

Thanks to you
It's working



Afterthoughts

Annals of crime, part II--Last issue, we decried sneak thievery and observed that there seemed to be more of it, at least based on personal experience. Well, there is indeed more of it says Walter Troy, head of Security Standards Division 9541. Walt's records show a several-fold increase in the number of reported thefts, both of personal and government property. Mac Groll (4152) reports the most egregious sneak thievery to come to our attention. Mac takes care of the self-service used book stand in Bldg. 802, proceeds from which are used to help poor people in villages along South Highway 14. He replaces 15 to 20 books daily and thus expects a corresponding amount of money in the coffee can where customers pay for the books. But it hasn't been working out that way; someone is either stealing books or stealing money. Whoever it is will probably graduate into higher prestige rip offs like robbing the poor boxes at churches.

* * *

The inflated hamburger--During the Fair there was a great uproar occasioned by the Journal's Scott Beaven writing that the "quarter-pound" hamburger he bought from a concession stand actually weighed considerably less. The concessionaires protested Beaven's assumption that when he saw something advertised as "quarter-pound," that's what he got. Seems that the promotional wizards of the hamburger industry decided to base their advertising claims not upon what the customer actually gets, but to move one step backward in the process and to extol their product in terms of its raw (and heavier) state. When a customer who happens to be a reporter fails to accept or even to understand this kind of advertising practice, the hamburger people are aggrieved and send letters to the editor filled with rancor and righteousness. Look--why not advertise hamburgers by their on-the-hoof weight? Everyone knows it takes several pounds of cow to put a pound of cooked meat on the table and, by that measure, that two ounces of frizzled meat you get on a bun could be advertised as a half-pounder.

* * *

Irvin, have you tried our office coffee?--"It smells like gangrene starting in a mildewed silo, it tastes like the wrath to come, and when you absorb a deep swig of it you have all the sensations of having swallowed a lighted kerosene lamp. A sudden, violent jolt of it has been known to stop the victim's watch, snap his suspenders and crack his glass eye right across." A definition of "Corn Licker" by Irvin Cobb. *js



JON BARNETTE (2336) displays his multiple-coded locking device recently patented by the AEC.

Jon Barnette's Coded Switch Awarded Patent

The AEC was awarded a patent recently for a multiple-coded locking device invented by Jon Barnette of Rolamite, Mechanical Coded Switches and Timers Division 2336.

The device incorporates an electromechanical means to provide up to six possible codes to lock or unlock the switch. Also provided is an internal "check" code to relate whether or not all coding functions have been performed correctly.

Jon joined Sandia in the summer of 1960 after earning a BS at the University of Arkansas. He was a member of the first Technical Development Program and subsequently earned a Master's degree in mechanical engineering at UNM.

Events Calendar

- Sept. 27 — Albuquerque Symphony plays at Popejoy Hall, 8:15 p.m.
- Sept. 28 — Football, UNM vs Arizona, UNM Stadium, 7:30 p.m.
- Sept. 28 — Outdoor Sports Fair, all day, Los Altos Park.
- Sept. 28 — NM Mt. Club, moonlight hike, 6-7 miles, Eastdale, 7:30 p.m.
- Sept. 30 — Taos Pueblo: war dances, pole climbing, foot races.
- Oct. 5 — The musical "Seesaw" at Popejoy Hall, 8:15 p.m.
- Oct. 5-6 — Last weekend of season for Cumbres & Toltec Scenic RR; contact LAB NEWS for schedule.
- Oct. 6 — Jackson Brown, Bonnie Raitt concert at Popejoy Hall, 8 p.m.
- Oct. 6 — NM Mt. Club, aspen walk in Santa Fe National Forest, 5-7 miles, Gulf Mart, 7:30 a.m.
- Oct. 7 — UNM Speakers Series: Erick Von Daniken, 8 p.m., SUB ballroom.
- Oct. 9 — Soviet Georgian dancers & Tsilitsi Choir, Popejoy Hall, 8:15 p.m.

Scientist on the Hill

Like many other Sandians, Will Smith (5113) buses to work. His bus, though, speeds up a special express lane on the Shirley

highway, crosses the Potomac into the District of Columbia, and ends up on Capitol Hill.

Will is on temporary assignment with the Senate Interior Committee, chaired by Sen. Henry Jackson (D-Wash). Will, with others, is doing research which should lead to several energy-related bills. Specifically, he's helping to assess the availability of the natural resources and manpower which are necessary to move the U.S. toward energy independence.

Will is also keeping abreast of developments on the Energy Research and Development Administration (ERDA) bill as it nears House-Senate conference and the compromises likely to occur there.

"I'm enjoying being a physicist on The Hill," says Will. "There are about 2000 professional people working with the Senate and the House. That may sound like a lot, but given the many committees and the increasing number of bills which demand professional expertise, it's not a big pool. And only about 20 of us have scientific backgrounds — we're kept busy."

Will is slated to return to Sandia by August 1975.

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Editorial offices in Albuquerque, N.M.
Area 505 264-1053
ZIP 87115

In Livermore Area 415 455-2111

John Shunny is editor

&

Don Graham ass't. editor

Bruce Hawkinson & Norma Taylor write
Bill Laskar does picture work
Gerse Martinez lends a hand
&

Lorena Schneider reports on Livermore

Morgan Sparks:

The Budget & The Labs

Money matters tend to dominate any discussion by employees of the Labs, and the budget was the central topic of a LAB NEWS interview this week with President Sparks. Here is a report on that interview.

* * * *

Lab News — Mr. Sparks, we understand you've recently returned from budget discussions with AEC officials in Washington. What does the Labs' budget look like?

Mr. Sparks — We're in a very tight budget situation this year. When our fiscal '75 budget was first put together last year, our planned programs were well supported. But several changes have since occurred — the two most significant being a cut in the AEC weapons budget by the House of Representatives and the authorization by DOD of several new weapon development programs. After several adjustments our part of the cut amounts to \$4.5 million. We welcome the new programs, but this work will increase required hardware purchases out of already tight money by several million dollars this year.

How will the budget outlook affect our current operations?

We anticipate some shifts of people to reflect changes in funding. For example, some of those in our weapons programs, particularly the exploratory programs, will move to the DOD reimbursable programs, others will go into energy R & D, and still others to the new activities in organization 1700 — nuclear security systems.

What are prospects in these fields?

Historically, DOD reimbursables account for about 10 percent of our work, and much of it is closely associated with our AEC weapons work. These programs are in the national interest. They also enhance our capabilities and opportunities for future assignments. We will continue to seek appropriate reimbursables, and I expect they will become a larger part of our work — perhaps double the present level.

We are just beginning work relating to energy research and development. Among these new programs are projects involving solar energy, some promising new approaches to oil well drilling and to the extraction of oil from shale, and the improved efficiency of automobile engines. Looking ahead, I expect our work on energy related projects will increase. I'd like to see it grow to the level of our DOD reimbursables. As now planned, the expanded national program for energy R & D is tied into the establishment of ERDA (Energy Research & Development Administration). Bills to establish ERDA have passed both the Senate and the House, but it is touch-and-go whether differences between Senate and House versions can be worked out before Congress adjourns Dec. 31. The resulting uncertainties in the organization and administration of the national energy program have made it more difficult for us to initiate work in the energy field, especially since we are starting from scratch.

The security of nuclear materials against diversion to unauthorized uses has become a problem of increasing national concern. Sandia's extensive background in the development of security measures for nuclear weapons is highly applicable in solving the new problem, and we are now the central laboratory in this increasingly important field.

Another new activity for us is reactor safety. The Labs has developed and operated nuclear reactors for a number of years to study the effects of radiation on materials, components, and subsystems. This experience and some of the unique features of our reactors are directly related to new programs being undertaken by AEC's Division of Reactor Safety Research.

What does this all add up to?

The AEC weapons program is in a very tight budget squeeze this year, and Sandia's budget reflects this circumstance. Fiscal '76 will likely be much the same. Good management and frugal practices are absolutely necessary. We have introduced more stringent controls to keep our spending at a minimum. We won't be alone — all federally funded activities will be under pressure to keep spending down. And I would urge every Sandian, at whatever level, to practice economy. One less trip, one less equipment purchase, making do with present facilities — if enough Sandians make it a point to be thrifty our budget problems, while not eliminated, will certainly be less severe.

I'd also like to emphasize one point. Although the prospects are that the AEC weapons program, measured in constant dollars, will level off or perhaps decrease somewhat in the years ahead, it is still our mainstream activity and is likely to remain so. New initiatives in non-weapons work are exciting, and I believe they are vital to the future of Sandia, but in focusing attention and publicity in these new areas we should not lose our perspective. Most of our people still support our historical functions — functions that the nation will continue to need in the years to come.

Looking at these years to come, I think Sandia has a bright future. Research and development will have to provide the solutions to many of our country's problems. I have described several new areas where Sandia is already contributing. We have an excellent staff, experienced and well-trained in relevant disciplines, and that, of course, is by far the most important ingredient of a successful laboratory.



Speakers

C. Arnold (5811), "Decomposition of Polyoxymethylene (Delrin) and Polyaryloxysulfone (Astrel 360) in the Presence of Nitrogen Dioxide," J. A. Panitz (5114), "The Direct Characterization of Catalytic Surfaces by Field Desorption Mass Spectrometry," ACS meeting, Sept. 8-13, Atlantic City, N.J.

H. J. Stein (5112), "Bonding and Thermal Stability of Implanted Hydrogen in Si," Conference on the Preparation and Properties of Electronic Materials, Sept. 9-11, Boston.

M. G. Vigil (9322), "Performing Characteristics of Sandia Laboratories' 5.8-Meter Dia. Explosively Driven Blast Simulator"; W. B. Leisher (9322), will be presented by M. G. Vigil, "Blast Pressure Transducer Use at Sandia Laboratories," Fourth International Symposium of Military Applications, Royal Military College of Science, Sept. 9-12, Shrivenham, Berkshire, England.

R. A. Anderson (5814), "Surface Flashover Investigations Directed Toward Improved Performance of Insulators"; D. J. Sharp and G. J. Hof (both 2432), "Thermal Acceleration of Ozone Interactions with Graphite and Other Organocarbons"; C. M. Tapp (2430), "Surface Characterization of Substrates for Hybrid Microcircuits"; T. S. Prevender (5833) and A. W. Lynch (5824), "Preparation of Laser Fusion Targets"; R. A. Sallach (5831), "Lava/Metal Interface Reactions"; G. J. Kominiak and R. R. Sowell (both 5834), "Coatings for Solar Energy Applications"; L. K. Jones and F. W. Oswald (both 5822), "Relative Effectiveness of Solvents for the Removal of Surface Contamination"; R. A. Langley (5111) and F. M. Bacon (2412), "Deuterium Depth-Profile Measurements in Neutron Tube Ion Sources"; N. J. Magnani (5831), "Compatibility Studies at Sandia"; S. M. Myers (5111), "Ion Backscattering Study of LiOH-to-Li₂O Conversion on a LiH Substrate," Conference on Surface Studies, Sept. 10-12, Oak Ridge, Tenn.

F. P. Gerstle (5844) and T. R. Guess (5847), "Analysis of Adhesive Shear Strength Test Configurations"; T. R. Guess and R. L. Allred (5844), "Double Lap Joints in Bending: An Analytical and Experimental Study," Army Symposium on Solid Mechanics, Sept. 10-12, Cape Cod, Mass.

Dick Jacobson Revisited

Last September, LAB NEWS ran a story on Dick Jacobson (8114) who had been taking kidney dialysis treatments since 1970. Since our interview, Dick has had a kidney transplant. The LEAP campaign lends support to the Kidney Foundation through CHAD, and Dick's experience illustrates medical advances made possible through the work of such foundations. We interviewed him again last week.

Lab News — Dick, when were you notified that a transplant was available?

Dick — One morning in December last year about 6 a.m. I had just returned four days before from a trip to Wisconsin.

LN — How long can a kidney be kept before transplant?

D — About three days, I think. For me the period was about 24 hours from the time the kidney was removed until the transplant.

LN — What was your reaction when they called?

D — I thought, do I really want this thing? I'm doing pretty well on dialysis. However, it didn't take me long to make up my mind.

LN — How did they match you up for this particular kidney?

D — To select the right recipient for a kidney transplant, the medical people compare the blood of those needing the kidney with the blood of the kidney to be transplanted. For example, I'm an O-positive, so every time an O-positive kidney came in, they ran comparisons, by computer, of mine and other O-positive samples. The closest match with the O-positive kidney is selected as the recipient.

LN — How many people do they call?

D — One person for each kidney. After waiting three years I finally came out in the top two, while the fellow that got the other kidney had only been waiting one month.

LN — Did they give you any idea who the donor was?

D — The hospital would only say that it was a pre-teenage boy who died accidentally. However, no other details are given. They tell you to think of it as you would a blood transfusion.

LN — You must feel like a young man with that kidney. Will it grow?

D — Yes, I feel a lot younger than I did before the transplant and the kidney does grow rapidly. I'm told the best kidneys for transplant are from young persons, even as young as six years.

LN — Do you remember anything about the operation itself?

D — No, I was under pretty heavy sedation. They put it in near the appendix, attaching it to the main artery going into the leg. My kidney didn't start working immediately. In fact, they thought they had a rejection on the operating table. Finally, after five days it came on strong, as shown by my

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DICK JACOBSON contemplates the Dick Jacobson of a year ago. At that time Dick was just changing from the large dialyzer at his left to the disposable unit in his right hand. This was followed by a successful kidney transplant in December.

blood chemistry starting to return to normal, for the first time in 10 years.

LN — What was your feeling during recovery?

D — Well, you're sick and you have to take large doses of steroids which, among other things, make you heal more slowly. For instance, the stitches stay in three weeks instead of the normal one week. The drugs have all sorts of side effects, so you can't stay on a high dose too long. And all the drugs are anti-inflammatory and slow down or attenuate your rejection mechanism so that you're subject to other diseases. However, I felt much better in a few weeks.

LN — What are the chances for success of a transplant?

D — About 50 percent from cadaver transplants. There were nine men receiving transplants when I was there. Six transplants were successful, but two died later of causes unrelated to their transplants, leaving four of the nine with successful transplants.

LN — Do you have any advice for the person who might be having this operation?

D — It's great if it works; if it doesn't, I imagine it would be a bad experience to get your hopes up and then have to go back on dialysis. I don't regret it. I'm doing fine and feeling fine, with lots more energy. Some people who do poorly on dialysis really don't have much of a choice. You just have to decide if the odds of success and your condition and outlook warrant a transplant. But I haven't heard of many people who decided not to have a transplant.

Over 200 people in the Bay Area await kidney transplants. Why not make provision to donate your kidneys? Employee Services has information on the donor program. Your gift will make life a lot more pleasant for a person suffering from kidney disease.

Speakers

Kirk Battleson (8342), "Neutron Transmission Gauging of Helium-3"; Charles Hartwig and Vern Barr (both 8342), "Accurate Measurement of Tritium with Ionization Gauges"; and Bob Setchell (8115) and Dave Ottesen (8313), "The Potential Use of Raman Spectroscopy in the Quantitative Analysis of Hydrogen Isotopes," Gas Analysis Conference, Mound Laboratory, Miamisburg, Ohio, June 11-12.

Bill Ashurst (8115), "Density and Temperature Dependence of the Lennard-Jones Excess Shear Viscosity"; Bill Ashurst and W. G. Hoover (LLL), "Liquid Shear Viscosity via Molecular Dynamics, The Wall Correction," American Physical Society meeting, Salt Lake City, June 12-14.

Mel Callabresi (8114), "General Nonlinear Analysis of Two-Dimensional Structures — GNATS," International Symposium on Structural Mechanics Software, University of Maryland, June 12-14.

Bob Setchell (8115), "Analysis of Flame Emissions by Laser Raman Spectroscopy," 1974 Spring Meeting, Western States Section of Combustion Institute, Pullman, Wash., May 6-7; Livermore Technical Seminar Series, June 4; and Special Seminar, Stanford University Mechanical Engineering Dept., Palo Alto, Calif., June 26.

John Brooks (8314), "Weldability of High N High Mn Austenitic Stainless Steels," American Welding Society Conference, Houston, Tex., May 7, and "High Strength Stainless Steel Development," Livermore Technical Seminar Series, June 17.

Tom Brumleve (8184), "Prospects for Solar Energy Utilization," Annual Conference of the California Society of Professional Engineers, State Line, Nev., June 13-15.

Ben Benedetti (8113), "Dynamic Stability of a Beam Loaded by a Sequence of Moving Mass Particles," Seventh U. S. National Congress of Applied Mechanics, University of Colorado, Boulder, Colo., June 3-7.

Billy Sanders (8115) and Prof. Harry Dwyer (UC/Davis), "A Physically Optimum Difference Scheme for Three-Dimensional Boundary Layers," Fourth International Conference on Numerical Methods in Fluid Dynamics, University of Colorado, Boulder, Colo., June 24-28.

Bob Huddleston (8322), M. R. Scott (2642), A. L. Fymat (JPL) and R. E. Kalaba (USC), "The Spectrum of the Anisotropic Transfer Equation," Society for Industrial and Applied Mathematics 1974 National Meeting, California Institute of Technology, June 25.

Walt Bauer (8334), "Charged Particle Irradiation Effects on Surfaces," invited presentation to APS Summer Study on Physics Problems Relating to Energy Technologies Radiation Effects on Materials, Brookhaven National Lab, N. Y., June 20.

Goal: \$41K

LEAP Campaign Begins Monday

The 1974 LEAP (Livermore Employees' Assistance Plan) fund raising drive gets underway Monday, Sept. 30, with employee meetings describing this year's program scheduled for that afternoon. During the week-long campaign, squad leaders and solicitors will contact each person.

Chairman John Marion (8332) says the campaign goal has been set at \$41,000, a target which the committee feels is realistic. "In keeping with the slogan 'A little more will do a lot more,' our major effort will be directed toward encouraging each employee to up his or her contribution a bit," says John. "Of course, we'll also be aiming at a related factor — an increased number of LEAP share givers, those who contribute one hour's pay per month."

LEAP serves as a means for Sandians at Livermore to participate in a combined effort that supports local community service agencies in addition to the United Bay Area Crusade and national health agencies. Through LEAP, employees have the opportunity of giving "once for all."

After extensive investigation and consideration by the employees' committee, seven local agencies, plus CHAD with 12 member agencies, and UBAC with over 180 member agencies, will receive LEAP funds. Here are the allocations:

Local Agencies	%
1. Livermore-Amador Valley Emergency Fund Center	5.0
2. Nursery School Scholarship Fund	5.0
3. Cerebral Palsy Center for the Bay Area	1.5
4. Health Care Concerns	1.0
5. Twin Valley Counseling Services	1.0
6. Valley Youth Services	1.0
7. Connection	0.5
National Agencies	
Bay Area Combined Health Agencies Drive (CHAD)	17.0
United Bay Area Crusade Agencies	67.0
Reserve	1.0
Total	100%

New on the list are two local agencies — Health Care Concerns and Valley Youth Services. Health Care Concerns is the only clinic in the Livermore Valley offering services in such areas as geriatrics, VD treatment, well-baby and child care, and premarital counseling to people unable to pay for such service. Valley Youth Services provides professional counseling for students at high schools in Livermore and Pleasanton.

"All of us are being hurt by inflation," notes John, "but the cost of helping others has gone up more than the cost of living for most Sandians. Let's keep this in mind and give 'a little more' this year."

Congratulations

Gary Kirchner (8182) and Vicki Roark, married in Livermore, Aug. 24.

Mr. and Mrs. Don Kasberg (8431), a daughter, Lisa Diane, Aug. 20.

Sympathy

To Bob Marmon (8412) on the death of his father-in-law in Livermore, July 30.

To Frank McMurtrey (8421) on the death of his mother-in-law in San Leandro, Aug. 26.

THE WIZARD OF ID

By Brant Parker and Johnny Hart



By permission of John Hart and Field Enterprises Inc.

Annual ECP Drive Starts Next Week

Sandia's annual Employees Contribution Plan drive starts Oct. 3 when directorate representatives, solicitors, the ECP committee, union officials and large staff hear an address by President Morgan Sparks on the subject.

Bob Garcia (200), chairman of the ECP committee, reports that the goal of this year's drive remains the same — 100% participation at the Fair Share level. Fair Share is defined as one hour's pay per month or .6% of annual income (the local community uses a sliding scale to define "Fair Share" under which up to 1% of salary for those making over \$15,000 annually must be given to qualify).

Last year Sandians pledged \$385,368 to ECP agencies, an average gift of \$83.60 per contributor. About 86% of employees contribute and more than 50% pledge Fair

Share or more. A number of retired Sandians continue to contribute to ECP.

ECP funds go to the 34 agencies of the Albuquerque Community Fund and eight additional national health and welfare agencies. The funds are distributed on the basis of the fund-raising experience of the agencies in the Albuquerque community.

Next year's ECP funds will be distributed as follows:

United Community Fund	85.2%
Cancer Society	3.1
Heart Association	3.0
Cerebral Palsy	0.7
Muscular Dystrophy	1.8
Arthritis Foundation	1.3
Multiple Sclerosis	1.6
Crippled Children	2.1
Cystic Fibrosis	0.7
Reserve	0.5
	100.0%

Credit Union Reporter

By Earl Simonson,
President

'No monthly Payment Until February 1975'



"Finance charges are applicable during the deferred period." So read some recent local ads that sound like a wonderful opportunity to buy that new washer and dryer, or redecorate the house now without having to pay a thing until after Christmas. But first stop and consider:

- (1) Do you want to pay four additional months interest in order to defer your payments until February?
- (2) Must you follow the store's plan, step by step, in order to buy the items now and defer the payments until February?

Let's assume you've decided on a \$500 purchase and you'd like to defer payments until February. Are other, cheaper means available to gain the same end? Answer: yes. You can make a 180-day one-payment loan at the Credit Union on any form of security, including your signature. Then, in February, you could refinance the loan and make monthly payments in the amount you would have paid against your charge card. But the Credit Union route is much cheaper:

	Credit Union	Charge Card
Original Purchase	\$500.00	\$500.00
Annual Percentage Rate	10.8%	17.5%
Monthly Payments Starting in Feb. '75	\$18.75	\$18.75
Number of Payments	31	37
Total Finance Charges	\$90.01	\$183.33

You thus save a total of \$93.32 by borrowing against your signature — our highest rate — and if some other collateral were used you could save even more because of the lower interest rate. You could still make your purchase today and defer payments until February. Remember also that most time payment plans call for a prepayment penalty in the event you wish to make an early payoff.

New Legislation Affects Credit Union

President Ford has recently signed the Housing and Urban Development Act which includes an amendment authorizing Federal Credit Unions to pay dividends from date of deposit to day of withdrawal. We are awaiting additional information on the effective date of the Act and implementation procedures.

New 6 1/2% Dividend Rate

The Board of Directors has declared a new 6 1/2% dividend for the quarter ending Sept. 30 and plans to increase the rate still further next quarter.

Credit Union Bulletin Board

Federal Examiners have just completed their yearly examination and report that the Sandia Credit Union is one of the best in the Region.

The Board of Directors has increased share account limits to \$20,000 for both member and custodian accounts.

Safe deposit boxes are still available.

Help Wanted: AHS & YMCA

Katrina Person is a young woman in Affirmative Action Division 211 who is doing a little drum beating for certain kinds of recruits. Specifically, for Sandians who (a) like to work with young people and (b) can spare a few hours a month to do so.

Katrina has visited, among others, Albuquerque High School and has learned that students there have a need to talk with people from the work world so that they can get a better handle on different occupations. Sandians in a range of jobs are what Katrina has in mind to represent the work world, and she is particularly interested in those who can speak with students about electronics, drafting, office work, publishing, welding, mathematics, computers, photography, the sciences and ecology. If you call, she'll add your name and specialty to the list, work up a schedule with the people at AHS, and one day give you a call to arrange a time when you can talk to the students.

Taking a little more time, but proportionately more rewarding, are some of the youth programs of the downtown YMCA. Katrina reports that the old place at 1st and Central is being abandoned, and the Y is moving into both Old Albuquerque High and a new building at Grand and Broadway. Y Director Hugh Eberle states that they have considerable need for adults willing to take an active interest in their young people and their youth program. Adults with the same ethnic background as the young people are particularly effective, but any interested adult is welcome.

You can reach Katrina on ext. 1949 to get more detail on both the AHS and the YMCA programs.

Volunteers Needed for Cleaner Air Week

It used to be Clean Air Week. Now we're settling for Cleaner Air Week. This year it's Oct. 5-12.

Vehicle owners and drivers can spend five minutes time (but no money) and get an exhaust emission test at any of 10 locations around the city. The test is a quick way to learn whether you're polluting air unnecessarily — and buying more gasoline than you should.

One testing clinic will be located between the KAFB-East Commissary and the Bank of New Mexico; it's open from 10 a.m. to 5 p.m. Monday through Saturday. Other locations, open from 10 a.m. to 6 p.m. on Oct. 7-12, are: Coronado, Winrock, Gulf Mart, K-Mart (Carlisle), K-Mart (West), UNM, Eastdale, Manzano, and Woolco.

On Oct. 5 school-age kids can hie themselves to one of the three high schools where bike rallies will be held — bike safety, bike skill contests, prizes. Check the dailies for exact times and places.

Like to help out with the bike rallies or spend a day testing emissions? No experience required, but you must be 15 or over. Call Terry Word at 842-6060 on the rallies, Hoyt Westcott at 842-3541 on the clinics.

Take Note

The Society of American Value Engineers recently recognized Jack Hueter (3131) as a Certified Value Specialist. This honor recognizes Jack as a professional, qualified to practice and teach value engineering. Jack was one of the group of Sandians that developed the Labs' VE program in 1963 as part of a cost reduction effort. The program was adopted by AEC and Jack conducted numerous value engineering/value analysis workshops throughout the AEC complex. He has been at the Labs since 1957 and now handles the University-Industry Relations Programs in Education and Training Division.

The 1974 Caravan, sponsored by the New Mexico Chapter of the Electronic Representatives Association, will be at the Airport Marina on Friday, Oct. 3, from 10 a.m. to 7 p.m. The Caravan, a joint effort by local electronics firms, includes hardware ranging from electrical and electronic components to complex instruments and systems for all kinds of scientific applications. It's free, and all interested persons are invited. More info from 292-3323 or 298-1875.

The Sandians, an organization of wives of employees, will meet Monday, Oct. 7, at 7:30 p.m. in the home of Patsy Phipps, 10605 Moonlight Ct. NE. Guest speakers will discuss turquoise and Indian jewelry, rugs and sand paintings. For additional information, call 299-8490.

Don Wesenberg (9324) will be an assistant instructor in a Farrier Science Course that is offered by N.M. State Univ. (For city slickers, farrier science is usually called horseshoeing.) The course runs on weekends from Sept. 28 to Nov. 24, every Saturday and Sunday from 8 to 5, costs \$225, and with 23 million horses needing four shoes each (Don's figures) running around, the country needs farriers. Call Don on 344-8974 if you're interested.

Did you see that little brown dog running around the Tech Area a while back? She was looking woebegone, so Mary Pasko (9535) rounded her up and had a vet check her over. The vet gave the dog a clean bill of health, noted that she had been cared for in the past (spayed and ears clipped), and estimated her age at two years. Mary advertised on the bulletin boards, and the story has a happy ending: little brown dog and a new owner have found each other.

ENERGY SAVINGS

COMPARED WITH LAST YEARS USAGE
REPORTING PERIOD SEPT. '73 - AUG. '74

ELECTRICITY	1973 91,000 MWH.	17.8 %
	1974 79,400 MWH.	
STEAM PLANT FUEL (EQUIV. OIL)	1973 219,400 BBLs.	16 %
	1974 188,400 BBLs.	
VEHICLE MILES	1973 2,475,000 MI.	21 %
	1974 2,048,000 MI.	



VISITOR from Washington, AEC's John Ryan discusses Sandia with President Sparks. Mr. Ryan is Assistant General Manager for Administration at AEC Headquarters.

Retiring



Claire Haut (4124)



Sylvester DeLuca (4821)

The Cover

We knew there was good reason for saving all those old photos from previous issues of LAB NEWS. Ass't. Editor Don Graham, who has the job of United Fund promotion in the paper, took a deep breath and proposed both the idea and his doing it. Did you ever cut out 213 faces from photos and paste them down? Great fun if you dig exacto knives and glue. We thought Don did a pretty good job, but when we asked him to supply the ID on those people he became incoherent for some reason.



Letter to the Editor

Regarding your editorial of a couple of issues back, I don't disagree with your suggestion that school kids could ride bicycles to school and benefit from the exercise.

There are, however, other considerations.

Your editorial seems to suggest that all school students ride buses to school. Not so. Of the 80,000 or so students in Albuquerque Public Schools, about 33,000 (41%) are eligible to ride buses.

Why is that? Discrimination? No, it's because in New Mexico there's a statute that says a grade school student who lives more than a mile from his school must be provided transportation; for a junior high student it's 1.5 miles and for a senior high student it's 2 miles. Not everyone who is eligible takes the bus, but it still must be provided.

As for savings, there are a couple of unusual things about the way transportation is financed. First, the number of eligible students is determined, the miles they are to be bused is measured (by a normal walking route, incidently, not as the crow flies), then the dollars to be allowed are added up and supplied directly by the State to the School District. The district disburses the money to the contractors (more on that later) through what might be called a "wash account," i.e., every dollar that comes in goes out. Thus, no District can effect economies — or spend dollars intended for other purposes — in the business of transporting students to schools.

Now about the contractors. In some states, one of the big issues that faces school boards is how many buses and what kind ought to be bought by the school district. Here, buses are owned and operated by contractors. They are "private enterprise" providing a service that must meet standards (especially safety) set by the State. Being private enterprise, they also have to work for efficiency if they're to make a profit. One result is that buses sit idle a relatively short time. Typically, a bus will make three runs each morning and three runs each afternoon. The 345 buses of the 12 contractors traveled about 4,533,300 miles in school year 73-74, an average of 13,140 miles per bus, or a little more than most family cars.

Back to the point of your editorial: More students are riding bikes than before, and the number appears to be increasing. Schools are providing parking spaces, some security, and bicycle safety programs. In short, the young people seem to be swept up in the current enthusiasm for biking.

This whole discussion reminds me of something that is supposed to have happened in Santa Fe at the time the Legislature passed the bill providing bus transportation. According to the story, the Senate Chaplain opened a session with words like, "O Lord, grant thy wisdom to this legislative body which has appropriated X million dollars for physical education programs and another X million dollars so our children will not be required to walk to school."

Amen.

Hank Willis - 3130
President, Albuquerque
Board of Education

Sympathy

To George Rodgers (2120) on the death of his mother in Yorba Linda, Ca., Sept. 2.

To Debi Hill (5131) on the death of her mother in Albuquerque, Sept. 2.



BOB TRUDO (2643), project engineer for the installation of the Uninterruptible Power Supply for the Univac 1108 computer, checks the reserve batteries. The system includes automatic controls and rectifier system which supplies smooth continuous power to the 1108 without power fluctuations. At left, Bob monitors control panel.

Will Save \$100,000 Annually

New Power Supply for 1108 Computer

Sandia's Univac 1108 is a hardworking computer that handles administrative, accounting, engineering information and quality assurance programs. It operates seven days a week, three shifts a day. Except when it's "down." Used to be that it was down a couple of times a week, "crashing" when there were major fluctuations in the power supply. No longer. There has not been a hardware crash since the installation of an Uninterruptible Power Supply (UPS).

As LAB NEWS went to press, the UPS had provided continuous power to the 1108 without fluctuations since Sept. 15. Bob

Nat'l Hunting & Fishing Day

The annual Outdoor Skills Fair, sponsored by the Albuquerque Wildlife Federation in observance of National Hunting and Fishing Day, will be held tomorrow, Sept. 28, at Los Altos Park. Featuring outdoor recreation displays and conservation exhibits prepared by more than 30 organizations, the fair is open from 9 a.m. to 4 p.m. Admission is free. The event will also feature duck and turkey calling contests and archery, kayaking, scuba diving, and rock climbing demonstrations. Dave Weingarten (2434) is president of the Albuquerque Wildlife Federation.

Tomorrow has also been selected for an open house and dedication of the Seven Springs Trout Hatchery in the Jemez Mountains by the N.M. Game and Fish Department. Ceremonies will begin at 10:30 a.m., a chili lunch will be served, and afternoon demonstrations and hatchery tours will be conducted. The hatchery is located on State Highway 126 north of Fenton Lake, about 3/4 mile north of the community of Seven Springs.

Trudo (2643), UPS project engineer, was jubilant.

"I feel this justifies the \$140 K cost of the UPS," Bob says. "The downtime on the 1108 before installation of the UPS was costing the company about \$100 K annually, not to mention the frustration of lost programming time, lost runs and the loss of fast transfer drums which were occasionally damaged. We should rapidly amortize the cost of the UPS, and we hope reduce user frustration at the same time."

The UPS is a solid state, three-phase system with automatic controls, a rectifier system, and battery storage. It converts commercial three-phase AC power to DC power which recharges the batteries and which, shunted to the inverters, is converted to precise three-phase AC power. Thus, this arrangement is an AC-DC-AC system. Should utility power fail, the inverters continue to convert DC battery to AC power. When the utility AC power returns, the chargers restore the DC power reserve in the batteries and provide DC operating power to the inverters once again.

The system is automatic. Audible and visual alarms tell the computer operator of a power outage. The battery reserve will operate the computer for 15 minutes, sufficient time for the operator to initiate an orderly shutdown of the computer in case of a total power failure. Plans are now underway for installation of an automatic-start diesel generator which could take over supplying power to the computer after 20 seconds of power failure.

Bernie Lorenzen (9743) headed the Plant Engineering team responsible for installation and construction for the UPS system. Others include Walter Scott, Tom Eglington, Bill Stamm (all 9743), and Mack Milner (9753).

Dan Puetz (2643) assisted Bob Trudo with plans and specifications for the UPS system.

Ralston Barnard's Connector Device Awarded Patent



Bell Laboratories was recently awarded a patent for a connector device invented by Ralston Barnard (2434). He joined Sandia last April after working six and a half years for Bell Labs at both Murray Hill and Atlanta.

The connector, a small slotted U-shaped device, enables rapid connection of plastic insulated wires used in the Bell system. Once made, the connection has high reliability and an extended lifetime. About 165 million of the devices are planned for production annually.

Two wires to be connected are thrust into slots in the walls of the U-shaped connector. The insulation is penetrated and the connection is made. Key to the success of the device is the multiple plated contact point. A barrier layer of nickel, plated between the copper-based alloy of the connector and the contact indium layer, prevents a formation of intermetallics or other brittle oxides which degrade electrical elements.

Ralston joined Bell Labs after earning a PhD in nuclear physics at the University of Colorado in 1967.

Planning for Emergencies

Emergencies are no fun to plan for. But they're worse to endure — especially when there's no comprehensive plan for responding to the disaster or emergency. Emergency preparedness these days means natural, local, civil, and operational emergency plans as well as plans for national emergencies.

Sandia is currently improving its Emergency Preparedness program to specify what would be done before the trained fire and emergency response teams arrive, tell how to assist them once they do, and prescribe how to evaluate the effectiveness of the plan afterward.

It's a formidable task. An Emergency Preparedness Committee, chaired by Charlie Winter (4010), recommended comprehensive plans to cover all of Sandia Albuquerque. It divides Sandia into 72 sectors, each with its own chief and emergency team.

At this point the directors have named the sector chiefs, and each chief is working on plans tailored to his or her respective sector. Each sector is unique in terms of size, likely work-related activities, presence or absence of hazardous materials or operations, etc. Therefore each plan must be unique too.

And each sector will need a different plan for different types of emergencies or disasters. The task of protecting lives after an airplane crash would be quite different from the task of protecting lives during a civil disturbance or after a hazardous gas bottle rupture. Or any of a dozen other kinds of emergencies we know could happen.

Multiply 72 different sectors by 15 different types of emergencies and the size of the emergency planning task is apparent. It will likely take a year or so before all plans are reviewed, approved, and published.

feedback

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. A comment regarding the cafeteria in Bldg. 839: The congestion and confusion associated with the food service lines would be reduced by posting a sign at the entrance listing the special hot meal and soup of the day — the only items that vary from one day to the next.

One now has to walk through to determine what the hot meal or soup is, and then return to the entrance to get in the proper line.

A. Thanks for an excellent idea. We have been in contact with Mr. Blaze, the Food Service Manager, and he will post a sign at the entrance listing the soup of the day and the special hot meal as you suggest. This way, people can go directly to the food service they desire.

R. J. Edelman - 4200

Q. My question relates to conversion of high energy gamma radiation from atomic waste materials into electricity. Couldn't a photovoltaic device be designed to work with gamma radiation as well as with sunlight? A medical diagnostic tool, the radiation scanner, works on a similar principle, using the emanations from Carbon 14 to assist doctors in diagnosing cancer of the thyroid. It seems to me we should be able to recycle our "atomic garbage" and put it to some useful purpose.

A. Your question concerning the conversion of gamma radiation to electrical energy is an important one and is of considerable interest to many people. For example, if good conversion efficiencies could be achieved, not only would reactor waste products serve as a power source, the intense gamma radiation in power reactors could be converted to electricity, improving reactor efficiency. Unfortunately, present conversion efficiencies are too low to be of practical use except in some applications requiring long life and low power and, when the low efficiencies can be tolerated, radiation shielding problems can be managed and cost is a secondary consideration.

The radiation scanner that you referred to is usually a scintillation crystal such as sodium iodide, or a semi-conductor device, or a Geiger-Muller tube, none of which is usable as a power converter.

One of the major technical problems associated with direct conversion of gamma radiation to electricity is a consequence of the extreme penetrating properties of gammas which prevent their capture and conversion by thin layer devices as used for solar radiation conversion (solar cells). Obviously, a new and different technique is needed to efficiently convert gammas to power.

Strontium 90, also separated from reactor waste, is being utilized for thermal heating in Arctic equipment and is under consideration by the Navy for use in remote power stations.

E.H. Beckner — 5200

Q. To conserve computer paper, suggest the following (applicable to CDC 6600 Remote Terminals):

1) Instead of printing the "Message of

the Day" on each job; post a copy of the message in a conspicuous place
2) Print only one dayfile, instead of two
3) Print only one job name (the one in big letters) instead of two.

A. Thanks for your suggestions. The "message of the day" often contains information regarding changes in the operating system that affects all 6600 users, and our experience indicates that posted notices will be overlooked to a greater extent than a printed output listing. However, Division 2641 is investigating the possibility of printing the message of the day on an otherwise committed printer output page.

The reason you see two printouts of the day file at the terminal is that over-the-counter jobs require two dayfiles so that Operations can save one copy in case the total day file is lost between regular dumps. As you point out, terminal users do not need the extra copy, and Division 2641 will review the cost of modifying the software to delete the extra copy to terminals. If the modification is economically sound it will be made.

Programming to print only one job name (the one in big letters) is complete. It has not been implemented as yet, because approval has not been granted by the group of terminal representatives who meet periodically with Division 2641. These reps will be polled again concerning this change, and it will be implemented if they approve.

— L. E. Hollingsworth - 2600

Q. Today I went to the salvage yard. When I arrived, the area near the gate was filled with hippies, service men and teenagers—very few Sandia employees. By the time Sandia employees arrived they were way back from the gate when it opened at 12:10. Since this salvage comes from the Labs, why can't Sandians have first choice at it?

A. The public sale of salvage and surplus material by Sandia is controlled by specific AEC and governmental regulations. All property offered is government owned and, therefore, must be made available to the general public.

AEC employees and AEC Contractor employees are granted the same opportunity to purchase government-owned property only when they certify that they have not:

- (1) Participated in determination to dispose of the property
- (2) Participated in preparation of the property for sale
- (3) Participated in determining the method of sale
- (4) Acquired information not otherwise available to the general public regarding usage, condition, quality or value of the property.

The Sandia Laboratories Reclamation operation is conducted on behalf of AEC and therefore must conform with applicable governmental regulations.

R.J. Hansen - 4800

FUN & GAMES

Sandia Tennis Ass'n. — A number of events are planned for the fall months. On Oct. 5 & 6 the Labs' first mixed doubles tournament will be held. Pat Freeman is the contact, ext. 2273. Later on, Oct. 19 is the date of the doubles tournament and Nov. 2 the date of the singles contest. A later LAB NEWS will give you information on the doubles and singles matches.

* * * * *

Sandia Bicycle Ass'n. — Saturday, Oct. 5, is the date of a Bike Rally called by the Environmental Health Dept. as one event in observance of Clean Air Week. According to SBA'er Tom Mayer, some 40 adult cyclists are needed to help make the event a success; these volunteers would act as judges and inspectors at the three high schools where rallies are scheduled. Give Tom a call, 294-3368, if you can help in the Rally, all day or even half a day.

Here are upcoming bike tours. All rendezvous at Gulf Mart at 7 a.m. Sept. 29 - Tres Ritos; Oct. 13 - Taos Ski Valley; Oct. 20 - Cuba to Abiquiu. Call Tom if you plan to go.

SBA Pres. Dave Barnes is optimistic about what the future holds for the cyclist at the Wyoming gate. It appears that bike paths will be installed, both outside and inside the gate; firm information about dates is not yet available.

* * * * *

Sandia Bowling Ass'n. — Three weeks into the season, Verne Christy (9542) reports that numerous 200-plus scratch games have been rolled: Stu Browning (ret'd.) 225; Frank Keene (1500) 225; Walt Granfield (1530) 229; Leroy Paulson (9412) 258; and Bob Dougherty (2411) 236. In the Women's League impressive games have been rolled too: Kathy Pitts (2322) 192; Aurora Baca (1612) 192; Roberta Chinn (4256) 185; and Pat Ximenes (4154) 185.

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"YOU PUSH the accelerator, and this relay clicks in," says Dick Bassett (2414) to daughters Gayle and Cheryl. Out of sight below Dick's right elbow is the battery-powered motor which makes the license plate appropriate.

The Electric Car

Something of a Shock

Mr. Bassett built an electric car. Mrs. Bassett drives it. So do daughters Cheryl and Gayle. They all like it.

For rather different reasons. Builder Dick (2414) enjoyed the opportunity to put his experience in electrical and electronic engineering into a challenging project. "I started last January," he says, "with a plain '63 Renault four-door sedan. It still looks plain — except for the electrical receptacle on the grill and the license plate in the back. But I pulled the engine and its accessories out of the rear end to make room for the motor — a surplus jet airplane generator — five of the ten special batteries that power the car, and the relays that control the power to the wheels. The other five batteries are in the front end trunk.

"I kept the rest of the car intact. The ignition key energizes the system, the accelerator controls the speed, and the gearshift gives it four speeds forward, though we don't use low gear. We get good pickup and a top speed of about 40 miles per hour."

The power assembly consists of 10 lead-acid six-volt batteries connected in a series-parallel arrangement so as to provide a 30-

volt output. The 12-volt car battery is utilized to operate the headlights, horn, brake-tail lights, windshield wiper and radio.

Gayle named the car the ET for Electronic Traction; Dick added the -1 to distinguish it from -2, already on the drawing board. Both Gayle and Cheryl like driving the car — "I mean, anyone can drive a gas-powered car, but electric? Kids enjoy going for rides in it."

Mrs. Bassett is official test pilot and has put the most miles on the ET-1. She's convinced of its utility. "It's the half or three-quarters cent a mile operating cost that I appreciate. Most of my driving is here in the North Valley — shopping, bank, swimming pool, lessons, doctor, the kind of trip it's ridiculous to be driving a full-size gas-guzzler for."

She didn't say it in front of the girls, but she likely finds the ET-1 perfect for her daughters' jaunts with friends too. They're not going to drive fast — or far. The range is 45 to 50 miles and the car has to come home to be charged up overnight, so going to Santa Fe for a Coke is out of the question.

As befits a would-be trend setter, Dick has compiled some impressive statistics supporting the revival of electric cars. Electrics should be able to handle about 88% of the tasks required of normal family cars. Electrics don't just exchange pollution on the street for pollution at the power plant either: in terms of total energy system efficiency, the gasoline car uses only 10% of the original energy of the raw fuel; the electric uses 20%. Then too, in heavy traffic with long idling periods, an electric consumes no power at all; an EPA study indicates that, over the same start-stop driving cycle, an electric will use 28% less energy than a gasoline-powered car.

Dick's the man to ask about technical details — the capabilities of the special batteries (designed for powering electric trains in mines), whether solid state controls and a permanent magnet DC motor would be feasible, for example.

We drove the ET-1 and liked it. We weren't able to quash the feeling everytime we stopped that the engine had died, but it wouldn't take long to adjust, especially during the current situation. Perhaps America is ready for the shock of the electric. •bh

AFTER 4 years and 8000 hours, these young men have graduated from the Labs' machinist apprentice program. Dennis Schalles is seated. Standing, from left, are Dave Kelton, Ernest Costales, Bob Cox and Jose Gonzales. All will work in Machining Department 3640.



MILEPOSTS

LAB NEWS

September, 1974



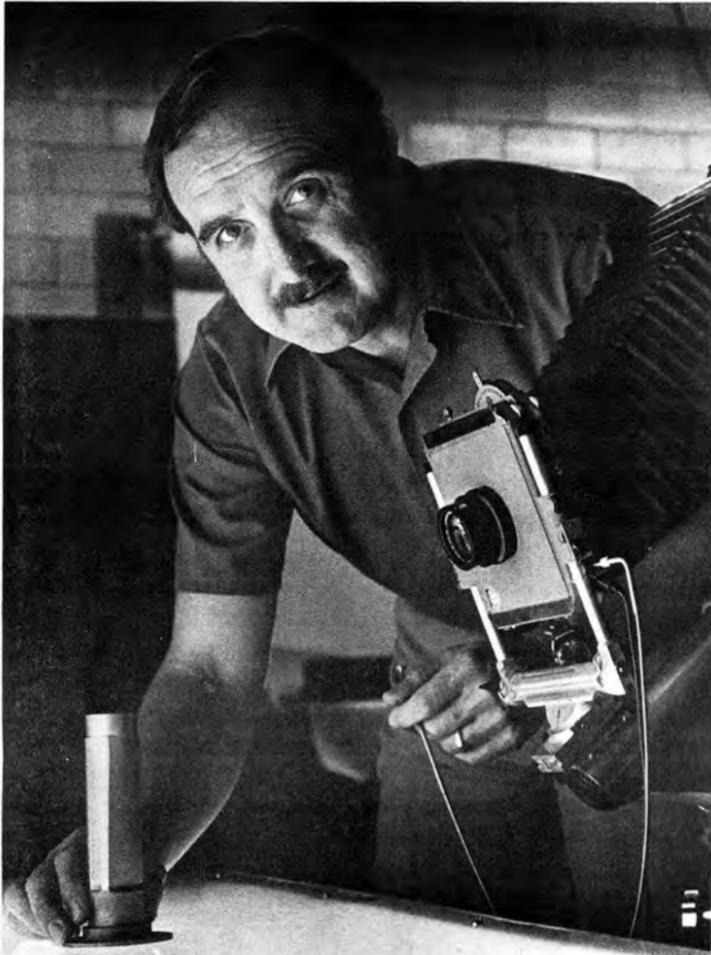
V. T. Stracina - 1254

20



Wentzel Wagoner - 1562

20



Louis Erne - 3148

20



Bob Crow - 8261

20



Frank Biggs - 5223

15



Ronald Cheek - 3621

15



Al Switendick - 5151

10



Sherry Smith - 9473

20



Lyle Wetherholt - 9300

15



Judy Hall - 1124

15



Kenneth Williams - 2324

25



Tess Reis - 4120

25



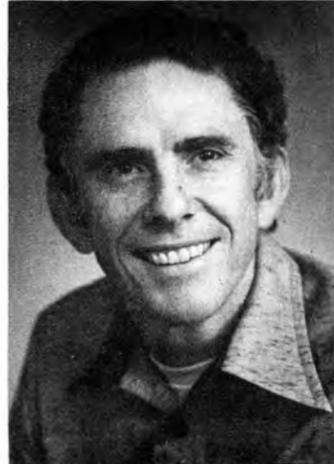
Harry Mason - 1232

20



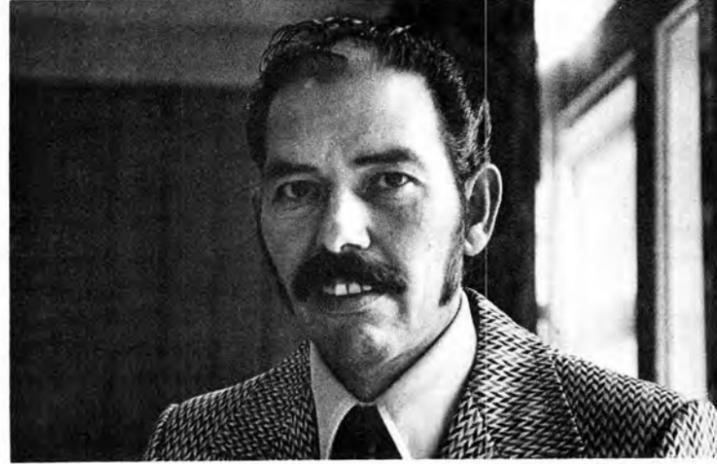
Glenn Baker - 9712

10



Joe Trembl - 8421

15



Manny Chavez - 2631

20



Ray Faltings - 8413

15

FRIDAY	SATURDAY
27 — HAPPY HOUR HUNGARIAN BUFFET Adults \$2.75 Under 12 1.75 BOB BANKS TRIO On Stage Denny	28 — SOUL SESSION 8:30 - 12:30 SINS OF LIFE Members Free Guests \$1.00
4 — HAPPY HOUR ORIENTAL BUFFET Adults \$2.75 Under 12 1.75 6-8 Thomas & Marsha 8:30 TESS & HER ALL-GIRL BAND	5 — FAMILY VAUDEVILLE THE GREAT GORDINI The Big Mouth Food at 6 Show at 7 Members Free

DAYS — dwindle for signing up for two of the three C-Club trips; deadline for the Caribbean trip, Dec. 20-28, is Oct. 29; deadline for Mexico City, Dec. 21-27, is Nov. 8. And then there's Greece, April 23-May 6.

GROW — happier (and maybe wider) and do it cheaper. Get the New Happy Hour Habit — beginning Oct. 4, the dance band will play 8:30-11:30 with visit-with-friends-type entertainment from 6 to 8. H-Hour

prices all evening, and always an appealing buffet: Hungarian tonight, Oriental on the 4th.

SHORT — skirts? Short shorts? Likely. Tess and her All-Girl Band play for dancing, Thomas & Marsha for listening, to kick off the new Happy Hour format on the 4th.

WHEN — The Great Gordini bills himself as Magician Extraordinaire, he's not deceiving you. But his prestidigitation will deceive — and delight you. He's followed by *The Big Mouth*, the most aptly named of the Jerry Lewis movies. Plus Chapter 8 of a 3M(usketters) serial. All at Family Vaudeville on the 5th.

YOU — hate housework, cooking, and behaving yourself? Then Peg Bracken is for you. Her lecture titled is "You Can Take a Girl Out of the Kitchen . . . And Sometimes You'd Jolly Well Better" and her presentation is likely to mix and blend wit with common sense throughout. Sanado Club meeting time is 1 p.m. (to give more time for meeting Ms. B. and her books) on the 8th. \$2.50 for members, \$3.50 for guests with reservations to Ann Tapp (821-0644) by the 4th.

REACH — for Top Hats and Glad Rags

and you may go up for assault. Top Hats is the dance band, Glad Rags the listen-to group at H-Hour on the 11th. Mediterranean is the menu.

SEPTEMBER — is as good a month as any to enjoy the Sins of Life in the flesh. They (not Shadow Fox) are the makers of music at the Soul Session on the 28th.

NIGHTS — of cheering in faraway, exotic places, like El Paso and Las Cruces. The Wolfpack's first excursion is to the UTEP game. A 3-day affair, some seats are open for non-Wolfpack C-Clubbers, but *deadline* is Oct. 4. Call Shirley Dean at 296-3264 for information. The second WP trip will be a one-day jaunt to the UNM-Aggie basketball game on Dec. 7 *if there's enough interest*. Call Dave Schafer at 299-6217 soon so he can proceed as appropriate.

JUST — a reminder for skiers: the Sandia Peak Walkdown is this Sunday. Meet at the ski lift (not the tram) at 10:30 for a ride, a walk, and an eat.

GROW — expectations! The Pre-Mazatlan Trip meeting is at 7:30 on the 8th. Slides, question/answer, other anticipation-builders.

MORE INFO — 265-6791.

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.
 A maximum of 125 ads will be accepted for each issue.

RULES

1. Limit 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Laboratories and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color or national origin

MISCELLANEOUS

- 17' ROVER camper trailer, self-contained, 30 gal. watertank, 1972, cost \$3000. McKenzie, 296-0620.
- TEDDY BEAR hamsters, guinea pigs. Hickman, 298-3804.
- CHAIN LINK fence, fabric, top rail, line posts, fittings, 3' high X 30' long, \$20. Edwards, 299-5578.
- WHEELS: 4 15X6, \$3 each; 4 14X6 heavy duty 5-hole, \$3.50 each; tires: E78X14, 4-ply, \$1 each; 7:00X14, 6-ply, \$2 each. Baxter, 344-7601.
- BARBELL SET, 2 bars, 172-1/2 lbs., \$17; motorcycle windshield, \$5. Miller, 299-6067.
- SKIS, Rossignol Stratoflex, 185 cm, Salomon 404 bindings, 48" poles, \$85; Nordica boots, woman's 8M, man's 12N, \$15 each. Grayson, 296-8210.
- TRUMPET, Getzen 300, new case, \$200; Swift microscope, case, \$150; Lafayette MicroDapter 99-7080, case, \$50; Swift Microilluminator SSL-10A, \$25. Villa, 298-0435.
- CATTLE: 2 450 lb. steers; 1 600 lb. steer; 2 Holstein heifers, 15 & 18 mos. old. Waddoups, 865-7952.
- METAL DESK & chair, new, \$75. Benjamin, 298-4909.
- TENNIS RACKET, Davis Professional, 4-3/8" L, with cover, \$15. Shane, 296-4430.
- 16 GA. SHOTGUN, Ithaca Featherlight Mod 37, with

- case, \$125 or make offer. Liguori, 256-3613.
- REYNOLDS FLUTE with case, cost \$150, asking \$95. Gallo, 255-4050 after 5.
- 1/3 HP PUMP, similar to Sears cellar drainer, \$25; rebuilt 21AXP22A color picture tube, \$20. Glaser, 293-8110.
- ARMSTRONG FLUTE, Mod 90, new \$350, sell \$150; gas grille, \$25. Barnes, 898-2375.
- BOWHUNTER BOOTS, Vasque, 11N, new \$40, sell \$25. Buck, 296-5963.
- COSCO HIGH CHAIR, white, folding, \$10; Evenflo baby bottles, 21 8-oz., 10 4-oz., with caps, 20¢ each. Thomas, 299-0178.
- 2-BDRM MOBILE HOME, 12' X 47', partly furnished, extras. Way, Terrace Park, Space A-7, 9000 Zuni SE.
- 8 TREE RINGS, red, O.D. 24", I.D. 18", \$1 each. Slesinger, 299-4626.
- REI 2-MAN nylon backpacking tent, 4-3/4 lbs., A-frame, poles, stakes, sack, \$20. Snyder, 296-5771.
- GAS RANGE, Wards Signature, 26" X 30", 4-burner, see-through oven door, \$50. Wilkinson, 299-8327.
- STEREO SPEAKERS, Altec Lansing with Karlson enclosures, sell or trade for smaller, good speakers plus cash, guns, etc. Cook, 294-2348.
- CUT STONE, 30 c. ft., assorted sizes, \$20. Wilson, 256-9345.
- BLACK GELDING, gentle, though spirited with experienced rider, \$300. Patterson, 877-3158.
- BABY BED with mattress; stroller; twin-size mattress; 175 cm skis; woman's ski boots, 6-1/2N. Kennedy, 298-0704.
- ENGLISH SPRINGER spaniel puppies, purebred, AKC reg., liver & white markings. Barth, 345-0172.

- EASYBOOTS, set of 4, red, new size 0-1, cost \$56, make offer. Rutledge, 281-1155.
- SAMSONITE FOLDING card table chairs, \$5 ea.; furred oak chair; oil paintings; Lund Topflight skis, \$9. Smitha, 293-1177.
- VIOLIN, 3/4 size, cost \$175, sell \$125. Teisher, 299-6987.
- FRONT SEATS for VW Bug, low back, reupholstered, \$25 the pair. LeRoy, 296-2953.
- NYLON PLUSH carpet, medium blue, 60 yards, padding, \$90; drapes, custom, contemporary, lined, 119" wide, 65" long, rod, \$35. Muir, 296-2252.
- ELECTRIC RANGE, Hotpoint, 39" wide, large timed oven, storage space. Minter, 265-9225.
- FREE KITTENS, 7 wks. old, white, black & white, ginger. Clauser, 296-1948.
- MILITARY MACAW, green, blue, yellow, red; talks, rolls over; incl. large wrought-iron cage, \$600. Dodd, 296-1158.
- CEMETERY PLOTS, 4 adjoining, Sunset Memorial Park, Garden of Gethsemane, 2 for \$500, 4 for \$850. H.L. Odell, Rt. 3, Bx. 404, Sequim, WA 98382.
- ITT PORTABLE AM/FM/FM stereo radio, walnut case, 3 speakers (2 detachable), AC power supply, cost \$200, sell \$60. Schkade, 293-7453.
- NAVAJO CONCHO belt, pawn, appraised \$2200, sell \$2000. Thomas, 293-9626.
- BUNDY CLARINET, case. Patterson, 877-6037.
- GUITAR, Sears standard, \$15. Tullar, 344-9420.
- ALTO SAX, Reynolds, \$250; twin-size bed, maple, box spring, mattress; 4 6:95 X 14 tubeless tires, \$10. Ellingson, 299-4056.
- HAMILTON STUDIO piano, built by Baldwin, \$650. Fisher, 247-4816 after 5.
- S&W K-38, target hammer,

- trigger & grips, new, \$120, 6" barrel. Snodgrass, 268-8820.
- BOX SPRINGS & MATTRESS, both for \$25. Cano, 296-6955.
- SKIS: Kneissel 190cm, \$50; Kastinger 180cm, \$30; Rebel 160cm, \$40; Boots: Lange competition, 9-1/2, \$35; Kastinger buckle, \$30, all Cubco. Roth, 877-4997.
- DINING ROOM set, solid oak, contemporary, table & 6 chairs; bedroom set: dresser, chest, headboard, commodes; \$200 for all. Harper, 298-0146.
- 3/4 ROLLAWAY bed, \$20; vacuum cleaner, \$15; 2 metal bed frames, \$5 ea.; double dresser, \$25; child's rocker, slide, trike, doll bed, \$3 ea. Keltner, 298-7888.

TRANSPORTATION

- '73 BLAZER, 4WD, 350 V-8, AT, AC, PS, PB, hitch, roll-bar, \$3995. Lassiter, 298-2461.
- '72 HONDA 750, 6,000 miles, \$1150. Bland, 265-6286.
- '69 MUSTANG, 289 high performance engine with 1500 miles, full-race cam, headers, mag wheels, Super 70 tires, \$1800. Daut, 255-2529.
- '72 SUZUKI 750, liquid cooled, \$1125. Jordan, 255-7000.
- TWO 3-speed bikes, matched man's & woman's, 26", \$50 each or \$90 the pair. Gray, 265-1883.
- '67 PONTIAC LeMans convertible, full power, air, new top, \$700. Beroldi, 265-5655 or 821-5732.
- '70 HONDA 350 CL, \$550 or best offer. Schulze, 898-2880.
- '71 TOYOTA Corona sedan, 4-dr., new radials, new yellow paint, \$1350. Barton, 281-3349.
- '64 RAMBLER 8-pass. station wagon, AC, 6-cyl. rebuilt engine with 10 miles, \$400. Laursen, 294-0678.
- TWO 3-speed bikes, girl's & boy's, 26". Blaine, 299-1036.
- '70 PONTIAC Catalina, PS, PB,

- AC, \$1100. Wright, 299-6458.
- '70 VW FASTBACK, AM-FM radio, AC, \$1450. Trice, 293-6653.
- '67 DATSUN 1600 sport convertible, \$950. Shope, 256-9519.
- '62 CORVAIR, R/H, \$199. Davis, 294-0139.
- '71 HONDA CL350, rack, matching helmet, \$575. Bagley, 294-4706.

FOR RENT

- 3-BDR house, NE, garage, range, walled yard, AC, carpet, drapes, lease, damage deposit, water paid, \$210/mo., available 11/1. Nielsen, 299-6740.

WANTED

- RETIREES with skills for sale. Call 264-7841 for registration form. LAB NEWS.
- PLAYBOY magazine, June 1971. Clark, 296-4541.
- 2 RESPONSIBLE female roommates to share house in NE Heights. Avery, 292-2100 or 292-3182.
- TO RENT 1 or 2-horse trailer Oct. 9-17; 500 mile round trip. Patterson, 877-3158.
- USED IBM standard electric typewriter or comparable model, good condition. Champion, 299-0163.
- BROWNING H.P., 9mm, std. sights, good to exc. condition. Snodgrass, 268-8820.
- TWIN BED, mattress & box spring, good condition. Zanner, 294-7613.
- PELLET GUN, rifle or pistol. Bouton, 898-3562.

WORK WANTED

- GUITAR LESSONS, beginning Classical and/or Flamenco. Melo, 268-7017.

