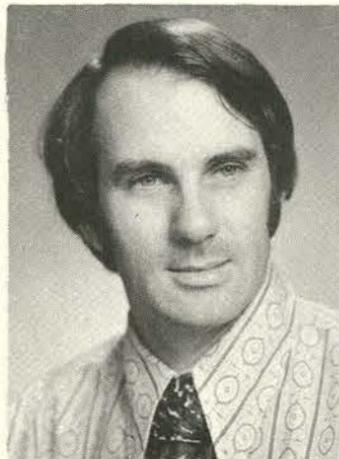
Bill Alzheimer - 8120 10



Art Clark - 8123 20



Gunner Scholer - 8333 20



Rob Rinne - 8321 10



Ken Nowatny - 2532 15



Ken Sutton - 3280 25



Pat Gildea - 8335 20



Ernestine Mikles - 8433 15



Gladys Rowe - 3144 10



Gene Jeys - 9512 15



David Berst - 9482 15



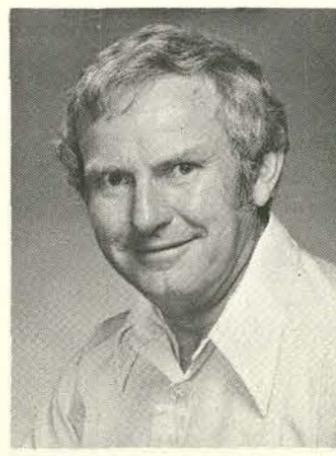
Ken Campbell - 9342 10



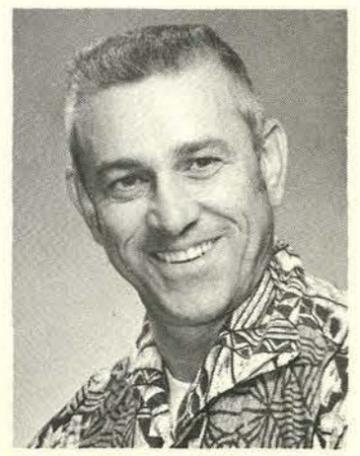
Chuck Stanton - 2153 20



Raymond Caster - 9481 25

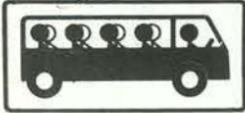


Ira Honneycutt - 3613 25



Rene Letourneau - 4337 20

Bus Notes



Avoid the parking hassle at the State Fair this year—ride a Fairgrounds bus. Buses travel along Central from downtown to the Fairgrounds every 20 or 30 minutes from 8:30 a.m. to 11:30 p.m. every day. Other buses leave from Winrock (park free north of Dillard's) at 15 and 45 minutes after the hour between 11 a.m. and 7 p.m. Special weekend or Sunday bus service along San Mateo from Gulf Mart and along the Snow Heights, Eubank Heights, and Highway 85 routes too. Best of all, the new, air-conditioned buses take you all the way **into** the Fairgrounds—and you get 25 cents off the adult entrance fee. Bus fare: 35 cents exact change. More info. at 766-7830 or 4-RIDE.

* * *

A safety note for City Sandia Special riders: Don't ask your driver to let you off anywhere but an intersection. Use the buzzer, and give the driver at least half a block to signal for a safe stop at the intersection.

Range Commanders Council Group To Meet Here

Sandia Labs will be the host representative for the Data Reduction and Computing Group (DR&CG) of the Range Commanders Council at its fall meeting at the Coronado Club, Sept. 13-17. The group consists of people from Navy, Army, Air Force, NASA and ERDA sponsored ranges who have common technical and operational interests.

Harlan Lenander, Director of Development Testing 9400, will welcome the group and provide a briefing on Sandia's mission and organization. The second day of the conference includes a tour of Sandia Labs. Charles Johnson (9421) will present a paper entitled, "Adaptive Intrusion Data System."

Marvin Bauder (9424), a member of the DR&CG executive board, is host activities coordinator.

Sympathy

To Homer McIlroy (9713) on the death of his mother Aug. 23 in Albuquerque.

To George Lujan (3422) on the death of his mother Aug. 22 in Albuquerque.



CAPTAIN Carlos Castro-Madero from Argentina listens to Jim Leonard's explanation of his group's solar reflector. The Captain is President of the Board of Governors of the International Atomic Energy Agency. At left, George Rhodes (ERDA/ALO) and Jim Scott (5700).

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

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Deadline: Friday noon prior to week of publication unless changed by holiday.

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Must be submitted in writing.
4. Use home telephone numbers.
5. For Sandia Laboratories and ERDA employees only.
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

- JEEP TRAILER, tandem axle, will haul 1940 to 1956 Jeep only. Kuroaski, 881-1859.
- RIMS, Chrome slotted, for small Plymouth, \$35/2 ea. Vigil, 296-3590.
- ST. BERNARD, male, short haired, 11 mo., leash trained, \$75. Lane 281-5019, days.
- BABY FURNITURE, dark hardwood crib, folding metal highchair, sit-step wooden chair. Chinn, 296-5172.
- BICYCLE, girl's 24", new tire and tube, \$20; 20" unicycle, \$20; extension telephone, \$12; child's baking stove, \$2. Mills, 299-2130.
- MOTORCYCLE TRAILER, 3 rails, purchased Nov. 75, Bobby J's, 6.50x13 tires, 2" hitch, \$200. Fowler, 299-6102.
- DICTATING MACHINES, 7 ea., Norelco model 84; 2 ea. 100 amp power services; 231' of new 1 1/4" gal. steel pipe. Wright, 281-5828.
- ROTH VIOLA, case and bow, cost \$900, sell \$650. Houston, 344-9004.
- AIR COMPRESSOR, 7 1/2 gal. air tank, 2 cyl. compressor, 1 hp electric motor, accessories, \$250. C deBaca, 898-5356, after 6.
- BEAN BAG CHAIR, foam rubber filled, 3' round by 3' high. Paul, 299-6387.
- HORSE BOARDING and training in Western or English Pleasure, equitation, dressage and jumping. Kirby, 299-2948, 898-7846, evenings.
- GETZEN 300 trumpet, \$110; Swift microscope, model #SST, \$100; Swift micro-illuminator, model #SSL-10A, \$10; Lafayette "Micro Dapter," \$25. Villa, 298-0435.
- CAPACITIVE DISCHARGE ignition, Delta MK-10B, 3 yr. guarantee, list \$64.95, sell \$35. Young, 299-6550.
- HORSE TRAILER, single horse, single axle, new floor, locked tack compartment, \$600. Houghton, 299-3386.
- PANASONIC "Dolby System"; stereo preamplifier, equalization for crystal or ceramic to magnetic and tape head inputs, \$60. Browning, 299-6384.
- GUITAR, Pimentel concert model, classical, rosewood, case. Barraclough, 296-4575.
- TV STAND, fits up to 19" portable, gold color metal, wood shelf and trim, \$7.50. Holmes, 292-0898.
- GERMAN short haired puppies, AKC registered. Hollingsworth, 298-8283.
- MALAMUTE CROSS puppy, female, 4 mo., \$5. Stevens, 266-0314.
- 35 MM CAMERA, Kowa SLR, 50mm lens, 35mm and 80mm adapter lenses, flash gun, \$65. Busby, 299-6450.
- TIRES, 700X13, used, four for \$50. Cianciabella, 268-7150.
- BICYCLE, 20" Spider, boy's; 4 steel folding cushioned arm chairs; 4 folding table trays; 1 take-down hammock. Moyer, 881-0754.
- FISHING FLIES, custom tied, 3/\$1. Swanson, 299-7833.
- CANON FD lens, 28mm, \$95. Vivian, 299-1785.
- '76 ENCYCLOPEDIA Britannica III, leather bound, gold page edgings, bookcase, 30 vol. set, \$750. McConnell, 256-7321.
- GOLF CLUBS, McGregor touring irons 2-9, putter, bag, \$30. Harley, 898-0594.
- BOW and accessories, 52" Bear Magnum, 45 lb. pull, \$70; 12 custom made razor type hunting arrows, \$20. Martin, 821-0131.
- WATER CONDITIONER, Clean Water, \$250. White, 293-2219.
- GOLFCART, ladies Bagboy Deluxe, \$35; 5x7 area rug, \$30; 96x60" drapes; kingsize bedspread; 8 1/2 ski boots/skis; iron. Chandler, 296-3323.
- RADIAL TIRE, GR78-14 (205-14) Uniroyal Zeta. Webb, 298-8139.
- PLASTIC SEAT COVERS for a 2 dr. Granada or Monarch with bench front seat, cost \$35, sell \$25. Crowell, 247-9140.
- SHOP MANUAL, '72-75 Travelall, cost \$25, sell \$12. Caskey, 294-3218.
- COLOR TV, RCA 15" portable, \$50; B&H 8mm movie camera, \$20; Kodak Duaflex, \$7; Bogen AM tuner, sell \$10. Devaney, 281-3961.
- SAW SHARPENING EQUIPMENT, Foley, circular saw sharpener, saw filer, hand saw setter, circular saw setter, accessories, \$485. Huddle, 881-2971.
- DOUBLE OVEN STOVE, O'Keefe & Merritt, avocado, \$225. Tessler, 296-1025.
- GAS DRYER, Sears, white, \$75. Stewart, 265-0860.
- HALLMARK CAMPER, 11', gas/elec. refrigerator, heater, monomatic toilet, shower, 4 burner stove, oven, elec. water pump, \$1750. Lovato, 299-1375.
- CORNER TABLE, single pedestal desk; chair for child's room, formica tops, \$50; wood grain formica serving shelf, 14x54x3", \$25. Garst, 299-5870.
- ARM CHAIR, Early American, \$25. Gendreau, 268-3436.
- CLARINET, Bundy, case, music stand, \$75. Willems, 298-7261.
- BICYCLE, Webco frame, Astabula parts, \$70. Wentz, 881-7125.
- PANASONIC STEREO, 8 tr. tape player, two speakers, tone and balance control, accessory jacks, \$55. Newton, 299-1283.
- SOFA, 89", olive green and gold silk texture, reversible cushions, \$95. Filusch, 299-5932.
- MUZZLELOAD RIFLES, both T/C with accessories, extra mold, .45 Seneca, \$185; .50 Hawken, \$195; 12 ga. double, \$220. Brammer, 266-5158.
- TAPE DECKS, Roberts 1740X Cross-Field stereo deck, 3 spd., \$150; Ampex FR-100A, 7 track, 6 spd., 14" reel, 1/2" tape, \$300. Kobs, 298-9133.
- GARAGE SALE, clothing, toys, books, games, stoves, garbage disposal, sink, movie camera and projector, 12680 Indian Place NE. Boeck, 298-3083.
- TAPPEN 20 cu. ft. side by side, auto defrost, harvest color, \$260. Moody, 821-1128.
- GOLF CLUBS, Graphite shafted, woods (1,3,4), Northwestern, \$90. Adams, 881-6836.
- SEARS 10 spd., \$80; Electrolux vacuum cleaner, all attachments, cost \$400, sell \$150; corner unit, 2 single beds, \$150. Clarkson, 296-8740.
- TRAVEL TRAILER, 73 Vacationer, 20', tandem axles, sleeps 6, AC. Washington, 293-2237.
- CLARINET, Bundy B-flat, \$65. Traeger, 298-0728.
- VIOLA, 14 inch, with case, \$110. Beattie, 898-2706.
- '66 VOLVO 122S, AC, AT, 4 dr., 60,000 miles, \$850. Laskar, 299-1024.
- '72 PONTIAC WAGON, third seat, roof rack, Michelins, AT, AC, radio, power, \$1995. Atkins, 298-5762.
- '73 HONDA TL125 trail bike, \$400. Kepler, 298-5652.
- '67 CHEVELLE, 283 cu. in., PS, AC, AM/FM, limited-slip differential, \$700. Bertram, 294-8350.
- '72 DODGE Dart Demon, slant six engine, new tires, radio, PS, \$1825. Krumm, 299-2279 after 5.
- '74 CAMARO, 6 cyl., AT, PS, rear spoiler, \$3600 or best offer. Pogna, 299-6701.
- '67 CADILLAC Sedan de Ville, AM/FM stereo, leather upholstery, new vinyl top, new paint. Robertson, 881-2544.
- RACING GO-KART, '75-76 100cc Heavy Class Champ, kart alone, \$300; ready to race, \$500. Faychak, 821-4833.
- '54 CHEVY 210, 2 dr., original owner, best offer. Daut, 255-2529.
- '67 RAMBLER Classic, 2 dr., 327 CID, AT, AC, PS, PB, \$450. White, 293-2219.
- '73 JEEP Wagoneer, quad track, luggage rack, radio, tape, AC, PB, PS, AT, 38,000 miles, \$4200. Toepfer, 299-8505.
- '71 DODGE Polara, AT, AC, power, 48,000 miles. Dumas, 268-3403.
- '69 SUBARU 4 dr. Sedan, white, front wheel drive, \$600; '64 Honda 90 motorcycle, as is, \$90. Chandler, 296-3323.
- '72 BUICK Electra, 4 dr., AC, AM/FM stereo, steel radials, PS, PW, PB cruise control, \$2800. Silva, 268-4008.
- '67 JEEP CJ5, 44,000 miles, hard and soft tops, new snow tires, battery, \$2500. Stevens, 266-6086.
- '66 MGB, red convertible, wire wheels, Michelin radial tires, new top, \$1180. Schmidt, 881-6689.
- '64 KARMAN GHIA, Michelin radials, new clutch and battery, \$400. Shuster, 268-8491.
- '69 RAMBLER, 6 cyl., radial tires, standard transmission, \$590. Vigil, 296-3590.
- BICYCLES, man's 10 spd., \$40; boy's 20", \$20; girl's 20", \$20. Shipley, 298-2433.
- WINNEBAGO CAMPER, 10 1/2', cabover, jacks, \$1075. Hole, 255-1444.
- DUNE BUGGY, rail frame, 40 hp VW engine, full roll cage, driving and towing lights, cushioned bucket seats, \$750. Hobbs, 268-6461 or 266-7557.
- '74 VEGA GT Hatchback, 29,000 miles, AM/FM, 4 spd., custom interior, \$2100. Hart, 265-2221.
- '65 DODGE D-200, 318 cu. in., 4 spd., heavy bumper, auxiliary gas tanks, AC, recent valve job. Clark, 869-2569.
- '72 PLYMOUTH Duster, 2 dr., dark green, 318 cu. in. engine, 3 spd., RH, tape deck, 67,000 miles, \$1225. Trump, 299-5162.
- BICYCLE, 20" girls, high rise, \$25. Gendreau, 268-3436.
- '73 HONDA 500, fairing, WS, crash bars, rack and rest, 8,000 miles, \$1250 or trade for 10'-13' trailer. Brammer, 266-5158.

FOR RENT

- APARTMENT, 2 bdr., unfurnished, garage, near University, carpets, drapes, stove, refrigerator, available Oct. 1, \$185/mo., plus \$75 deposit. Daniel, 268-8335.
- HOUSE, 3 bdr., 1 1/4 baths, walled in yard, Ridgecrest addition, \$350/mo. Harvey, 265-3055, after 6.

REAL ESTATE

- COCHITI LAKE LOT, purchased for \$5084, will sell for \$1200 plus 26 payments of \$50/mo. McMaster, 296-7881.
- CORRALES ADOBE on 2 acres, 2500 sq. ft., pasture, horse facilities, refinancing required. Elliott, 262-0778.
- TOWNHOME, 2 bdr., Westside, swimming pool, park with gazebo, lawn care, outside maintenance. Chaves, 831-2296.
- MOBILE HOME, 2 bdr., 1400 sq. ft., city lot, established 7 yrs. Moody, 821-1128.

WANTED

- ALTERNATOR for Bridgestone 175cc dual twin motorcycle, approx. '69 model. Schallert, 298-8942.
- BICYCLE, small boys. Shank, 877-4497.
- TRUCK TIRES with highway tread, 2 ea., 670X15 or 700X15, 6 or 8 ply. Snelling, 294-5751.
- DRESSER, four or five drawer. Santana, 294-0536.
- AIRCRAFT ENGINE, Continental O-200, prefer low time but will consider run-out. Reed, 299-7425.

LOST AND FOUND

- LOST—Rx gold framed safety glasses in black case.
- FOUND—Gold Skeleton key. LOST AND FOUND, Bldg. 832, 4-1675.

WE—have quite a Labor Day Event coming up Monday from 11 to 6. **Country Comfort** returns. So do 20 cent beers, Happy Hour bars, and the snack bar. Or swim all day—no ticket necessary. Free to members. **NOTE:** Bargain prices (\$5) on used dining room chairs—strong, comfortable, stackable. Buy a bunch.

ALL—the Happy Hour you could want tonight as Tim and Paul who do it all begin the fall. They'll play while you dine (on pot roast, fried chicken, all the trimmings). **The Prisoners** are paroled again from 8:30 to 11:30; they're the only prisoners who help you escape.

WANT—to go to Mazatlan after all? Some spaces have opened up for both the Oct. 17-24 and the 24-31 trips. At \$295, you get RT transportation, Playa Mazatlan accommodations, breakfasts, dinners, other goodies. Sign up by the 10th. Or maybe you have questions, problems, suggestions, or praise for any or all of the club's travel programs. Stop by the Club lobby during Happy Hour between 6 and 7, and corner Ed Neidel, Travel Director.

TO—see what Walt Disney thought really happened in Sherwood Forest (what forest isn't sure wood?), see his animated version of **Robin Hood** tomorrow at Variety Night. See magic too—Maxwell and Company will amaze you and yours with their prestigious prestidigitation.

GET—your fill of Texas Gulf shrimp at the Peel on the 18th. Or try the chicken (it's good stuff—not fried in Kentucky). Dance or listen later to **The Nightlifers**. Tickets by the 11th; \$6 and \$6.50 per month.

EVERYTHING—in the new fall fashions, including Flair models, will highlight next Friday's Happy Hour. But the barbecued spare ribs and corn-on-the-cob are pretty tasty dishes too. **The Cimarrons** will play background music for the

show ("A Gritty Pearl Is Like a Malady," other favorites) and dance music for the dance (like "San Antonio Rose—About Three Feet During the Quake of '62"). Later in the Lounge, it's Denny, the only guy around it's fun to watch fret.

THAT'S—Midnight Special you hear chugging around the bend on its way to Soul Session on the 11th.

COMING—up: a fishing school for brown trout. Well, a brown troutfishing school (open, of course, to all races, nationalities, etc.). Taught by pro angler Bob Lake, it begins the 22nd for six Wednesday evenings. Sign up (\$22 members, \$24 non) before then.

TO—bag your limit during the upcoming hunting seasons (that's if you enjoy hunting upcomings), make it to Outdoors Indoors on the 13th at 7:30. You'll learn lots of valuable and some invaluable information (like, when a hunter asks, "Are you game?" don't, whatever your mood, answer yes).

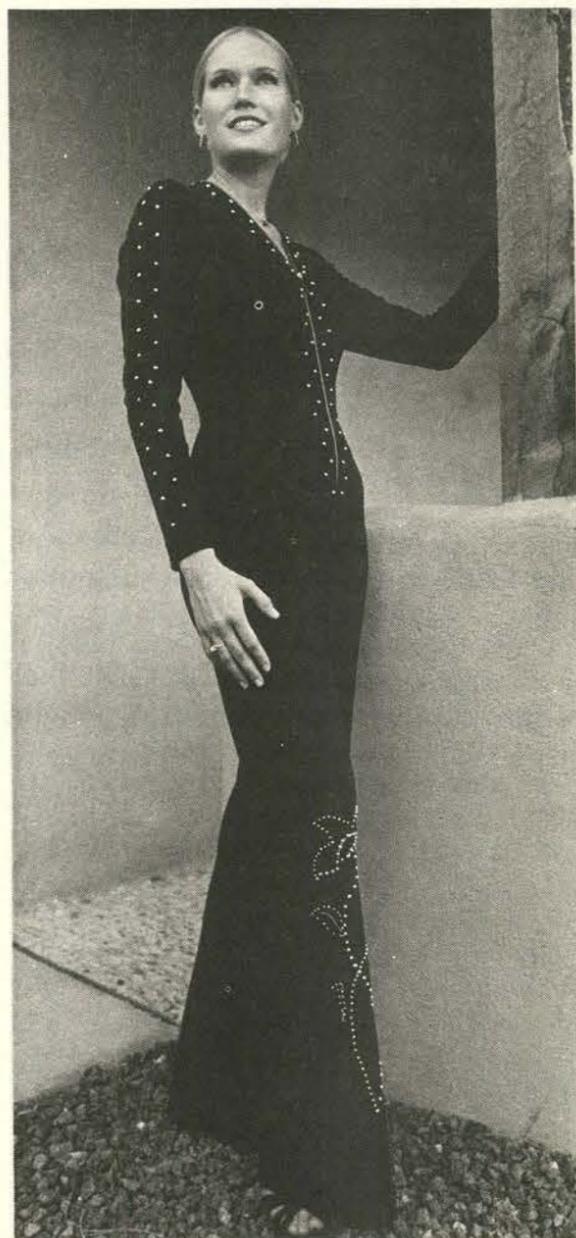
US—armchair travelers can do it again at Travelogue Night on the 15th at 7:30. Earl Simonson (3252) will show slides of a camper rig trip to and through Alaska. (Earl's brother Albert couldn't make the trip—turns out that on the Alcan Al can't.)

WITHOUT—a doubt, September swimming is great. So save your season pass. It's good Saturdays and Sundays all month at all three pools.

GETTING—cooler, but that's great for appetities. Bring a bigger picnic dinner and spread it out on the patio any Wednesday night. No glassware, even in September.

WHAT—a great chance for a hand-made double-knit pantsuit, Sanadoes! Other prizes too. And presentations on all Sanado Special Interest Groups. At the Harvest Fair on the 14th at 12:30 at Donna Baremore's. Bring a prospective member.

WE—just learned that the maximum age for junior bowlers has been revised upward. So if your bowler is 8 through 18 or still in high school, he or she is eligible. Sign up at San Mateo Lanes before 9 a.m. on the 11th. And check San Mateo Lane prices—cheap. More info from Ciss Kelly at 255-8011.



FLAIR MODELS (like Laurie Hall) will show off the latest in fall fashions (like this black polyester jumpsuit by Estivo of Phoenix, \$63) at 7 at Happy Hour next Friday. Fashions from Marcy's Apparel and The Lancer. Coordination and comment by Rosario Ayers of Flair.

PROBABLY—noticed the girl's water polo team pic in the last issue, didn't you? If your child (male or female, 8 years and up) is interested in competitive A.A.U.-sanctioned swimming, diving, or water polo programs, get to the Club for the Coronado Aquatic Club's parent orientation meeting at 7:30 on the 8th.

DESERVE—a break in movie ticket prices? Commonwealth tickets save you 75 cents a show. They're good through Dec. 15.

MORE INFO—265-6791



MEET COUNTRY COMFORT: Tom Simpson (3647), Linda Beattie (1), Donnie Stroud (with his Tom-Toms named Dick-Dick and Harry-Harry), and Ray Cooper (3647). The Club's Labor Day Event features the group that made Memorial Day memorable.