

Test Cells Simulate Corrosive Environment

The nation has lots of coal, in fact, about half of the world's known supply. The nation's natural gas supply is dwindling. Coal can be converted into synthetic gas.

But the conversion process is not yet commercially feasible. One of the obstacles is that coal undergoing gasification (by the addition of steam and oxygen) produces gases that are highly corrosive. The gases can actually destroy the hardware—called "internals"—used inside the gasification towers.

Understanding this corrosion process, and testing alloys that may survive the corrosive atmosphere: these are the goals of an ERDA Fossil Energy-sponsored set of experiments being conducted by Larry Weirick (8312) and Bob Bradshaw (8813) on alloys designed by Ron Stoltz (8314).

Two 1000°C corrosion test cells have been constructed. Both cells are about the size of a quart bottle. One cell subjects test samples to corrosive gases at ambient pressure, the other at high pressures (1000 psi, or almost 7 MPa).

Both cells can subject a test sample to various combinations of the gases given off by coal during gasification. The high-pressure cell is connected to an on-line gas chromatograph that provides a continuous recorded analysis of the gases within the test cell.

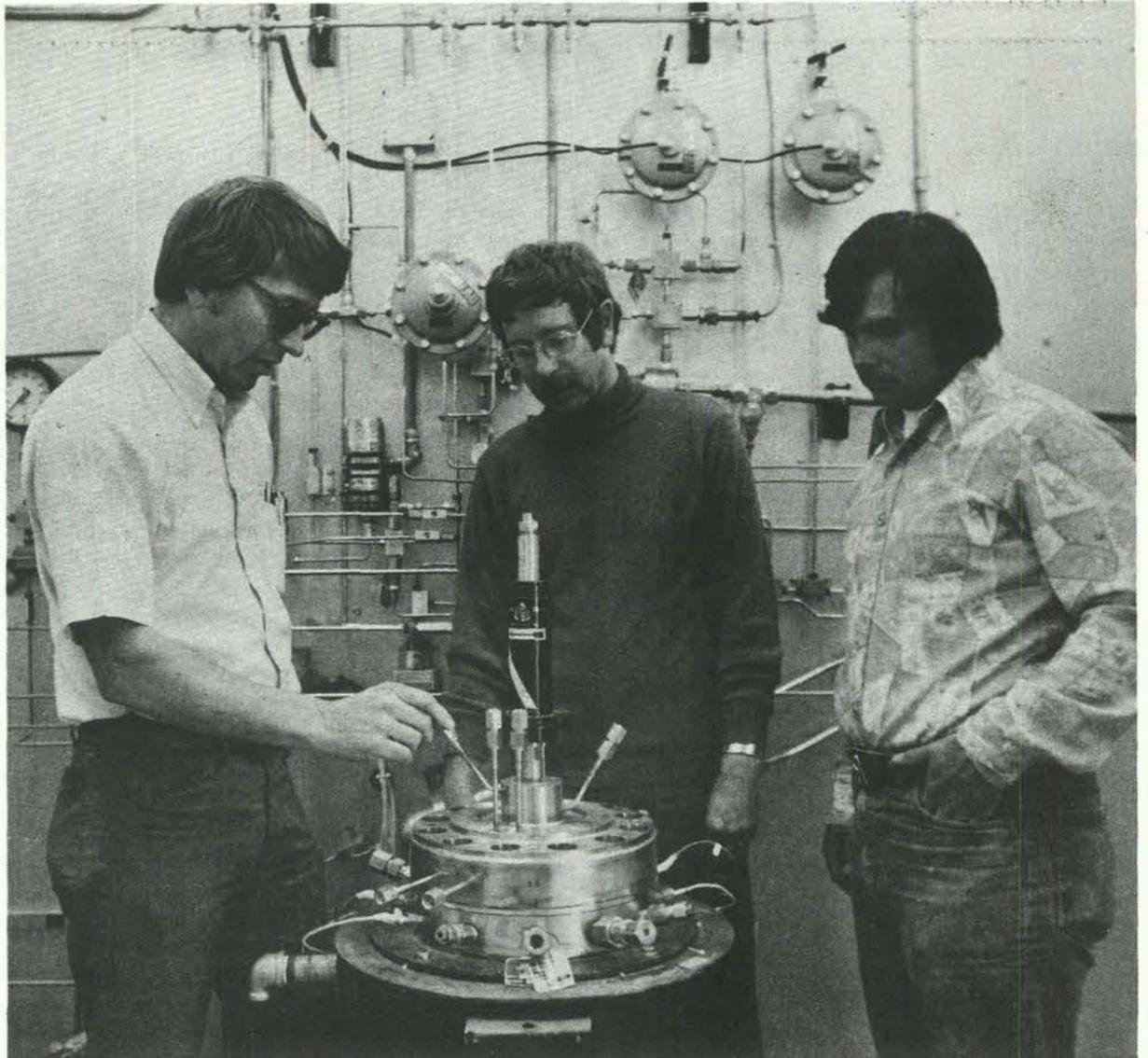
"In these tests," says Bob, "we're not looking for an alloy that *won't* corrode—that's unrealistic. We're looking for one that forms a protective scale and, if that spalls off during thermal cycling, would heal itself; that is, form another scale with minimal additional corrosion of the alloy."

Ceramic coatings can protect an alloy against corrosion, but they lack this rehealing characteristic if the coating is lost.

"Making the search even more difficult," says Larry, "is the need to test alloys at high temperatures and pressures for long periods of time. We plan to develop a material suitable for internals that can survive 1000 psi at 1000°C when tested for 1000 hours. If a material survives Bob's test cell at ambient pressure and high temperature, then we'll expose it in the high temperature, high pressure cell."

Materials currently being used in experimental coal gasification plants or being evaluated in other ERDA/FE programs are far from meeting the 0.002 inch (.05 mm) per year rate of corrosion currently proposed. In fact, some materials diminish at the rate of a quarter-inch in 10 hours. It's true that erosion as well as corrosion is involved. In addition to corrosive gases, coal contains particulates which erode. "But," says Supervisor Don Adolphson (8312), "if we can't solve the corrosion problem, there's not much use in worrying about erosion."

In addition to the Sandians who will be



THREE of the many Sandians involved in the high temperature test cells project. Here, cell designer Leon Seibel (8312) explains the working end of the high pressure cell to project engineer Larry Weirick (also 8312) and Pete Roybal (8314), who designed the facility in which the cell sits, including the complex plumbing system.

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Energy Subject of ERDA's 'Science NOW' Program

Arlyn Blackwell (8110) was featured speaker at "Science NOW" in a recent program sponsored by ERDA's Nevada Operations Office to recognize outstanding students in science and mathematics from high schools in the Las Vegas and Nevada Test Site areas.

Purpose was to encourage student interest in scientific fields, especially in those related to energy. Area teachers also became acquainted with ERDA's national goals and programs and its educational resources.

Arlyn's talk was entitled "Energy Use and the Potential for Conservation."

Sympathy

To Jess Floyd (8257) on the death of his father in Dalton, Ga., May 3.

using the cells, researchers from Lockheed and Lawrence Berkeley Lab are expected to submit alloy samples for testing under the severe test conditions that the cells simulate.

Take Note

Gertrude Williams, EEO and Women's Coordinator at SLL (8212), served as sessions leader during a recent career planning workshop sponsored by the Society of Women Engineers in Santa Barbara. Objective of the workshop was to acquaint women professionals and students in engineering and science with the proper tools to put their careers in motion. Gertrude led the sessions on "Résumé Preparation and Job Negotiation" and "Dealing with Discriminatory Attitudes."

Sandia/Livermore acted as host during the Career Day sponsored for high school students by the Twin Valley YMCA and Men's Club in cooperation with the Livermore School District. Aim of Career Day is to give students a first-hand look at career or profession they might like to pursue. Over 100 students participated along with some 60 Livermore Valley business people.

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'Bond-a-Matic' New Bond Drive Feature

All Sandia employees will be contacted May 23 - June 3 during the Labs' U.S. Savings Bond campaign, according to Randy Maydew (1330), drive chairman. Savings Bond literature and payroll deduction cards will be distributed.

"Goal of the drive is to increase employee participation from the current level of 77 percent to 90 percent or better," Randy says. "Buying Bonds is one way to support our country's future—being in the nuclear weapons business, we know about that—and to help keep a lid on inflation. And, Savings Bonds are now paying six percent interest, a better investment than ever."

New feature in this year's campaign is

called "Bond-a-Matic." It offers the opportunity to increase savings in E Bonds without diminishing take-home pay. When a payroll saver's F.I.C.A. (Social Security) deductions are completed for the year, all or part of his deductions is then applied to the purchase of Savings Bonds.

"It's that easy," Randy says. "Do yourself a favor and sign up for either regular payroll deductions or for the Bond-a-Matic plan."

Other members of the Savings Bond Committee are Jim Meikle (2550), Bill Martin (3430), Bob Yoder (4130), Dick Lynch (5440), Hugh Kelly (6001), Fred Eichert (8432) and Walt Rosenberg (9630).



'Bonds Make Sense for Families' — Dick Rael

Dick Rael, purchase analyst in Purchase Services Division 3725, is a family man. Dick has two married daughters and four children still at home. Dick and his wife Rita feel that buying Savings Bonds makes good sense for families.

"Payroll deduction is the easiest way I know to save money," Dick says. "You adjust to your budget and never miss the money that goes into Bonds. And they add up!"

"Bonds work three ways for us," Dick continues. "First, we hope to hold them until retirement or use them to help with the kids' college education. Then, in case of unexpected expenses, they're an emergency fund. I don't like to cash Bonds, but sometimes it's necessary."

Dick signed up for payroll deduction for Bonds during one of Sandia's early bond campaigns. He found that he liked the way Bonds accumulated, and signed up for more through the years as pay increases came.

"There are special tax advantages in buying Bonds for a child's college education," Dick says. "It's in the campaign literature. You buy the Bonds in the name of the child. The tax burden becomes his. While in college, he usually doesn't have to pay any income tax. Check it out."

'Bonds Worry Free' — Bob McIntosh

Bob McIntosh is an information systems analyst in Financial Systems Division 3211.

He considers Savings Bonds the "cornerstone" of his investment program. His reasons are analytical. Bob has prepared tables of figures showing that in the long run it would take investments paying 10 percent or better to beat the money earned from Savings Bonds, depending on the particular income tax situation of the investor. (Copies of the tables are available from Sandia Savings Bond drive canvassers.)

"I'm single," Bob says, "and I take the



standard deduction on my income tax. That means that the IRS takes a pretty good bite out of what I earn. Any return from a speculative investment is subject to the same bite.

"Savings Bonds are different. They are not subject to state taxes while federal taxes can be deferred until the time the bonds are cashed. If you convert E bonds to H bonds, the tax payment may be deferred even longer—into the retirement years when the tax bite is less.

"That's why Savings Bonds are my 'cornerstone' investment. The interest is guaranteed. They represent long term security. With Savings Bonds, there are no risks. They are a worry-free investment."

Bob does cash some of his bonds occasionally. He bought a new car recently. He feels that the fact that Savings Bonds may be cashed at any bank is another advantage of the investment. Certificates of Deposit, for instance, can be cashed only at certain times without a penalty or loss of interest.

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'Bonds Substantial Savings Program' — Marty Martegane

Marty Martegane, retired Sandia Security Inspector, started buying bonds when he was in the Seabees during WWII. And, for more than 15 years while at Sandia, he bought a \$25 bond each week through payroll deduction.

"Smartest thing I ever did," Marty says. "If it hadn't been for the bonds, I might have lost my home."

Marty was in Rockford, Ill., visiting his relatives when he suffered a series of heart attacks which left him clinically "dead" at one point. He recovered, but was unable to travel or return home for a year. He was



undergoing treatment and performing an exercise regimen.

"Insurance paid most of the medical expenses during the time," Marty says, "but my living expenses—apartment rent and the things you need when you're away from home—quickly added up. I had to cash \$5000 worth of bonds. I had them with me (always travel with bonds in case of an emergency. They're better than traveler's checks because they draw interest).

"The next year the stock market went to hell and my variable annuity pension dropped significantly. Had to cash more bonds. They made the difference between being comfortable or selling my house or camper."

Now fully recovered and an active rockhouser, Marty spends time in the

boondocks with his camper or visiting with his two grandchildren.

Marty has converted all of his E bonds to H bonds, and collects interest payments twice a year.

"The accumulated interest on my E bonds represented two-thirds of the purchase price of the H bonds," he says. "Over the years, the interest adds up. I was surprised and more than pleased. My WWII bonds had tripled in value. Bonds are a substantial savings program. Unlike the stock market, they pay a guaranteed interest rate. And the best part is this—because of my age and my tax bracket, I've not yet paid any tax on the interest the bonds have earned."

Message from the President

Fellow Sandians:

Next week, we have the opportunity to sign up for the regular purchase of U.S. Savings Bonds through the Payroll Savings Plan.

If you do not now buy Bonds, I hope that you will decide to take advantage of the opportunity--not only because Payroll Savings is one of the easiest and most convenient savings methods ever devised, but also because Savings Bonds are a practical investment in your own and your country's future. They are safe, protected against loss, easily convertible to cash in the event of emergency and have special tax advantages--and now Bonds earn 6% when held to maturity.

The Payroll Savings Plan has been successful for millions of Americans who never before had mastered the art of saving. A new option, Bond-a-Matic, has been introduced. If you elect this option, Bond deductions do not begin until your Social Security deductions for the year are complete. Your take-home pay can thus remain constant.

If you already buy Bonds, perhaps this would be a good time to give some thought to setting aside a greater amount.

Please consider this matter between now and next week--so that when your department's canvasser calls on you with a payroll deduction card, you will be prepared to take the step that leads to financial independence and peace of mind: signing up for our company's Payroll Savings Plan.

Sincerely yours,



President

Take Note

Felix Padilla (3421), *Lab News* cartoonist, recently took one of the top awards in a national art show. He was awarded second place in oils and acrylics, professional class, in the 9th Annual National Art Show sponsored by the Fine Arts League of Southeastern Colorado at La Junta. Felix entered a large acrylic painting of the Sandia Mountains.

* * *

Upcoming 5100 Seminars feature Richard Hanson (5122) on May 24, "Solving Linear Equations with Inequality Constraints," and Bill Benedick (5131) on May 31, "Unique Properties of Glass-Ceramics and the Response of Glass-Ceramics to the Nuclear Test Environment."

* * *

At the May 20 meeting of ASME, being held in the Kirtland West O-Club, the featured speaker is Dan Hartley, manager of SLL's Gas Dynamics Department, whose talk is entitled "The Automobile—Present and Future." At the same meeting, Mayor Harry Kinney will receive the ASME Regional Public Service Award for 1977. Other awards will also be bestowed upon section members. A cocktail hour begins at 6:30, followed by dinner. Reservations: Fred Norwood, 4-3306, or Tom Feldman, 277-6313.

A Conference on Cultural Conflict in New Mexico takes place June 2-4 at the Museum of Albuquerque. A series of locally and nationally known experts will tackle the problems of land (June 2, 7:30 p.m.), education (June 3, 9 a.m.), legal rights (June 3, 2 p.m.), politics (June 4, 9 a.m.) and women's rights (June 4, 10:30 a.m.). Open discussions will follow each presentation.

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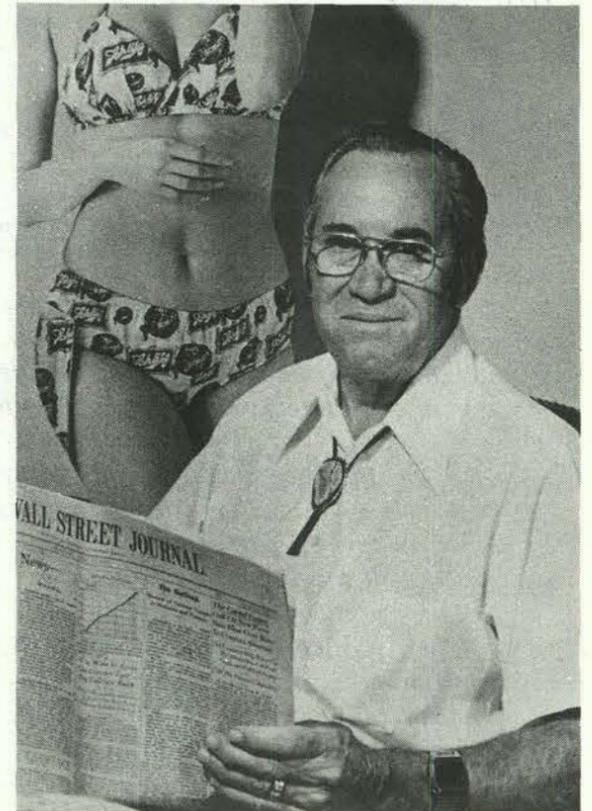
For children and young people who have diabetes, the American Diabetes Association is offering its 7th annual camp, June 5 to 11, at Camp Shaver in the Jemez Mts. Purpose is to provide campers with a camping experience while gaining understanding and confidence in the care of their diabetes. Games, nature study, archery, campfires, hikes, fishing and other camp activities are the order of the day, and the cost for the week is \$70. Call 268-1913 for further information.

Sympathy

To Fred Palkovic (9718) on the death of his brother in North Hollywood, Calif., April 29.

To Eddie Martinez (3727) on the death of his father in Plainview, Tex., May 4.

To Joe Baldonado (9582) on the death of his mother in Albuquerque, May 15.



CHET FORNERO (3171) retires May 31 to the drudgery of being a travel agent.

Chet Fornero Retiring; To Travel World

Last month, Rio. Next month, Mexico. In following months, Hawaii, Las Vegas, Europe.

Chet Fornero (3171) retires May 31 after 29 years with Sandia. He will pursue a second career that most Americans might envy—travel. Chet is leaving the Labs to be an independent travel agent (affiliated with Transglobe Travel Bureau, Inc.) specializing in charter and group tours.

Chet joined Sandia in June 1948 during the very early days of the nuclear weapons program. He had administrative duties in what was then the engineering department, moved on to stockpile surveillance, spare parts and QA activities. He was a division supervisor in personnel for three years, moved to handle Sandia procurement within the old AEC weapons complex as head of the Integrated Contractor Purchasing Division. He also headed a commercial purchasing division and, more recently, Photo, Mail Services and Records Management Division.

He was one of the first Sandians to earn a degree under the Labs' Educational Aids Program, a bachelor's in industrial management from UNM. It took almost six years of after-hours study.

Still, Chet found time to help organize the Sandia Golf Association, win a few tournaments, and become a charter member of the Coronado Club. He served several terms as a Club board member and twice as president. He started the Club's travel program in 1970, an activity which led to formation of his own travel agency.



feed n'iback

To get a response to your comments and questions about Sandia Labs, complete a Feedback form [available near bulletin boards] and return it to the Feedback administrator. The substance of questions and responses of wide interest is published in LAB NEWS.

Q. The instructions concerning the administrative escort of uncleared visitors through the Mardix booth require that the escort pass completely through the booth before the visitor enters the booth. This procedure works very well when entering the Tech Area, but when leaving it puts the escort on the outside of the fence with the visitors still inside.

A. Your concern stems from the apparent lack of control that occurs when an administrative escort must precede his/her visitors out of the area via Mardix booth. This would be a legitimate concern if it were the administrative escort's responsibility to physically control his visitors, but this is not the case. An administrative escort is responsible for ensuring that his/her visitors do not gain access to classified information inadvertently. Should the visitors fail to follow the escort's instructions and deliberately leave, the escort should immediately notify Security. The necessary number of Security inspectors will then be dispatched to apprehend the visitors.

In the event the visitors should leave when they are inside the area and the escort is outside, the escort merely needs to return to the booth and report that his visitors have deliberately left him, and Security will take over finding the visitors, who will be looked upon and treated the same as someone who illegally attempted to gain access to the tech area.

D. S. Tarbox - 3400

Q. Are there any plans to construct a bikeway on KAFB from the Gibson gate? I believe many S.E. residents would leave their cars at home if a bikeway were available. Why won't the Base allow bicycles to enter through Wherry housing?

A. There are no immediate plans to construct a bikeway from the Gibson gate. The matter, however, will be brought up in the next Installation Traffic Committee meeting. Bicycle traffic is not allowed to pass through the Zia (formerly Wherry) housing area due to the lack of manpower to control the Zia gate. The energy crisis is not over, but each of the suggestions that you propose involves expenditures of funds and the Air Force is currently operating under somewhat of an austerity program.

D. S. Tarbox - 3400

Q. Please enlighten me on the laws that bicyclists are supposed to be using. It might make it easier if motorists and bicyclists use the same set. A lot of motorists are very tired of the bicyclists riding up through traffic.

A. We assume you are referring to on-base laws regarding bicyclists. On-base, bicyclists and motorists must obey the same rules and regulations. The only exception

is that a bicyclist may yield at a "Stop" sign. If a bicyclist is not staying on the right-hand side of the road, or is carelessly blocking a motorist from turning, then he is disobeying the law. The majority of bicyclists do observe the law. However, there will always be a few careless bicyclists, and it is for this reason that motorists are asked to use extreme caution.

D. S. Tarbox - 3400

Q. I recently went to one of the Self-Service Stockrooms to obtain stationery supplies for our office [4 secretaries and 11 other personnel]. Our office is not located near the stockroom, so we keep a reasonable stock of supplies on hand in a nearby cabinet, as we cannot be running to a stockroom every time we need an item. In the process of obtaining the supplies on my recent visit to the self-service stockroom, I was informed I was not to take more than for current use, that my name would be taken and I would be reprimanded! It seems that a stockroom is to be looked at, and not used. Perhaps then, they should be abolished.

Half the time I go to the stockroom for a certain item, it isn't there, anyway. So from now on, all of our supplies will be ordered on an MR.

A. The supervision and service clerks of the Self-Service Stores are attempting to maintain sufficient supplies in these store-rooms so that shortages of those items most commonly used do not occur. One of the reasons for constant shortages in Self-Service Stores has been the one you cite . . . "keep a reasonable stock of supplies on hand in a nearby cabinet . . ." Stores Management has asked each Stockkeeper to request employees who use the Self-Service Stores not to take more than a nominal supply for their own use. Stockkeepers have been asked to project this request politely, and we apologize if you understood that you would be subject to "reprimand."

If you require a stock of supplies for all the employees in your work location, we specifically request that you do prepare a Material Requisition and route it to General Stores. This is the procedure for issuing volume requirements.

L. S. Conterno - 3700

Q. Has consideration been given to reducing the amount of air conditioning used in the summer in order to save energy? Last summer I found it necessary to wear a jacket most mornings in Bldg. 892 because the building was kept so cold.

A. We have not received any information from ERDA that would change our operating policy from the last cooling season. Briefly, that was to permit temperatures to rise to 78° before adding cooling energy for personnel comfort.



ONE SMART DOG — Baron and his master, Officer Bob Fiege of APD, are not after a crescent wrench in this tool box but, rather, a small amount of concealed explosive. He found it as well as other explosive samples planted in out-of-the-way places. Dave Williams of Safeguard's Entry Control Systems Division 1735 set up experiment to check on sniffer talent of trained dogs.



MOST UNUSUAL window plant at the Labs may belong to John Coleman (9633) in Bldg. 836. He says he keeps it to remind him of why he left Oklahoma wheat country.

Exception to this policy was granted only when required for proper operation of equipment or processes. Many of our building environmental systems will not provide uniform temperatures throughout a building under these operating conditions. In those cases we provide 78° in the worst case area of the building and other areas will assume lower temperatures than the target 78°. Also, with fans turned off at night, temperatures drift lower and slowly rise during the day as people and lights add internal heat gain.

R. E. Hopper - 9700



Fun & Games

Your Move—Chess is a neat cerebral exercise, and those who fancy it may wish to take part in the Bell System Postal Chess Tournament, an ongoing thing with some 1200 participants. The 31st annual round gets underway early in the fall. For scheduling, applicants are needed before July 1. Send a stamped self-addressed envelope to: Chess Tournament, 195 Broadway, Room 1338, New York, NY 10007. Entrants should have the ability to read chess notation and, in the words of the announcement, "the inherent interest and time to keep 8 games going at one time." Also, it helps to know how to play.

* * *

C-Club Tennis—The number of sign-ups has increased to 72, still short of the 100 memberships initially aimed for. However, the tennis committee hopes that with this number construction can be undertaken, perhaps building three rather than four courts. Meanwhile, a C-Club Tennis booklet has been prepared, outlining court policies and related matters. (It's going to cost more to wait.) Copies are available at the Club, from Joe Tillerson, 4-5575, or Phil Stanton, 4-1097.

* * *

Skiing—Two Sandians were recently honored by the National Ski Patrol with appointments as National Ski Patrollers, the highest rank in the organization. They are Don Bush (2523) and Jack Cyrus (2524), both of whom are members of the Sandia Peak Ski Patrol.

* * *

Golf—An even 100 Sandians competed May 6 in the "West Side Special" SGA tournament at Paradise Hills, the largest SGA event in recent history.

Competition was held in two flights. Winners in the AA flight were Richard McCann (5733) and Tom Covert (4336). Second were Frank Davis (ALO) and Jim Leonard (5712). Tied for third place were Orlando Espinosa (9561) and Dennis Gutierrez (2111) with Pres Herrington (1735) and B. A. Clouse (ret.). Bill Lutgen (5243) and Lee Parman (ret.) took fifth.

Tied for first in A flight were John Ford (2327) and John Von Dreele (2324) with Glenn Guist (9656) and Rand Rozelle (9651). Third place was taken by James Hann (4322) and Werner Kuhn (9512). Tied for fourth were Grant Claycomb (2601) and Larry Larson (2622) with Clyde Walker (1140) and Bob Statler (1133).

* * *

Scuba Diving—If you're a certified scuba diver, you can join an expedition to San Clemente Island off the coast of California on June 13-14. Suzie Simpson (3714) and husband Oscar and Pam Morenus (2516) and husband Pat are organizing the two-day cruise for divers aboard the 80' *Bottom Scratcher* out of San Diego. The cruise begins at 12:01 a.m. on June 13, costs \$100 per head, and includes all meals, scuba tanks and air, and private bunks. Suzie has arranged package deals on equipment at local dive



THE LOOK OF WINNERS—Students selected for Sandia's Work/Study Program lunched with President Sparks last week at the Coronado Club. From left, Clayton Pryor (Valley), Mikel Lindley (Mimbres), Melecita Sanchez (Los Lunas), Pres. Sparks and Robert Gorsline (Manzano). At the Science Fair in Cleveland and thus not shown, T.J. Allard (Highland). The five students begin work at Sandia this summer and start their university training this fall, with tuition and other costs undertaken by Sandia.

Work/Study Program Students Selected

Five graduating high school students have been selected from among 55 candidates for Sandia's Work/Study Program in Albuquerque. The five will pursue their college education in engineering or a physical science at one of three schools—UNM, NMSU, NMIT—with tuition and books paid for by Sandia. In addition, the Labs pays each student a monthly subsistence during the school year and provides summer employment. A Sandian is assigned to each to act as a mentor, providing guidance and career counseling during the four year program.

Purpose of the program is to assist the well qualified but financially pressed student through college. Both SLA and SLL participate.

Director of Microelectronics Bill Spencer (2100), chairman of the University Programs Subcommittee, describes the selection process: "Each year we contact high school principals throughout the state, explaining the program and asking for nominees. Of the 55 nominated this year, 15 were chosen as finalists. Each finalist was then interviewed by the Sandia committee, and the final selection of five was made."

The records show that the chosen five are outstanding. *Clayton Pryor* from Valley High ranks 40th of 626 in his class, is a member of the National Honor Society and of his school's diving team. *Mikel Lindley* from Cobre High in Bayard is 13th of 169, belongs to the National Honor Society and is a 4-H club leader. *Robert Gorsline* of Manzano High ranks 22nd of 722, plays with the Albuquerque Youth Symphony and is a member of a jazz band. *T.J. Allard* is number 1 in his Highland High class; he has played varsity football, gained a letter in speech and participated in the APS/Sandia Summer Science Program. The fifth student, *Melecita Sanchez*, is 2nd in her class at Los Lunas High, president of the honor society and current holder of the state title in the Junior Miss contest.

All rank high as well in their national test scores (ACT).

Since the program's inception in 1974, more than 25 young people have participated in it here and at Sandia Livermore. The Work/Study Program is patterned after the Bell Labs Engineering & Science Program.

Events Calendar

May 21—"Oliver," KHFM 96.3 FM, 6:40 p.m.

May 22—Dog Rabies Clinic, Livestock Complex, State Fairgrounds, 292-2696.

May 22—Chamber Orchestra of Albuquerque with Hector Garcia, First United Methodist Church, 4 p.m.

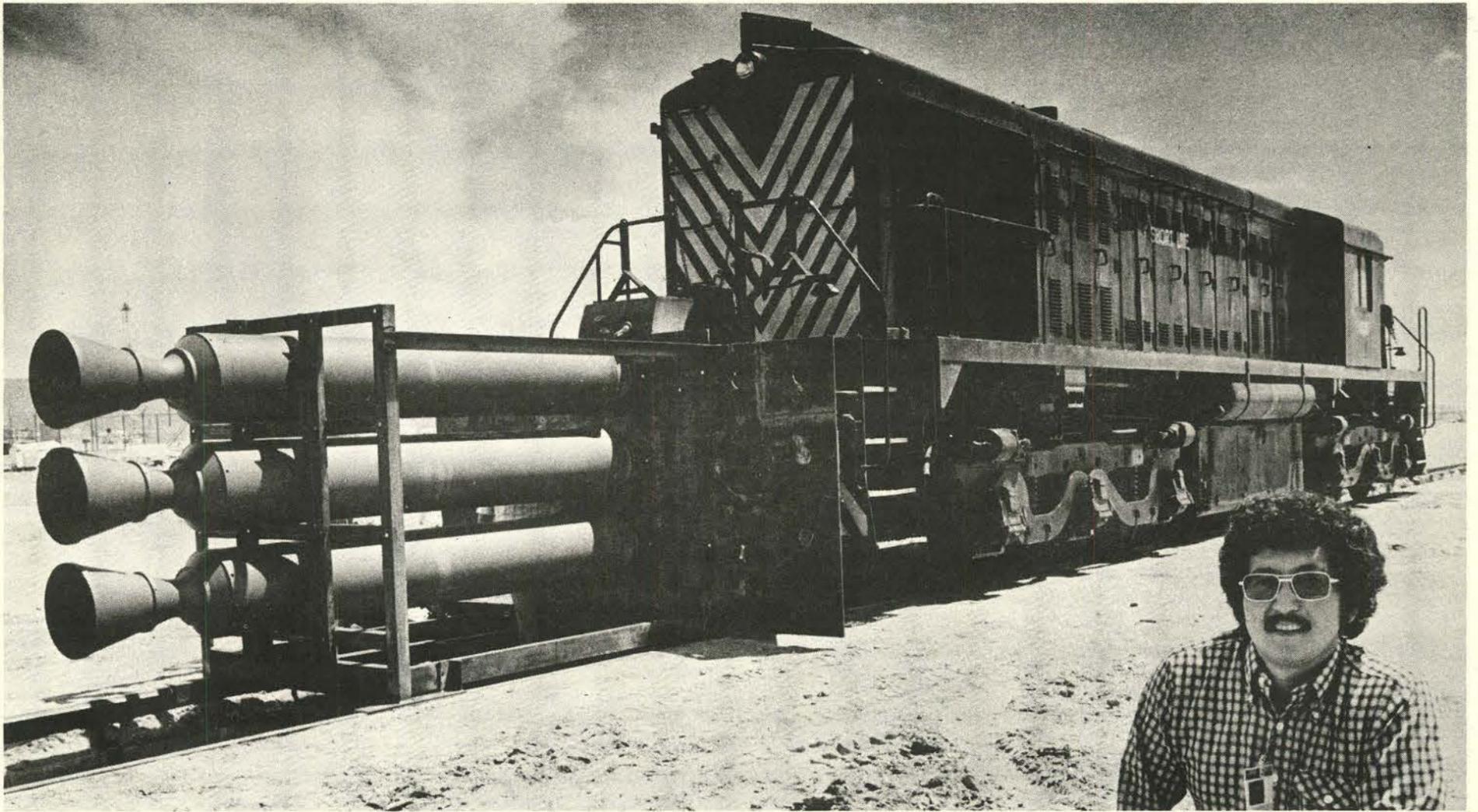
thru June 5—"The Lady Who Cried Fox," Barn Dinner Theatre, 281-3338.

thru June 12—"All the Girls Came Out to Play," Ole Henry's Dinner Theatre, 293-5060.

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shops too. Call immediately. Oscar is at 247-0295 days; the Simpson's number is 256-1167 evenings.



IT GOES FAST—In Richard Yoshimura's (5432) last destructive fling, he brought together at 84 mph one truck, a nuclear fuel cask, and a concrete wall. Cask and wall were OK, truck came off second best. For his next spectacular,

Richard plans to pile this rig into a trailer/fuel cask at a simulated rail crossing. Test is set for next week in Area III. Purpose is to test structural integrity of fuel cask under "worst possible" conditions.

Grant Your Family Immunity

The Federal government's center for Disease Control and Secretary of HEW Joseph Califano have joined forces to remind the American people that it is vital to immunize children against major childhood diseases. Federal public health experts estimate that 20 million of the 52 million American children under the age of 15 are not immunized against one or more of the potentially dangerous childhood diseases for which vaccines are available.

Dr. A. S. Verdesca, Western Electric headquarters medical director, has written this two part article on the subject.

Recent outbreaks among pre-teenagers and teenagers of "childhood diseases," which everyone assumed had been brought under control, if not completely eliminated, has led to intensive investigations to try to determine "How come?"

The answer to "How come?" turned out to be that we, in America, have taken things too much for granted; the relative absence of these infectious diseases has led to apathy. We are no longer subjecting our children to immunization and boosters as much as or as frequently as we should be.

When one recalls that measles can be fatal, that chickenpox can be a very serious disease, that diphtheria very often was fatal, that whooping cough often left the child with permanently irreversible damage to his lungs, and that polio could leave a person crippled for life if not dead, one could rightly be astonished at the neglect of Americans in making sure that they and their families are protected.

Let me suggest that you take this article home and check the immunization records

of everyone in your family. You may save a life by so doing.

Here is what you and your children should have received:

Age 2 months. The famous DPT shots are begun. The D protects against diphtheria, the P against pertussis, and the T against tetanus. This is the first of a series of shots since, contrary to what many think, one shot doesn't offer adequate protection. Also at 2 months, the first of a series of trivalent oral polio virus vaccines is given to the child.

4 months. The second shot in the series of DPT and the second oral polio is given.

6 months. The third of each is given.

1 year. Now, either singly or as combined vaccines, the individual is given measles, mumps and rubella (German measles) immunization. Recently, the tuberculin skin test (one form of which is known as the Tine Test) has been suggested as an important adjunct at age one. This tells the physician whether the child has been significantly exposed to tuberculosis and can be very important in determining whether treatment should be then offered to prevent any of the serious late-life complications that have caused the devastations of tuberculosis for centuries.

1½ yrs. A booster of DPT and oral polio is given again.

4-6 yrs. The final dosage of DPT and oral polio is given.

14-16 yrs. An adult-type tetanus and diphtheria toxoid booster is then administered at a 10-year interval from the previous booster and continued every ten years throughout life.

For children who weren't immunized in infancy, the following schedule is recommended:

Age 1 through 5 yrs. —

1st visit — DPT, oral polio and tuberculin test.

1 month later — Measles, mumps and rubella immunization.

2 months later — DPT and oral polio.

4 months later — DPT and oral polio.

6-12 months later or pre-school — DPT and oral polio.

Age 14-16 yrs. — Tetanus-diphtheria toxoid every ten years.

Unfortunately, as recent investigations have shown, there are children 6 years of age and over who haven't yet had primary immunizations. For these, the following recommendations are made:

1st visit — TD (This is tetanus-diphtheria. The pertussis — whooping cough part is omitted because after age 5, whooping cough is much less serious.) Oral polio and tuberculin test.
1 month later — Measles, mumps and rubella immunization.

2 months later — TD and oral polio.

6-12 months later — TD and oral polio.

14-16 yrs. — TD and every ten years thereafter.

If the above charts were followed for every child in America, we would quickly put these illnesses and diseases back in the "What's that?" category.

It is estimated that most adults will have had either the immunization or the specific "childhood diseases" we spoke about sometime before they reach adulthood. The schedule we gave you then is not one that should be followed by adults. Rather, a review of one's past immunizations and illnesses should be conducted individually with your doctor to determine which, if any, of the immunizations are in order for you.

Many physicians believe that an adult polio immunization series is a good idea for people of all ages. Once the series of three oral vaccines is taken, however, there is no need for further boosters, so the adult winds up having to contend with only tuberculin tests and tetanus shots.

Albuquerque Spends \$600,000 A Year Picking Up Litter

May 21 is Clean Up Albuquerque Day. And, if the Clean Cities Committee has its way, CUAD will be the start of a long-playing educational program designed to change the attitudes and behavior of New Mexicans concerning littering.

"Litter wouldn't be a problem if it looked like money. Then people would pick it up," says Ted Sherwin (3160), communications chairman for the campaign. "Our job is to convince people that litter *is* money—money out of their pockets." The \$600k the city spends picking up litter and removing weeds each year is in addition to costs of the regular refuse removal. So it is an expense, shared by all, that could be largely avoided by simply not littering and keeping premises free of weeds.

Albuquerque is one of a dozen cities launching such an educational program in an effort to develop the civic pride that will make the city litter-free. As a first measure, the business community plans to adopt better refuse handling practices and to observe existing regulations more scrupulously. Residents will be urged to keep their premises clean and to encourage others to do likewise. And the school system will seek to instill in young people a desire to see their community as a model of cleanliness and beauty.

Where does all the litter come from? Says Sherwin, "Most of us think 'litter' when we're driving along and see trash along the road. That's only part of the problem. Litter is scattered everywhere, and it comes from many sources besides the careless motorist—construction sites, uncovered trash-hauling trucks and trash bins, households, etc."

Litter moves. It spreads in all directions from the source until it finally gets trapped



SLOBVILLE types do their thing. A clean-city educational program hopes to reach hard core slobs, achieving rehabilitation before condition becomes terminal.

by fences and walls, along planted areas, embankments and storm drains.

The city plans to get tough with enforcement of existing laws on trash handling, especially the requirement that trash hauling vehicles be covered. (That will be good news to Sandians who run the Eubank Blvd. obstacle course every day, dodging the tree limbs, burst plastic bags and assorted rubble.)

The communications committee is one of several working groups appointed by Mayor Kinney to spearhead the Clean Cities campaign. An executive director, Janille Farthing, has been appointed to coordinate the largely volunteer effort. Ms. Farthing maintains an office in the City Hall and may be reached at 766-7550. Anyone who has any ideas for helping make the program a success is invited to call her or get in touch with Ted, 4-8065.

A Lonely Vigil?

Not in the least. Although Bonnie Vigil just completed all the courses in Sandia's ESA (Engineering and Science Assistant) Training Program in 2½ years rather than the normal 5 years—which takes a good deal of study—she's far from lonely.

First of all, she's doing a job she likes as a computer programmer in the Computing and Statistics Division 1223. And second, she finds time for an active social and sports life—she's on bowling, softball, and volleyball teams.

She began at Sandia as a secretary in 1969. In July 1974 she bid for one of seven slots open in the ESA program, was selected by org. 1223, and, in September 1974, began the courses. She now has the equivalent of a Technical-Institute certificate: she's completed 20 courses at Sandia and at UNM.

"Bidding on the job here in Statistics has

to be one of the best career choices I've made," says Bonnie. "I like the work, though I'm still very much an amateur at program writing.

"And I've generally enjoyed my classes. That means I haven't minded the studying involved."

She's not stopping now. Since 1969, she's managed to accrue almost 40 hours of credit at UNM. "I'm a sophomore now, and I intend to graduate with a degree in computer science and a minor in accounting one of these days."

At the rate she's going, it probably won't be very long.

(Advancement opportunities through the ESA Training Program are announced as they occur in the Weekly Bulletin. For info on the program, talk with your personnel rep. or Gene Bates in 3522.)

Speakers

D. Poole (3521), "Sandia Apprentice Programs," Queen of Heaven School career day, April 1.

G. V. Barton (5833), "Science and Engineering for Women," Queen of Heaven School career day, April 1.

G. H. Bradley (1221), "Engineering and Science," Queen of Heaven School career day, April 1.

R. M. Jefferson (5430), "Our Current Energy Problem," AAUS State Convention, April 2, Clovis, N.M.

D. P. Peterson (9624), "Computing," Hoover Middle School science class, April 18.

G. C. McDonald (9636), "Why Wilderness?," Heights Optimist Club, April 20.

K. L. Biringner (5719), "Solar Energy Research," Adult Fellowship Group, First Presbyterian Church, April 24.

R. G. Roosen (5741), "Our Changing Climate," Heights Optimist Club, April 27.

A. D. Swain (1222), "Motivation of the Volunteer Worker," Zonta Club, April 28.

R. L. Schwoebel (5820), "Stabilization of Radioactive Wastes from Power Reactors," Northwest Optimist Club, April 28.

J. M. Hueter (3521), "Creativity—Choice or Chance?," N.M. Watercolor Society, Feb. 24; "Creativity and Humor in Training," annual conference on Training and Employee Development, U.S. Civil Service, March 1-2, Dallas.

D. A. Oliver (9624), "Computer Aid Design and Manufacturing Activities at Sandia," WE Numerical Control CAD/CAM Coordinating Committee Meeting, May 11.

W. J. Spencer (2100) and D. S. Schade (UNM), "Electronic Controls for Diabetes," Joint meeting ADM & IEEE, April 13, Albuquerque.

T. N. Simmons (3312), "Monte Carlo Generated Bremsstrahlung Source Terms," Radiation Protection Problems around Fusion Devices, Princeton Plasma Physics Dept., April 14-15, Princeton University, N.J.

W. R. Wampler (5111), "de Haas-van Alphen Studies of H in Cu," Seminar at Dept. of Physics & Astronomy, University of Oklahoma, April 15, Norman.

J. N. Olsen (5244), "Coded Imaging of REB Targets"; J. G. Kelly (5423) and K. T. Stalker (2541), "Some Applications of One-Dimensional Coded Apertures," SPIE/SPSE Technical Symposium, April 18-21, Reston, Va.

D. D. Boozer (1758) and D. Engi (5741), "Nuclear Facility Safeguards Systems Modeling Using Discrete Event Simulation," Eighth Annual Pittsburgh Conference on Modeling and Simulation, April 21-22, Pittsburgh.

R. L. Iman (1223), "Use of the Rank Transform in Regression," Texas Tech Mathematics Colloquium, April 22, Lubbock.

P. J. Chen (5131), "Dynamic Electromechanical Responses of Ferroelectric Ceramics," Colloquia: University of Illinois, Dept. of Theoretical and Applied Mechanics, April 21; and University of Minnesota, Dept. of Aerospace Engineering and Mechanics, April 22.

W. Y. Velez (5121), "A Characterization of the Splitting of Inseparable Algebraic Extensions," Meeting of the Mathematical Association of America, Southwestern Section, April 22-23, Phoenix.

W. J. Whitfield (5442), "Recycling Sewage Sludge by Using Radiation Treatment to Eliminate Pathogenic Organisms," 23rd annual technical meeting and equipment exposition, April 23-27, Los Angeles.



BONNIE VIGIL with one of the computer programs she's written. A recent graduate of the ESA Training Program, she's now working toward a degree in computer science.



HALL OF GIANTS in Carlsbad Caverns contains huge stalagmites. These are more than fifty feet tall. Cavern formation began 250 million years ago.

Vista New Mexico

Carlsbad Caverns — Journey Into Geologic Time

Southeastern New Mexico contains one of the true national wonders of the world — Carlsbad Caverns National Park. It is a monstrous system of caverns distinguished by fantastic formations of limestone stalagmites and stalactites in an endless variety of shapes and forms.

One room in the caverns has a floor area equal to 14 football fields; its ceiling is high enough for the nation's Capitol Building to fit in one corner.

Of all the impressions they create, one is overwhelming — a sense of the passage of time. The columns in the cave were built grain-by-grain as surface water moving downward dissolved the limestone and left minuscule deposits on ceilings, walls and floor. And some of the formations are massive — the Totem Pole is 38 feet tall, the Hall of Giants contains great domes more than 50 feet high and over a dozen feet in diameter. Some formations are still growing. You see the drop of water on the tip of a stalactite; after several minutes it drops to the floor and, several minutes later, another drop forms. In a human lifetime, there would be no visible change in the stalactite.

Some 250 million years ago the cavern area was on the rim of a great inland sea. Tiny lime-secreting algae built a massive reef, generation by generation, over a mile across and hundreds of feet high.

In the lagoon behind the reef, rivers deposited sediments, while on the seaward

side relentless waves smashed great chunks of the limey material away from the face of the reef and these tumbled into the depths. Eventually, the inland sea, cut off from its supply of fresh water, evaporated. After centuries, the sea basin and the lagoon completely filled up with evaporated salts and sediment. No surface trace remained of the ocean or reef which once dominated the area.

Some 60 million years ago internal forces within the earth pushed at the ancient reef and tilted part of it several hundred feet above the plain. This did not happen abruptly but, rather, over a period of millions of years. As the uplift continued, the forces of erosion were also at work. A pattern of cracks slowly appeared in the ancient reef, setting the stage for the formation of the caverns.

Rainwater, converted to a weak carbonic acid by absorption of carbon dioxide in the soil and decaying matter, seeped into the cracks and worked its way down to the water table. Slowly dissolving the rock, the water created immense water-filled underground galleries.

The water table gradually lowered, stabilized, and fell away again. There are three main levels in the cave — at 200, 750 and 850-foot depths. As air entered the chambers, the decoration phase of cave-building began. Millions of years passed.

Seventeen thousand years ago, bats

found the cave. Five thousand years ago, Indians left pictographs at the cave entrance, built fire pits nearby.

In 1903 Abijah Long filed a claim to mine bat guano. More than 100,000 tons were mined through the years up to 1923. A cowboy and mine foreman — Jim White — pioneered exploration of "Bat Cave." His stories of the splendors of the caverns spread. In 1923 President Calvin Coolidge signed the order creating Carlsbad Cave National Monument. In the late 1920's trails were constructed and lighting installed. Elevators were installed in 1932 and improvements in the facilities have continued to the present. More than 20 million visitors have toured the Caverns.

The park is located 20 miles southwest of Carlsbad; it's about 300 miles from Albuquerque. The caverns are open from 7 a.m. to 9 p.m. during summer months. The complete walking tour, at your own pace with a "walkie-talkie" gadget that automatically tells you about the area of your immediate vicinity, is three miles. At the midway point are an underground lunch room and elevators. Park rangers are stationed at various locations in the Caverns to answer questions and discuss the Caverns. Wear a sweater — cavern temperature is a constant 56°.

Depending on your pace, the tour takes about four hours — a journey into geologic time. •dg

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STUDENTS from the Navajo Community College in Tsaile, Arizona, listen to Al Artiaga as he describes Sandia Labs. The group toured Sandia facilities that have some relationship to their studies. Ray Perry (9581), front row left, accompanied the students during their tour.

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Pay (and Pay and Pay) As You Go

Ask most drivers what it costs them to drive their cars, and you're likely to hear "Well, it gets about 10 (or 20 or 30 or whatever) miles to the gallon, so, at 55c a gallon, that's . . ." You can stop listening at this point: you're not going to get the answer to your question.

That's because most people don't have any idea what it *really* costs to drive. With less effort than it took to fill out your 1040, you can arrive at a reasonably accurate figure—simply follow the directions below. We should warn you though—finding out what your car really is costing may be hazardous to your mental health.

Variable Costs

GAS

If you keep a record of gas purchases, add up one year's worth. Otherwise estimate yearly cost based on miles driven per year/miles per gallon/price of gas. \$ _____

OIL

As above \$ _____

MAINTENANCE

Actual—Total your records of lube jobs, oil changes, tune-ups and repairs (a portion of major repairs such as valve jobs, overhauls, body repairs, and your deductible on insurance claims for collisions should be included on the basis of mileage: if, for example, you had an overhaul costing \$600 at 60,000 miles and you drive 10,000 miles per year, your average annual cost is \$100—60,000 ÷ 10,000 = 6 years; 600 ÷ 6 = \$100.) *Estimated*—Multiply annual miles by 0.97c (represents only routine maintenance for intermediate sized medium priced cars. \$ _____

TIRES

Actual—Again, calculate the miles you normally achieve on a set of tires, then amortize over the years you'll use them: for example, a \$250 set of tires that last 40,000 miles when you drive 20,000 miles a year will last two years—or \$125 per year. *Estimated*—Multiply annual miles by 0.66c (again, the figure is for an intermediate sized, medium priced car). \$ _____

Fixed Costs

INSURANCE

Total the premiums you pay per year. \$ _____

LICENSE AND REGISTRATION FEES

Total your expenses for license and registration fees. (If your license fees are dropping, determine your average cost.) \$ _____

DEPRECIATION

This is at once the largest expense for those who own recent model vehicles and the most difficult to determine. Remember, the purchase price of your car includes all fees and taxes and, if you finance it, the interest paid. But since trade-in prices vary widely, a selling price is difficult to determine. One method (if you buy new cars) is to determine the cash outlay it would require to replace your car with a new but otherwise identical one. From that figure, subtract the trade-in value of your car (from the "blue book") and divide that figure by the number of years your car is old. \$ _____

Now, Add Up Your Figures

That's the annual cost to you. Divide the total by the number of miles you drive per year, and you have the cost per mile. _____c/mile



AT LEAST we New Mexicans don't have to worry about toll roads.

Compare your figures with these, compiled for a '75 Chevelle V8 sedan equipped with automatic transmission, power steering and brakes, and radio:

<i>Variable Costs</i>	<i>Average per mile</i>
Gasoline and oil	4.82 cents
Maintenance	.97 cents
Tires	.66 cents
	<hr/>
	6.45 cents

<i>Fixed Costs</i>	<i>Annually</i>
Insurance	383.00
License and registration	30.00
Depreciation	773.00
	<hr/>
	\$1,186.00

(or \$3.25 per day)

[For air conditioning, add .20 cents per mile, 20 cents per day. For mileage in excess of

15,000 annually, an additional depreciation of \$32.00 per thousand miles would be added to the fixed costs.]

If all the figuring seems overwhelming, here are figures for four sizes of '75 cars based on the experience of fleet owners. They assume you live in a "low cost" area of the nation—Albuquerque probably qualifies.

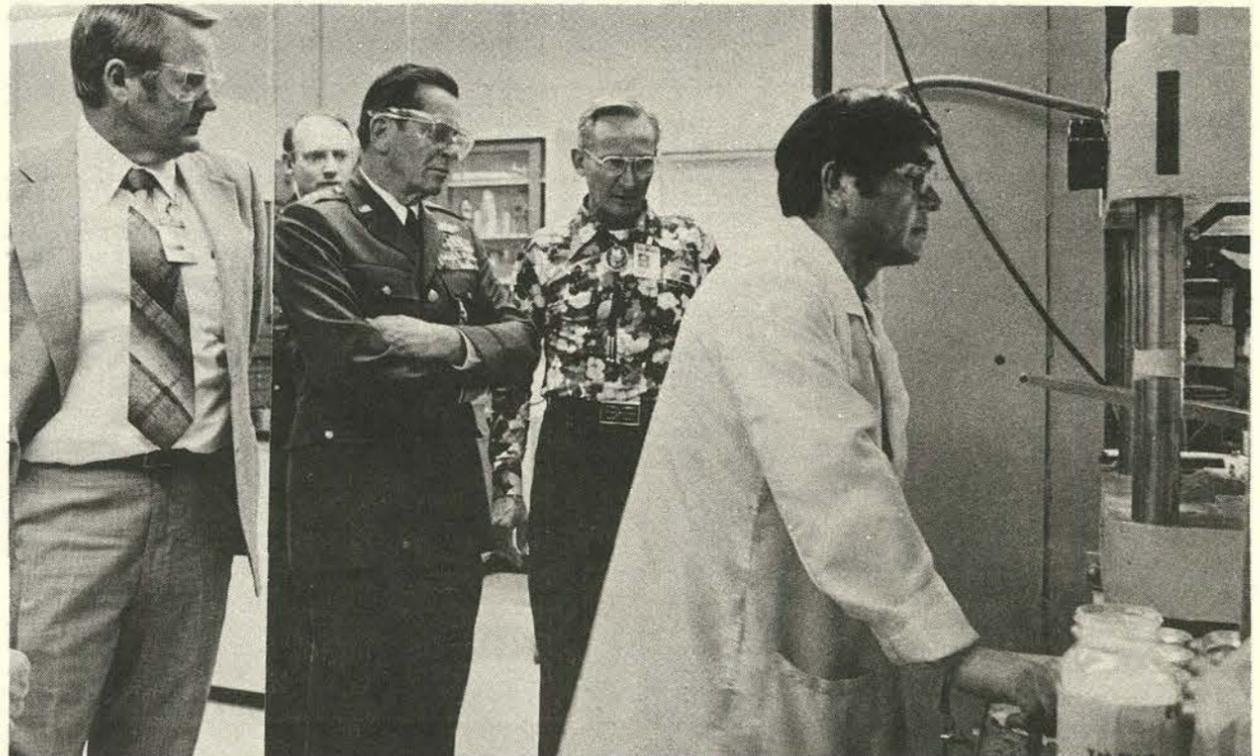
	<i>Per Day</i>	<i>Per Mile</i>	<i>Per Year Total Cost</i>	<i>10K Miles Per Mile</i>
Sub-Compact (4 cyl.)	\$2.36	4.15c	\$1276	12.8c
Compact (6 cyl.)	2.44	4.95	1386	13.9
Intermediate (8 cyl.)	3.02	5.95	1697	17.0
Standard (8 cyl.)	3.53	6.60	1948	19.5

Note: for every 10 cents per gallon increase in the price of gas, the per mile cost of running a car increases by one cent if the car delivers 10 mpg, or one-half cent if the car delivers 20 mpg.

Congratulations

Bob Brooks (1211) and Elizabeth Golden married April 13 in Albuquerque.

Mr. and Mrs. Wayne Shirley (9657), a daughter, Karen Renee, May 11.

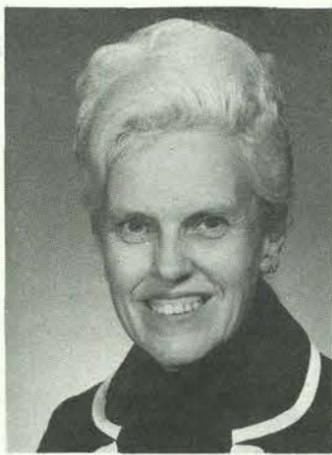


MANY STARS—Military visitors to the Labs this month included, at left, Vice Admiral Robert Monroe, head of the Defense Nuclear Agency, who walks with VP Glenn Fowler following briefings in Bldg. 892's Weapon Display Area. Above, Air Force General Robert Dixon, chief of Tactical Air Command, observes Geronimo Fragua in Thermal Battery Lab as Bob Wehrle, head of Battery Development Division 2522, explains. Bob Peurifoy (left, 4300) accompanied the General on his Labs tour.

MILEPOSTS

LAB NEWS

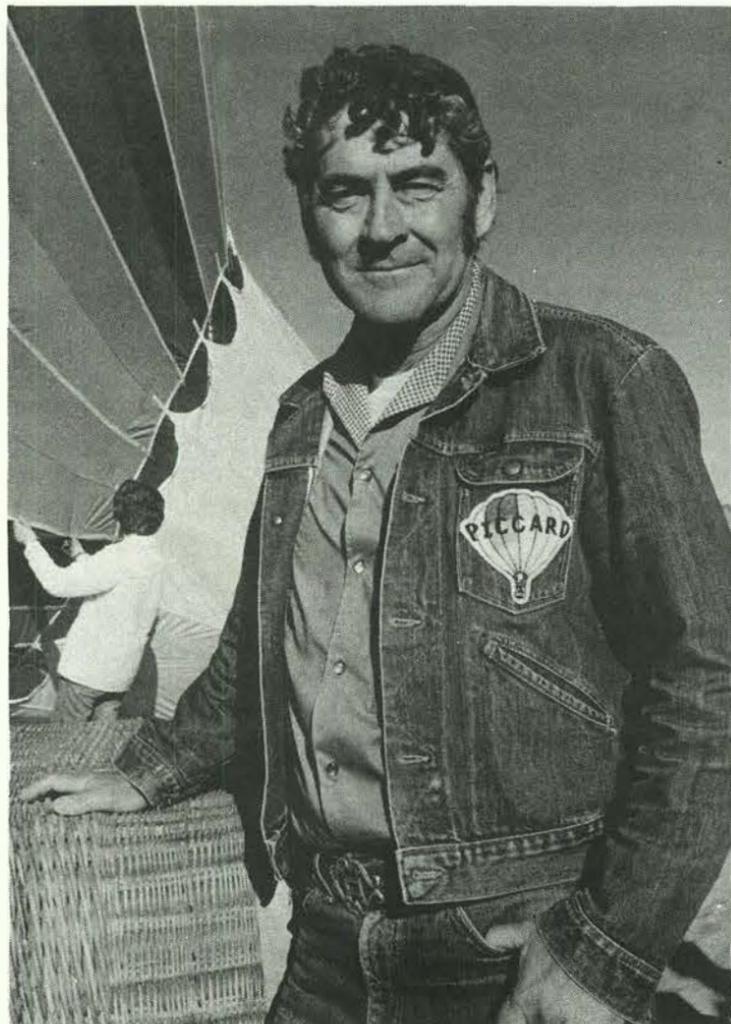
MAY 1977



Virginia Bryan - 2000 20



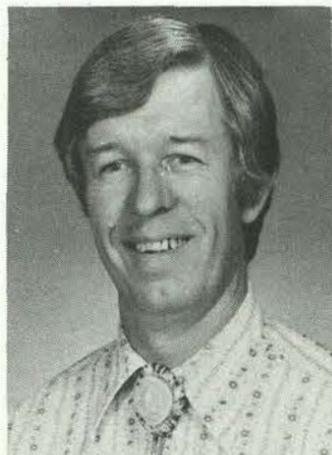
Charley Bates - 9573 30



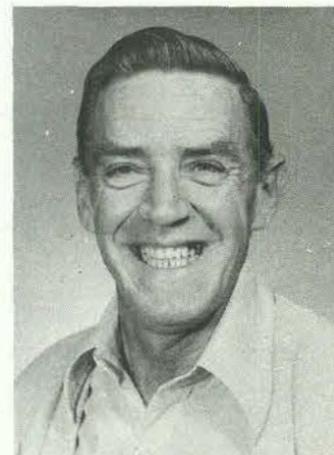
Chuck Ray - 5734 20



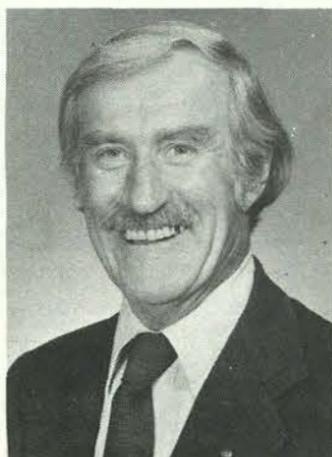
Florencio Baca - 9718 25



David Davis - 2631 20



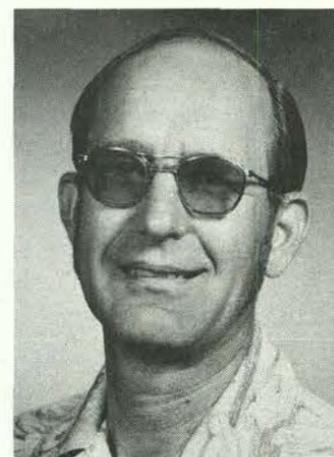
Ken Peters - 9571 20



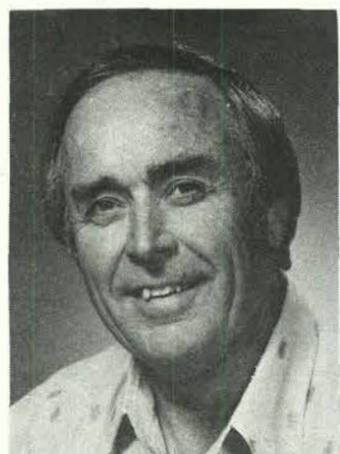
Jack Hueter - 3521 20



Joseph Pavelko - 1756 20



N. C. Widenhoefer - 2132 20



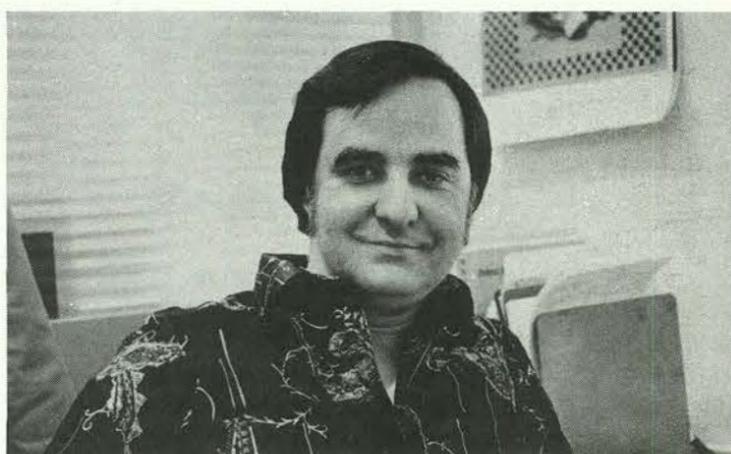
Billy Johnson - 1732 20



Nita Ward - 9511 15



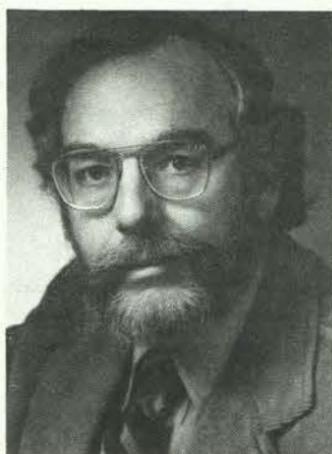
Hubert Fifer - 9652 20



Lewis Sisneros - 3725 20



Marie Arellanes - 3732 10



Gary Drummond - 8323 25



Harvey Morse - 1714 20



Mollie Miller - 3321 25



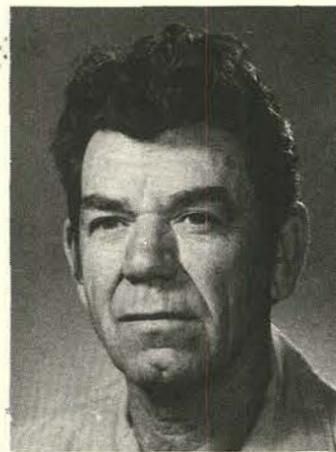
Jeanne Holmes - 3531

10



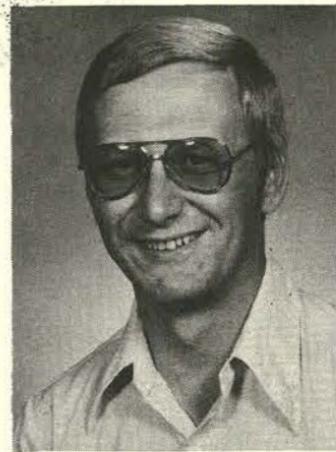
H. J. Salazar - 9582

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Louis Perea - 9355

20



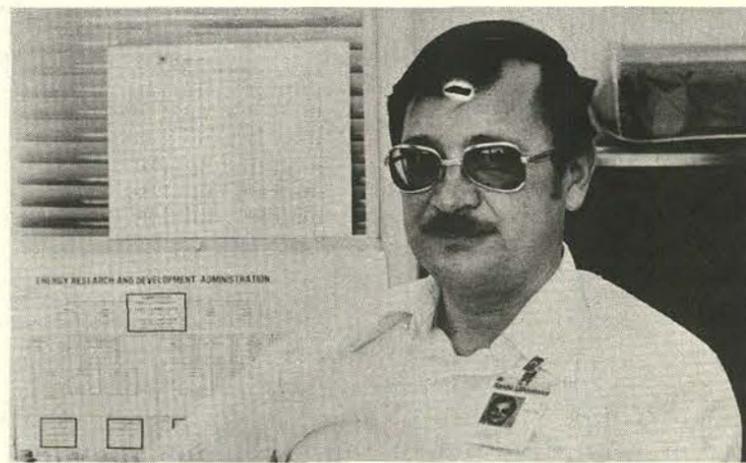
Edward Roberts - 2112

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W. B. Shepard - 9512

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Al Chavez - 5200

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Fritz Arensdorf - 3171

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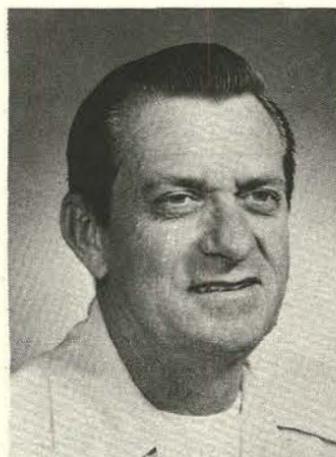
Vernon Barcafar - 1126

25



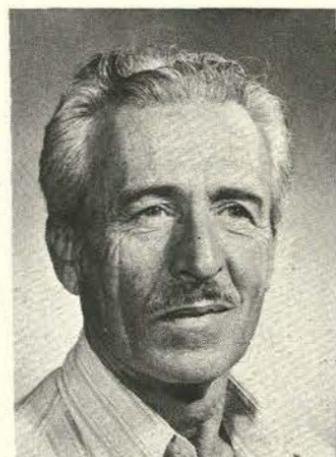
Rex Myers - 1735

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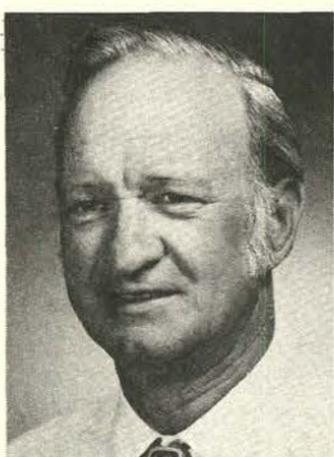
Herbert Sisson - 1756

20



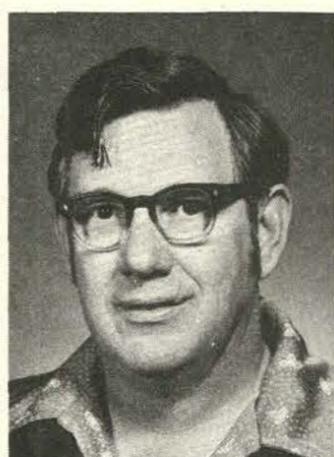
Lloyd Burrigh - 9713

20



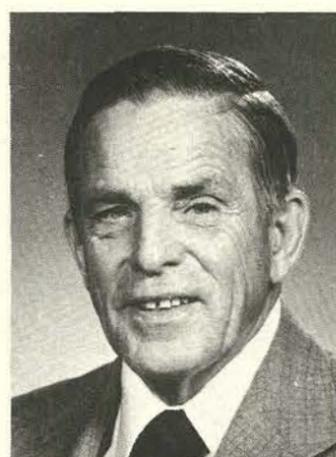
James Davis - 1136

25



Robert Lindsey - 2122

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Thomas Meyer - 9651

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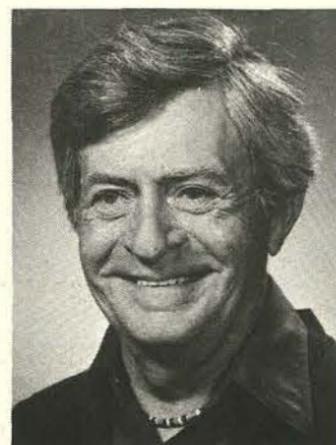
Charles Hall - 2521

15



Keevin Moriarty - 4123

25



Philip Eyer - 1715

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Danny Aubuchon - 1352

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Gertrude Piraino - 3723

15

Ray Jojola Helps Accident Victims

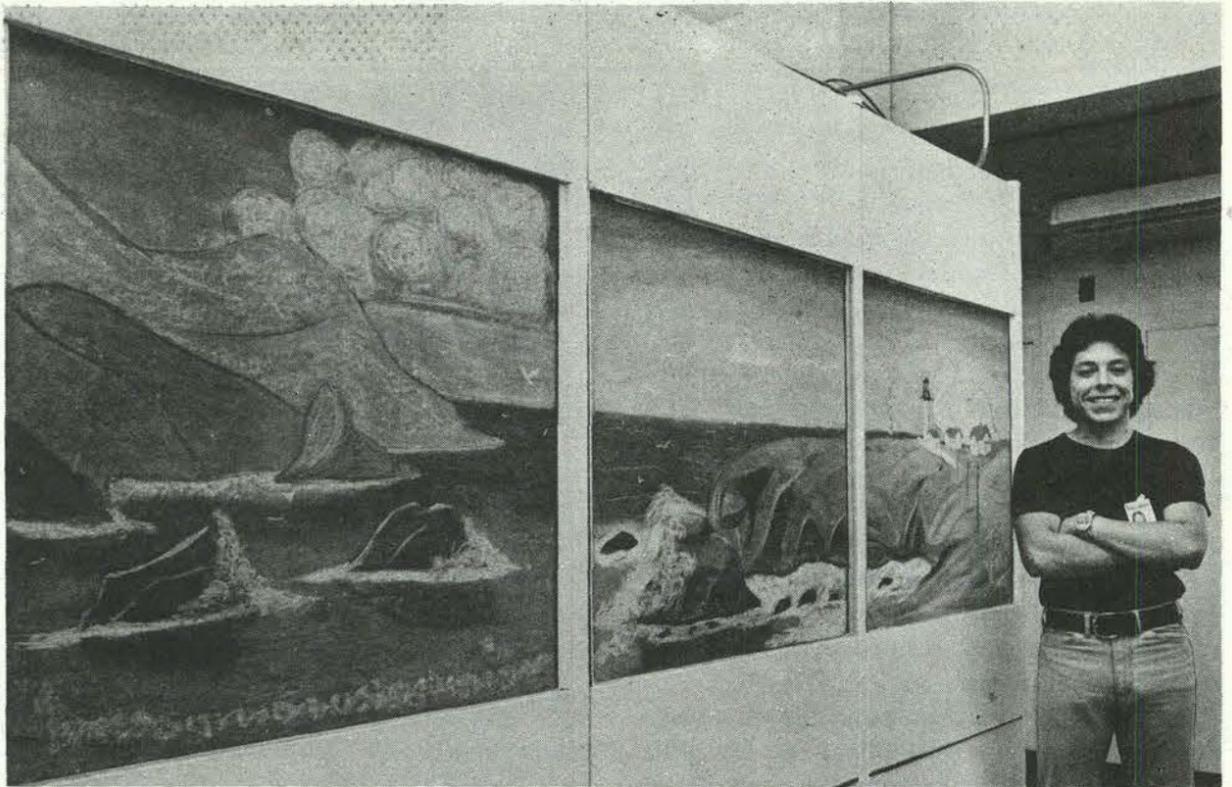
Ray Jojola (9414) was credited recently in playing a key lifesaving role following an accident on the Isleta Reservation.

Ray was visiting his parents after supper when the family noticed a great deal of dust along Highway 85. A small sports car had gone out of control and crashed into the irrigation ditch.

Ray ran the 60 yards or so to the ditch to find a little girl and a man trapped inside the car. Water, about waist high, was rapidly filling the car. Both occupants were injured and bleeding. Ray managed to get the child out of the car and onto the ditch bank. He returned to help the man out. The little girl (about three years old) had serious head and face wounds.

By this time, an Isleta paramedic who lived nearby was on the scene and treating the injuries. Ray's mother had called an ambulance.

"I'm glad I was there to help," Ray says. "There really wasn't any time to spare."



PSYCHOLOGICAL COOLER. That's not the title of Johnnie Griego's (9657) pastel chalk seascape, but it could be. His colleagues asked him to give them a refreshing scene in their drafting area in Bldg. 836. He used his lunch and before-work periods to create the mural. "I've always drawn stuff," says Johnnie, "but this is my first in color."

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

CLASSIFIED ADVERTISING

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

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 ERDA employees.
6. No commercial ads, please.
7. Include name and organization.
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TYPEWRITER, portable electric w/ case, Smith-Corona, \$85; typing table on casters, \$15; RV ceiling vents 14 x 14, \$10 ea/2 for \$15. Gray, 268-1883.

SANSUI, Model SR 717, direct drive stereo turntable, \$130; EPI "mini tower" speakers, \$180. Babcock, 296-5058.

SOLID MAPLE BUREAU, 6-dwr., 50" long, \$65; overstuffed livingroom chair, gold, \$30; Ward's stereo, \$30. Dalphin, 265-4029.

LAWNMOWER, Sears Craftsman, rotary w/grass catcher, 3.5 HP, \$20. Snyder, 296-5771.

REAR BUMPER, '64 Chevy P.U., \$20; 60 ft chain link fence, \$35; 6 ft x 2 ft water tank used for swimming, \$40. Sanchez, 292-3852.

BEERMEISTER, \$200 or best offer. Thoney, 294-6480 before 6 pm.

REGULATION POOL TABLE, includes all accessories, \$75. Robles, 298-2466

LEATHER HIKING BOOTS, mens, 10B, Vibram soles, worn 2 weekends, \$18. Smith, 242-9576.

CHAIN LINK FENCE, 150 ft., 6 ft. high, 2 gates, 2" posts, you remove, \$200. Martinez, 294-4913.

AKC GREAT DANE, 16 months, good watchdog, enjoys children, black, \$100. Shoaf, 865-6648.

FLY RODS, 8' Fenwick, 8 1/2' Garcia, 7 1/2' Phillipson, 2 - 7 1/2' custom built, all new. Kindley, 881-4182.

MOBILE HOME, 1961, New Moon, skirting, 2-bdr., new water heater, 10' x 48', set up, \$3,750. Valdez, 243-0742.

LABRADOR-WALKER HOUND CROSS PUPS, w/shots. Kane, 881-7672.

BABY BUGGY, \$5; car seat, \$5; toddler's tricycle, \$8; children's home made wood climbing toy (painted), \$10; finished wooden rocking horse & elephant, \$15 ea. Bishop, 299-5749.

WASHER & DRYER, Frigidaire, \$125; Teac reel to reel tape deck plus 20 reels of tape, \$250. Tollison, 266-2040

1972 STARCRAFT TENT TRAILER, sleeps 6, toilet, 8500 miles, \$1295. Coalson, 298-0061.

ELECTRIC FIREPLACE / HEATER, Sears, \$100; redwood stained sundeck for pool, \$25. Babich, 293-8737.

COWBOY BOOTS, Blucher custom-made, black calf, size 11-12 B, \$35,

cost \$110; Sunbeam electric horse-clipper, \$25. Rutledge, 281-1155.

PATIO DOORS, sliding 6', Alenco bronzed, 3 complete units w/ screens, \$80 ea. Rainhart, 821-3690 after 5.

REFRIGERATOR, white, 15 cu ft., Boes, 292-1690.

SHOP VACUUM, \$30; Magnavox color TV, works—needs some repairs, 23", \$125. Tufts, 255-9663.

TYPEWRITER, Olympia, portable, \$35. DeYoung, 265-4014.

BEN HOGAN WOODS, 1 & 3, stiff shaft, D 1 weight, \$30; ladies Bagboy golfcart, \$35; lavender nylon carpet, 15' x 15', \$50. Chandler, 296-3323.

FEMALE GREAT DANES, 2, picks of the litter, 1 black & 1 harlequin. Gustafson, 298-2888.

TOWING BAR for 1-7/8" ball hitch, \$25; 90/6400 volt transformer, \$20. Jackson, 296-1307, 13425 Sunset Canyon Drive, Albuquerque, NM 87111.

GARAGE SALE, Sat. May 21, 9 a.m. to 4 p.m. only, baby crib, iron gate, pickup rack, clothing, furniture, etc. Sublett, 3024 San Pablo N.E.

BEER TAP, CO₂ tank, regulator, Copeland, 266-4944.

AMATEUR RADIO STATION, Collins, 75A-4 receiver, KWS-1 transmitter, 80-10 meters, 1 KW SSB-CW-AM, \$850. Richardson, 877-2731.

TEAC CASSETTE, model A180, w/ Dolby, under warranty til August, offer. Patrick, 255-5944.

GOLF CLUBS, Pro line, woods 1, 3, 4, 5, reg shaft D-2, \$50; Nicklaus Golden Bear irons 3-9 & PW, \$45. Kaiser, 296-5215.

GARAGE SALE, May 21 & 22, dishes, sm appliances, trunks, toys, quilts, used carpet, drapes & rods, stereo, much more. 4712 Sherwood NE, Ormer.

ESTATE CLEARANCE SALE, tools, sporting goods, household items, everything must go, May 21 & 22, 8 a.m. - 8 p.m. 120 Stanford SE, Abbin.

ANTIQUUE table & 4 chairs, needs restoration, Bernal, 869-2305 or 898-1539.

TWO ea. tires, tubes, wheels, 7:00/16, 6-bolt-GMC, recappable, \$10; 3 ea. tires & wheels, 5-bolt Olds, \$15. Elskes, 1304 Georgia NE.

12 x 60 MOBILE HOME, 2-bdr., appliances, AC, new carpet throughout. Martinez, 298-7819.

TIRES, polyester/fiberglass belted, L-78-15's, 4 ea., \$10 firm. Stuart, 265-7315.

ROLLEIFLEX 4x4cm, \$175; Sankyo super 8mm movie camera w/power zoom, \$75. Laskar, 299-1024.

FREE KITTEN, female, black w/white markings, 3 mos. old, very friendly. Hall, 294-6295.

UTILITY TRAILER, 4x6x4 1/2; '73 Mitchell Fishing Hut, deluxe. Wigley, 299-5221.

WOODEN CRATES (2), lids w/screw fasteners, approx. 24x26x18 inside, \$3 ea. Madden, 296-1082.

G.E. RANGE w/self-cleaning oven, 30" wide, free standing w/matching hood & blower, \$115. Barham, 298-7304.

FREE 3 1/2-yr-old spayed female Persian; 2-yr-old male tom cat. Weber, 266-9100.

NEW tent & Coleman stove; Porta-Potty; broiler-oven; small sun lamp; 500W slide projector; Airquipt magazines; weed burner. Southwick, 281-3782.

AUTO. water softener, drapes, carpet, doghouse, RG-8 coaxial cable. Norris, 877-6415.

CHILDREN'S TOYS; swing set; bicycle; occasional chair; end tables; misc. Lee, 293-6216.

CAMERA, 35mm, viewfinder w/focus, case & carrying bag, \$30. Watterberg, 294-6759.

GREEN cloth recliner chair w/3-spd. vibrator, \$70. Baca, 265-2881 after 5:30.

REFRIGERATOR, large upright, black, \$40. Johnson, 298-1011.

TRANSPORTATION

'74 HONDA CB200, 3000 miles, adult ridden, \$600. Rose, 298-4849.

'74 HONDA CB360 motorcycle, air horns, crash bars, luggage rack, padded passenger back rest, \$675. Riley, 821-6431.

18' TRAVEL TRAILER, SC, 2-way refrig. & stove w/oven, hot water heater, furnace, sleeps 6, \$2400. Dingman, 881-9632.

'70 PONTIAC Bonneville, \$700 firm; '62 Airstream 22' travel trailer, \$3000 or best offer. Ulibarri, 3413 El Porvenir SW.

'70 4-DR. Impala HT, AT, AC, PS. Berg, 299-7334.

'72 DATSUN 510, 4-dr., below blue book. Apodaca, 821-6304.

TRAILER, 23' Prowler, '74, AC, self-contained bath w/shower, 6-gal. water heater, used once, \$450. Kindley, 881-4182.

'74 FIAT 124 twin cam (overhead) stn. wgn., 27,000 miles, 4-spd. stick, Michelin radials, AM-FM, CB wired, 4-cyl. engine, below book at \$2450. Morgan, 299-2850.

'71 CHEVY stn. wgn., Kingwood Estate, AC, PB, PS, luggage rack, air lift shocks, \$1700. Nuttall, 821-2895.

'74 21' Gleastron cabin cruiser w/Dilly trailer, 188 hp, basic & navigation gear. Heidrich, 881-4060.

'76 SCOUT II XLC, yellow, cork trim, PS, PB, AC, AT, AM/FM radio, bucket seats, auto. hubs, \$5600. McCoy, 294-1305.

BICYCLE, Schwinn stingray; erector set, G.I. Joe, electric football, tinker toys, etc. Amos, 298-1095.

'73 INTERNATIONAL Travelall 1010 series, lots of extras. Simons, 881-3298.

'70 TOYOTA Corona, AM-FM, AC, 4-spd., 4-dr., needs minor motor work, see & make offer. Benson, 256-1350.

'74 SUZUKI TS185L motorcycle, low mileage, \$475; CB Starduster antenna, \$20. Adams, 881-4351.

'74 900 KAWASAKI, pearl black w/white windjammer II fairing, extras:

English racing bars, backrest. Horton, 256-7661.

'67 PONTIAC Catalina, 4-dr., AT, AC, AM-FM, disc brakes, hd suspension, limited slip differential, steel belted radials, make offer. Karnes, 299-9033

'62 CONTINENTAL, original factory condition, low mileage, genuine leather, orig. Sultana white finish, will trade. Smitha, 881-1001.

HARLEY DAVIDSON chopper, 1940 Knucklehead; misc. parts & helmets; '68 Mojave motorcycle, needs some repair. Bernal, 869-2305 or 898-1539.

'69 DATSUN pickup, 1300 cc, \$900. King, 299-8768.

'72 FORD Gran Torino Sport, AC, PS, PB, one owner, \$2000 or best offer. Rodriguez, 883-8424 after 6.

'69 MUSTANG Mach 1, 390 engine, AM-FM, 8-track, 273 gear ratio, new paint, 4-spd. Morrison, 266-3139.

'72 CUTLASS Sportsman, one owner. Jaramillo, 277-5146.

MINI-BIKE, best offer. Stromberg, 255-6131.

'76 HONDA CB-360T, blue w/white accessories, less than 3000 miles, \$800. Maydew, 821-0102.

'67 CHEVY Impala, 83,000 miles, AC, PS, HT, \$650. Puccini, 294-1704 or 255-0568.

'71 HONDA CL70, \$150. Wilkinson, 299-8327.

'76 FORD F-250, 4x4, 360, 4-spd. PS, PDB, dual tanks, 12,000 miles, \$4950. Campbell, 294-6000.

'67 CHEVY Carryall, 327 CI, auto., \$350 firm; 36" hollowcore exterior door, new, \$10; new door lock, \$3. Aragon, 294-0225.

DIRT BIKES: 125cc Puch, \$275; 250 cc Yamaha Monoshock, '76 model w/air forks, \$895; 250 Husky WR, \$750. Lassiter, 298-2461.

'71 CHEVY 4-dr. sedan, V8, PS, PB, AT, AC, 61,000 miles, \$1300. Johnson, 298-7020.

'72 VEGA, 4-spd., radio, best reasonable offer. Dees, 898-8049.

'74 JEEP CJ-5, 258 6 cyl., Warn hubs, roll bar, rear spare/jerry can rack, 12,800 miles, \$3800. San Hamel, 255-9798.

3 FORD PICKUP TRUCKS: 1959, 1960 (4-wd), and 1961 (4-wd), as is, best offer. Stevens, 867-5713.

'72 FORD VAN, windows, complete rebuilt V8, PS, PB, manual trans., \$2150. Mossman, 268-5045.

'74 NOVA CUSTOM, hatchback coupe, PB, PS, AC, steel radials, lime green, \$300 below book. Hock, 881-1318.

'71 CHEV. Impala, 4-dr. HT, 350 engine, AT, PS, PB, AC, \$900. Barton, 265-8607.

'73 PONTIAC GRAN PRIX, vinyl top, SJ option, AC-PW-PB-PS, AM/FM stereo, radial tires, lge motor, \$2900. Boveric, 255-1071.

FOR RENT

3-ROOM VACATION HOME, rustic, by stream in forest, near Mora, N.M., \$15/week. Cooper, 268-8975.

3-BDR. home, new appliances, garage, nice yard, easy access to base, \$270, available June 1. Romero,

298-8586 or 265-2957.

LAKE-FRONT CABIN, Vallecito Lake near Durango, 3-bdr., furnished, fp, hiking, fishing, horseback riding, reserve for vacation. Croll, 881-7235.

SMALL commercial bldg, all utilities paid, \$125/mo., 3812 12th St. NW. Sanchez, 344-6931.

2-BDR., unfurnished, in 4-plex, color coordinated, outside storage, laundry facilities, near KAFB, 131 Gen. Arnold NE. Cashwell, 292-1150. *

REAL ESTATE

BELLEHAVEN AREA, brick, 3-bdr., DR, den, study, 1 1/2 bath, shop, dbl. car garage, 2090 sq. ft. Tormey, 298-5312.

WANTED

SEALED BIDS on piano bar (converts Spinnet type to Grand size); bids opened 5/26; high bidder remove 5/27. Coronado Club Office.

WATER SKIS. Amos, 298-1095.

WET SUITS; HP-35 or HP45 calculator. Copeland, 266-4944.

KODAK Pocket Instamatic, model 48, 50 or 60. Baxter, 344-7601.

PORTA-POTTI, flushable; 16.5 rims, 5-hole. Brock, 865-4055.

CEMENT MIXER, used, good condition, electric preferred. Perea, 867-2941.

ENGINE PARTS or complete engine for '66 VW squareback, 6-volt system. Kane, 881-7672.

HARDTOP TRAVEL TRAILER, 19 or 20', about 1974 model, self-contained. Coalson, 298-0061.

FURNISHED APT for visiting parents, June 5 to Aug. 20, approximately, prefer NE heights near Arroyo Del Oso golf course. Longcope, 821-8423

2" GALVANIZED PIPE for irrigation well. Miller, 869-6383 after 5:30.

HEAVY DUTY, filled punching bag & gloves. Rex, 299-6264.

RENTAL for summer (or buy) camp trailer w/shower. Wentz, 881-7125.

AUXILIARY GAS TANKS for Ford F-100 pickup and 7 1/2-10 HP outboard motor. Lee, 293-6216.

SAXOPHONE, C-Melody. Graham, 293-8823.

WORK WANTED

COLLEGE STUDENT needs summer work, specialize in house painting but will do any odd jobs, have truck. Sanchez, 293-4751.

2 TEENAGERS will do yard work, 3/4-ton truck to haul trash; lawn care, watering, etc. Brian, Pat, 881-0148.

LOST AND FOUND

LOST—silver-rimmed bi-focal safety glasses w/Photo-grey lens & black case, Rx glasses w/Photo-Lens and gun metal rims, silver necklace w/3 turquoise & numerous abalone fetishes, man's battery-operated watch w/fabric band, 2 pr. men's bi-focal glasses with square (rounded corners) lens.

FOUND—man's wire-rim glasses.

LOST AND FOUND, Bldg. 832, 4-1657.

MIDDLE—is where the hunger pains hurt most? Hang on till this evening and get invaded by 10 ounces of New York Steak hot off the outside grills. With the Happy Hour bar and good companionship buoying up your spirits, we'll have buoys and grills together—that's always productive. No seconds on steaks (\$3.95) and no kids' portions, but the snack bar will be open. At 8:30 it's *Cascabel*—if you like *Brown Sugar*, you'll love *Cascabel*.

CLASS—in Hunter Safety is what Sgt. Jim McNabb teaches at the KAFB Firing Range June 7-9 for the young hunters who need to be legal during hunting season. Free to members; waiting list for non-members—the class is limited to 30. Sign up at the Club now.

POVERTY—is what traveling with the C-Club doesn't lead you into. (Temptation is another matter.) The newest Club trip is a ride on the historic Cumbres and Toltec narrow-gauge railroad on July 23. Round-trip from Chama (bus, then train) is \$12.80 adults, \$4.80 under 12.

IS—Tokyo where you'd like to go but can't decide? Decide! The trip departs July 26 and returns August 9—unless you stopover in Hawaii at no increase in airfare. The whole package is only \$883 including fares, the fantastic Otani Hotel, and much more. For other C-Club travel bargains, see the last column.

EXPLAINING—why you'll want to go to the Alaskan King Crab and *Watermelon Mountain Jug Band* special on June 11 is like explaining the birds and bees to your teenager—possible, but unnecessary. So all we'll do is to tell you to pick up tickets well before the June 4 deadline. (Yes, it's a full pound of crab.)

THE—Happy Hour next Friday features barbecued spare ribs, corn-on-the-cob, baked beans, potatoes, salads, and *Jeanne Rich and Friends*. After hearing her, you'll likely be one of them. Buffet is \$3.50 adults, \$1.92 under 12.



AH SPRING!—the only season when Bob Lassiter (3521)—no doubt inspired by ElVeta Patrick (3251)—walks on water. Come Pool Opening Day (the 28th), they'll actually get into the water. Come join in.

CHECK—the activities at the Grand Pool and Patio Party on the 28th and you won't miss it: Mike (Accordion Bleat) Michnovicz, patio games with prizes (horseshoes for adults; ping-pong, shuffleboard, volleyball, cribbage, and darts for adults and kids, mixed and unmixed). Sign up for games from 11 to noon. Nickel dives will have the kiddies grasping for coins and gasping for air. The snack bar will be open; so will the 20-cent draft beer truck and a Happy Hour bar. And, of course, swimming all day—no ticket required. Swim passes will be on sale. The Party is free to members; members only, please.

IS—your family ready for a Variety Night tomorrow evening? The Whitecloud Indian Dancers will provide color, rhythm, and spectacle. The movie, *The Point*, a fascinating (but fun) lesson.

IN—case you'd like the latest scoop on C-Club tennis, see the "Fun and Games" section of the paper. The tennis group has netted a few more members and is courting several others.

THE—Soul Session on the 28th will help you get it all *Together*. Come out for a swinging time.

MAIL—your sealed (and well-labeled) envelope containing your bid on the piano bar (*sans piano*) to the Club right away. Or drop by the Club, inspect the bar, and leave your sealed bid in the office. The bids will be opened on the 26th and, if your bid is the highest, you'll have Friday to pay for it and remove it from the premises. It's a great way to turn that piano in the den into a doubly functional bit of furniture.

OVER—200 singles mingled on the Patio on May 6. The next Single Mingle is June 3 with most of the same attractions—games, music, Happy Hour bar, snacks, 50-cent admission, and lots of neat people. The change: draft beer by the pitcher. Club members: We won't have personalized invitations to everyone at Sandia and

ERDA, so be sure to spread the word!

A—word or two on pool schedule: Open May 28, 29, 30. Closed May 31, June 1, 2, 3. Open for the summer June 4 from 11 to 6.

PRINCESS—is what each Sanado daughter will think she is on June 7. And mothers of Sanadoes will be treated like queens for a day (well, a couple of hours at least). It's the Sanado Tea for members' mothers and daughters, and it features entertainment by the Albuquerque Dance Theatre. Reserve by June 2 with Barbara Gunderson, 3320 June Court NE.

PHONE—the office (or talk with Ed Neidel) for detailed info on the eight C-Club travel packages now going. We've mentioned the Cumbres & Toltec and Tokyo trips. One of the others takes you to America's frontier—Alaska—from August 28 to September 8 for about \$1160.

IN—Las Vegas, you'll have a choice of mid-week, off-the-Strip economy (June 13-15) or weekend, on-the-Strip excitement (June 17-19). Either one is fun. Airfare, lodging, and much more for \$125 or \$155, depending on your choice of trip.

YOUR—dreams of seeing romantic Hong Kong come true November 12-29 if you sign up soon. Just \$879 for the package.

SECOND—Pre-Trip Meeting for people heading for the London on the ABC Super Cheap this summer is May 24 at 7:30. **BONUS:** Dr. Warren Lee of the U of A will discuss English history and some of the historical sights to see while you're there. Non-tourists are invited too.

BATHROOM—facilities in the Grand Canyon worry some people. Needlessly. Through a miracle of modern sanitary technology, the outfitter solves the problem for you. Relax and sign up for the greatest trip through the greatest scenery in the country.

MORE INFO—265-6791.

