



THE OPENING WAS GRAND—At Tonopah Test Range last week, President Sparks stands with scissors at the ready while Sam Moore, Range Manager (center), and Glenn Fowler (VP-1000) look on. Moments later the new Operations Control Building was open for business. Part of an eight-million-dollar Range update, the new Operations Building's 8500 square feet of space contain computer and other electronics with which to control tests of bombs and missiles.

LAB NEWS

VOL. 32, NO. 9 SANDIA NATIONAL LABORATORIES MAY 2, 1980

For Computer Modeling

Rock Behavior Focus of Rock Mechanics Lab

Sandia Labs from its beginning has maintained an interest in geosciences. Sandia researchers have long studied weapons effects such as ground shock and motion and the earth stresses of underground nuclear testing. The Labs also had a role in early efforts relating to peaceful uses of the atom bomb such as digging harbors or excavating another trans-isthmus canal. Sandia participated in Project Blanco, a detonation of a nuclear device to stimulate natural gas production in a deep underground "tight" rock formation. And Sandia pioneered terradynamics, the study of earth penetrating missiles, which also led to the development of penetrators to measure the thickness of arctic ice packs.

Since the energy crunch of 1973, however, Sandia has become deeply involved in a number of energy projects which embrace the geosciences—enhanced natural gas recovery through hydrofracture, *in situ* retorting of oil shale formations and geothermal drilling. In the strategic petroleum program, the Labs is assisting in characterization of underground salt domes in Texas and Louisiana as storage chambers for crude oil. In addition, Sandia is conducting geoscience research in support of underground nuclear waste disposal (the WIPP project

near Carlsbad and at the Nevada Test Site).

Providing support for all these programs is the Rock Mechanics Laboratory, Geomechanics Divisions 5532, under Barry Butcher.

"We squeeze and break rock samples," Barry says, "to provide data for computer modeling of earth formations and earth dynamics. The idea is to gather data by means of an experiment in the lab, construct a model, run it through the computer to predict the experimental results and then make comparisons between the model predictions and the experiment. If we're close, then we have a working code. If not, it's back to the rock pile."

Accurate computer modeling can save millions of dollars in large-scale energy projects. The more accurate the model, the better the odds for success in the field, the greater the opportunity for "fine tuning" the economic factors and balancing recovery costs against value of the energy resource recovered.

A number of impressive machines in the Rock Mechanics Lab provide the brute force necessary for applying stress to large rock samples. The large test machines are



ADRIAN JONES measures residual stress in a tuff sample from the Nevada Test Site. Strain in the sample was measured, then overcured (circular cuts in the center of the block) and measured again by strain gages tied to the surface of the rock.

[Continued on Page Four]

Afterthoughts

The new, ambiguous power source--John Andersen (1721) recently received a letter from an engineer in Japan who is associated with the firm of Hitachi Zosen. After you read the quoted portions of the letter below, we think you'll understand John's contention that our national interest would best be served by the Labs sending John to Japan to check out this new power source.

"Dear Sirs:

Although you may feel too abrupt, by this urgent letter we would like to ask for sending me, as possible as you can, the materials necessary for the following concerning Spent Fuel Storage Facility, because I have heard... that Sandia Laboratories has made a magnificent contribution forward the design of AFR pool in U.S.A."

The letter continues, discussing technical matters, then concludes:

"This is a matter of great urgency, because 'JAPAN UNCLEAR FUEL SERVICE CO. LTD.' which has paid up capitals of 10 billion yen and is to be in charge of reprocessing... spent fuels from Japanese unclear power station... Thank you..."

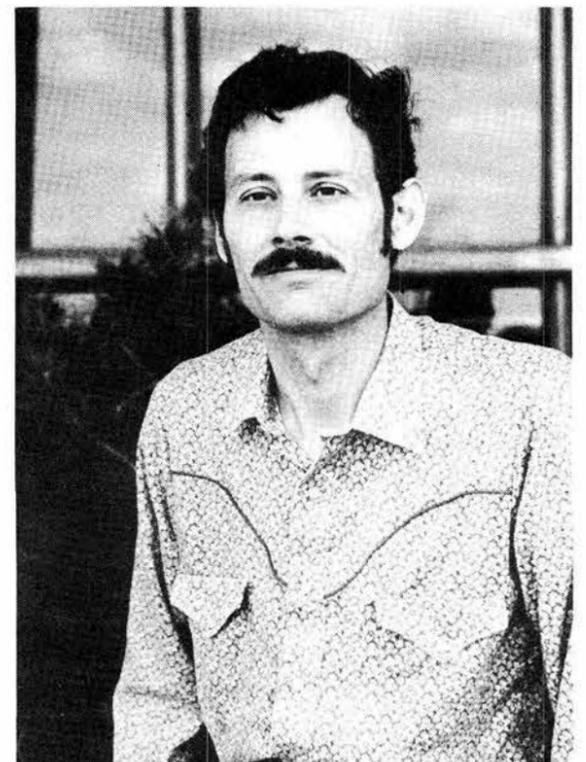
* * *

Double think in the Mideast--The Saudis are in a snit with the British because a British TV film depicts the official execution of a Saudi princess and the beheading of her lover for adultery. That the film is based on actual and acknowledged occurrence (in 1977) matters not at all--the Saudis told the British ambassador to go home and are muttering about economic reprisals. It's the kind of thinking one has come to associate with the Mideast wherein the local version of justice, which runs to cutting off hands for thievery and heads for other offenses, is blandly expected to be above reproach or even examination in the rest of the world. Yet this is not a two-way street, and the world of Islam rushes to loudly condemn any Western behavior perceived to be out of step with its view.

* * *

Writers, take note--"There's nothing mystical or magical about being a writer. A writer is just a person who writes something. There are almost no people who are not dentists who can fix teeth, but there are a lot of people who aren't professional writers who write very well. This is one of the reasons why being a writer is more difficult than being a dentist." Andy Rooney *js

Supervisory Appointment



DENNIS POWERS to supervisor of Nuclear Waste Technology Division 4511, effective April 16. Dennis joined the Labs, and his current division, in August 1975; his work has centered on the WIPP project.

Dennis earned BS and PhD degrees in geology from Iowa State and Princeton, respectively. He is a member of the Geological Society of America and the Society of Economic Paleontologists and Mineralogists. His leisure activities are family and church oriented. Dennis and his wife Becky have three children and live in the NE heights.

Labs Succeeds In Meeting Energy Savings Goal

Last year at this time, President Carter put out the word to all federally-funded agencies: reduce energy consumption by 5%, reduce vehicle fuel use by 10%. Or else.

The cruncher was that these goals had to be met irrespective of any growth in numbers of people or in facilities. At Sandia, our number of people has increased, as has our number of facilities.

Yet the goal of 5% energy consumption has been met and even exceeded with a figure of 5.7%, and the vehicular goal, 10%, is essentially met with a figure of 9.5%. Some specifics: electrical usage is down 1.9% and natural gas shows a 6.0% decline. We used 54.9% less fuel oil, while propane is up 1.1%. Of course, the mild winter helped.

The statistics cover Labs installations in Albuquerque, Livermore and Tonopah.

Ward Hunnicutt, Director of Plant Engineering 3600, reports that the goals must be met to avoid possible shutdown of individual facilities and that DOE continues to monitor our performance closely.

The soft spot continues to be electricity at all three locations. Sandians are urged to turn off lights and equipment wherever such action does not interfere with the work at hand.

Events Calendar

May 2-3--NM Symphony Orchestra, 8:15 p.m., Popejoy.

May 2-4, 9-11, & 16-18--"Murder at the Vicarage," Classics Theater Co. at The Vortex, Central & Buena Vista SE, 247-8600.

May 3--Cochiti Pueblo, Corn Dance, Coming of the Rivermen.

May 3--Garden Fair & Plant Sale, Council of Albuquerque Garden Clubs, Garden Center, 10201 Lomas NE, 9 a.m.-5 p.m.

May 3-4--"Godspell," musical based on the Gospel according to St. Matthew, Kiva Auditorium, Conventions Center, 3rd-8:30 p.m., 4th-3 p.m., free.

May 4--UNM Jazz Band Concert, 6 p.m., UNM Mall.

May 6--Audubon Travel-Adventure Film, "Gila Wilderness," 7:30 p.m., Popejoy.

May 9-11--Navajo Rug Exhibit & Sale with Navajo weaver demonstration, 9 a.m.-6 p.m., Indian Pueblo Cultural Center, 2401 12th St. NW.

May 10-11--NM Iris Society Show, Garden Center, 4-8 p.m.

May 11--Mother's Day Concert, NM Symphony Orchestra, Rio Grande Zoo, 2 p.m.

May 11--Indian Pueblo Cultural Center, dancers from San Juan Pueblo, 1 & 4 p.m.

May 14--Music Vespers Series: New Christy Minstrels Concert, 7:30 p.m., First United Methodist Church, 4th & Lead SW.

LAB NEWS

Published every other Friday

SANDIA NATIONAL LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO

LIVERMORE, CALIFORNIA

TONOPAH, NEVADA

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Repro Computer Graphics Ready

Computer graphics of quality suitable for reproduction in technical publications are now being provided by Bert Barker (8334), Hesa Yano (8215) and others from SNLL's Computer Applications Division.

Working with Pete Dean of Publications Division (8265) and John Daniel of Technical Arts Section (8265-1), these Sandians are expanding the capabilities of SNLL computer graphics. Several computer programs have been assembled for the CDC-6600 computer by Bert and Hesa.

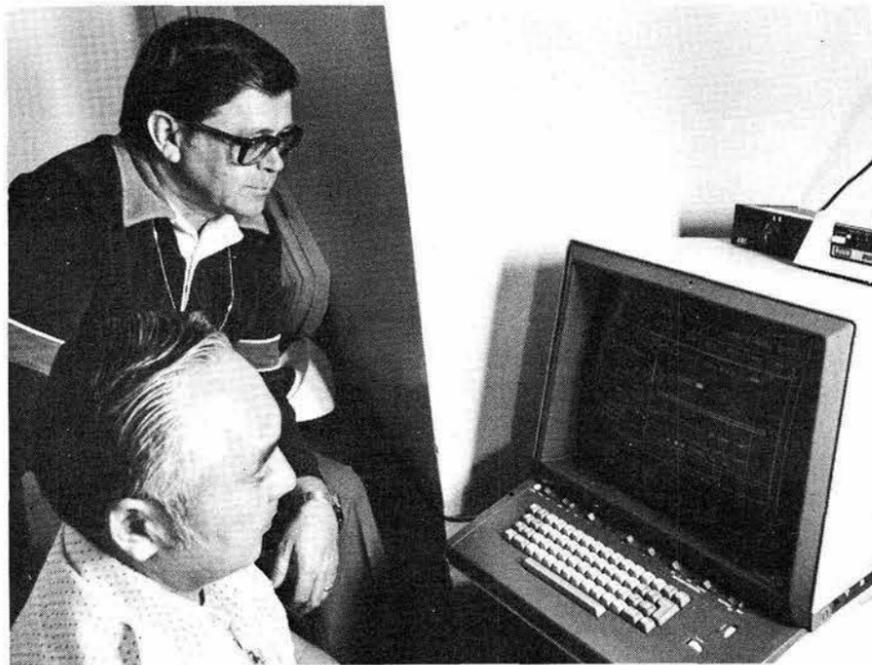
As a result, even a novice computer programmer can learn to produce professional-quality viewgraphs, slides or plots rapidly and with a minimum of fuss.

The Sandians work with Integrated Software Systems Corp. of San Diego, which provided the computer plotting package. One purpose of the project has been to relieve the technical arts people of the tedious task of providing hand-drawn plots. With the improvement in graphics on display terminals and the ability to quickly provide quality plots on paper or on film, Bert foresees increased usage of these graphic materials.

Several methods have been developed to adopt the computer to the requirements of the artist. Simplified programs are easier for non-programmers to use. Other programs have been changed to provide better control of layout, letter size, and other important features. And publication art standards are being examined to see where changes can be made to make the computer more productive.

Sandia is coordinating efforts with other DOE agencies—among them Union Carbide, Oak Ridge and EG&G at Idaho Falls—to further the advance of high-quality graphics.

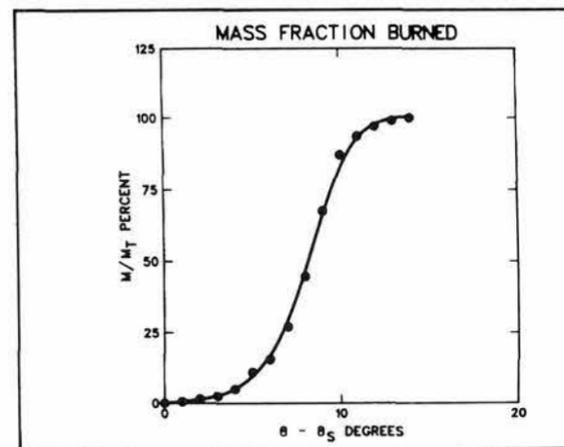
At a recent conference on computer graphics, Bert served as program chairman and Pete delivered a paper in which he



WORKING ON A CHART of quality suitable for reproduction are Bert Barker (8334), back, and Hesa Yano (8215). The terminal is a Tektronix 4014.

explained that the "aesthetics of computer-generated graphics have generally been ignored for years. Charts and graphs typically produced from scientific and engineering data still show little evidence of attention to the visual details of the finished product As a result, most authors have had to rely on technical illustrators to create the 'publication quality' graphics for formal publication."

He reported further that "the field of computer graphics has now reached the point where more emphasis is being placed on creating high-quality charts and graphs . . . and at Livermore the technical illustrators and publications personnel have joined with the computer graphics staff to create computer programs capable of high-quality work that can be used not only as report illustrations but which serve equally well as projection transparencies and journal illustrations."



PRINTOUT from the Tektronix is ready for reproduction.

Computer Center Addition Design Contract Awarded

The architectural and design engineering contract for a major addition to the Computer Center at Sandia has been awarded by DOE.

Hunt and Company Architects of San Francisco has received the contract for the 13,000-square-foot addition to the underground computer facility. Total cost of the project is estimated at \$2.8 million.

The construction contract will be let in early 1981 and ground broken for the addition in March 1981, according to project engineer Bob May (8254). Completion is expected in the spring of 1982.

The addition will nearly double the size of the Computer Center.

Sympathy

To Joe Iannucci (8326) on the death of his mother in Livermore, March 19.

To Tom Jefferson (8332) on the death of his father in Westwood, N.J., March 14.

To Ron Pastrone (8423) on the death of his mother-in-law in Paradise, Calif., April 4.

EXHIBIT OF PAINTINGS by Jack Young (8265) is now on display in the lobby of Sandia Livermore's Building 911. A commercial and technical artist for over 25 years, Jack began painting landscapes in 1973 and was a self-employed artist for five years. His paintings have been shown in galleries in Miami and Oklahoma City and, in California, in Carmel and Campbell.



Prevention & Control

By Larry Clevenger, MD
Sandia Medical

[Editor's Note: At the next Go for Health program, Tuesday, May 13, 12-12:30, Bldg. 815, Medical's Dr. Larry Clevenger will discuss the importance of detection of high blood pressure and its prevention and control. Later in May, blood pressure screening for Sandians will be conducted by Medical throughout the Tech Area. The screening schedule follows this article.]

Hypertension (high blood pressure) is our chief 20th-century epidemic—it affects nearly 23 million Americans. The affliction is unusual, when compared to other major diseases, in that it is symptomatically silent—you may not know you have it—and it is non-communicable. But as a destructive force in the health of the American people, hypertension's real threat becomes apparent when one considers that it is the primary causal factor in the 500,000 strokes and 1,250,000 heart attacks that annually occur.

Historically, epidemics have been stopped by first understanding the behavior of the disease and then implementing widespread preventive and therapeutic measures. Unfortunately, the pathophysiology (disease process) of hypertension is not yet fully understood so that reliable preventive techniques have not been developed. Some factors involved in hypertension have been identified, however, and control of these may help. They include: maintenance of an optimal body weight, regular exercise, limited sodium and alcohol intake, avoidance of chronic stress, and stopping smoking.

Since these measures offer no guarantee in the prevention of hypertension, regular blood pressure screening should be a part of everyone's personal health maintenance program. Once diagnosed, hypertension can be controlled in nearly all persons through use of a wide variety of inexpensive and well-tolerated medications.

* * *

BLOOD PRESSURE SCREENING SCHEDULE

Thursday	May 15	Bldg. 836, Room 114	1-3 pm
Friday	May 16	Bldg. 806, Room 201	12-3 pm
Monday	May 19	Bldg. 880, Room C-11	1:30-3:30 pm
Friday	May 23	Bldg. 892, Room 216	1-3 pm



Death

Glenn Baker, supervisor of Custodial Section II 3426-4, died suddenly April 19. He was 56.

He had worked at the Labs almost 16 years.

Survivors include his widow, three daughters and a son.



JOSEPH MARTIN trims a sample of rock salt taken from a strategic petroleum reserve site in Texas for a triaxial creep test.



JERRY O'BRIEN adjusts rock sample for a uniaxial compression test to measure stress/strain response.



LARGE TEST FRAME in the Rock Mechanics Laboratory, Division 5532, applies either tension or compression loading up to 220,000 lbs. on rock samples. Jerry O'Brien and Chris Robertson ready the apparatus for a test. A larger machine with a million-lb. load capacity is ready for installation in the lab.

Continued from Page One

Rock Mechanics Laboratory

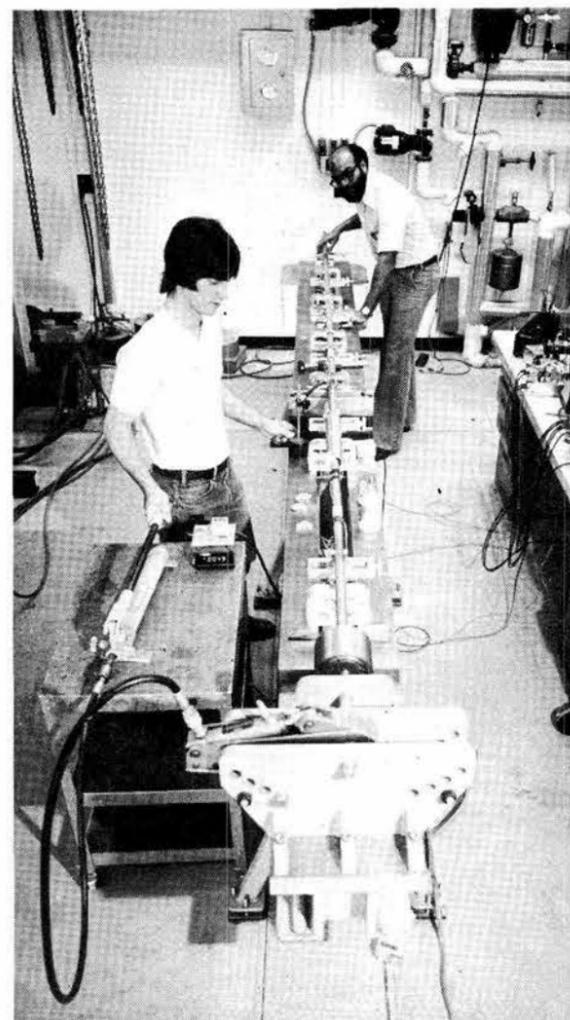
supported by sophisticated instrumentation and computer-controlled data gathering systems. Temperature and pressure are prime concerns.

"One of the greatest limitations of modeling," Barry says, "has been the lack of *in situ* data. What, exactly, are the forces acting on rock formations at, say depths of 2000 feet? With our heating devices and pressure chambers, we've had some success in simulating these conditions.

"Another success is our measurement of permeability," Barry continues, "the rate of flow of fluid through a rock formation. We have simulated this for the salt formations of the WIPP and we are now examining the volcanic tuff found at NTS."

The Rock Mechanics Laboratory also supports the Pershing earth penetrator missile development program, continues studies related to weapons effects—ground shock and cratering.

"There's widespread interest," Barry says, "in the data we generate. Our work has applications in the mining, natural gas and petroleum industries as well as the experimental programs of Sandia Labs."



A TORSION BAR test apparatus determines fracture strengths and fragment sizes on rock samples at high strain rates characteristic of explosive events in oil shale. The torsion bar propagates a shear wave through the sample (located in the cylindrical chamber at the center of the bar). Chris Robertson and Adrian Jones prepare a test.

Take Note

The WE/BTL Radio Amateur Directory, containing information on radio amateurs who work for WE/BTL and associated companies, is being updated. Interested Sandians may add their names to the directory by contacting Pete Havey (5824), 4-1273.

* * *

The "Japan in Albuquerque" celebration continues:

- May 1-31—"Japanese Folk Art Kimonos," and "Kasuri Weaving," Gallery One.
- May 3 —"Origami for Beginners," San Pedro Branch Library, 10 a.m.
 "Contemporary Japanese Ceramics," slide lecture, main library, 2 p.m.
 "The Japanese Art of Bonka She Shu," punch-needle embroidery work, main library, 3 p.m.
- May 4 —"Haiku at the Zoo," Japanese poetry, Rio Grande Zoo, 1 p.m.
 "Mothra," and "The Mysterians," horror films, Kimo, 1:30 p.m.
- May 5-31—"Japan Today," exhibit, main library.
- May 9 —"Martial Arts of Japan," demonstration, Civic Center Plaza, 7:30 p.m.
- May 10 —"Origami," advanced, San Pedro Branch Library, 10 a.m.
 "Zen Gardens," slide lecture, main library, 1 p.m.
 "Ikebana," demonstration, main library, 2 p.m.
 "Bonsai," demonstration, main library, 3 p.m.
 "Brush Painting," demonstration, main library, 4 p.m.

The main library is located at 5th and Copper NW. Hours are 9 a.m. to 5 p.m., Monday through Saturday.

* * *

Dick Bassett (2354), our resident electric car expert, reports numerous calls regarding an ad in current magazines for an electric car drive system which uses four 12-volt automotive batteries and a 100 amp generator driven by a 5 hp gasoline engine. This provides power for an aircraft generator used as a motor.

"From my experience," Dick says, "I can tell you that the advertised system would provide a maximum of only 10 minutes driving at 50 mph, and it would be impossible to reach the claimed top speed—90 mph. The automotive batteries' plates would buckle due to excessive heat caused by large current drain. Caveat emptor."

* * *

About five years ago, all employees age 55 and over were sent a letter in which they were given the opportunity to receive a membership in the American Association of Retired Persons (AARP) and a subscription to the magazine *50 Plus* at no cost as long as they remained active employees. The purpose was to provide employees with material which could be helpful in planning for their retirement. At that time, only about one-third took advantage of the offer. Now this offer is being repeated, and any employee 55 and over who is interested in AARP should contact Vern Henning (4-7336) or Tom Morgan (4-6575), Benefits Administration and Employee Services 3543, by May 9.

* * *



AT LAST month's Career Encounter Day, some 70 students with a high interest in science and technology came to Sandia from local high schools to listen to Sandia technical people relate the hows and whys of careers in engineering. Then small groups of the students toured various areas within the Labs, getting a look at science and technology in action. Here, Eloy Gutierrez (2116) and Kerry Sturgeon (2454) tell the young people about the ELA silicon gate cells they are examining upon the light table. Gerda Krefft (3510) was coordinator for CED and welcomed the students at the Coronado Club.

The New Mexico Chapter of the American Vacuum Society is holding its annual symposium May 6 to 8 at the Sweeney Convention Center in Santa Fe. Technical meetings include 11 speakers on such topics as thin films, surface science, and vacuum science and technology. Keynote speaker is R. F. Thompson, space shuttle program manager, who will deliver a status report on the space shuttle on the morning of May 6. A four-day program of courses is being held in conjunction with the symposium, and 44 exhibitors will display technical equipment. No registration is needed to visit the exhibit or to attend the keynote address. Free bus service between Albuquerque and Santa Fe is being offered during the three days. The bus will leave from the southeast corner of Montgomery Plaza each day at 6:30 a.m. and return from the Santa Fe Convention Center at 5:15 p.m. Warren Taylor (2551), 4-7539, has additional information on the symposium.

* * *

Retiree Bill Carstens is presiding over the 18th summer season of the Adobe Theater in Corrales, and he reports that the 1980 season features play by four prominent American authors. They are: *Of Mice and Men*, by John Steinbeck; Tennessee Williams' *Glass Menagerie*; *The Good Doctor* by Neil Simon; and Edgar Lee Masters' *Spoonriver Anthology*. Presented in the historic San Ysidro Church in Corrales, each play runs three weekends. Tickets are \$3.50 each, while a season ticket for all four plays is \$12. Box office, 898-3323; for season tickets, call 898-0065 or 898-6223.

* * *

The Old Cienega Village Museum and Colonial New Mexico Historical Foundation celebrate their annual spring festival this weekend, May 3 and 4, at La Cienega (15 miles south of Santa Fe). The museum offers continuous demonstrations of sheep

shearing, soap making, weaving, spinning, and cooking, along with entertainment and traditional foods. Hours are 9 a.m. to 4 p.m. To get there, get off I-25 at the La Cienega exit and follow the museum festival signs. There is a small admission charge.

* * *

The Labs held its 24th annual Science Youth Day last month, and 80 students from high schools in and near Albuquerque attended. The program is one of a nationwide series supported by the Thomas Edison Foundation and is designed to encourage students to pursue technical careers. After a morning of briefings at the Visitor Center, the students broke into smaller groups for tours of the Photovoltaics Test Facility, the Vertical Axis Wind Turbine, and the Midtemperature Solar Test Facility. After lunch, the groups visited Areas III and V as well as the Power Tower. Community Relations 3163 people handled tour arrangements.

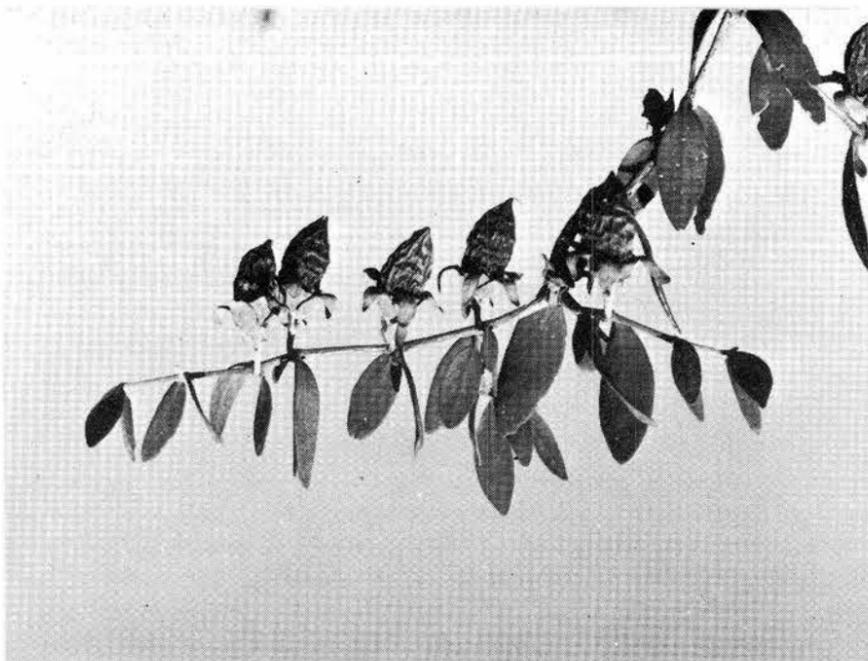
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John Gardner (3140), executive director of Albuquerque's Classic Theater Company, called to tell us of the imminent opening on Friday, May 2, of Agatha Christie's play, *Murder at the Vicarage*. Location is the Vortex Theater, Central Avenue and Buena Vista SE. This is the first Classics Company production outside Popejoy Hall in some time. Curtain goes up at 8 p.m. at the Vortex. Reservations at 247-8600. Play runs Friday, Saturday and Sunday nights through May 25.

* * *

LAB NEWS is about to place an order with a commercial house for those 11 x 14" photographic prints of the aerial view of Tech Area I. If you're interested, the color prints cost \$3.50. Send your name and organization to Color Print, LAB NEWS.

IN AN ARID ENVIRONMENT, the jojoba becomes a bush shrub, three to four feet high, while along the Pacific coast it may reach 16 ft. Hardy and drought resistant, jojoba can sink its taproots 30 feet in search of water. The plant produces a small yellow flower, followed by green fruit. At maturity, the outer shell dries up and falls off, exposing the dark nut, which is about one-half oil. Easily extracted by pressing, this unsaturated liquid is virtually a duplicate of sperm whale oil.



Vista New Mexico

Save the Whales—Grow Jojoba

What's the common denominator between the endangered species sperm whale and a greyish-green bush growing wild in our Sonoran Desert? The answer: oil—sperm whale oil and jojoba bean oil.

Sperm whale oil is used as a high-pressure lubricant in automotive and tractor transmission fluids and in metal-working oils; it's also used with gears and other machine parts required to operate under extreme pressure. Sperm whale oil consumption averaged up to 55 million pounds per year in this country before the early 1970s when the U.S. banned all imports of oil, meat and other products containing sperm oil under the Endangered Species Conservation Act.

Researchers have now determined that jojoba ("ho-HO-ba") oil is an almost exact duplicate of sperm oil and can be used as a substitute without any major refinement. Actually, jojoba oil is probably superior to sperm oil because it is clean and odorless; further, it's simple to harvest because the oil is merely pressed out of the bean.

Jojoba has been around a long time; the Apaches appreciated its medicinal qualities and made a type of coffee from the bean. And today, Apaches on the San Carlos Reservation in Arizona are harvesting jojoba and distributing the seeds to researchers and industry.

The oil itself, colorless and odorless, is used in many products: cosmetics, food oil, heating oil, furniture wax, fertilizer, candles, chewing gum, mulches, browse for livestock, a coating for pills, and a cure for skin ailments. It's even reported to stop balding!

Researchers feel that jojoba's future lies in its development as a cultivated crop. And its potential worth as a petro-

Congratulations

Gwen Mitchell (1553) and James Germany, married in Hobbs, April 5.

Sympathy

To Howard Viney (1130) on the death of his mother-in-law in Albuquerque, April 16.

chemical or oilseed crop is causing a stir. Consider this: one mature, producing acre of jojoba yields the same amount of oil as 30 sperm whales. Since the current annual whale harvest is limited by international treaty to 6000, just 200 acres of jojoba could, in theory, save all the sperm whales.

The jojoba seeds are worth up to \$4 a pound and a mature plant can yield 10 pounds per year. Researchers calculate that one acre can support 500 plants, thus the yield could be 5000 pounds per year per acre—up to \$20,000 per acre. Sounds like a cure for what ails many parts of the arid southwest, but there are drawbacks.

The plants take a long time to mature—about a dozen years—and the crop is expensive to establish. Growers put in three times the number of plants they expect to mature because the seed now available produces highly variable plants. Another limitation is yield; although research teams have obtained an average of five pounds of seed per bush, some bushes inexplicably yield only 1½ pounds of seed. And the bad news for New Mexico growers is that the plants cannot withstand temperatures below 20°. Darrell Sullivan, a horticulturist with NMSU's Agricultural Experiment Station reports that after evaluating 12 jojoba varieties for winter hardiness, he concluded there is little possibility for commercial growth of jojoba in the state.

Despite these limitations, there's real potential for the crop in southern California, Arizona, and Mexico. Jojoba can grow in hot, harsh climates where temperatures reach 110-115° in summer with winter lows of 25°. It's a drought resistant plant than can exist on as little as 10 inches of rainfall a year, and it tolerates salty and alkaline soils. It has a natural life-span of 100 to 200 years and is not vulnerable to serious damage by insects or disease. In fact, jojoba planted in the medians of the Los Angeles freeway, where exhaust fumes killed all previous plantings, has survived nicely.

In short, says Sullivan, while jojoba shows much promise as a cash crop, for New Mexicans it's unlikely to become more than an ornamental plant growing in a sheltered area. • nt

feed it

Q. Recruiting is again under way, and we can expect a number of new employees at the Labs. With the many varied projects going on, there is frequently little interaction for these people with the staff. Therefore, people with common interests do not always get together. How about publishing photos and brief descriptions of new employees, including home town, schools, technical interests and hobbies to help all of us get better acquainted?

A. As you have mentioned, Sandia Laboratories has a variety of ongoing programs and projects. We recognize that new people working in one area may not have the opportunity to meet and interact with people on another project. The real question is, what should the role of Sandia Laboratories be in promoting this interaction?

Sandia Laboratories has elected to limit its role to presenting opportunities for technical interaction. Sandia has traditionally and purposely avoided entering the personal or social lives of its employees.

One of the key elements of our technical interaction program is the technical seminar series. Another is technical reports. A monthly abstract publication receives broad distribution within the Laboratories. One objective of this document is that it helps link people with common technical interests. Probably the key element for promoting technical interchange is the one-to-one informal discussions between newcomers and the present staff.

Your suggestion to publish photos and descriptions of new employees might be welcomed by some but others could very well consider it an intrusion. We have no plans to expand the Laboratories' role beyond that of promoting technical interaction.

A. N. Blackwell—8200

Q. Re: conservation of electricity—Why isn't Plant Engineering pursuing the installation of the new family of inductive motor controls now being marketed? The controls I refer to are solid state circuits which can actively and very rapidly sense the actual load an inductive electric motor is being asked to supply and just as rapidly regulate the electric power being used to the required amount and no more. I have read many articles and test reports on the new control devices and am convinced that savings ranging from 10 percent to 60 percent of normal motor power consumption can be realized, depending on the individual motor application. These devices are inexpensive and thus have a short payback period.

A. Plant engineering is not currently installing any type of "load anticipating" motor controllers. We are aware that these devices are now commercially available for various induction motor applications but, to date, have not studied them in sufficient

detail to incorporate their use in our design standards. We do have a project written to study the economic and engineering feasibility of these devices.

At this early stage, we might note several possible drawbacks:

1. Because these devices actively use thyristors in the line input circuit, there will be harmonics introduced back into the power distribution system. At Sandia, we often have very sensitive equipment, such as mini-computers and microprocessors, on rough power lines with other non-critical equipment. In the past, we have experienced problems with SCR-type motor controllers interfering and often causing downtime on other critical equipment on that line. To solve this, expensive power line conditioners would need to be purchased for that critical load, or another power feeder would need to be supplied.

2. The majority of motors here at the Labs are typically under constant loads of 75 percent or more. This would decrease the value of these load-anticipating controllers since they are characteristically most effective for lightly loaded and/or varying load applications.

3. We have studied and anticipate using the new breed of energy-efficient motors now being marketed. This would affect the economic payback of these controllers in new construction applications.

After a detailed review is completed on these devices, we will take appropriate action to incorporate their usage in our design standards if they so warrant it.

Thank you for bringing this specific device to our attention and for the technical literature describing it. Your concern for energy conservation is greatly appreciated, as the goals we have set on a Labs-wide basis will require a great deal of cooperation.

R. W. Hunnicutt—3600

Speakers & Authors

R. L. Iman (1223), "A New Distribution Free Procedure for the Analysis of Complete Blocks," the Fifth Annual Santa Fe Meeting, April 11; "Small Sample Efficiency of Fisher's Randomization Test When Applied to Experimental Designs," Spring meeting, West Texas and Oklahoma chapters of the American Statistical Associations, Lone Wolf, Okla., April 18-19.

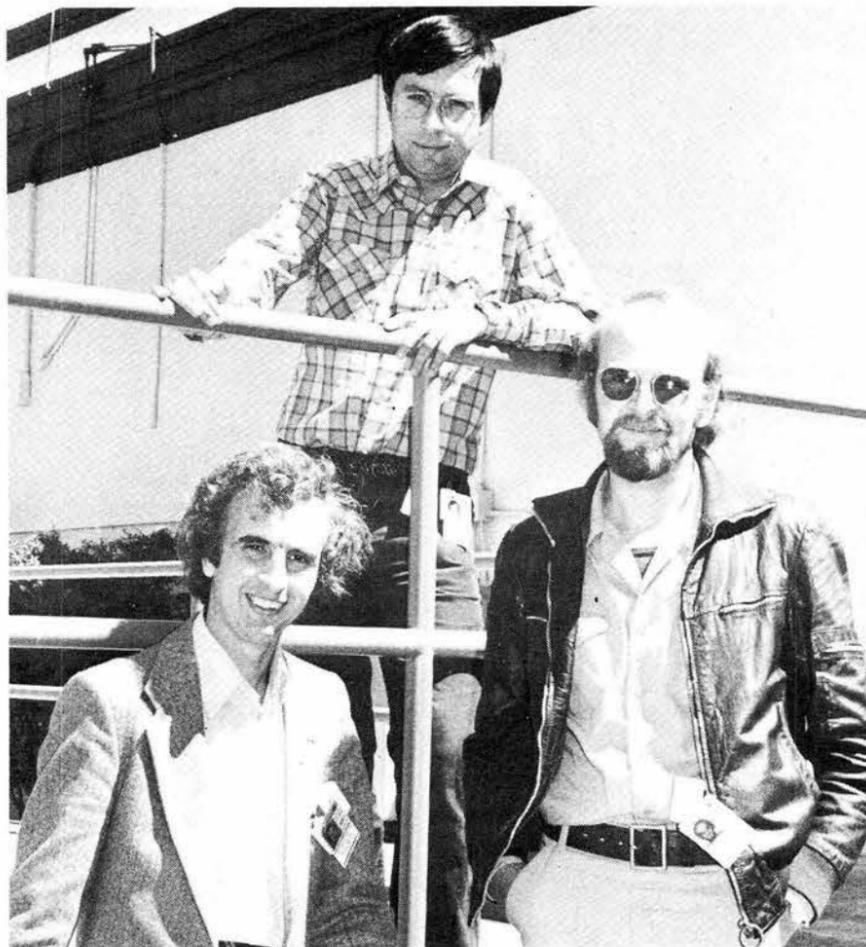
J. T. Holmes (4713), "The Solar Power Tower," NM Section, American Society of Civil Engineers, April 11, Albuquerque.

M. K. Snell (1765), "Modelling the Initial Transient in Simulation Output," 1980 Operations Research Society of America/The Institute of Management Science Joint National Meeting, May 5-7, Washington, D.C.

R. L. Iman (1223) and W. J. Conover (Texas Tech), "The Rank Transformation as a Method of Discrimination with Some Examples," Vol. A9(5), 1980, COMMUNICATIONS IN STATISTICS.



Speed and the number of traffic deaths are apparently closely linked. Death on the highway dropped significantly when the 55 mph limit went into effect. Last year the toll edged over 50,000 for the first time since 1974, an increase the Department of Transportation attributes primarily to speeding. For what it's worth, the greatest percentage of the increase occurred in the Southwest and the West.



VISITING SCIENTISTS working at Sandia on advanced reactor safety studies are Frank Briscoe, UK; Michel Schwarz, France; and Wolfgang Breitung, West Germany.

International Exchange

Three European Scientists at Sandia Working on Reactor Safety Projects

Three European scientists are working at Sandia under programs of international cooperation to study advanced reactor safety. They are assigned to Advanced Reactor Safety Physics Division 4425 under Bill Camp. Their work is sponsored by DOE and NRC.

"Nuclear reactor safety is a prime concern all over the world," Bill says. "As technology advances into the liquid metal, fast breeder reactor area, it makes good economic sense to jointly fund international studies. In Sandia's reactor complex—Area V—we can offer extensive support facilities for studies of the safety and control of advanced breeder reactors. In addition to our diagnostic instrumentation and computer facilities, the Annular Core Research Reactor is a flexible tool for reactor safety investigations."

WOLFGANG BREITUNG, from the West German breeder reactor project at Karlsruhe, has been at Sandia 18 months. A nuclear physicist, he is studying the thermal properties (equation of state) of oxide fuels for reactors.

The work is directly related to a new, fast breeder test facility under construction in Germany. Currently, 12 percent of West Germany's electricity is nuclear derived.

"I like the working climate at Sandia," Wolfgang says, "particularly the support services—drafting, testing, analyzing samples. At Karlsruhe, we do the construction and everything ourselves."

Wolfgang and his wife Gabrielle enjoy skiing, have spent a lot of time sightseeing in the western states. "Every place but California—perhaps later this year we can visit there."

FRANK BRISCOE of the United Kingdom Atomic Energy Authority, has been at Sandia almost three months. A mathematician by training, he is investigating the behavior of fission products, chiefly radioactive gases, that might develop in a reactor during an accident.

Frank and his wife Angela are parents of a 16-month-old who keeps them close to home. Both are world-class runners, having represented Great Britain in international track meets in the 10,000-metre and 1500-metre events. They continue to keep in shape by working out regularly.

"The air here," Frank says, "is very dry, very thin. But the space, the vast space. Now that is refreshing."

* * *

MICHEL SCHWARZ comes to Sandia from the Cabri facility in southern France. The Cabri is another "driver" reactor, similar to Sandia's ACRR, and is used to simulate accident conditions. Michel's work here involves studies of post-accident heat removal and radioactive material containment problems.

His work is directly related to the Phenix reactor in France, an operating fast breeder reactor generating electricity for France's power grid. A second fast breeder facility, the Super Phenix, is under construction. Sixteen percent of France's electrical power is generated by reactors.

Michel has been associated with France's reactor program for six years as a nuclear engineer.

Michel and his wife Brigitte have a five-year-old son and a daughter, two. They enjoy traveling in the US and have visited California, Texas and Louisiana. Michel also appreciates the nearby ski runs in the Sandias. This summer they plan a sightseeing trip of the Rocky Mountains.

* * *



PAINTINGS BY JANDA PANITZ, including the two shown here, will be on display in Sandia's Technical Library through June. Janda is a staff member physicist in Process Metallurgy Division 5833.

Janda Panitz

Scientist Sees Art As Complement

Janda Panitz, whose paintings are on exhibit in Sandia's Technical Library through June, has a PhD in theoretical physics and, as a staff member in Process Metallurgy Division 5833, does experimental work on thin film and surface metallurgy. As a painter, she belongs to the school called "magic realism."

"That's a hard term to define," she says. "It owes something to surrealism, something to superrealism—but essentially it means trying to inject a sense of time and emotion, of memory and anticipation, into a strong facsimile of reality."

Many of her paintings are of actual scenes, like the view of tile rooftops in the mountain village of Fornalutx de Mallorca. "My husband and I were visiting his cousin, Manuel de los Santos, and this is a view from the balcony of Manuel's house. Mallorcan village life tends to be a closed society and in the short time I was there, I had no opportunity to become a part of that society. So I felt a strong sense of isolation. You'll notice there are no people in the painting and no doors or windows. That's the way I chose to project the feeling I had that everything was closed to me, a mystery."

Janda's interest in both art and science go back to childhood. "My grade school and high school notebooks were full of drawings of horses, trees and automobiles," she says. "In college, I still did drawings, but they were smaller—tiny sketches in the margins of my notes from math and physics and chemistry courses."

Her interest in painting began after she finished her degree work at Penn State and moved to Albuquerque with her husband, John (a physicist in Surface Physics Division 5114). After seeing the work of Richard Maitland and Bill Forsythe, two Santa Fe painters, Janda began to work in

John Gardner, library resource analyst in 3140, arranged the exhibits that have been gracing the entranceway of Bldg. 804 for the past couple of years. He's always on the lookout for Sandia artists (any medium that can be hung on display boards) who would like to exhibit their work. You can contact John at 4-8869.

acrylics, a medium she handles with obvious skill.

"I began as an art forger," she explains with a smile. "I copied paintings I liked, discovering as I went along how the artists had achieved effects I admired."

Janda's paintings reflect her travels. She and John have traveled in Northern Europe, the Mediterranean and in the Yucatan—and they've hiked and explored New Mexico. Many of Janda's paintings reflect the long horizons of the Southwest—and the sense of lonely isolation those horizons sometimes create.

"Professionally, I'm a physicist," Janda told us, "and art is like a vacation from the structured world of the lab. I read somewhere that science is primarily a function of one side of the brain, and art primarily the function of the other—but they definitely complement one another."

"Your art seems structured, too," we pointed out. "All the elements seem very carefully selected and very precisely rendered."

"That's me," Janda said. She smiled a little wistfully. "I've tried to lay on paint with a palette knife like the expressionists. But by the time I'm satisfied, the paintings always end up looking like the ones that are on exhibit right now in the library."

• cec

ISE '80 Symposium Features Sandians

A technical symposium, *Microprocessors: New Directions For Mankind*, is one of the highlights of the second annual electronics show (ISE '80) scheduled for the Albuquerque Convention Center May 13-15. Several Sandians will make presentations or chair sessions.

The overall sponsor for ISE '80, the second annual electronics show devoted to new ideas in science and electronics, is the N.M. Chapter of the Electronics Representatives Association. The symposium is sponsored by the Albuquerque Section of IEEE.

Arlin Cooper (2612) is overall chairman of the symposium and is chairing the background session on May 13, 2-4 p.m. Chuck Gwyn (2110) and Bob Gregory (2140) will discuss microprocessor development and future trends.

On May 14, Jim Jorgensen (2116) will talk about game and toy applications of microprocessors in Session 2 (9-10:30 a.m.), Steve Gossage (2648) will chair Session 3 on computer applications (10:30-noon) and Cliff Harris (2331) will chair Session 4 on data acquisition and communication equipment (1-3 p.m.). Session 5 on microprocessors and education will be held from 3-5 p.m.

In addition to the symposium, a user/buyer/seller panel is scheduled and over 300 exhibits featuring electronics, electro-optics, scientific and laboratory equipment. More information at 266-5202 or from the Sandians scheduled to participate.

Albuquerque Museum Opens Railroad Show

The Albuquerque Museum has opened its largest historical exhibit, "New Town and the Railroad Boom Years, 1880-1912," depicting the life styles of the residents of "New Albuquerque" during the early growth years when the railroad came to town. "This exhibit will be a chance to experience what life was like in New Albuquerque when the business, social and day-to-day life centered around the railroad," says Byron Jackson, the museum's curator of history. The city museum, located at 2000 Mountain Rd NW, is open Tuesdays through Fridays, 10 a.m. to 5 p.m., and on Saturdays and Sundays from 1 to 5 p.m. There is no charge.

Sandia Retirees Honored

Retirees Felix Padilla and Dick Strome who have achieved local, state and regional reputations as fine artists, were honored recently at the Centennial Reunion of Albuquerque High School. They were among those honored as outstanding alumni. Albuquerque High celebrated 100 years of operation.

Fun & Games

Yoga—Guru Deep called to report his next "Slim/Trim Yoga" class, to begin Tuesday, May 6, 5 to 6 p.m. at the east gym, running for eight sessions. Guru Deep says you'll achieve "relaxation, sleep less but have more energy, and gain other benefits from the mild exercises." It's \$24 for the class, and you sign up by showing up for the first session.

* * *

Swimming—Shortly after we published our item in the last issue concerning lap swimming at the Olympic Pool, the *KAFB Bulletin* published this happy note: "Olympic Pool Closure. On 23 May 80, the Olympic Pool will be closed for the summer for maintenance/repairs. The pool will reopen 6 Sep 80." So much for lap swimming. As many will recall, the military closed the Olympic Pool last summer for an identical purpose. For the 22 people who wrote to us to express their interest in lap swimming, it looks like the north pool within the C-Club patio is it, with lap swimming from 11 to 1 and 5 to 6 on weekdays. Membership is \$5/month, with a pool surcharge of \$20 for the season. The "annex" (the former NCO pool), is reserved to members of the Coronado Aquatic Club. We have discussed the Olympic Pool closure with our military contacts, and it appears that continued operation is simply too costly in terms of the number of people using the facility. With other military and civilian pools available during this period, closure is felt to be justified.

* * *

Running—LAB NEWS is willing to publicize running events and to pass out entry blanks, but we can do neither when no information is provided. A request: if you come across an entry blank(s), send us a copy—we'll take it from there.

YOU've never seen puppies and a little girl in the LAB NEWS, right? That's because para. 83b of our editorial policy says "No puppies" and 83c says "No kids." But it says nothing about puppies and kids and anyway this is a special case. Seems that the occupants of T39-T41 (the metal buildings east of the Credit Union) were taken aback one morning to discover that a certain lady dog had taken up residence under T41 and given birth to four puppies, one male, three females. Gene Runkle (4413) learned that the military have a straight-forward policy in these matters, immediately dispatching all such animals to the pound. So soft-hearted Gene took 'em all home and turned to LAB NEWS. Hey—how about a nice white puppy with black and brown spots and soft brown eyes? Lineage: guaranteed 100% Amalgam. That's Gene's daughter Katie with the litter. You can reach Gene on 4-7339.



Dirt Bike Racing—If off-road motorcycle competition seems like a good way to spend a Sunday, you're in luck. Bob Lassiter (1758) called to remind us that the 4th annual 100-mile (or less, depending on class) desert race promoted by Southwest Off Road Enterprises (S.O.R.E.) is scheduled for Sunday, May 18. Riders meet at 7:30 a.m. at the start point: 20 mi. NW of Bernalillo on NM 44 and follow the signs. Race starts at 8:30 a.m. Entry fees are \$20 a rider in all classes prior to May 10 and \$25 after that. There'll be cash prizes in some categories and trophies in others. More info and entry forms from Bob at 4-7798 or 298-2461.

* * *

Sandia Softballers—Come out to Manzano Field (at Manzano Base) with rake and shovel on Saturday, May 3rd, starting at 8 a.m. Purpose: field cleanup. Skip is bringing something to assuage your thirst.

* * *

First annual state women's soccer cup competition is Saturday, May 11, at Bullhead Park (San Pedro and Gibson), according to Pat Newman (3144), President of the N.M. State Soccer Association. Matches begin at 9 a.m. Rosie Montoya (3612) says her team, Academy Motor Griffin Soccer Club, will sponsor a food and drink booth in conjunction with the May 11 event to raise travel expenses so the team can represent New Mexico in the Dr. Pepper Texas Open Soccer Cup competition May 24-26, which draws teams from Canada, Mexico, Germany and the U.S.

* * *

Sandians are eligible for membership in the Kirtland Aero Club and are invited to an open house May 10 offering free snacks and five-cents-per-pound airplane rides.

The club is located on the west side in Base Operations Hangar 333.

The open house is part of a general membership drive for the group. The normal \$25 initiation fee is reduced to \$10, and private pilot ground school tuition is reduced from \$75 to \$25. Student pilots who sign up for the private pilot course receive their first flight lesson free. For more details, call 4-0884 or 242-4184.

* * *

Railroading—The Cumbres & Toltec Scenic Railroad in Chama, New Mexico, opens for the summer on June 14. This narrow gauge, steam engine train is owned jointly by the states of New Mexico and Colorado, and its track goes through some of the prettiest high country in both of these states. LAB NEWS has a small quantity of the C&TSRR brochure/schedule; call on 4-1053 if you want one.

* * *

Arts & Crafts Center—Located on Kirtland West in Bldg. 954, the new hours of operations are as follows: Sunday, 12 to 5; closed on Mondays and Tuesdays; Wednesday and Thursday, 1 to 9; Friday, 9 to 1; and Saturday, 9 to 5.

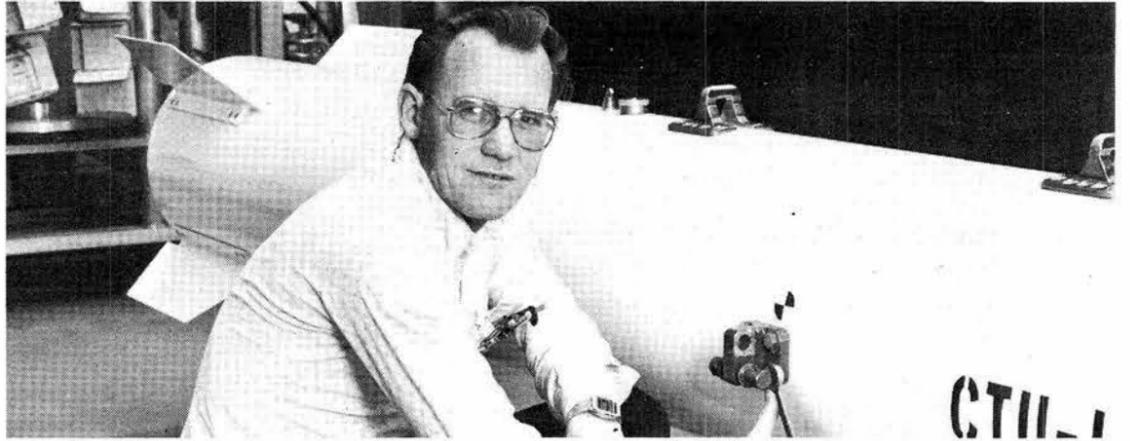
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Skiiing—Milo Navratil (1584) dropped off a copy of the "Taos Ski Valley Master Development Plan," and interested Sandians can review the ambitious proposal here in the LAB NEWS office. Milo says the Forest Service is still accepting comments on the plan. It calls for eight new lifts, expanded parking lots, construction of a service station and garage, an up-mountain restaurant, a shopping mall, additional commercial, condominium and second-home development, and more. TSV says they'll limit the number of skiers to 4800. Opponents of the plan say the sewage system won't take it.

MILEPOSTS

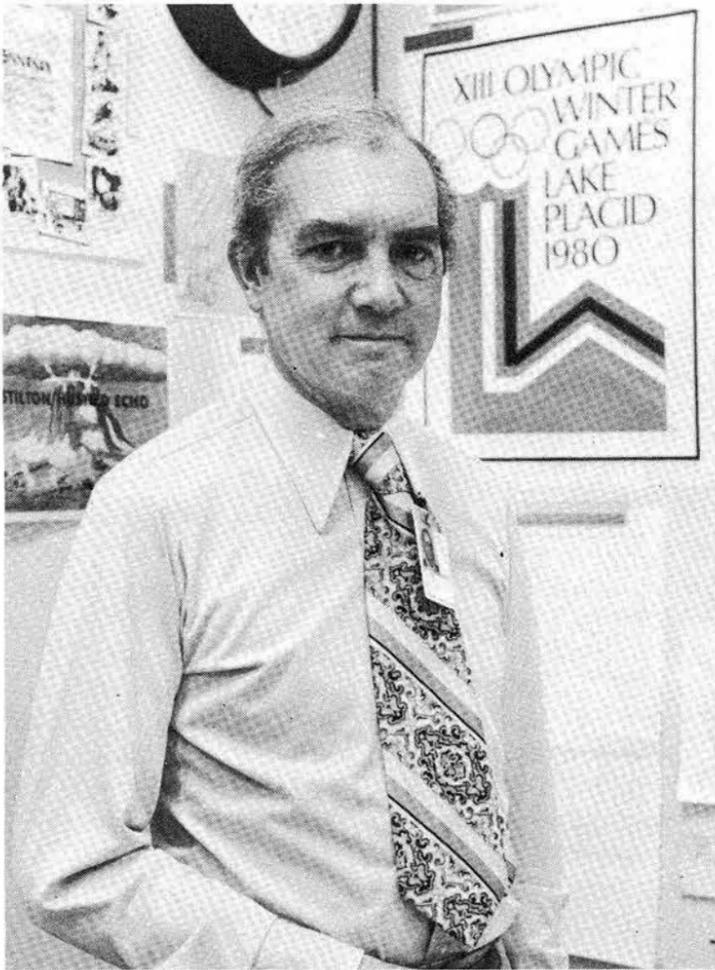
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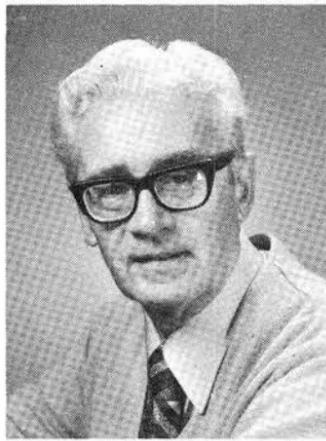
John Tootle - 8412

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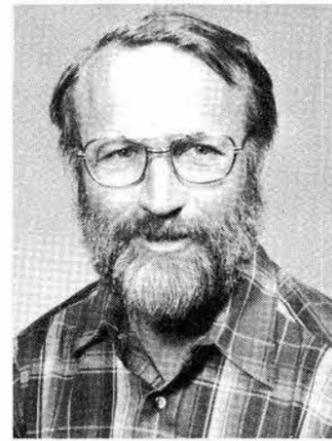
Allen Church - 1132

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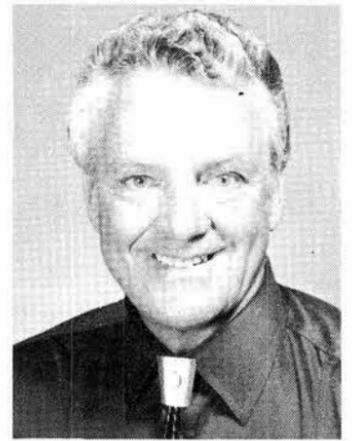
Allen Danielson - 8271

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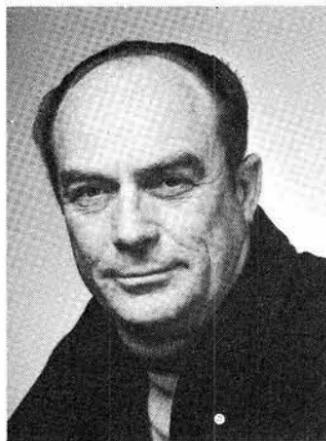
Eric Jones - 4214

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Jack St. Clair - 4741

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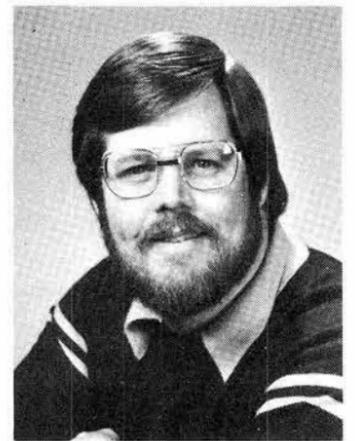
Wayne Townes - 8257

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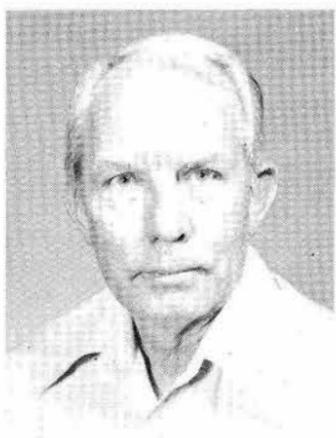
Glenn Kuswa - 4240

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Durwood Green - 8413

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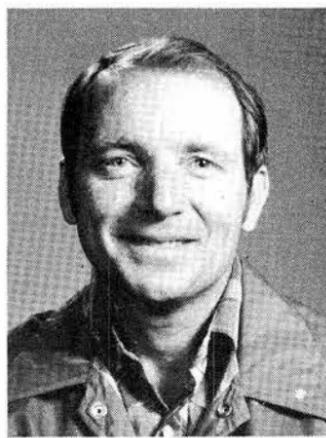
Brad Sanders - 1481

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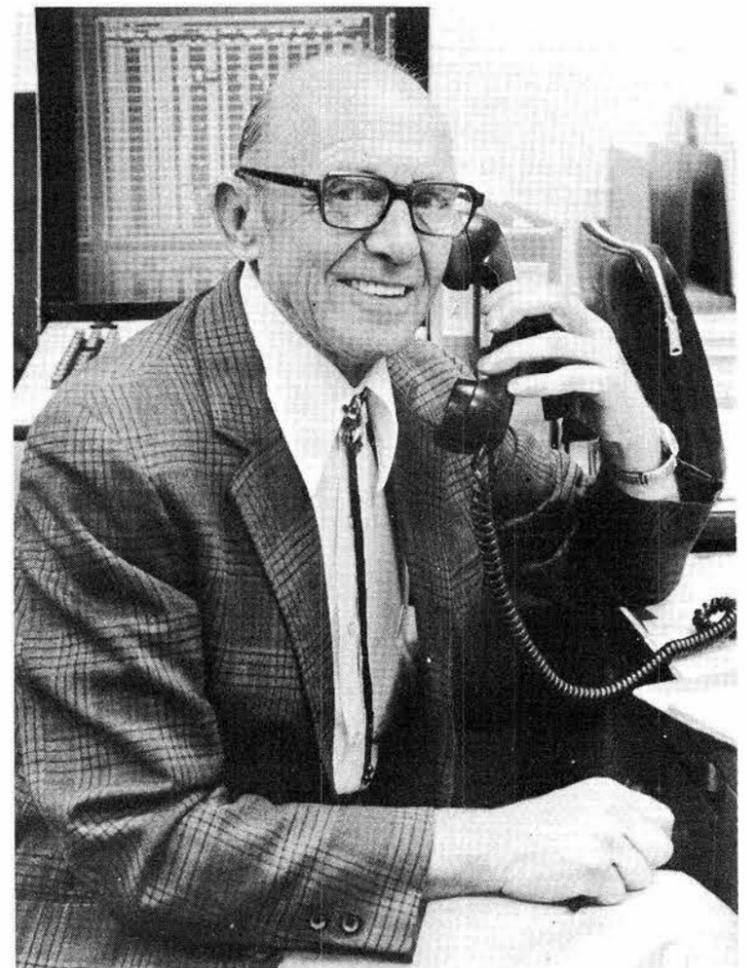
Jesse Allen - 1761

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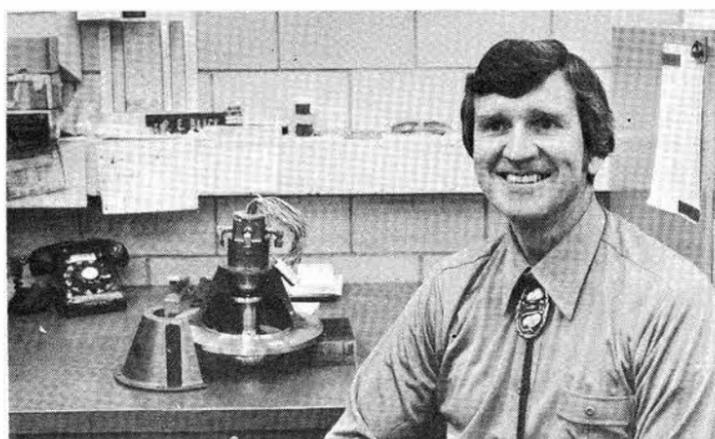
Dick Curlee - 4731

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Grant Johnson - 3742

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Rolyn Baack - 1426

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Fay Spellman - 3155

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Retiring



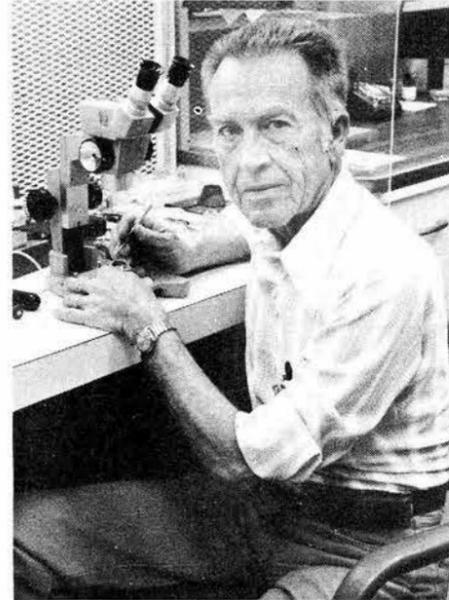
Virginia Barrett (6010)



Daniel Eaton (1481)



Dorothy Gray (2431)



Larry Estabrook (2324)

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RULES

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

MISCELLANEOUS

GIVING AWAY small dog house. McCaughey, 292-3144.
 SIMMONS baby crib, \$75; 19" B&W Magnavox TV, needs adjustments, \$60. Brewster, 898-0144.
 AKC reg. Cocker Spaniel, 1-yr.-old, blond male, \$100. Gourley, 296-5700.
 FOUR-place burial lot #6 in Sandia Memory Gardens' Garden of Mercy area, \$800. Herrmann, (214) 836-2752, Oak Hill, Texas.
 CONTOUR CHAIR, power glide, ivory w/walnut legs, cost \$500, sell for \$225. Dean, 256-9633 evenings.
 OLHAUSEN 4 1/2 x 9 pool table, 1" thick slate top, oak frame, w/balls & sticks, \$850 or best offer. Lucero, 293-6205.
 TWO screen doors w/hardware, 36"x80", one LH, one RH, \$5 ea. or both \$8; Diesel engine motor oil, Texaco 20W & 30W, 60 cents/qt. Stuart, 299-9190.
 VANITY, mahogany, 70 yrs. old, \$90; oak rocker, \$80. Stinnett, 821-2750.
 LAWN MOWER, self-propelled side-bagger w/bag, recent tune-up & valve job, \$30. Simmons, 298-8510.
 WHIRLPOOL port. or built-in dishwasher, \$60; Whirlpool AC, 5000 BTU, window type, \$125. Prevot, 864-3816.
 BRAIDED oval rugs: approx. sizes: 9x12', \$35; 6x9', \$20; 11 1/2x15 1/2', \$75; 8'x22" runner, \$10. Sell separately or any combination. Fisher, 298-0526.
 CAMERA, Pentax SP-100 SLR, case, \$120. Downs, 294-5283 or 293-9320.
 PIANO, Hobart M. Cable, console size, mahogany, \$900. Berman, 296-5640.
 METAL SECRETARY DESK, RT return, arm chair, 25" 4-drawer legal file w/lock; misc. office supplies. Watkins, 265-6379.
 4-D78-14 at \$2, 3-670-15, 6 ply, 2 hwy, 1 M&S, at \$3; 4-670-15 tubes at \$1.50. Baxter, 344-7601.
 WIND deflector for vehicle pulling a travel trailer, Trail-eze brand, \$40. Beegle, 296-5300.
 DOG HOUSE, medium size, 18"x27", \$20. Miller, 268-5992.
 SOFA, avocado green, rollers, \$100; 36-cup coffee maker, Tricolorator

brand, \$10. Smith, 299-7151.
 NORGE HD gas dryer, 20,000 BTU DGJ-7520B-4 w/flex-gas pipe, \$125; Whirlpool washer, LKA5600WO. Poole, 299-2642 after 3.
 SOFA sleeper, queen size, almost new, \$250. Gross, 821-3761.
 CARPETS: 9'x12' avocado green area rug w/pad; 8 1/2'x11' gold carpet, bound. Koski, 822-1122.
 REFLECTIVE window shade, spring roller, 103 wide, 72 high, bronze color, 78% reflectivity, \$30. Rainhart, 821-3690.
 MUZZLE LOADER BALLS: all popular sizes, hand-casted & wax fluxed, min. order of 100. Alger, 294-6259 after 5.

RANGE, gas, 36", make offer. Perea, 255-7831.
 SKATEBOARDS: Hightail Road Rider sixes, Bennet pros pads/tape, Sims 10"x30", ex-trackers, c-sixty-five kryptonics pads/tape, best offer. Tolman, 296-8239.
 PANASONIC stereo radio, RE-7412, w/separate 5x7 speakers, \$35; BSR-4800-AX record changer w/ceramic cartridge, \$15. Von Riesemann, 884-7954.

HEAD PRO tennis racket, 4 1/2 M, w/Garcia gut, \$28; 3.00-21 Trails tire, \$7. Healer, 298-6967.
 HARD TOP for CJ-7, white, w/doors, \$650; 14" rims & hubcaps from Datsun 280-Z, make offer. Furry, 294-6349.

DALMATIAN puppy, 6 mos., to good family. Wesenberg, 293-0506.
 INFINITY speakers; classical records & tapes; Sears Bugwacker; tool grinder; rain jet sprinklers. Norris, 877-6415.
 SMALL COUCH, turquoise herculon cover, \$60; 8-track Panasonic, plays & records, \$25. Maxwell, 296-1977 or 299-2027.

JUNGLE GYM, \$50; 2-burner Coleman stove, \$15; dbl. mantle lantern, \$10; some fuel for stove & lantern. Worrell, 299-0381.

ANTIQUÉ flax spinning wheel in working order; wool winder; maple poster bed, can be used dbl or queen. Parks, 884-7475.

ROTATING TV antenna, elec. motor, wire, control unit, \$20. Pate, 293-5393.

SINGER Stylist sewing machine & carrying case, \$275; ladies sapphire & diamond ring, size 5 1/2, \$200. Cowgill, 293-4386.

GARAGE SALE: May 3, 8:30-4, 428 Wellesley Pl./Dr. NE, appliances, furniture, dishes, kitchenware, more. Birdseye, 255-6328.

PINBALL machine, \$165; queen-size mattress & box springs, \$75; Kenmore sewing machine. Mercer, 821-6449.

BALLOON club membership; try hot air ballooning & share expenses. Hansche, 281-5623.

SEARS 9" radial arm saw, \$120; 13-gal. humidifier, \$50; apt. gas stove, \$25, couch, \$50. Tucker, 299-7711.

CARPET, 5 yrs. old, 23 yds., brown & white sculptured, 33 yds. gold sculptured. Hendrick, 296-2163.

CARPETING, used: 45 yds. green plush; 20 yds. lt. blue plush, best offer. Manteuffel, 281-5992.

KENMORE sewing machine in cabinet, cost over \$400, includes all cams for fancy stitches, \$100. Barton, 265-8607.

MINK STOLE, recently appraised by Lauer Furs at \$650, sell for \$300. Baack, 296-2312.
 2-PIECE sectional corner table & lamp, \$85; 4- & 5-drawer chests, \$50 for both; twin bed, complete, \$45. Stang, 256-7793.
 CHIMAYO wall hangings, 19 1/2"x65", predominantly gold-yellow, \$25 ea. or \$45/pr. Gregory, 268-2022 after 5.
 CAMPER SHELL, LWB, w/vertical door, curtains & bed; 500-lb. steer; geese. Dees, 869-6949.

TRANSPORTATION

'60 JEEP, 4-cyl., cloth top, tow bar, roll bar, lock out front hubs, \$1495. Hayward, 294-7278.
 '78 KZ 200 Kawasaki, 2000 miles, 70 mpg, adult ridden & care, \$900. Gourley, 296-5700.

'75 SCOUT II, 4x4, 304 V8, 49,000 miles, new brakes, many extras, \$3500. Riney, 299-1457.

'75 CHEVROLET, SWB truck, 6-cyl., 4-spd., roll bar, new paint, white, spoke rims, radio, CB. Gurule, 898-1574.

'71 FORD F100 pickup, 302, 3-spd., SWB, 18 mpg, shell, \$1350. Martin, 869-2049.

'63 FORD Fairlane 500, rebuilt 6-cyl. & trans., new tires, \$650. Keim, 345-4653.

BICYCLE, ladies, 3-spd., 24". Stinnett, 821-2750.

'77 DODGE Ramcharger, 4-wd, AT, PS, PB, AC. Tenorio, 867-5341 after 5.

'78 CHEVY Big 10, AC, PS, PB, deluxe fiberglass camper shell, Easy-Lift hitch, 28,000 miles, take trade; 23' Prowler, self-contained, \$3900. Roeder, 865-5600.

'64 T-BIRD, full power & air, best offer over \$3000. Lawrence, 344-9973.

'59 METROPOLITAN, 30 mpg, original paint. Jeys, 266-0687.

'75 CHEVY pickup, C10 Custom Deluxe, 8' bed, gauges, shell top, tow bumper, \$2000. Gross, 821-3761.

BOYS' bicycle, Schwinn Varsity, 10-spd., 17" frame, 24" wheels, \$65. Palmer, 299-5082.

FIELD & STREAM motor home, 24', Dodge 440, loaded, low mileage. Richardson, 243-4759.

18' POWER BOAT, Tahiti, 325 HP Olds eng., 180 total running hrs., Berkely jet drive, HD tandem trailer, \$5500. Perryman, 294-6113.

'78 CORVETTE, many options, low mileage, will consider trades of lower value. French, 821-6144.

'69 CHEVY 1/2 ton pickup, 70,000 miles, 3-spd., LWB, 307 V8, \$1300; '71 Toyota Hilux 1/2 ton pickup, 93,000 miles, 4-spd. std, \$1500. Peterson, 877-6398.

'74 BUICK Regal, AC, PS, PB, 37,000 miles, \$2050. Montry, 821-3758 after 6.

10-SPEED Motobecane, Soutour derailleurs, alloy crankset, used 3 mos., fits person 5'9" tall, best offer over \$80. Lagasse, 299-8357.

PLYMOUTH slant-6 w/new steel radials; stereo; Zenith B&W TV; furniture; many items. Trowbridge, 293-1073.

'77 SUZUKI, GS 400-B, \$800; Bell helmet, black, extra visor, worn once,

\$100. Clem, 296-5204.
 '69 AMERICAN MOTORS Rambler, 6-cyl., AT, AC, Michelin radials, 30,000 miles, \$1800. Tucker, 299-7711.
 '76 HONDA motorcycle, 360 CB, 3500 miles, \$1000 or trade for good-running small truck—Datsun, Luv, Courier. Herrera, 836-1768.
 '75 SUZUKI, GT550, fairing & bags, 5000 miles, adult ridden & kept garaged. Norwood, 292-0072.
 '77 PACER, 38,000 miles, PS, AC, AM/FM tape, radial tires, \$3095. Hendrick, 296-2163.
 '57 CHEVY Belair 4-dr. HT, AT, PS, all stock. Graeber, 298-0662.

SAILBOAT, 12' Cardinal, 5' beam, 20" freeboard, lateen rig, Dilly Trailer, Evinrude outboard, \$750. Curzi, 296-5386.

'64 CHEVY pickup w/long stepside bed, 3-spd. on the floor. Dees, 865-6359.

REAL ESTATE

3-BDR. in Cedar Crest, 1 acre, view, horse corral, 13 miles to Sandia, 2 fps, good water. Hansche, 281-5623.

ASSUMABLE 9 1/2% VA, 4-bdr., 2 bath, dbl. garage, landscaped, storage bldg, walk to schools, NE. Wright, 294-7460.

MOUNTAIN PROPERTY, Deer Lake Estates, San Pedro, wilderness, hunting, fishing, camping, elec., well, \$10,000 cash or 1/2 down, 1/2 at 10%. Brown, 821-3636.

3-BDR. HOUSE, 1 1/2 bath, LR, DR, kitchen, den, utility, 2-car garage, many extras. Bailey, 298-0517.

MOUNTAIN PROPERTY, 10-20 acres in pines, stream frontage, county road access, 13 mi. west Las Vegas, \$1400/acre. Muir, 883-7933.

3-BDR., LR, den w/fp, dbl. car garage, storage shed, on cul-de-sac near Indian School & Chelwood. Gallegos, 298-9235.

FOR RENT

LARGE 1-bdr. house, fenced lot, lg. garden area, elec. paid, \$230, 517 Virginia SE (near Wyo. gate). Li-guori, 256-3613.

NE, 3-bdr. house, den, fp, walled yard, sprinklers, appliances, new kitchen & bath, \$380/mo., no pets. Morrison, 266-3139.

CONDOMINIUM, 2-bdr., carpet, appliances, garage, heated swimming pool, near Juan Tabo & Menaul, \$275/mo. Priddy, 884-8392.

FURNISHED or unfurnished 1-bdr. + den or 2-bdr. home, lease 6 mos. or longer, fenced yard. Neas, 883-0178.

2-BDR. APT. Lomas & Juan Tabo, private storage, carpet, drapes, appliances, w/d hookup, no pets, \$220/mo., water paid, \$200 DD. Chen, 298-2422 or 292-5139.

RV or boat storage space. Far NE off Louisiana. Gray, 821-8617 after 6.

3-BDR. HOUSE, 2 bath, lg. den w/fp & permanent bar, garage, carpeted, fenced, \$375/mo. + utilities, \$150 DD, 11001 Haines NE. Gallegos, 344-3290 after 5.

3-BDR. townhouse in NW, available June 1, enclosed patio, trailer stor-

age, shop & pool, \$350/mo. w/lease. McCaughey, 268-6855.
 2-BDR. apt., unfurnished, near Indian School & Juan Tabo, pool, carpet, drapes, all appliances, storage area, \$240. Tyner, 294-5289.
 2-BDR. furnished apt., garage, refrig., washer/dryer, 1 mile from Wyo. gate, \$250/mo., \$100 DD, water paid. Field, 281-5650 after 6.
 3-BDR. HOUSE, 2 yrs. old, El-Dorado neighborhood, drapes, fp, all appliances, sprinklers, 2-garage, workshop, avail. mid-May, \$425. Blewer, 268-9019.

WANTED

USED push type lawn mower. McFadden, 892-6167.

OUTDOOR horseshoe set. Stuart, 299-9190.

BICYCLE, single speed, full size, girls' preferred, condition not important but must be cheap. Long, 296-2590.

3RD housemate to share 4-bdr., 3-bath, 4 Hills home, nonsmoker, \$183/mo. plus. Gorsline, 265-9569 or 292-1626.

CAMPER AWNING; wet suit (6-2, 180). Baxter, 344-7601.

HORSE TRAILER, 1- or 2-horse size, any condition. Jones, 281-3617 after 5.

USED classical guitar, broken neck OK if price is right. Dumas, 268-3403.

HOUSESITTING or inexpensive rental during summer for grad. student from MIT, start date: June 9, reliable references. Lagasse, 299-8357.

UNDER-THE-BED spare tire carrier for Chevy pickup. Aragon, 294-0225.

EXERCISE CYCLE. Lundergan, 294-7533.

B&W TV, 4" to 8" screen, any condition. Mayer, 294-3368.

1950 CHEV. shop manual. Sandy, 883-5872.

GOOD to high quality lightweight bicycle, 10-12 spd., 23" to 27" frame. Vollendorf, 293-7161.

METAL storage shed, approx. 7'x10'; used radial tire, HR78x15. Hall, 298-8617.

SHARE-A-RIDE

Third person in a two-person carpool from Rio Rancho. McFadden, 892-6167.

VANPOOL service from Rio Rancho and Corrales Shopping Centers and Paradise Hills to Sandia, \$2.50 for round trip. Pace, 897-2396.

LOST AND FOUND

MISPLACED at Tijeras Arroyo, Wilson Tour Special putter, tan leather grip, flange blade w/lead tape, reward, NQA. Underhill, 294-5774.

LOST—Pocket size Texas Ins. calculator in black case, brown Sandia briefcase, orange gloves, 2 keys on leather strap, 5 keys on key ring, red & white baseball hat, silver dessert fork, man's brown wallet.

FOUND—Silver bracelet, multi-colored scarf, wool belt, ladies' white 10-spd. bike, black plastic glasses (6MSA) & 46-20. LOST AND FOUND, Bldg. 814, 844-5677.

Youngblood Tonight, Clowns Tomorrow

TONIGHT at Happy Hour, the Club's famous steamship round of beef is the buffet feature, Gary Waters entertains in the main lounge and Youngblood plays for dancing. Next Friday, May 9, the buffet feature is all-you-can-eat catfish, Gary again works in the lounge and Lower 40 Grass plays bluegrass and country style. To reserve buffet tickets, call the Club office, 265-6791, by mid-week.

TOMORROW at Variety Night, the Police Athletic League Clowns perform a big show of skits, magic and juggling. The movie is an oldie but goodie—Shirley Temple in *Little Princess*. Admission to Variety Night is free to members and families. Super sandwiches are available at 6, the show starts at 7.

SANADO WOMEN plan a biggie dinner dance Saturday, May 10, with veal cordon bleu topping the menu and Shalako holding the bandstand. Call Donna Urish, 299-1456, right now to find out about reservations.

ANNUAL FIESTA of the Coronado Club is scheduled Saturday, May 17, with a Rio Grande style Mexican food buffet planned, entertainment by the Mariachi Nuevo Tapatío and dancing to a group called Together. Tickets (\$6 for members) should be picked up by May 10.

THE TWIN POOLS open May 24 quietly with the big bang grand opening celebration set for the next day, Sunday, May 24. It's an all-day party—games for the kids, recreational swimming, special events and Happy Hour prices in effect from 11 a.m. to 6 p.m.



SQUARE DANCE CALLERS John Lewin (4445), Dick Siebenforcher (3213) and John Cronin (1473) will be among 1600 dancers descending on the city May 16-18 for the 33rd annual New Mexico State Square Dance Festival at the Convention Center. Louis Narvaiz (2655) is vice president of the state organization and is co-chairman with Charlie Clendenin (2611) of the meet. Mike Michnovicz (2432) is hospitality chairman.

TRAVEL—Two trips are scheduled to the Coronado Club South—the Playa Mazatlan—Nov. 3-10 and Nov. 10-17. See Travel Director Frank Biggs (4231) in the lobby tonight between 6 and 7 for the full package information and details on other trips now in the planning stage. If you have travel ideas, Frank will listen. He can also help you with rental cars in Europe and special fares to Hawaii.

FLASH—At press time, Frank called with the announcement of a new Caribbean Cruise for June 7-15. This is a standard luxury cruise with air fare, stopovers in the Caribbean islands and the works for \$798, a bargain price. There are just a few berths available, so talk to Frank in the lobby tonight.

Also, the dates on the Washington, D.C., package have been set—Oct. 1-5 with the price depending on the options you choose.

Chutes Get New Lease On Life

A weapon chute that ends up in the Salvage Yard doesn't have much to look forward to. Fifty or so feet in diameter, heavy, shaped like an inverted porridge bowl, the chutes are slow movers (no pun intended) in the parlance of merchandising.

Along comes Dave Miller (2525), a bit preoccupied with a problem. A Sergeant 1st Class in the Army Reserve, Dave and his outfit—the 423rd Service & Supply Battalion—are scheduled to take part in some large-scale war games in the Mojave Desert. But they don't have any camouflage netting, and the Army Reserve is too strapped for funds to help out. As logistics NCOIC (which stands for Non Commissioned Officer in Charge), Dave worries about war gaming without camouflage.

In the military, you don't enter the higher ranks of sergeantdom without having honed a skill variously termed cumshaw, scrounging, and other descriptors less polite. And so it came to Dave that Sandia's Salvage Yard just might have what the Army needed. He talked to Ben Armijo of Reclamation (3418), filled out a bunch of forms and, presently, the 423rd S&S Battalion took possession of nine B53 chutes.

There was one small hitch. The chutes were shiny white and Dave wasn't expecting snow in the Mojave. So he "leaned a bit" on some other contacts and got some paint. Then came the real work. "Painting them was one hell of a job—all that stooping gets you in the back," Dave explains.

But painted and striped they finally were, and SFC Miller and company took off for maneuvers in the Mojave. The camouflage chutes were draped over their tents and vehicles. "Worked real good," says Dave. "Now we have to paint the reverse sides—make 'em resemble New Mexico. You wouldn't have a little extra brown paint around . . .?"



SERGEANT FIRST CLASS Dave Miller (2525) and camouflage netting that began life as a chute for the B53 weapon. An Army Reservist, Dave was chief in charge of chute acquisition and conversion.