

## LAB NEWS

VOL. 27, NO. 5

MARCH 7, 1975

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

### New Sandia Project

## Radioactive Waste to Treat Sewage?



THERMORADIATION effects on coliform, a class of bacteria which thrives in sewer sludge, are catalogued by Jerry Brandon (5252), seated, and Jack Sivinski (5250). New Sandia project for ERDA and EPA will investigate feasibility of using reactor radioactive by-products to sterilize municipal sewage for use as fertilizer and soil conditioner.

Thermoradiation, a Sandia developed technology which consists of simultaneous application of heat and ionizing radiation to inactivate biological systems, has led to a new \$630,000 project to be conducted by the labs over the next 17 months. This is a joint effort program sponsored through an Interagency Agreement between ERDA and the Environmental Protection Agency.

Sandia will study the effectiveness of thermoradiation in disinfecting and treating sewage sludge, using radioactive waste from nuclear power reactors.

The studies could point the way for solving a major environmental problem — safe disposal of sewage sludge for use as a fertilizer and as a superior soil conditioner for reclamation of poor land and strip mined areas. The work is centered in the Biosystems Research Department 5250 under Jack Sivinski.

“We first started developing the thermoradiation technology in 1969,” Jack says, “when we were helping NASA with the planetary quarantine program. Thermoradiation was developed to provide an alternative method of spacecraft sterilization which we found to be extremely effective for inactivation of microorganisms.

“What was striking was the low levels of heat and radiation required, much lower than one would expect for the additive effects of heat and radiation applied separately. In-depth investigation of these synergistic

phenomena resulted in an extensive store of data and a number of hypotheses relating to the inactivation of many species of organisms. We're currently using Cesium-137 as a radiation (gamma) source for the thermoradiation of the pathogenic viruses, bacteria, and parasites in sewage sludge with promising results. Cesium-137 is one of the major waste products of nuclear power reactors. With the new funding, we will continue these studies.”

The project specifies other tasks. Sandia will develop new techniques to study the effects of thermoradiation on (1) the biological response of pathogens and parasites in digested sludges (2) production of odor (3) chemical effects on sludge refractories and changes in volatile solids concentration and (4) the settling rate/filterability of digested liquid sludges. Whether mutant or more resistant species develop as a result of the thermoradiation treatment will also be investigated.

Other program goals include:

- Development of the design outline for a 50,000-gallon-per-day pilot plant.
- Performing of cost analyses of the thermoradiation process in comparison with other methods; compare health and safety aspects.
- Prediction of radioisotope requirements to the year 2000 and initiation

(Continued on Page Five)

# Afterthoughts

That's a slur, sir--Since this has become the age of sensitivity, I've been looking around for something to be offended about and I think I've found it. The Journal headline read "District Court to Hear Bikers' New Trial Bid." I misread "trial," thought it said "trail" and figured here was an item about bike routes or maybe even motorcycle trail bike routes, subjects I'm interested in. Then to the first paragraph ". . . a motion for a new trial for four motorcycle club members who have been convicted of murder, sodomy, and rape." Here we go again--everytime the headline writer at the Journal or Tribune has to describe those four characters from California, who actually arrived here in a van, his inspired imagination suggests "bikers." Suppose the four shared an interest in stamps; would it be "Stamp Collectors Convicted--Face Gas Chamber?" Ease off the bikers/motorcyclists--most of us gave up murder, sodomy and rape for less demanding pursuits long ago.

\* \* \*

The military grapple with soft core--Vietnam was bad enough, but now the Air Force has had to come to grips with sexism. The following is lifted from the KAFB Bulletin: "1. Using illustrations/photographs of scantily clad women in Air Force publications to attract male reader's attention violates AFM 5-1, para 2-13 and AFR 6-1, paragraph 3-31. Depicting women as sex symbols, however well-intentioned, cannot be condoned in official Air Force publications." We see the court room scene now--the covey of colonels sternly regarding Airman Hefner, the defendant who as editor of the Camp Swampy Flash did brazenly and wantonly cause to be printed Raquel Welch in her cave woman outfit. It's a case that'll eclipse the trial of Billy Mitchell.

\* \* \*

Riposte--"God wanted Texans to ski, so He gave them pocket change to buy the mountains of New Mexico." (Submitted by "a displaced Texan.")

\* \* \*

It's as good as most pronouncements on economics--"Inflation means that instead of having the money you haven't got, you have twice as much. But it's worth only half of what you would have had if you had what you haven't got." (Source unknown.) \*js



INVENTORS Bob Dosch (5824) and Tom Prevender (5833) examine an anodic coating on a sample of aluminum alloy. New process was recently awarded a patent.

## Anodic Barrier Layer Process Awarded Patent

ERDA was recently awarded a patent for a process invented by Bob Dosch (5824) and Tom Prevender (5833) for applying barrier layer anodic coatings.

Essentially, the patent covers a method of providing extremely thin (sub-micron) electrically insulating oxide films on the surfaces of a number of metals. Among the metals which can be barrier anodized by this method are niobium, tantalum, tungsten, titanium, beryllium, uranium, aluminum and various alloys of these metals. The patent also describes a multi-step chemical immersion process for the surface preparation of aluminum alloys which enables the pore-free insulating layer to be created over large areas.

Bob has been at Sandia 12 years. He has one other patent. A chemist, he holds a PhD from UNM earned in 1971.

Tom joined Sandia in 1969 after earning a PhD in physical metallurgy from Iowa State University.

LAB NEWS

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## LAB NEWS

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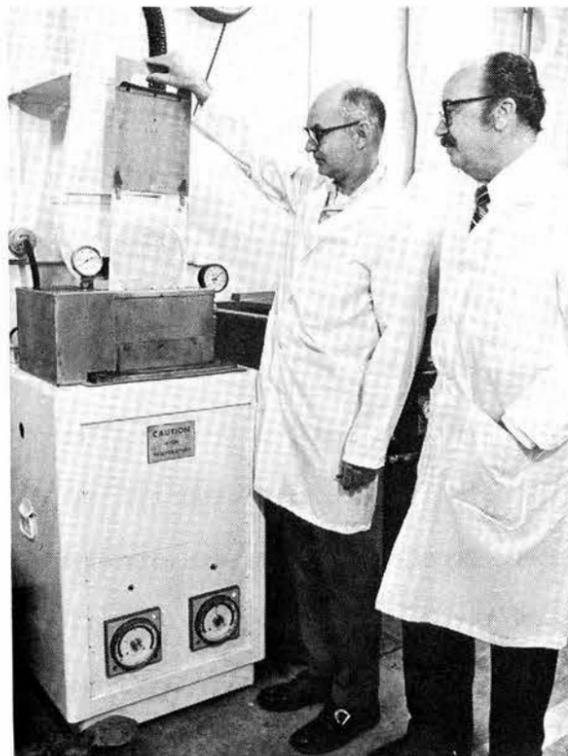
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## Patent Awarded for New Solder Leveling PCB Machine



NEW SOLDER LEVELING machine for printed circuit production is demonstrated by inventors Bob Sylvester, left, and T.A. Allen (both 3623-1).

ERDA was recently awarded a patent for a machine that levels solder on printed circuit boards (PCBs) with a blast of heated air instead of hot liquid. Inventors are T.A. Allen and Bob Sylvester of Photofabrication and Precision Components Section 3623-1. (See LAB NEWS, March 23, 1973.)

The machine applies a bright, thick-fused tin-lead coating to conductors on printed circuit boards and offers minimal thermal degradation, with high solderability after storage.

The short cycle time reduces electrical energy usage to 50 percent of that required by liquid-leveling machines per square foot of processed boards. Because it uses compressed air, the machine eliminates the need for petroleum-derived polyglycol liquids. And, since it has an integral solder supply, it eliminates the lead-tin electroplate step in PCB manufacture, saving chemicals and eliminating attendant disposal problems.

Overall, the new machine cuts process time by 70 percent, compared to conventional liquid-based machines, and cuts pollution by 90 percent. Several manufacturers have been licensed by ERDA to produce the machine for commercial use.

# LIVERMORE NEWS

VOL. 27, NO. 5

LIVERMORE LABORATORIES

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## Affirmative Action & Gertrude Williams

— Lack of education can be the greatest obstacle for women and minorities in industry today.

— An affirmative action program which offers training programs, job counseling, communication of equal employment opportunity, and woman/manpower planning, is an effective tool in helping women and minorities.

— Interest in the physical sciences and engineering should be developed in students at a younger age — at the junior high level or below.

These were conclusions reached, says Gertrude Williams, EEO and Women's Coordinator in Personnel Division 8212, when she appeared on a recent panel discussion on "Women in Industry," sponsored by the Tri-Valley Chapter of the National Organization of Women. NOW's purpose is to bring women into full and equal participation in the mainstream of American society. Appearing as panelists with Gertrude were LLL Women's Coordinator Carol Rupenthal and EG&G (San Ramon) EEO Administrator Ida Coleman.

Gertrude sees her present task as one of carrying out Sandia's affirmative action plan and counseling employees in matters relating to equal opportunity. "Another important part of my job," she adds, "is acting as a sounding board for any employee who feels discriminated against. I spend a good deal of time talking with people. Many just drop in, but when someone wants to discuss a problem, that pre-empts everything else because it's important for that employee right at that moment."

Most discussions dwell on possibilities of getting into other areas of work or opportunities for educational benefits. Complaints of discrimination are referred to



Gertrude Williams

management for review and to see what steps can be taken.

Gertrude also talks to schools and before community groups about the Labs' programs for women, minorities and handicapped.

Since joining the Labs in 1969, she has worked as supervisor of the Information and Distribution Section and as a computer programmer. A graduate of South Carolina State College, she attended M.T.I. Business Schools in Hayward for advanced computer program training and is currently working toward a master's degree at California State University in Hayward. Before Sandia, Gertrude taught at S.C. State and worked with the Job Corps.

## Authors

Jack Dini and Rudy Johnson (both 8312) and Harry Saxton (8314), "Influence of Sulfur Content on the Impact Strength of Electroformed Nickel," *ELECTRODEPOSITION AND SURFACE TREATMENT JOURNAL*, 1974.

Jack Dini and Rudy Johnson (both 8312), "Ring Shear Adhesion Tests," *METAL FINISHING*, August 1974.

Jack Dini and Rudy Johnson (both 8312) and Gary Beeler (8157), "Nondestructive Testing of a Plated Aluminum Stainless Steel Joint," *MATERIALS EVALUATION*, Vol. 32, p. 124.

Leroy Haggmark (8341), Comment on "Source of Error in Foil Thickness Calibration by X-Ray Transmission," *JOURNAL OF APPLIED PHYSICS*, Vol. 44, p. 3196.

Ray Mar (8313) and N.D. Stout (LLL), "Enthalpy and Entropy of Fusion of  $ErB_{12}$ ,  $UB_{12}$  and  $Zr_{0.6}Y_{0.4}B_{12}$  by Drop Calorimetry," *JOURNAL OF HIGH TEMPERATURE SCIENCE*, Vol. 6, pp. 167-176.

Larry Weirick (8312) and Carl Schoenfelder (8313), "Effect of Oxygen, Chloride Ion, and Water Vapor on Crack Initiation in U-7 1/2 wt.%Nb-2 1/2 wt.%Zr," *CORROSION*, Vol. 30, No. 5.

Walt Bauer (8334) and George Thomas (8313), "Helium and Hydrogen Re-Emission During Implantation of Molybdenum, Vanadium and Stainless Steel," *JOURNAL OF NUCLEAR MATERIALS*, Vol. 53, p. 127.

George Thomas (8313) and Walt Bauer (8334), "Surface Deformation in He and H Implanted Metals," *JOURNAL OF NUCLEAR MATERIALS*, Vol. 53.

Bill Swansiger (8334), Ron Musket (8334), Larry Weirick (8312), and Walt Bauer (8334), "Effects of Surface Oxides on the Permeation of Deuterium Through 309S Stainless Steel," *JOURNAL OF NUCLEAR MATERIALS*, Vol. 53, p. 307.



SIXTEEN TONS, and what have you got? A new 16-ton boiler for the steam plant, that's what. Installation provides additional capability, serves as backup to existing boilers.

## Speakers

Peter Mattern (8334), "Thermoluminescence of LiF TLD-100 Dosimeter Crystals"; Ted Dellin (8341), Ken Dolan (8344), and C.J. MacCallum (5223), "Photo-Compton Currents at Material Interfaces: Theory and Experiment"; Ted Dellin (8341), "Upper and Lower Bounds on Vacuum Photo Emission from Multi-Dimensional Surfaces"; Ken Dolan, "X-ray Photoemission from Multi-Dimensional Surfaces"; Ken Dolan, "X-ray Photoemission from Metals"; Larry Watkins (8342), Cliff Skoog (8344), and Ed Barsis (8342), "The Effects of Radiation on the Absorption and Luminescence of Fiber Optic Waveguides and Materials," IEEE Annual Conference on Nuclear and Space Radiation Effects, Ft. Collins, Colo.



PACKAGING SEMINAR — Some 45 Sandia Livermore and LLL employees attended a recent Department of Transportation seminar on packaging and labeling, presented at SLL by Eugene Graham (left) of DOT's Bureau of Motor Carrier Safety. Here he answers questions on hazardous materials regulations for (from left) LLL traffic specialist R. Scott Zarbaugh, special handler John Rogers (8252) and shipping and receiving clerk Jesse Watts (8256).

# The Governors Were, Well, Colorful

Recently, this column described Territorial Governor Lew Wallace and his occupancy of the Old Palace in Santa Fe. Governor Wallace directed his government in a calm manner and is best remembered for his writing of *Ben Hur*. All in all, his was an unremarkable administration. Not so, however, for a couple of his predecessors.

Go back to the years when New Mexico was a province of Mexico, from 1821 to 1848. These were the years of strife — internal problems caused by corruption, intrigue and rebellion; external crises because of almost constant attack and harassment by the Indians. Chief executive of the territory was the *jefe politico* until 1837 when he became known as *gobernador*, and the Territory became the Department. The six-member territorial legislature was called the *junta departamental*, and, along with the judiciary, was under direct control of the governor.

The population concentrated in towns and villages as protection against Indian raids, and most of the settlements were in the Rio Grande valley. The area south of Santa Fe was known as *Rio Abajo* and in the north as *Rio Arriba*. Larger towns included San Miguel del Vado, Albuquerque, Tomé, Canada, San Juan, Taos, Abiquiu, and Santa Fe.

Santa Fe itself was a hodgepodge of narrow, winding streets, adobe buildings, and an occasional corn or wheat field. Besides its residents, the streets were filled with Indians from nearby pueblos, Mexican and American traders, Mexican soldiers, donkeys, carts, wagons. The mood of the crowd changed with the occasion — a raucous welcome for the trader's caravan, a joyous participation in religious celebrations, and a somewhat uneasy acceptance of the pomp and ceremony of the military. Gambling halls and drinking rooms provided much of the entertainment.

The social and commercial center of all this activity was the plaza, a bare-earth square ringed by the *Palacio*, custom-house, military barracks, jail, the *Casa Consistorial* of the *alcaldes*, the military chapel, several private homes, and stores of the American traders. The buildings were all shaded by rough *portales*. The plaza was the market place, and

on lines stretched between pillars of the *Palacio* fresh meat was hung for inspection. Shoppers could examine mutton, kid, pigs, and, in winter, venison, wild turkeys and an occasional bear. Spread out underneath the portal were chili, beans, onions, milk, bread, cheese and, in season, grapes, wild plums, raspberries and melons.

For a time the palace portal and executive office were decorated with the scalps and ears of defeated hostiles. The practice occurred in the reign of one of the most cruel and unscrupulous Mexican governors: Gen. Manuel Armijo. Gen. Armijo, who made his home in Albuquerque, dashed to Santa Fe whenever opportunity came his way. In 1837, with friends in Tomé, he masterminded a rebellion against Gov. Perez which resulted in Armijo's taking possession of the Palace, assuming control of the government, and proclaiming himself governor. Gov. Perez? Well he ran, but not fast enough, because a few days later his head, impaled on a stake, was displayed in the plaza. Several months later, the Mexican government confirmed Gov. Armijo's appointment.

Until 1844, Armijo ruled like royalty. He especially disliked the Americans and imposed exorbitant taxes and import duties upon them to support his government and himself. Even though the traders were at the mercy of Gov. Armijo, the trade was still lucrative enough to clog the Santa Fe Trail. Traders called the governor "his obesity." Armijo was responsible for the cruelties suffered by the Texan-Santa Fe expedition in 1841 (LAB NEWS, Feb. 23, 1973) and the Texans were out for revenge. Raiding parties attacked government caravans and spread the word that they were out for Armijo himself. But the governor was a coward and he admitted it, once proclaiming "It is better to be thought brave than really to be so," and citing "the grave infirmities" of his health, he resigned.

Santa Anna, president of the Republic, appointed General Don Mariano Martinez as constitutional governor in March 1844. His term was short because, according to historians, his efforts to follow Armijo's example in converting customs revenues to



General Manuel Armijo

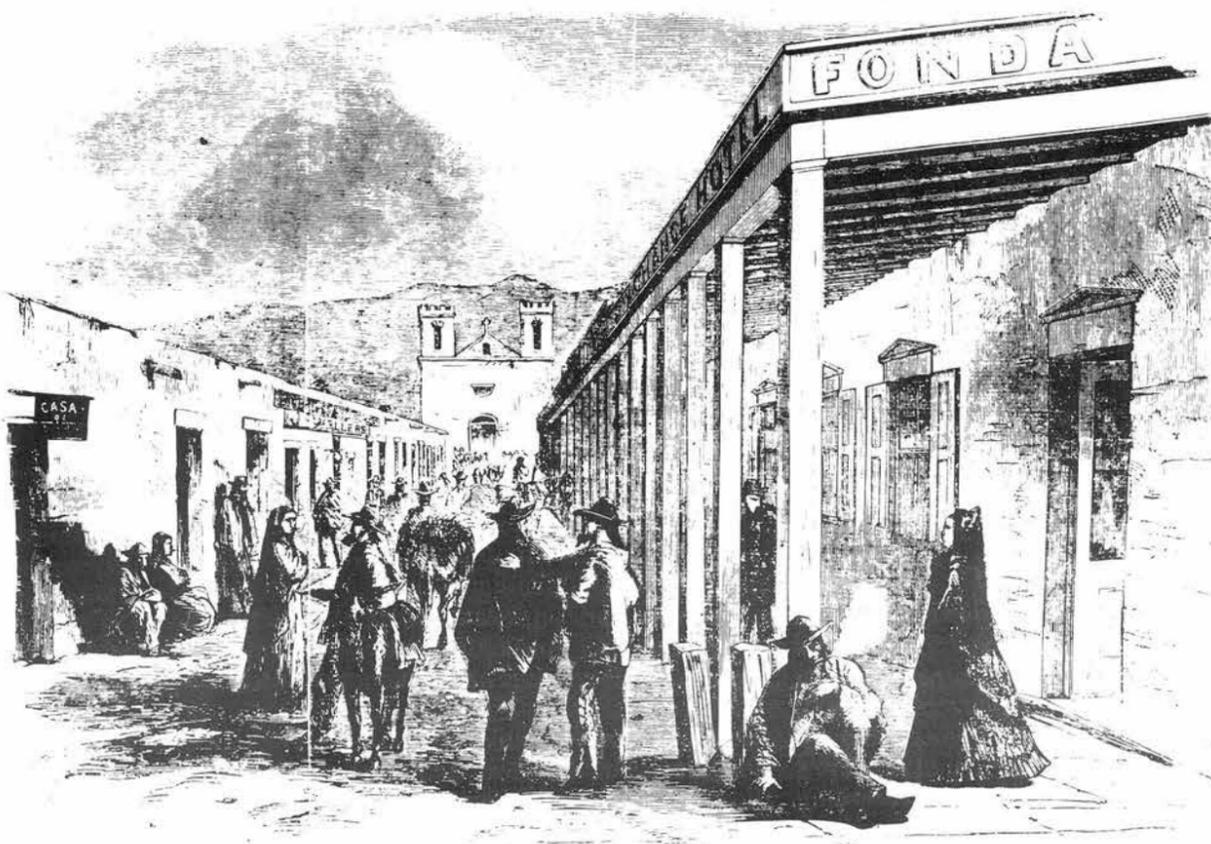
personal use were "a lamentable failure."

One unusual event did occur during his reign. A few months before he was named governor, Gen. Martinez led a campaign against the Ute Indians. After he became governor, a party of Ute chiefs came to Santa Fe to talk things over with the governor — supposedly a peace conference. Several sources indicated, however, that the Utes planned to kill the governor. Thus, when the Indians were admitted to the reception room (first room on the right of the present main entrance), soldiers were concealed behind drapes. When the governor saw a Ute chief draw a knife from under his blanket, he picked up a chair, swung and promptly killed the Indian. In the ensuing melee eight Indians and one citizen were killed in the hall of the palace and out on the plaza.

Former Gov. Armijo didn't leave Santa Fe; he rented a room in a building housing a small store. Sometime during the winter of 1844-45, Governor Martinez made a formal call on Armijo. The shopkeeper not only eavesdropped but recorded this account in his diary:

"After the usual formalities and while partaking of their wine, Gov. Armijo asked Gov. Martinez why Gen. Santa Anna had superseded him in the office of governor, and stated in justification of his course how he had maintained the government in New Mexico without calling on the national treasury to aid. 'Well,' replied Martinez, 'Santa Anna told me he wanted to make a change there; that the administration of affairs had been exceedingly corrupt; there had been stealing in every department, from the governor to the lowest subordinate officer.' 'True,' said Armijo, 'the custom house officers have no doubt stolen; they demand fees and perquisites from the merchants introducing goods, to which they are not legally entitled, and my secretary also avails himself of his opportunities. I have also stolen a good deal by permitting this indirect and illegal trade and, in fact, if you call it stealing, I have been stealing all of my official life and have got the money in my pocket to show for it; but I don't see how he has helped matters by sending you here, for I know your history and have known your course for years. You, poor devil, have been stealing all of your life, and today haven't got a dollar. Who is the smarter man and who is better fitted to administer an economical government in New Mexico?'"

Santa Anna was able to figure that one out too because in 1845 he reappointed Armijo as governor. The redoubtable Armijo shortly rose to new heights of cowardice the following year in the Mexican War. But that's another story. • nt



19TH CENTURY San Francisco Street in Santa Fe.

## Sandia Would Have Role in Solar Institute

Establishment of a national Solar Energy Research Institute in Albuquerque has been proposed by the State of New Mexico and a consortium of laboratories and universities in the state.

The proposal that the Institute be established in Albuquerque was made last month to ERDA's John Teem by Governor Apodaca, Senator Montoya, and Sandia's Don Shuster (4700).

Besides Sandia, consortium members include LASL, New Mexico Institute of Mining and Technology, New Mexico State University, and the University of New Mexico. Composite scientific and technical staff of the consortium numbers some 15,000 persons, representing a wide range of scientific, engineering and academic disciplines. The consortium institutions are heavily engaged in solar energy research and engineering.

Other states are making similar proposals, and it is believed that a final decision on the Solar Institute is not likely until next year.

## All About Equal Rights

LAB NEWS recently received a copy of both federal and state equal rights amendments. Their brevity took us by surprise. As a service to readers, here's what the fuss is all about:

"Federal Equal Rights Amendment

Section 1: Equality of rights under the law shall not be denied or abridged by the United States or by any state on account of sex.

Section 2: Congress shall have the power to enforce, by appropriate legislation, the provisions of this article.

Section 3: This amendment shall take effect two years after date of ratification."

"New Mexico law: Art. 2, Sect. 18:

No person shall be deprived of life, liberty, or property without due process of law; nor shall any person be denied equal protection of the laws.

Equality of rights under law shall not be denied on account of the sex of any person.

The effective date of this amendment shall be July 1, 1973."

Whatever your sentiment on this controversial subject, please — don't call us; try your friendly legislator.



IF YOU WORKED in a nuclear facility and tried to exit with radioactive material on your person, this monitor would get very excited and things would happen, mostly to you. Tom Sellers (1739), left, and Jim Ney (1741) have been explaining operation of this and similar equipment to representatives from a number of foreign countries where nuclear facilities are located.

## Labs Hosts Foreign Visitors

The physical protection of nuclear materials is the subject of discussions being held at Sandia Labs with representatives from a number of countries. The discussions are an outgrowth of an offer to make available U.S. research and development in the area of physical security and safeguards. Dixy Lee Ray, former AEC chairman, made the offer at an international meeting in Vienna last year, and first discussions began last November when representatives from France visited Sandia.

Since that time, representatives from Israel, the United Kingdom, France (a second delegation), the Netherlands, and Euratom have appeared. Future talks are slated with engineers and scientists from Canada, Japan, and Germany.

Jim Ney of System Studies and Engineering Division, 1741, is handling arrangements at the Labs. The objectives, Jim says, "are to assist in assuring the adequacy of physical protection given to nuclear materials used in nuclear power activities. To this end, we are encouraging thoughtful exchanges with our visitors on ways that both nations may better protect nuclear materials from terrorists or other well-armed, equipped, and trained attackers."

A typical agenda, held in the Science

Exhibit Center Auditorium, for the one-day sessions includes talks by both Sandia and LASL people. The day begins with a presentation by Orval Jones, director of Nuclear Security Systems, 1700, of the problem and an overview of the U.S. R&D program. Transportation hazards are described and protective measures — container developments, penetration resistant vehicles, and communications systems — are covered. The protection of facilities where nuclear material is processed or stored is discussed, and under this subject perimeter barriers and sensors, vaults, personnel entry material inventory techniques are described. The early detection of in-plant diversion of nuclear material is the subject of a LASL talk. Other agenda items include descriptions of equipment used to locate lost or stolen nuclear materials and radioactive material dispersal assessments.

The day of discussions typically winds up with a Mexican dinner at an Old Town restaurant. Jim reports that a few of the foreign visitors feel that green chili should come under international control.

*Continued from Page One*

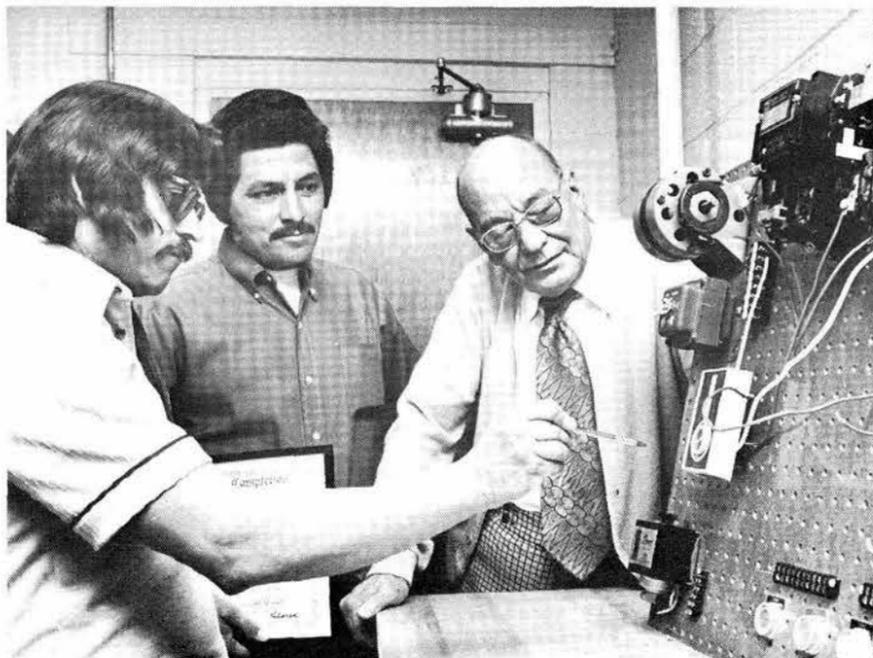
## SEWAGE PROJECT

of studies relating to their procurement and safe use.

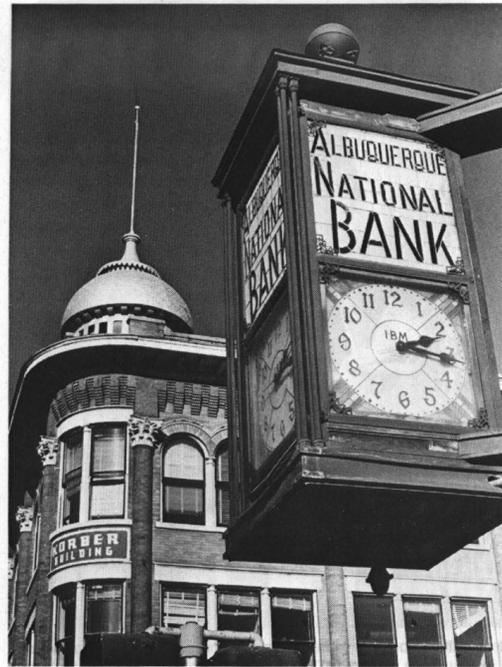
— Organization of a research program with the U.S. Department of Agriculture and New Mexico State University for greenhouse and field plot tests to evaluate thermoradiated sludge used as plant fertilizer.

"We believe far-reaching benefits will arise from these studies," Jack says. "The key question is whether thermoradiation is economical for municipal sewage systems. The project calls for critically examining this question and others, such as public acceptance of fertilizer produced by thermoradiation. We have to demonstrate that the process is economically competitive and absolutely safe."

IN THE BEGINNING, a millwright was the guiding hand behind the machinery in a water mill. Tom Sanchez, left, and Ramon Lucero, center (both 9713), have just graduated from the Labs' 5-year apprenticeship program for structural millwrights and will be working on much more complex machines. Bob Hopper, Director of Plant Engineering 9700, looks on.



# Our Town—The Changing Face of Albuquerque



The truth is most Sandians rarely visit downtown Albuquerque. The variety of shops is greater in suburban shopping centers, and parking is considerably easier.

As a matter of fact, we probably avoid downtown because of the chancy parking. The new underground parking facility just west of the Convention Center should relieve the problem, but construction projects block many streets and intersections in that area.

The fact remains, however, that downtown is still the symbolic center of Albuquerque, and that center is rapidly reflecting a modern, big-city image.

No longer is Albuquerque a cowtown. No longer is downtown quite so ghostly. Empty store windows remain, but now there is a hum of activity.

Construction noise roars constantly throughout the day. In spite of aggravations,

25,000 people work downtown in government and financial offices and in retail businesses. And this population will increase as new buildings under construction reach completion and are occupied. In addition, the Convention Center will draw thousands of visitors to the city's core.

Much of the current construction will be completed within a year. Still more government and office buildings are planned, as well as an underground shopping gallery, high rise apartment buildings, parking facilities and retail stores.

Radically different now from just last year, downtown Albuquerque will continue to change for years to come.

Metro 70s, an organization of banks and financial institutions, property owners and retailers, has provided much of the impetus for downtown's development. City officials and

planners, community leaders, professionals and concerned citizens have contributed and shared the enthusiasm for keeping downtown Albuquerque the coherent city center.

There is a solid economic reason for keeping business (other than retail) centralized. Major buildings increase in value by association, each with the other. The enhanced value of downtown property adds thousands of tax dollars to the city. The north-of-Central area of several blocks, tax-valued at \$206,000 in 1969, is today valued at \$80 million in buildings completed, under construction or committed for construction. Metro 70s believes this will increase to \$250 million by the end of the decade and has detailed plans (and some commitments) toward this growth.

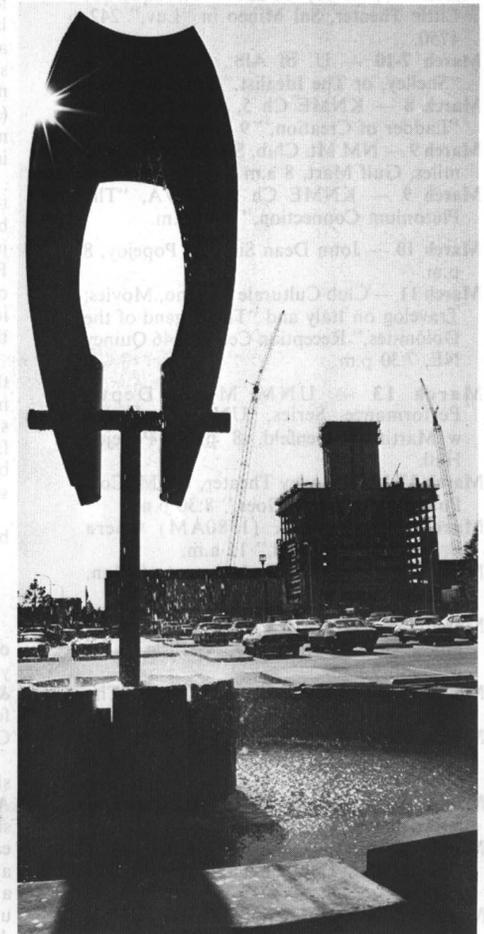
Yes, the organization is dedicated to increasing parking facilities and their ease of access. Metro 70s is also "constantly looking for

those amenities that will make downtown an exciting, beautiful place. . ."

Life in Albuquerque will change — even for Sandians.

As new hotels, restaurants and entertainment facilities multiply to cater to the convention trade (estimated to reach \$25 million annually within a couple of years), downtown will become more attractive to residents. Already, the Convention Center is doubling as a cultural center with concerts, art exhibits and other entertainment drawing large local crowds. Sandia scientists and engineers participate there in regional and national professional meetings. Those involved in city government and community affairs meet downtown regularly.

People ultimately determine the quality of life in a city. But Albuquerque's new look in its new downtown will be a major ingredient in how we feel about our city. • dg



ALBUQUERQUE INN at the Convention Center rises behind steel sculpture in front of the American Bank of Commerce complex. New 300-room hotel will be connected to Convention Center by tunnel.

KORBER BUILDING at Second and Copper, an Albuquerque landmark since 1902, fell to the wrecking ball in early February.

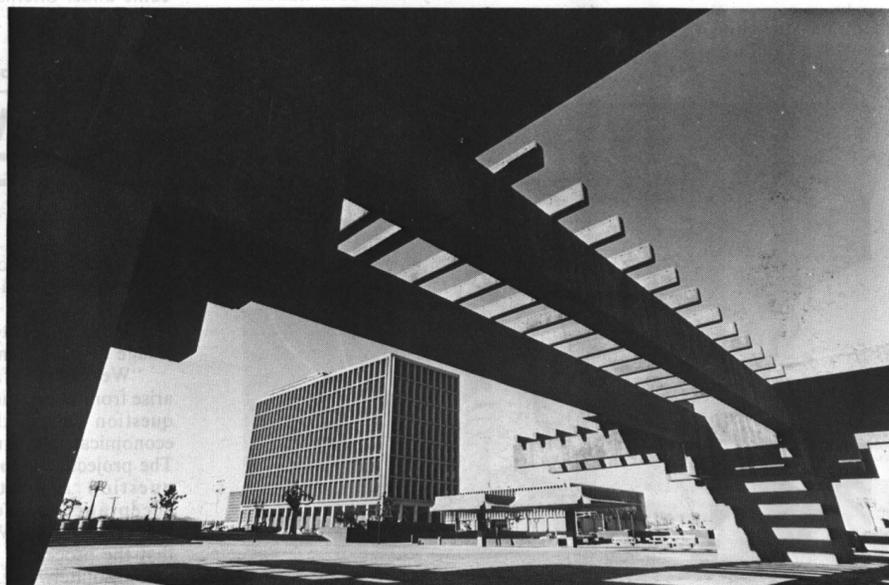


AMERICAN BANK OF COMMERCE at Roma and Second. Construction is complete and the building occupied.



INITIAL PHASE of a \$30 million First National Bank complex is under construction at Second and Copper. Bank offices and a retail shopping gallery will be housed in this structure. Grand opening is set for this summer.

CONCRETE PLAZA with dramatic structural forms covers new underground parking facility. Islands of green dot the concrete landscape.



PLAZA DEL SOL, with architecture patterned after the style of the Incas, will house offices, arts/crafts/specialty shops and restaurants.



NEW 303 ROMA BUILDING with 80,000 sq. ft. of office space is scheduled for completion early next fall.



"HANDS OF FRIENDSHIP" sculpture stands in center of concrete plaza over underground parking facility.

## Events Calendar

- March 7-9, 13-16 — Old Town Studio, Art Buchwald's "Sheep on the Runway," 242-4602.
- March 7-9, 11-16, 18-20 — Albuquerque Little Theater, Sal Mineo in "Luv," 242-4750.
- March 7-10 — U. of Alb., Ann Jellicoe's "Shelley, or The Idealist," 8 p.m.
- March 8 — KNME Ch 5, Ascent of Man, "Ladder of Creation," 9 p.m.
- March 9 — NM Mt. Club, San Miguel hike, 8 miles, Gulf Mart, 8 a.m.
- March 9 — KNME Ch 5, NOVA, "The Plutonium Connection," 7:30 p.m.
- March 10 — John Dean Sings at Popejoy, 8 p.m.
- March 11 — Club Culturale Italiano, Movies: Travelog on Italy and "The Legend of the Dolomites," Reception Center, 146 Quincy NE, 7:30 p.m.
- March 13 — UNM Music Dept., Performance Series, UNM Orchestra w/Martin Schoenfeld, 8 p.m., Popejoy Hall.
- March 13-16 — Rodey Theater, UNM: Cole Porter's "Anything Goes," 8:30 p.m.
- March 15 — KZIA (1580AM) Opera Broadcast, "Siegfried," 11 a.m.
- March 15 — KNME Ch 5, Ascent of Man, "World Within World," 9 p.m.
- March 15 — NM Mt. Club, Black Mesa, 4 miles, State Police HQ, Carlisle S of Menaul, 9 a.m.
- March 16 — KNME Ch 5, NOVA, "The Other Way," 7:30 p.m.
- March 18, 22 — KNME Ch 5, Ascent of Man, "Knowledge of Certainty," 8:30 & 9 p.m.
- March 19 — Laguna Pueblo Harvest and Social dances, Feast at Old Laguna Village.
- March 20-23, 28-30 — Alb. Civic Light Opera, "Most Happy Fella," Popejoy, 277-3121.
- March 21 — Experimental Theater, UNM: Albuquerque Dance Theater, "An Evening of Modern Dance," 8:30 p.m.

## Recreation Notes

# FUN & GAMES

*Sandia Bicycle Ass'n.* — It's time for a little brag. The feature article about SBA in last Sunday's *Journal* demonstrates: 1) SBA is alive, flourishing, and influencing the bike scene, both locally and, to some extent, nationally; and 2) though loosely organized (and financed), SBA with its list of 400 members works — cycling in Albuquerque is improving.

At last reading with the military, it's legal to enter the Wyoming Gate on the west side by going through that visitors parking area just to the west of the two traffic lanes. SBA Pres. Dave Barnes has checked this out — but offers no guarantee. Rulings from the military in this area seem to be good until a new AP at the gate decides otherwise.

Once you're inside, try the new bike path that takes off to the right, through the housing area. You can circle around to the stop light on Wyoming at the school, and from there it's clear sailing. It looks like the bike path inside the gate on the east side will soon be ready.

Bulletin: the Big Century (100 miles on a bike) is scheduled for Sunday, April 27.

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*Skiing* — A one-day bus trip to Taos takes off tomorrow morning at 6 a.m. For \$7.25, you get the ride, coffee & donuts going, beer & cokes returning. The lift ticket will tag you for an additional \$9. But it sure beats driving. Call Bob Burnett, ext. 3066 or 3778, for a seat.

Who and what gets hurt these days on the slope? Three MD's in Boston, writing in the *AMA Journal*, say that the percentage of skiers injured hasn't changed much since the early 60's. But their injuries have: far fewer ankle breaks, presumably because of the high and totally inflexible boot, but many more upper body hurts — arm, shoulder, ribs. The doctors also question the belief that it's mostly beginners who get crunched; two-

thirds of those injured classified themselves as intermediate or better.

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*Gym Users* — A sneak thief is on the prowl again. Several wallets have been lifted recently. They are generally found in the trash, money gone. If you don't have a locker, it would be wise to make some provision for your valuables.

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*Anyone Interested?* A Sandia Judo Association has been suggested by three Sandians, Tony Anaya (9718), John Olsen (5242), and Bill Shurtleff (9344). They envision using a local judo gym a night or two a week and offering classes in the sport for Sandians (and ERDAn's) and their families. "It's a great physical conditioner and a great means of self-defense," says Tony. "And kids love it." If you or a family member is interested, call Tony at 4-6252 or 266-8467, John at 4-4361, or Bill at 4-2345.

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*Bowling* — Last season tournament, scotch doubles, is set for March 15 and 16 at the Holiday Bowl. You choose the day. Door prizes include steak dinners and a portable radio; trophies will also be awarded. Entry blanks: Verne Christy, ext. 2443, or Wally Granfield, ext. 3437.

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*Rally School* — Vic Schulze (1244) of the Alb. Sports Car Club will tell you how to really rally on Sunday, March 9, from 1 to 3 p.m. in the meeting room of Alb. Federal at Wyoming and Menaul. Two weeks later, March 23, you'll have a chance to exercise your skills when the Cibola Safari II rally is conducted. For info call Vic at 298-9328 or Charlie Clark at 294-3112.

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*Fleet Geezers* — Local runners over 30, men and women, are organizing and hope to attract those who run or jog for fitness and/or competition. With the formidable title of Masters Running Ass'n. of the Southwest, the group plans to offer fun, i.e., non-competitive, runs, and competitive events, as well as training and health advice by means of a newsletter and meetings. MRASW is still in the formative stage, but Sandia's Pete Richards (ext. 6295) or Mark Percival (ext. 7145) would like to hear from you if you're interested.

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*Volleyball* — Call Marshall Berman on ext. 1545 if you'd like to play in the after-work volleyball league. Game play will start in late March.

## Sympathy

To Phil Nicovich (9655) on the death of his mother in New Orleans, Feb. 17.



IF YOU'VE WONDERED what happens when your car hits a stone wall at 50mph, then here's the answer. There's the same effect if two cars meet head-on at 25mph. The Area III event is one of a series in which the structural integrity of the type of concrete wall used in a nuclear facility is put to the test. That's a dummy — a real one — in the front seat.

# feed<sup>back</sup>

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 Labs receive a large amount of material packed in styrofoam "Peanuts." If this material could be re-used, it would reduce our disposal problem and reduce material costs for our packaging personnel.*

A. Following an earlier suggestion, an effort was made to recycle packaging materials. This was abandoned after a three months trial because of lack of support from recipients of material. Also, the styrofoam "peanuts" cannot be used by our shipping organization, since the items being shipped require an entirely different type of packing material.

R.E. Hopper - 9700

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*Q. I would like to suggest that Sandia either furnish, or make it possible for us to purchase at a nominal cost, the service award broach to which we can pin our badge. It might help solve the problem of "wearing the badge properly" for female employees.*

A. Your suggestion of making available the broach as a badge holder has been considered. However, since it is a service award, it cannot be sold.

The Security Organization has a substitute pin which is available for the purpose you suggested at no cost. You may pick one up at the Badge Office.

R.J. Edelman -4200

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*Q. I noticed in U.S. News and World Report that there is a good possibility that our term life insurance at Sandia will be included in our taxable estate. Is it possible for us to transfer ownership rights of this Sandia insurance, and if so, how do we go about it? If not, could Sandia negotiate a change to one or more of the policies to make this possible?*

A. In 1970 changes were made to the First and Second Supplemental Group Life Insurance Policies which permit insured active employees to make gift assignments of their interests in these Policies.

The Laboratories and the Prudential Insurance Company urge employees to obtain personal legal and tax advice before making such assignments. Neither the Laboratories nor Prudential will undertake to advise individuals in this matter.

If you are interested, you may obtain copies of the necessary forms by contacting the Benefits Administration Division on extension 3545.

R.J. Edelman - 4200

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*Q. Why doesn't Sandia have an employee suggestion program?*

A. Most suggestion programs are associated with large volume, repetitive manufacturing operations where many employees occupy similar jobs. Under these circumstances, a reasonable opportunity exists for all employees to observe operations, participate in the suggestion program, and to measure the real value of the suggestion. In Sandia's R & D activities, opportunity to observe is unequal, and it is frequently extremely difficult to identify savings. Under these circumstances, a cash award system that would be equitable among all employees is not considered practicable.

R.J. Edelman - 4200

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*Q. I would like to know why Sandia insists on trying to run its own basketball program at the base gym. The Lab puts in \$1200 and the players still have to pay \$8 each to play. The City runs a program which we as taxpayers subsidize; why not use it?*

A. At the pre-season meeting of Sandia players, the pros and cons of playing in the city basketball league versus playing at the Base gym were discussed, and the majority of the players elected to use the Base gym. Many men participated in the city league two years ago and felt the facilities were inadequate. Some gyms had tile floors which are more likely to cause injury; clocks and scoreboards were not as easy to see or use; officiating was not as good and games were scheduled just once a week. The Base gym has better facilities, a clock and scoreboard that is easier and better to use; two games each week can be scheduled; and it is more convenient. For the \$10 per person fee the city charges, 11-14 games may be played. A minimum of 18 games, plus a post-season tournament for all teams, can be played in the Base gym.

R.J. Edelman - 4200

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*Q. Concerning the Bell System Savings Plan and AT&T stock, what happens to the dividends AT&T pays? Do they change the number of units one holds, or do they change the unit value?*

A. The Bell System Savings Plan Prospectus, on page 8, states that dividends and other distributions received by the Trustee with respect to AT&T shares shall be invested in AT&T shares. This increases the value of the units an individual holds.

As earnings accrue on the investments and as the market value fluctuates, the unit value fluctuates, but the number of units already credited to an employee's account remains the same.

By now you should have received your BSSP Annual Employee's statement which shows in the right hand column the market value of your units as of December 31 of the preceding year.

R.J. Edelman - 4200

*Q. Since this is the age of utility conservation, it would be appropriate to look at another area which is literally dripping through our fingers — leaking water faucets. I have frequently noted faucets dripping in the restrooms, and generally it seems to be the hot water — a double-barrelled waste of gas and water. In Bldg. 880, the men's room near Door YEI is a notable offender — four of the six hot water taps leak.*

A. With thousands of valves and connections in our water and steam lines, the maintenance organization is faced with a continuing task of eliminating leaks. To assist us, we must have the cooperation of all employees of the Laboratory to report deficiencies. To assist in this we have installed a small sign in most restrooms asking employees to report deficiencies by calling Ext. 4571. Incidentally, the leaking faucets in the men's room near door YEI have been repaired.

R.E. Hopper - 9700

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*Q. (from SLL) Sandia has done a good job of reducing energy consumption but further reductions could be obtained if more employees would ride the buses instead of driving their cars to work. Sandia could encourage the riding of buses in any of the following ways: (a) sell monthly and yearly bus tickets at a discount and with payroll deduction, (b) subsidize the buses possibly by using the vending machine profits, (c) charge for parking (especially non-carpool vehicles), or (d) provide the same amount of money for bussing as is spent to own and maintain the parking lot. Why isn't Sandia doing more to discourage commuting by auto and encouraging the bus riders? Sandia is presently doing just the reverse by providing free parking for all the auto commuters but not helping the bus riders.*

A. The energy conservation methods utilized to date are those which can be accomplished on the job. We have encouraged car pools to the extent of providing favorable publicity, a map showing where fellow Sandians live, and special parking privileges.

We have also encouraged employees to ride the bus through the promotional articles carried in the Lab News and the distribution and posting of the bus schedules. It is felt that for management to further press employees to ride the bus could be construed as infringing upon individual rights.

C.H. DeSelm - 8200

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*Q. Why is it that the drafting designer is very seldom mentioned in reports in Lab News about Sandia projects?*

*The engineers and scientists seem to be the only ones to get recognition.*

A. LAB NEWS attempts to recognize, through mention, all Sandians making a significant contribution to a project being given coverage. And our writers inquire of their sources concerning the people who participated in the project; the problem derives from differing views of what constitutes a "significant contribution."

John Shunny  
Editor, LAB NEWS

## Take Note

Children of Sandians are eligible for the Kirtland Officers Wives Club Scholarship Program for which applications are now being accepted. Seven scholarships of \$500 each for the 75-76 academic year will be given, and awards are based on scholastic ability, financial need and recommendation of faculty members. The scholarships are open to freshmen and upperclassmen entering an accredited college or technical institute. Applications, which must be submitted by March 25, are available at the Bank of New Mexico (on Base), the Officers Club and the NCO Club. Money for these scholarships comes from operation of the Base Thrift Shop.

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On March 9 at 7:30 p.m., Channel 5, the TV program Nova will present a 60-minute study of nuclear materials safeguards. Emphasis will be on manufacture and transportation of special nuclear materials. A portion of the program was filmed at Sandia Labs.

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The New Mexico Gun Collectors will hold a Gun Show March 8 and 9 featuring collections of antique and modern guns. The event will be held at the Industrial Building, State Fairgrounds. Collectors are invited to display their exhibits or bring old guns around for a free appraisal.

The group meets the fourth Wednesday of each month at the Trade Winds. Call Dwight Lewis (ERDA), 7834, for more info.

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A special postage stamp exhibit, valued at \$10,000 plus, and many more frames of stamps will be on display during the Albuquerque Philatelic Society Stamp Show on March 7, 8 and 9. It will be held at Holiday Inn East and admission is free.

The APS is celebrating its 40th anniversary, and members Hal Post (5624), Pete Kaestner (1723), Jim Cocke (1514) and Jim McCutcheon (retired) will gladly tell you more.

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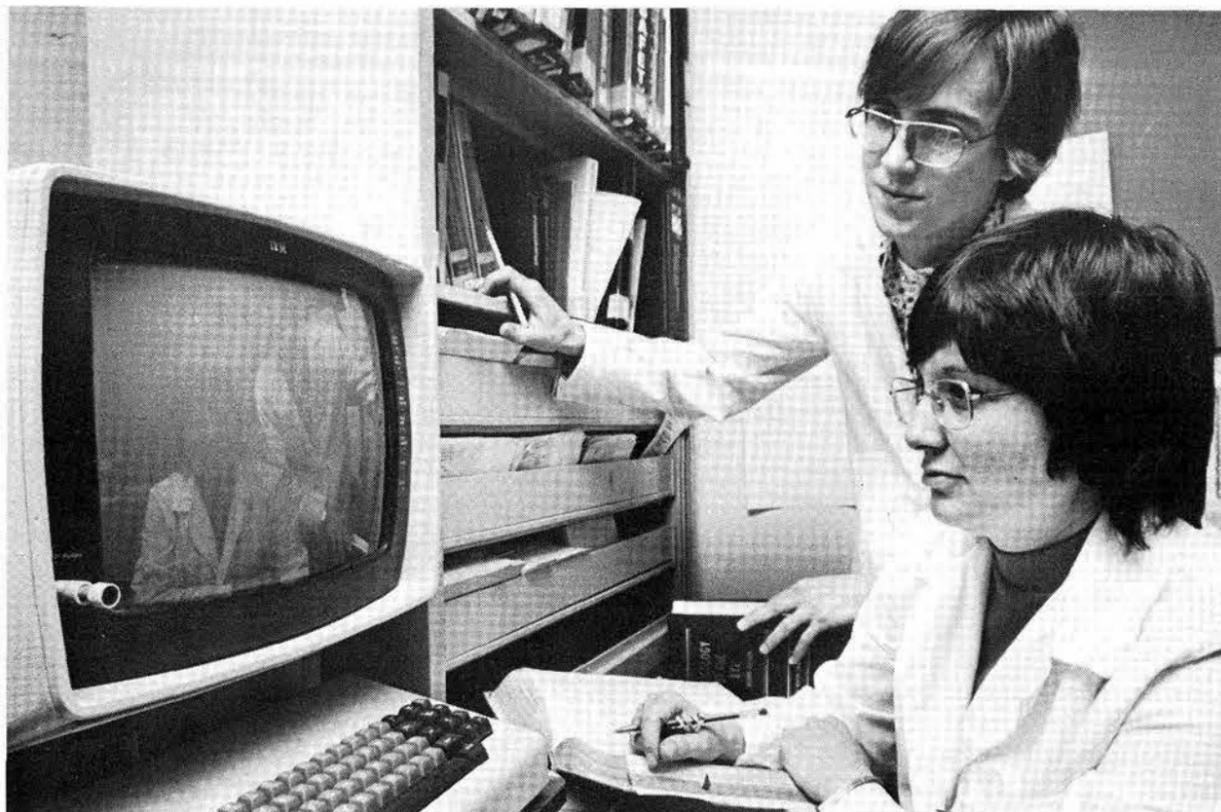
Herman Stein (5112) will present "Silicon-Nitride Films: Displacement Damage and Impurities" at the 5100 Seminar Tuesday, March 11, at 8:30 a.m. in Rm. 201, Bldg. 806. The seminar will not meet March 18.

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Have a home you'd be willing to share with a Japanese high school student? Forty of them will be in Albuquerque July 27 - Aug. 14 in a program sponsored by the Foreign Study League. Each will attend classes at Highland High School four mornings a week and will tour local points of interest most afternoons. Host families supply room, board, and transportation to classes; students have medical insurance and their own spending money. If you're interested, call coordinator Roger Figge at 881-3859 evenings.

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The American Nuclear Society — Trinity Section will meet at the Santa Fe Hilton at 6:30 p.m. on March 14. Marvin Squires, head of the New Mexico Energy and Natural Resources Administration, will discuss the role of that group. Dinner is included in the \$6 tab; guests are welcome. Reserve with Bob Jefferson (1724) by noon March 11 at 4-4296.



DR. DIANA CALVERT, director of the N.M. Poison Center, and supervisor Robert Stevens conduct a "drug search." They have just queried the Bureau of Drugs clearing house in Washington, D.C., via this computer hook-up. In seconds the requested information will appear on the TV monitor.

## New Mexico Poison Center

Seven hundred telephone calls were received by the New Mexico Poison Center in January. About 60 percent of those could be classified as panic calls — actual poison ingestions. The remainder were requests for information.

The Center is located in the Bernalillo County Medical Center. Staffed 24 hours a day, seven days a week, by one of 14 registered pharmacists, the Center can rapidly respond to any call. In addition to the expertise of the staff, the Center is backed up in Washington, D.C., and the National Poison Center Network in Pittsburgh. The N.M. Poison Center is one of only six centers in the U.S. with a direct computer hook-up with these agencies.

Dr. Diana Calvert has been director of the Center since its inception two years ago. "This is a state-wide service," Dr. Calvert says, "and in an emergency situation it's a good thing to know about. The principle of first aid in any poisoning, except poisonous bites, is to get the poison *out* or *off* or to *dilute* it as soon as possible. There are correspondingly important first aid procedures for poisonous bites. Once we have established certain facts about the victim — age, weight, suspected toxic substance — we can then give specific first aid instructions."

The service doesn't end there. If need be, a "drug search" is conducted. This may entail use of the computer hook-up, or reference to the numerous source books, or to the commercial product file. In more serious cases, the Center communicates with the patient's physician or hospital. Then, at closely-spaced intervals over the next two days, follow-up calls are made to check on the patient's condition.

"These follow-up calls are critical," says Dr. Calvert. "We can offer additional advice according to the condition of the victim and, at the same time, gather data for use when another similar case comes along."

Dr. Calvert says the most frequent calls concern pre-school children whose curiosity has led them to some type of non-food substance. She emphasizes that *any* non-food substance is a potential poison. Consider this two-day sampling of calls, quoted from the Center's log:

— One y/o male (approx. 20 lbs.) tasted

some Johnson's Step Saver.

- Child ingested unknown amount of poinsettia plant.
- 18 mo. old male ate 1-2 ml. of airplane glue. What kind of problems can I expect?
- Is there anything else to do for child that got bleach in the eye other than to flush with running water?
- 5 y/o male ingested glassful of water and bleach.
- 3 y/o male ingested 1 swallow of rubbing alcohol.
- 2 y/o male ate about 1/2 tube of Diaperene Baby Ointment.
- 4 y/o male ingested approx. 2 ozs. of Super Set Hair Setting Lotion about 10 minutes ago.

"We have a direct connection with the rescue squad," Dr. Calvert continues, "and we often get calls from the Suicide and Crisis Prevention Center and some of the organizations dealing with alcoholism." Not all are panic calls. There was the sheepish-sounding man who called early one morning: "I just brushed my teeth with Brylcreem. What should I do?"

The Center conducts a vigorous educational program, and the staff lectures before kindergarten classes, civic and professional groups, and in all the medically related courses at T-VI. They also conduct Emergency Medical Services training for ambulance drivers and technicians, and participate in the Rural Critical Care Nursing Program.

March 16-22 is National Poison Prevention Week and the Center is hoping to make more people aware of their services. "Last time we had some publicity," Dr. Calvert says, "our telephone calls jumped by a total of 200 over a previous month."

She urges parents to ensure that potential poisons are kept out of the reach of small children. And adults are cautioned too; for example, before taking medication read the instructions; arrange the contents of the medicine chest so that the greasy kid stuff isn't right next to the tooth paste; and, above all, if a poisoning emergency arises call the Center promptly. They're in the white pages under "Poison." • nt



SANDIA MACHINIST Ray Perry (3644) describes precision machining to a group of attentive young people from Laguna-Acoma High School. Occasion was last week's New Mexico Indian Youth Conference, held at Western Skies. Conference purpose was to describe career and educational paths for the students.

## Authors

J.W. Poukey and J.R. Freeman (both 5241), "Limiting Current for Hollow Rotating Beams," Vol. 17, No. 10, THE PHYSICS OF FLUIDS.

F.P. Gerstle (5844) and G.W. Pearsall, "The Stress Response of an Elastic Surface to a High-Velocity, Unlubricated Punch," Vol. 41, No. 4, JOURNAL OF APPLIED MECHANICS.

D.B. Longcope (1541) and C.R. Steele, "Pulse Propagation in Inhomogeneous Media," Vol. 41, No. 4, JOURNAL OF APPLIED MECHANICS.

H.J. Stein and R.H. Baxter (both 5112), "Versatile Cryostat Systems for Low-Temperature Ion-Implantation Studies," Vol. 45, No. 12, REVIEW OF SCIENTIFIC INSTRUMENTS.

J.Q. Searcy (2515) and J.B. Fenn (Yale Univ.), "Clustering of Water on Hydrated Protons in a Supersonic Free Jet Expansion," Vol. 61, No. 12, THE JOURNAL OF CHEMICAL PHYSICS.

W.P. Bishop (4761) and C.D. Hollister (Woods Hole Ocean. Inst.), "Seabed Disposal — Where to Look," Vol. 24, December 1974, NUCLEAR TECHNOLOGY.

E.P. EerNisse (5112) and C.B. Norris (5113), "Introduction Rates and Annealing of Defects in Ion Implanted Si<sub>2</sub> Layers on Si," Vol. 45, No. 12, JOURNAL OF APPLIED PHYSICS.

R.K. Cole (5223), "Lifetime-Averaged Cross Sections for X-Ray Transport Calculations," and "Analytic X-Ray Transport Theory for Numerical Computation," Vol. 55, No. 1, NUCLEAR SCIENCE AND ENGINEERING.

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#### RULES

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

#### FOR SALE MISCELLANEOUS

- WROUGHT iron chandelier w/5-candle candelabra, \$45. Hines, 296-4959.
- AMERICAN mobile home, 10x55, 1-bdr., '61, new aluminum skirt, awning, shed. Arthur, 299-1802.
- DELUXE pool table, 2/mo. old, 7'x4', 1-1/4" slatite adj. bed, complete w/accessories, \$325. Perryman, 292-1120.
- FIRE WOOD, pinon, ponderosa, cedar, \$45/cord split, delivered & stacked. King, 292-2693.
- RABBIT clearance, fryers, \$3; breeders, \$4/\$8; bunnies, \$2; does, bucks, American chinchilas, New Zealand blacks, checkered giants, browns. Bassett, 898-1840.
- 30" ELECTRIC GE built-in range; 13 cubic ft. Westinghouse refrigerator, make offer. Trujillo, 255-5053.
- TRAVEL trailer, 16' 9", Santa Fe, toilet, stove-oven, ice box, wall heater, 2-5 gal. bottles, 700-15 truck tires, '75 license, \$975. Senter, 255-0594.
- SNOW tires, 1-D78 x 14, Sears XST, new cost \$32, sell for \$22; 1-B78 x 14, \$4. Mikkelsen, 881-3921.
- THREE used 4-ply tires, 8.25 x 15, all for \$15, or will sell separately. Causey, 881-7534.
- CABOVER '72 Open Road 9' camper, fully self contained, for long-wide 3/4 truck, \$1250 firm. Foster, 265-0069. 5115 Aspen NE.
- FOUR YR. old mare with an 8 mo. old palomino colt, \$200. Salas, 865-6344.
- PIANO, upright, \$300; aquariums, 5, 10, & 15 gallons, pumps covers, etc., take all \$30. Barth, 345-0172.
- NEW radial Dunlop tire, 165x13, \$35; foam mattress, dbl./bed,

\$30; patio table & 3 cushioned chairs, 2 modern Danish chairs. Lundergan, 255-2974.

MOTORCYCLE trailer, holds 3 bikes, new radial tires, including spare, complete lighting hook-up, \$150. Lewis, 296-7896.

LABRADOR retriever, 7 mos., registered AKC, \$50. McGuckin, 299-1342.

KITCHEN dinette set, includes 5 chairs & 2 leaves. Filusch, 299-5932.

CAMERA lens, new 250mm Vivitar for Pentax or Nikon, \$65; 135mm Soligor for Pentax, \$35; 135mm Soligor auto for Canon, \$60. Briggs, 299-4047.

TOY poodle, 6 mo. old, white, \$50. Campbell, 268-8445.

WURLITZER Funmaker custom organ, synthesizer, swinging rhythm, dancing chords, cassette, 18 mo. old, fruit wood finish. Massey, 256-0308.

6.00-12 TIRE, Firestone Deluxe Champion, white wall, used less than 25 miles, \$14 or make offer. Clark, 294-3112.

ENGLISH riding boots, all leather, black, size 5-A; rat-catcher shirt, maize, girl's size 14. Mehl, 345-1076.

AKC registered Norwegian Elkhound puppies, black & silver, child's pet or watch dog. Blaylock, 256-0734 or 268-6598.

TWO single Hollywood beds, bedside, table, bureau, mirror, vanity & bench, chair, \$120 or separately, other items. Overton, 265-6395.

TERRARIUMS, Miller, 268-5992. CANON SLR camera, model FTb, w/1.4 lens & case, \$210 firm. Duvall, 255-3326.

LADIES plastic Henke ski boots, size 8, used 1 season, \$15; shock absorbers from '70 Mercury station wagon, \$6/pair. Harstad, 298-6551.

PLYWOOD, used but good, 8 ea., 3/4 x 4 x 8, exterior, 8 at \$5 ea. Haskell, 345-0355.

RALEIGH 5-spd men's bike, \$65; Phillips 5-spd ladies bike, \$40; antique walnut marble top dresser, \$225. Van Den Avyle, 898-6474.

HIDE-A-BED, Simmons, love seat size, 52" wide overall, makes twin size bed, avocado green. Stevens, 296-6326.

CULLIGAN soft water unit, reconditioned, \$70, used 1 yr. Benton, 877-2473.

KIRBY vacuum cleaner, \$50. Mason, 296-7267.

ROLLENEX portable whirlpool footbath w/attached motor, cost \$30 new, will sell for \$15, used only once. Slesinger, 299-4626.

DISHWASHER, portable, Frigidaire Imperial, white, \$95; chrome dinette set, extra leaf, 6 high back chairs, \$55. McIntire, 299-5791.

ROLL-AWAY bed; heavy duty bumper hitch; 43 lbs. of 8-penny cement coated nails. Windham, 293-8107.

POWER supply, 325V-525V, DC, variable, 0-200 ma; car tape player, Arthur Fulmer; portable AM/FM tape player. Cabe, 265-2741.

NEW golf balls, 12 regular Titleists, 9 Pro Trajectory Titleists, 6 Blue Max Maxflis, \$1 ea. Longcope, 821-8423.

SCREENS, fiberglass w/aluminum frames, 18" x 23-1/2" & 24" x 31-1/2"; Airquipt slide projector w/screen, trays, etc; 1/3hp cellar pump. Glaser, 293-8110.

17.5 CU. FT. Coldspot refrig/freezer, approx. 12 yrs. old, \$85. Dean, 296-3264 after 5:30.

#### FOR SALE TRANSPORTATION

'58 PONTIAC, AT, R & H, \$125. Mackenzie, 299-1806.

'67 OLDS Toronado, low mileage, AC, PS, PB, 1 owner. Bennett, 268-3726, evenings

'60 FORD 1/2-ton, swb, 292 V8, 3-spd., recent valve job, no oil burning. Erdman, 298-3097.

BICYCLE, 10-spd, Schwinn, 23" frame, 27" wheels, thornproofed, \$80. Foster, 265-0069, 5115 Aspen NE.

'68 OLDS station wagon, Vista Cruiser, AC, PS, radio, Rex, 299-6264.

'64 OLDS 88, AC, AT, PS, PB, R & H, new retreads, new windshield, \$175. Gammill, 299-4702.

'68 FORD F100, 360 V8, lwb, air, chrome wheels w/radials, air shocks. With 8' cabover camper, \$1250; pickup alone \$900. Brandvold, 296-4394.

'65 SUZUKI, 80cc, road bike, 80 mpg, \$150. Carlson, 299-6610.

'54 FORD, 9-passenger station

wagon, V8, std. trans., overdrive. Cafferty, 898-3102.

'60 CHEV. PICKUP, 4-spd., 6-cyl., 235 cu. in. engine, lwb. Gallegos, 831-2393.

'73 CHEV., 4-wheel drive, 3/4 ton, AT, AC, PS, PB, dual batteries & fuel tanks, 28,000 miles, best offer. Hastings, 255-7932, eve.

'67 MERCURY station wagon, AC, PS, PB, 6 passenger, 1 owner, \$600. Kimball, 299-5527.

'68 T-BIRD Landau, 4-dr., new radials, \$1095 or best offer. Schulze, 898-2880.

'74 SUPER Beetle, sunbug, metallic gold, sunroof, AM/FM radio, Rally wheels, chrome pkg., underseal, interior pkg., 4000 miles. Hostetter, 294-4082.

SCHWINN ladies bicycle, 1-spd., \$35. Johnson, 299-8745.

ROVER 200TC, designed safety car, reinforced door, engine deflection, built-in roof support, over 3000 lb., 28 mi./gal., leather interior, 55,000 miles. Beezhold, 293-3699.

#### WANTED

DRAFTING instrument set. McConnell, 881-2440 or 255-2488.

ITEMS for a garage sale, sponsored by the Albuquerque Association for Children with Learning Disabilities (AACLD) Wells, 292-3364.

STATIONARY exercise bike. Phillips, 268-1034.

DIRT bike trailer, will pay top price, w/14" tires or larger, hiway legal, 2-bike capacity. Holmes, 255-1517.

GOOD USED boy scout uniforms, pants short/long, waist 31", legs 32", shirt short/long, sleeve 34", neck 15". Ricker, 296-2191.

BACKPACK equipment: frame, pack, tent, etc. also mini wheel tricycle for child. Watterberg, 294-6759.

GOOD transportation car for retiree, must be economical, pay up to \$600. Burkhardt, 281-3335.

CHOW-CHOW male pup, AKC registered or full breed guarantee. Snodgrass, 268-8820.

ANYONE with offensive back field experience that would be interested in coaching in the Young American Football League heavyweight division

please contact Bill Woodward, 264-2810 or 264-7428.

LOOK Nevada ski bindings. McConnell, 255-2488.

RIVER Rats for spring & summer weekend trips; also want babysitting jobs. Mason, 296-7267.

#### FOR RENT

3-BDR, brick, 2 bath, fully carpeted & landscaped. Baca, 8724 Phoenix NE. 842-5801 after 12 p.m.

4-BDR home, family room w/fireplace, dining room, lots of extras, 2 yrs. old, New Holiday Park. McIntire, 294-5884.

2-BDR house, available March 22, newly finished den, AC, stove & refrigerator available, Gen. Somervell NE. Baker, 898-3206.

MOTORHOME, travel in comfort, sleeps 6, bath, AC generator, \$210 wk., 400 miles free, for details call Roberts, 298-9163.

#### FOR SALE REAL ESTATE

BRICK fourplex, NE heights 3 furnished, 1-bdr apartments, 3-bdr. owner's units w/fireplace, greenhouse, garage, \$62,500. Eagan, 299-9630.

4-BDR. w/den, 2400 sq. ft., near Winrock. Ward, 299-0944.

DELLWOOD area, 3-bdr., den, rec. room, near shopping, bike & bus routes to Sandia, \$41,000. Easterling, 299-7828.

15.24 ACRES, fully fenced, irrigated, Los Lunas Tome area. O'Connor, 292-0592.

2 ADJACENT 1/2-acre lots at Meadow Lake, \$2800 ea.; 1 large corner lot at Volcano Cliffs, \$3500. Johnston, 881-1280.

#### LOST AND FOUND

LOST — Silver Foxtail earring, 20 yrs. award; yellow gold wedding band; man's glasses w/clear plastic rims; brown frame glasses w/black case; silver and turquoise squash blossom dangle earring; Foxtail service award earring. LOST AND FOUND, Bldg. 832, 4-3441.

FOUND — First Aid book; ladies brown glove; ladies black rim glasses; man's brown rim glasses w/black case; brown pipe; maroon and gold chain necklace. LOST AND FOUND, Bldg. 832, 4-3441.

**THUN MOVIE • C-CLUB • LIONS • BULLS • MINI-LUAU • LASAGNA • PRISONERS**

FRIDAY	SATURDAY
7 — HAPPY HOUR PASTA SUPREME Adults \$2.75 Under 12 1.75 Thomás & Marcia On Stage THE PRISONERS	8 — SPECIAL SOUL SESSION 8:30 - 12:30 <i>Moments of Madness                      with Jeffery Eden</i> 9:30 - 10:30 BROWN SUGAR
14 — HAPPY HOUR MINI - LUAU Adults \$2.95 Under 12 1.95 Glad Rags On Stage MIDNIGHT SPECIAL	15 — ST. PAT'S Dinner - 6:30-8:30 B. Clark & B. Grady Dancing - 8:30-11:30 KENNY ANDERSON Mbrs. \$4.50; Guests \$5

**LEGISLATIVE** — news boring you? Forget it at the "Wearin' of the Green" Extravaganza on the 15th. Irish menu for Irish men (and women and pagans). Irish songs to lighten hearts, bring tears to eyes, and exercise larynges. *Tickets tomorrow or today.*

**PROGRESS** — toward August and the trip to Lake Thun seem glacial? Make the wait tolerable by attending the Pre-Switzerland Slide, Movie, and Question-Answering Session at 7 on the 25th. Even if you're just thinking about going, go, learn, yearn.

**NO** — more popular wonder in the western world than wondering "why Disneyland?" See, hear, feel for yourself by signing up (*March 10*) for four days, three nights, several dusks in culture-drenched Anaheim: D'land, Marineland, Lion Country Safariland, and more (Land o' Goshen!) Plane lands March 27, again March 30.

**HITS** — like Jeffery Eden's "Moments of Madness" don't come to Albuquerque often. He's a rollicking, quasi-racy guy who can pick your pocket or tickle your fancy. And then there's *Brown Sugar* — "Great," says Bruce Davis. Plus specials on Libidinous Bulls and Sunrises and posters commemorating the lot. A very Special Soul Session.



TONIGHT, TONIGHT, it's Thomás and Marcia, playing and singing for your Happy Hour pleasure. Attractive to look upon, delightful to listen to, they'll make tonight's mealtime a memorable occasion.



On the average . . .  
 Man is a 0.25-megohm, 1-watt resistor.  
 At 1 milliamperes, shock is perceptible -  
 . . . at 10 mils you can't let go -  
 . . . 100 mils is generally fatal.

ABOUT 600 PEOPLE ARE  
 ELECTROCUTED YEARLY  
 IN U.S. HOMES BY  
 ALTERNATING CURRENT.



**NO** — Artists starving in garrets these days. They're starving (for clients) at the Wyoming Mall's 4th Annual Starving Artists Arts & Crafts Fair, 10 to 6 on the 15th. C-Club's Aquatickers will fill a booth with crafty arts; watch for them.

**RUNS** — and pairs and fifteens. Lots of pegging at the Club on the 22nd at the Cribbage Tourney. Bring a partner or find one there. \$2 to enter a team. Cash prizes to survivors of the double elimination contest. Begin at 10.

**ONE** — Happy Hour features Dave Fosterelli's special lasagna (just like Grandma

used to make before she became The Happy Crochet Hooker) and customized Caesar salad. Next week it's sweet and sour ribs, fish tempura, chicken teriyaki, and fresh fruit salads: what the Club calls a Minnie-Lou. Wow!

**ERA** — of emphasis on communication continues. One of the most fascinating areas is "saying lots with your mouth closed," alias Body Language. It's the subject of Marian Shelton's demonstration for Sanado March 11 at 1:15. She's easily one of the most interesting, informed, intriguing people around. *Reserve today* with Anne Tapp.

**• GLAD RAGS • DISNEYLAND • CRIBBAGE • BODIES •**

**Speakers**

C.F. Melius (5211), "The Chemical Bond in Ni: Its Application to Chemisorption and Catalysis," Sanibel Symposia, Univ. of Florida, Jan. 19-25, Sanibel Island.

G.A. Samara (5130), "The Role of High Pressure in the Study of Structural Phase Transitions: Soft Phonon Modes," Midwinter Research Conference, Jan. 22-28, Irvine, Calif.

R.E. Jones (2642), "QMESH: A Self-Organizing Mesh Generation Program," C-Division Seminar, Feb. '75, LASL.

D.W. Bushmire (2431), "Solid Phase Bonding," NEPCON 75 West, Feb. 11, Anaheim, Calif.

P.D. Thacher (9532), "Fringing Field Effects on Voltage Measurements — Kerr Cells vs ADP Crystals," National Bureau of Standards, Feb. 12, Gaithersburg, Md.

W.H. Dodson and J.D. Heightley (both 2116), "Charge Pumped Control Circuitry For A Serial Access 336 Bit MNOS Electrically Alterable ROM," IEEE International Solid-State Circuits Conference, Feb. 12-14, Philadelphia.