



Be Bonded

CURRENT participation is 85%. May is Bond Month and Charley Bild (3600), Chairman of this year's drive, aims to get Labs participation up to 90-plus percent. Says Charley, "All of us will get a bit more in our paychecks starting this month because of the lowered tax bite. Why not put that extra money into Bonds? It's a systematic way to save and E Bonds now pay a full 6% interest when held to maturity of five years. Also, interest is not subject to income tax until the Bonds are cashed." Plans are to contact each Sandian during the drive. New Bicentennial Bond design above in all denominations will be issued for one year starting May 1 — it may become a collector's item.

LAB NEWS

VOL. 27, NO. 9

MAY 2, 1975

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



INSIDE: Sandians As Policeman



CONGRESSMAN LUJAN visited Sandia last Friday, talked with employees on a wide range of subjects during his colloquium appearance, and attended some technical briefings. Here Jon Reuscher (5221) tells him about a container in which certain properties of plutonium are measured. President Sparks and Everet Beckner (5200) look on.

Narath, Newsom Discuss Drilling With Senate Group

Sandia Laboratories recently received \$150,000 in additional funding from ERDA's Division of Geothermal Energy to continue research and development of the spark discharge drill bit (LAB NEWS, March 15, 1974). The work is centered in Drilling Research Division 5718 under Max Newsom.

Recently Max and Al Narath (5000) explained the concept before the U.S. Senate Committee on Interior and Insular Affairs.

"The bit consists of a down-hole electrical pulse generator which discharges high-energy electrical pulses between an array of electrodes," Al said. "The spark creates a shock wave, a bubble forms and then collapses creating another shock into the rock. In tests to date extensional rock failures seem to predominate. If this development is successful the problem of bit changing in deep holes will be largely eliminated, and this bit offers improved rock removal efficiency as well."

In laboratory tests, various models of the spark bit achieved encouraging drill rates in rock and concrete specimens — as high as 30 feet per hour. This compares favorably with the performance of conventional rotary bits; however, the Sandia spark bit was operating at only three horsepower, and the goal is to increase power by a factor of 50 to 150 hp.

"Much work remains to be done," Max says. "We must improve drill bit design to achieve longer life, we must develop components that are more temperature and corrosion resistant, and we need to know more about rock fracture mechanisms and the physics of the spark created environment in a drilling fluid."

"For spark energies of 100 to 200 Joules, we've measured shock pressures of 2000 to 10,000 atmospheres," Max says. "The jet created when the bubble collapses may generate even higher pressures although this phenomenon is not well understood at this time. The rock spalls, and the broken rock is floated out of the hole by conventional circulating drilling fluid."

The two Sandians were discussing advanced drilling technology with the Senate committee in connection with its study of underground energy resources.

Al Narath also described Sandia's terradynamic drill bit, which shoots projectiles to fracture rock, and two down hole changeable bit designs, both of which have the capability of replacing worn cutting surfaces without having to pull out the entire drill stem.

"Drilling costs are a major expense in the development of most energy resources," Al told the committee. "Even a relatively small increase in drilling efficiency would produce dramatic economies."

Sandia has proposed a national drilling program to develop new methods for exploiting underground resources. "We are convinced," Al said, "that significant near-term improvements in drilling technology can be realized for a modest expenditure of funds compared to the level of effort required to support some of the long-term energy programs."

Credit Union Bulletin Board

The AEC Employees Federal Credit Union is looking for a manager/clerk to run a one-person office full time. Credit union experience is desirable and a background in accounting is essential. Resumes should be sent to the AEC Credit Union, 424 Montclair SE, Albuquerque, 87108.

Events Calendar

May 2 — Albuquerque Little Theater: Mark Miller's "Ginger in the Morning," 8 p.m.

May 2 — UNM Collegiate Singers, "Entertainment Extravaganza," 8:15 p.m., Popejoy.

May 2-3 — 28th Annual State Square Dance Festival, Convention Center, 281-3639.

May 2-4 — N.M. Art League, 6th Annual Albuquerque Arts Festival, Wyo. Mall.

May 2-3, 8-9 — Rodey Theater, UNM: Geraldine Glover's "Prophecy to the Wind," an Evening of Dance Theater, 8:30 p.m.

May 3 — Albuquerque Youth Symphony, 8:15 p.m. Popejoy.

May 3 — Taos Pueblo: Santa Cruz Day, Green Corn Dances; Cochiti Pueblo, Green Corn Dances, Celebration of the "Coming of the Riverman."

May 3 — Girl Scout Fair, Tingley Coliseum.

May 3-4 — 4th Spinning & Dyeing Zoo Workshop, 10 to 3 p.m., Rio Grande Zoo. Info, 256-9130.

May 4 — Rodey Theater, UNM: Jazz Band Concert, 4 p.m.

May 4 — Channel 5, Solar Energy, "The Solar Decision," 7 p.m.

May 3, 10 — KHFM (98.3), complete musicals, 6:40 p.m.

May 4, 11 — KHFM (98.3), complete operas, 6:40 p.m.

May 7 through month — Barn Dinner Theater, "Born Yesterday," 281-3338.

May 9-11 — 3rd Annual American Indian Arts Festival, Indian Bldg., State Fairgrounds.

May 10 — Channel 5, Consumers Survival, "The Truth About Condominiums," 5 p.m.

May 11 — Albuquerque Civic Chorus: Cecilia Mass, 243-5646.

May 11 — Dog Show at Tingley.

May 15-16 — Albuquerque Opera Theater: Verdi's "Falstaff," 8:15 p.m., Popejoy.

LAB NEWS

Published every other Friday

SANDIA LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA

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Area 505 264-1053
ZIP 87115

In Livermore Area 415 455-2111

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&
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

Sympathy

To Alveo Gendreau (3644) on the death of his mother in Maine, April 18.

To Joe Cuellar (9715) on the death of his father in Los Angeles, April 6.

To Diego Gonzales (9718) on the death of his son in Albuquerque, April 9.

To Florencio Baca (9718) on the death of his father in Albuquerque, April 15.

To Don Barrack (3621) on the death of his sister in Detroit.

Congratulations

To Mr. and Mrs. Ramon Villegas (1112), a daughter, Laveda Deirma, April 19.

Ray Smith Earns PhD



Ray Smith (8365) received a PhD degree in fluid mechanics recently from the University of California at Davis through Sandia's Educational Aids Program. Title of his dissertation was "A Rotational Raman Scattering System for Measuring Temperature and Concentration Profiles in Transient Gas Flows."

Since joining Sandia in Sept. 1967, Ray has been involved in instrumentation and component development, fluid mechanics and, currently, command and control inventory systems and explosive ordnance disposal. His BS and MS degrees were granted by the University of Washington.

Retiring



Eloise Perry (8424)

Burning Question Focus of SLL Research

Combustion is the central element of energy production from fossil fuels. Yet scientific understanding of combustion is far from complete, and it has become generally accepted that such understanding would bring cleaner, more efficient combustion and great savings in fuel.

At Sandia/Livermore major research is now underway in combustion. Funded by ERDA's Division of Physical Research, and more recently by the Division of Conservation, the research is led by Dan Hartley, supervisor of Combustion Research Division 8115.

Although combustion underlies much of our industrial civilization, combustion science is only in its infancy, largely because of the absence of good diagnostic techniques.

For the automobile alone, new engine concepts — such as the Honda Civic's stratified charge engine — offer significant increases in efficiency. But Dan notes that these concepts are based on complex combustion processes that are poorly understood. He estimates that greater understanding of combustion could bring up to a 10 percent increase in efficiency, where each percent in dollars alone represents approximately 140 million dollars a year. Fuel economies would be equally impressive. In coal-burning power plants, the combustion problem is even more complex.

Sandia's effort is focused in three areas: (1) basic research into turbulent reacting flows, (2) applied research into automotive combustion, and (3) development of diagnostic techniques with emphasis on laser-oriented schemes. The effort is an extension of a unique Labs capability to use Raman scattering to measure concentrations and temperatures in gas dynamic flows. The

capability derives from earlier gas dynamics work relating to the weapons program.

Raman scattering, an effect involving light scattering from molecules of gases, liquids and solids, was discovered by Indian physicist, C.V. Raman, in 1928. The Labs began to exploit this effect about five years ago in studies of turbulent gas mixing; the development at that time of high power lasers and sophisticated optical detection systems considerably enhanced the diagnostic potential of Raman scattering. And Sandia's work in this area represents pioneering in the development of this diagnostic capability.

"We've been most successful in applying Raman scattering to the study of turbulent mixing," comments Dan. "Furthermore, we've continued to improve, and I'd estimate that our capabilities in this particular field are the best in the country."

One outgrowth of earlier work is "Ramanography," a technique that renders a two-dimensional plot of gas concentrations using a single laser pulse. Another technique was developed by Ray Smith to give temperature profiles in the gas mixture; it employs rotational Raman scattering and TV scanning of the spectral output.

First phase of the reacting flow studies is being carried out by Bob Setchell and Pete Witze. In addition, in experiments relating to automotive combustion, Pete has used hot film anemometry to characterize engine turbulence while Bob has employed laser transmission in connection with an operating engine for Raman measurements of the combustion process.

Other investigators include Bill Sanders and Bob Kee (both 8111), Bill Ashurst and Jim Miller (both 8115), Don Hardesty (5131), Dan Aeschliman (on loan from 5642) and Ron Hill (5642).

LIVERMORE NEWS

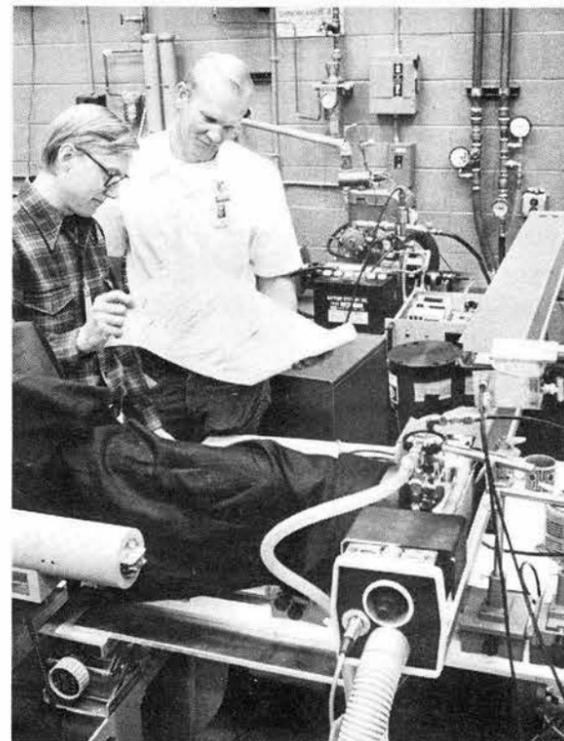
VOL. 27, NO. 9

LIVERMORE LABORATORIES

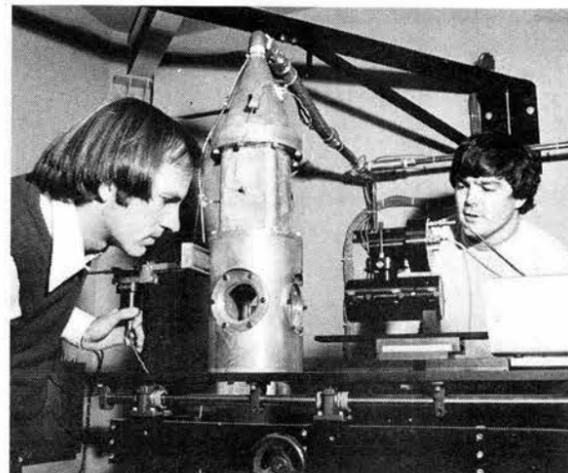
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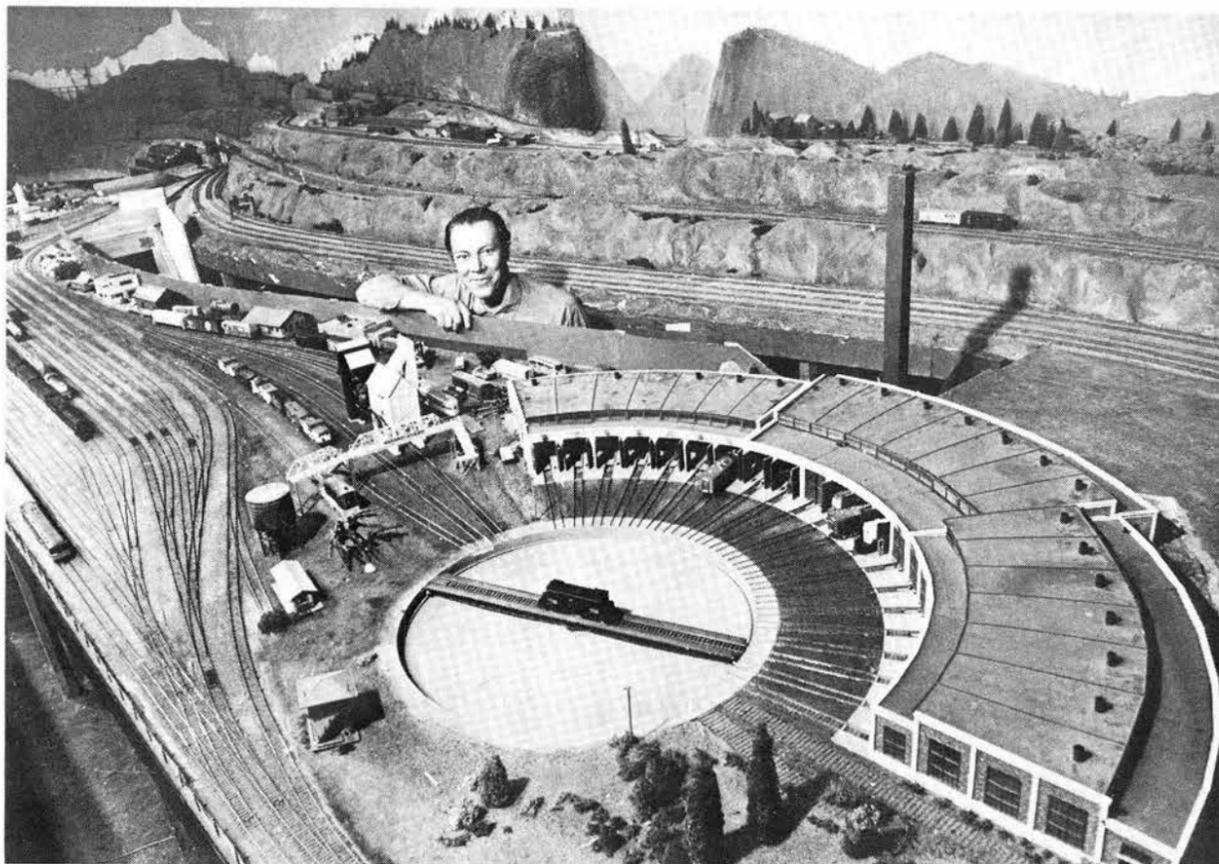
RAMAN SCATTERING is used for measuring species concentrations and temperatures in both laminar and turbulent flames during reacting flow studies. Bob Setchell (8115) adjusts laser for the laminar experiment.



LASER TRANSMISSION through ports in an operating engine has been measured. Here Dan Aeschliman (on loan from 5642), left, and Charlie Crawford (8115) examine plot of laser-induced fluorescence in combustion gases.



DAN HARTLEY (left), supervisor of Combustion Research Division 8115, and Pete Witze set up laser Doppler velocimeter on the high pressure flame facility.



SCENERY AND BACKGROUND of the HO model railroad display at the State Fair is the responsibility of Dick Sons (9353), secretary of the Rio Grande Valley Railroad Club. The 25 members of the group work year 'round on the exhibit.

Dick Sons Builds Model Trains

What's this, grown men playing with toy trains?

Shades of Casey Jones, don't you guys have anything better to do?

Dick Sons, engineer in EMR/EMP Analysis Division 9353, is not intimidated. He spends several nights a week on his hobby of model railroading, building the rolling stock for his favorite historical line — The Virginia and Truckee of Nevada. And he painstakingly creates the scenery along the track as well: replicas of general stores, schoolhouses and livery stables, and the trees, grass, shrubs and picket fences of the glory era of steam locomotives around the turn of the century.

Much of this work winds up in the permanent exhibit at the State Fair's Model Railroad building. Dick is secretary of the Rio Grande Valley Railroad Club which, along with the Albuquerque Railroad Club, provides the Fair's model show during the annual event. Difference between the clubs is in scale — The Rio Grande group prefers HO gauge — 3.5 millimeters to the foot — while the Albuquerque Club goes O-gauge, slightly larger.

"Anyone who doesn't seriously pursue a hobby simply doesn't understand," Dick says. "This hobby requires intense dedication. There's creativity and craftsmanship. There's long hours of concentration. And then there's



FOR MODEL RAILROADER, authentic detail is paramount. Dick Sons (9353) displays a locomotive with the markings of a gold-rush-era Nevada line.

satisfaction and pleasure. A hobbyist creates something."

"Frugality is a fair fortune, and the habits of industry a good estate."

B. Franklin

**Take stock in America.
Buy U.S. Savings Bonds.**



Speakers

W.J. Meyer (5151) and A. Narath (5000), "Evidence of a Nonlinear Hyperfine Coupling in LaP:Ce"; P.S. Peercy (5132), B. Morosin (5154) and G.A. Samara (5130), "Pressure and Temperature Dependences of the Raman Spectra, Dielectric Constant and Lattice Constant of SnI₄"; R.T. Johnson (5155), B. Morosin (5154), M.L. Knotek (5155), and R.M. Biefeld (5154), "Solid Electrolytes Based on LiAlSiO₄"; R.G. Kepler (5810), E.J. Graeber (5825), and P.M. Beeson (5814), "Texture and Pyroelectricity in Polyvinylidene Fluoride"; D.W. Schaefer (5814), "Number Fluctuation Spectroscopy of *E.Coli* Bacteria"; H.J. Stein (5112), "Ion Bombardment of Amorphous Silicon Nitride: Optical Absorption"; J.R. Asay (5167), "Shock-Induced Melting: Time-Resolved Measurements of Stress Wave Profiles Near Melt States"; S.J. Niemczyk (5151), "An ScF-X α -SW Investigation of Tungsten Carbide"; S.T. Picraux (5111), "Ion Channeling Studies of ²H Lattice Location"; R.A. Langley (5111), "Depth Profiling of Deuterium and Helium in Metals by Elastic Proton Scattering";

M.L. Knotek (5155), "Thermal Desorption of Ions from the Surface of S-Alumina"; A.C. Switendick (5151), "Superconductivity in Palladium Hydride"; A.C. Switendick, Invited Paper, "Energy Band Theory of Metal-Hydrogen Systems"; P.M. Richards and E.L. Venturini (both 5132), "Observation of 180° Spin Flop in an Amorphous Ferromagnet"; D. Emin (5155), "Thermoelectric Power Associated with Phonon-Assisted Tunneling Motion"; L.C. Bartel (5151), "Comments on a Possible Explanation of the Magnetic Properties of Invar Alloys"; P.J. Feibelman (5151), "Self-Consistent Calculation of the Surface Photoelectric Effect"; J.P. Van Dyke (5151), "Electronic Energy Band Structure Calculations for AgI";

K.K. Murata (5151), "Dynamic Critical Exponents for a Coupled Mode System"; J.E. Schirber (5150), A.J. Arko and E.S. Fisher (both Argonne Lab), "deHaas — vanAlphen Studies of the Fermi Surface of α -Uranium"; B. Morosin (5154), "Lattice Constants of High Concentration PdH_x and PdD_x"; E.D. Bergeron and D. Emin (both 5155), "Calculation of the Phonon-Assisted Tunneling Rate Involving Both Acoustical and Optical Phonon Modes"; H.R. Weaver (5154) and W.J. Camp (5151), "NMR Studies of the Detrapping of Helium Beta-Decay Products in Metal Tritides"; C.H. Seager and G.E. Pike (both 5155), "Electrical Transport in Mn-doped GaAs"; C.J.M. Northrup, Jr. (5834), "High Temperature-High Pressure Thermodynamics of Alpha, Beta and Gamma Uranium-Hydrogen Systems"; R.T. Johnson and R.D. Nasby (both 5155), "Transport Properties of SiGe Thermoelectric Alloys Doped with As, P, and As₂P"; W.J. Camp and J.P. Van Dyke (both 5151), "High Temperature Series in Arbitrary Dimension"; I.J. Fritz (5132), "Ultrasonic Velocity Measurements Near the 250°K Phase Transition in BaMnF₄"; G.A. Samara (5130), P.S. Peercy and I.J. Fritz (both 5132), "Temperature and Pressure Dependences of the Dielectric Constants and Phase Transition in Paratellurite (TeO₂)"; L.R. Edwards and I.J. Fritz (both 5132), "Pressure Dependence of the Magnetic Transitions in Cr-Fe Alloys"; R.C. Hughes (5814), "High Field Electron Transport in Amorphous SiO₂," American Physical Society Meeting, March 31-April 3, Denver, Colo.

T.D. Harrison (2334), "SQC-Aid in Purchase of a Machine Tool," March 15, AIIE Management Engineering Conference.

G.W. Hughes (1243), "Artificial Satellites," March 18, Eldorado H.S. science class.

E.H. Copeland (9343), "What's Going On Here, Anyway?" March 18, Sandia Kiwanis Club.

N.J. Pollard (9354), "Engineering Careers," March 19, Menaul H.S. Career Day.

L.M. Holmes (3616), "Electronics Technician," March 19, Menaul H.S. Career Day.

J.S. Fishburn (2641), "Computer Science," March 19, Menaul H.S. Career Day.

L.V. Feltz (5623), "Wind Energy — A Revitalized Pursuit," March 22, Univ. of Colorado/Sierra Club Energy Conference.

A.D. Swain (1642), "Human Factors Engineering," March 26, Albuquerque Chapter, AIIE.

R.D. Klett (4734), "High Level Waste Melting Experiment," Waste Management '75, Univ. of Arizona, March 24-26, Tucson.

F.L. Vook (5110), "Applications of Ion Beams to Materials," Stanford Univ. Materials Research Laboratory Workshop on Special Materials Preparation Techniques, March 26-28, Stanford, Calif.

J.L. Jellison (5833), "Susceptibility of Microwelds in Hybrid Microcircuits to Corrosion Degradation," International Reliability Physics Symposium, April 1, Las Vegas.

D.M. Mattox (5834), "Coatings for Solar Energy Applications," 18th Annual Conference on the SVC, April 7-9, Key Biscayne, Fla.



THE HARLING HOME was built in 1930 as a private residence. It saw service as a nursing home and had been a rental property.

The South Valley Book, Old Car And Kayak Storehouse Place

A year ago, Gene Harling (9400) went shopping for a house. He and his wife Aggie had the usual requirements for a comfortable and pleasant place to live, for themselves and their three children. In addition, they wanted to bring three households together; Aggie's widower father lived in Washington, D.C., and Gene's widowed mother lived near Wichita, Kans. Thus, one of their requirements was enough space to provide privacy for each member of the family. And space was the operative word, because Gene is a book collector, and he needs lots of room for his library.

They found the house — a 4000-plus-square-foot adobe, situated on three acres of fertile south valley land. "We're happy with the place," Gene says, "although there's lots of work to be done." "We all like it," Aggie adds. "Gene's right, we may never get everything done, but at least there's something for everyone and what needs fixing first gets fixed."

Gene's primary interest is his library which covers numerous subjects. "I don't have the books cataloged yet," he says, "but I'm gradually getting them unpacked and on the shelves." The living room contains his biographical material and a complete set of *National Geographics* dated from 1912. His Southwest collection and railroad books are housed in the study, along with *Arizona Highways* and *New Mexico Magazines* from 1948.

In a spare room in the basement he keeps his military history collection, gun books, and what he calls his practical library — books on farming, animals, machinery, blacksmithing. "I collected the farming books just because I was interested," Gene says, "but they have proved useful this past year." In a wide hallway facing French doors which open into an enclosed courtyard, Gene has an impressive array of books on travel, sailing, art, theater, poetry, airplanes, cars, and photography, plus some classics and children's books.

The entire family shares Gene's hobby and none of them can pass a bookstore, second hand store or flea market without browsing. Gene's collecting instincts aren't limited to books. He has removed many layers of paint and grime from the glass fronted, oak cabinets he's unearthed and that he now uses to contain his *Geographics*.

The Harling home reflects their varied interests: from an old butter churn to a beautifully restored pump organ, from a miner's candle holder to a wrecked '49 MG-TC (to be restored), from cartridge to china displays, from Indian artifacts to lithographs, or from kayaks to stained glass windows. • nt

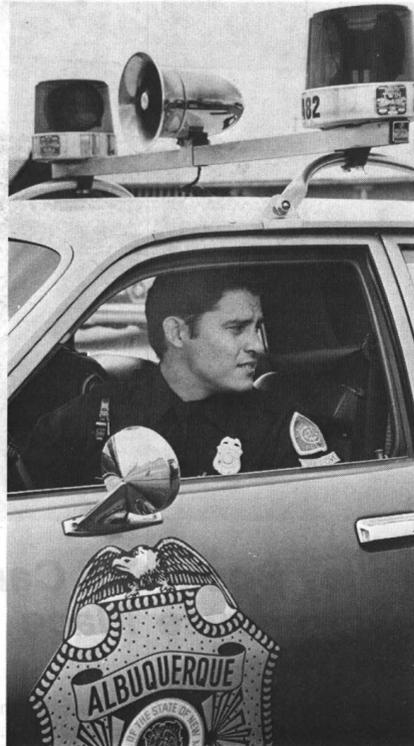


VIGAS in the large adobe are hand-hewn and come from trees of the Jemez Mountains. Floors are both flagstone and wood.

Our Town

Spare-Time Cops

Three Sandians are now unpaid Reserve Officers in the Albuquerque Police Department. They are Bill Talley (1247), Kent Parsons (2334) and Ramon Villegas (1112). LAB NEWS joined Ramon and fulltime officer Dennis Armstrong on a recent eight-hour shift. The reservist is always teamed up with a fulltime officer.



RAY VILLEGAS (1112) spends his leisure time here.

It was, said Ray and Dennis later, a pretty typical Saturday. First stop after the 6:30 a.m. briefing was to pick up a parole violator at his home. He went with us quietly, almost fatalistically, to be booked into jail.

Spent the next couple of hours in Dennis's sector — west of the river, north of Central, south of I-40. He knows the area and its people, and many of them know him.

Did some "roll-patrol" — five mph up and down residential streets, looking for open windows, suspicious activity. "We don't usually nab anyone, but just being so visible keeps burglaries down," explained Denny.

Off to a family fight. Policemen dread these — seldom any action to take except get the parties separated and cooled off. "Good justification for psychology courses," says Denny. This one was easy. Homeowner had evicted her brother. "Sorry, son, it's her house. She can evict you if she wants to."

That sixth sense you hear about? We spied a van with muffler dragging, wheeled around and stopped it. Guy on his way to softball practice, unconcerned about muffler. Radio check of van showed it was okay, and we waved the guy on. But we kept him in sight. And then the radio: he's wanted on an FTA (failure to appear). Full speed and full code (lights and siren) after him. No resistance — a fatalistic air. Booked him into jail with a "Good luck — see you on the softball field."

Reserve officers help. They mean fewer calls by an officer for assistance. And they relieve the monotony of single-man patrol.

As Ray can testify, they're as fully trained as any rookie cop. But there's still lots to learn. A shift with an officer like Denny is like a graduate seminar in the human side of law enforcement. Ray summed it up: "I want to pull a shift with him again." • bh

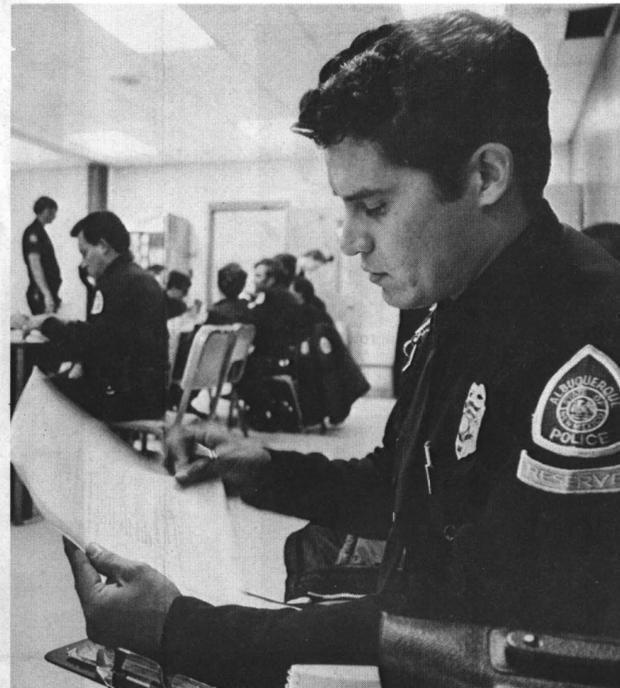
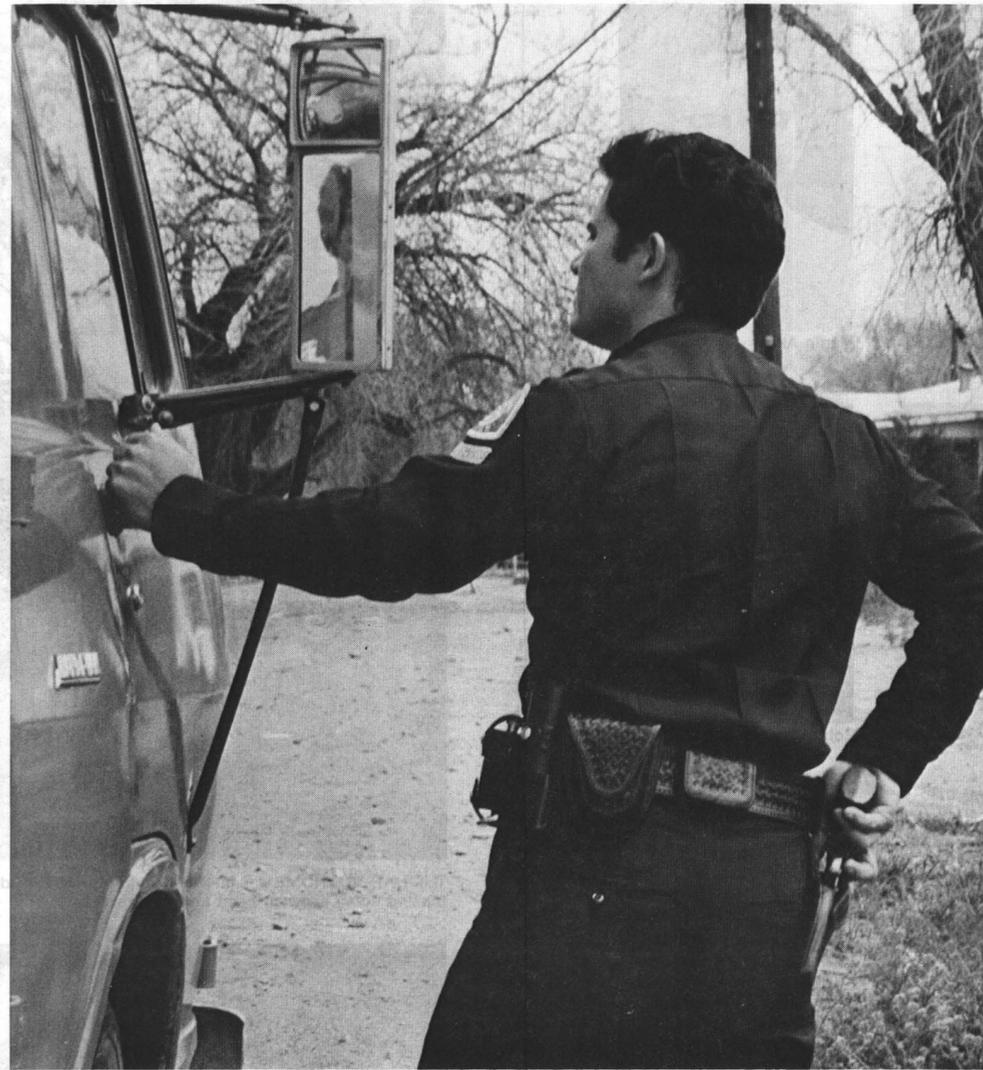
GOOD RAPPORT with residents. Denny (left) has worked his sector for four years, has a tremendous memory for names, faces, backgrounds.



FRISKING is a pre-booking ritual for an officer, a humiliation for the suspect. Valuables, glasses, and belts go into the safe when their owner goes into a cell.



MOVING IN on the van's blind side. Ray's trained to be ready for anything. Turned out the driver was on the APD wanted list.



REPORT-WRITING after the shift is a chore Ray is mastering.

Take Note

Marian Jacot (4256) reports that a chapter of the WAC-Vets Association is being formed in New Mexico. First meeting is tomorrow, May 3, at Sambo's, Central and San Mateo, at 9:30 a.m.

Object of the Association is to promote the welfare of all veterans, but especially of those from the Women's Army Corp and the Women's Army Auxiliary Corps. The group also sponsors educational and civic improvement programs for the community.

Call Marian on 299-4990 if you are interested.

The Neighborhood Drama Project, directed by Gary Shepherd (2634), will present a musical adaptation of "Sleeping Beauty" at 8 p.m. May 2-3 at the Center Auditorium, 1020 Edith SE. Twenty youngsters are in the cast.

The Neighborhood Drama Project brings work with the theatre arts to the Broadway/East San Jose area. Youngsters build sets, design and sew costumes and handle most aspects of the productions. A fire last year destroyed most of its scenery, costumes and lighting equipment. Admission to Friday and Saturday performances is free, but donations will be accepted.

Anyone with theater experience who would like to help with the project is invited to contact Gary at 4-1450.

Ernie Bolton (3732) and Gene Emerson (9623) announce that Boy Scout Troop 285 will hold a rummage sale on May 9 and 10 at the Sombra Del Monte Church. Purpose is to raise funds, and donations are welcomed (contact Ernie or Gene).

Norm Richardson (5824) has suggested a plant exchange, i.e., your potted plant for a potted plant. Many people cultivate a plant of some sort in their office or lab and after a decade or two with the same rubber plant

might feel it's time for a change. We suggested to Norm that people who are hot to swap plants place an ad under the "Wanted" section of the LAB NEWS classified ads. No poison ivy or Acapulco gold, please.

Last month four Sandians were honored by the Kit Carson Council of the Boy Scouts of America when each was presented with the Silver Beaver Award. Charles Arning (9614), Eldon Frame (9521), Art Cordova (9626) and Ernie Lovato (3645) received the awards for "distinguished service to youth." The Silver Beaver is the highest adult scout award.

Lee Davison (5131) will discuss "Spall Fracture in Ductile Metals" at the 5100 Seminar Tuesday, May 13, at 1:30 p.m. The seminar will meet in Bldg. 802, Rm. 229.

The Sandians, an organization of wives of employees, will meet Monday, May 5, at the home of Julie McBride, 41 Rock Ridge Dr. NE, at 7:30 p.m. Program will be a homespun fashion show. For information, call Anita Solberg, 298-9248.

Authors

A. Owyong (5214), "Induced Focusing and Defocusing of Optical Beams Via a Raman Type Nonlinearity," Vol. 26, No. 4, APPLIED PHYSICS LETTERS.

J.R. Asay (5167), "Shock and Release Behavior in Porous 1100 Aluminum," Vol. 46, No. 1, JOURNAL OF APPLIED PHYSICS.

M.K. Matzen (5211) and D.K. Hoffman (1247), "Thermal Diffusion in Isotopic Mixtures of Polyatomic Gases. I. The Thermal Diffusion Coefficient," and "Thermal Diffusion in Isotopic Mixtures of Polyatomic Gases. II. Model Calculations," Vol. 62, No. 2, THE JOURNAL OF CHEMICAL PHYSICS.

D.A. McArthur (5225) and P.B. Tollefsrud (5220), "Observation of Laser Action in CO Gas Excited Only by Fission Fragments," Vol. 26, No. 4, APPLIED PHYSICS LETTERS.

J.W. Nunziato (5131) and E.K. Walsh (Univ. of Fla.), "Small-Amplitude Sinusoidal Waves in an Elastic Mixture with Binary Chemical Reactions," Vol. 57, No. 1, JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA.

J.W. Poukey (5241), "Ion Effects in Relativistic Diodes," Vol. 26, No. 4, APPLIED PHYSICS LETTERS.

P.J. Chen and J.W. Nunziato (both 5131), "Thermodynamic Restrictions on the Relaxation Functions of the Theory of Heat Conduction with Finite Wave Speeds," Vol. 25, No. 6, ZEITSCHRIFT FUR ANGEWANDTE MATHEMATIK UND PHYSIK.

P.J. Hargis (2441) and R.A. Hill (5642), "Fabry-Perot Interferograms of Periodic Spectra of Molecules with Large Rotational Constants," Vol. 65, No. 2, JOURNAL OF THE OPTICAL SOCIETY OF AMERICA.

P.S. Peery (5132), "Soft Mode and

Modes in the Ferroelectric Phase of KDP," Vol. 16, No. 4, SOLID STATE COMMUNICATIONS.

J.W. Poukey and C.L. Olson (both 5241), "Computer Studies of Collective Ion Acceleration," Vol. 11, No. 2, PHYSICAL REVIEW A.

L.D. Bertholf (5162) and C.H. Karnes (5847), "Two-Dimensional Analysis of the Split Hopkinson Pressure Bar System," Vol. 23, pp 1-19, JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS.

M.A. Gusinow (5215) and J.R. Freeman (5241), "Late-Time Behavior of an Iodine Photodissociation Laser Oscillator," Vol. 10, No. 2, JOURNAL OF APPLIED PHYSICS.

J.E. Houston (5114), "The Secondary-Electron Background Problem in Electron Excited Auger Electron Spectroscopy," Vol. 6, No. 2, APPLIED PHYSICS.

S.C. Levy (2523), "An Improved Glassy Carbon Electrode," Vol. 47, No. 3, ANALYTICAL CHEMISTRY.

B. Morosin (5154), "Structure Refinements on Dichloro- and Dibromobis(pyridine) copper(II)," Vol. 31, Part 2, ACTA CRYSTALLOGRAPHICA.

W.J. Camp and J.P. VanDyke (both 5151), "Isotropic Magnets in Two Dimensions," Vol. 8, No. 3, JOURNAL OF PHYSICS C.

M.J. Clauser (5241), "Targets for Electron Beam Fusion," Vol. 34, No. 10, PHYSICAL REVIEW LETTERS.

G.A. Samara (5130), "Temperature and Pressure Dependence of the Dielectric Properties of Ionic Crystals and the Properties of Soft Mode Ferroelectrics," chapter in the text *Materials Under Pressure*, Honda Memorial Series on Materials Science, Maruzen Company, Ltd., Tokyo, Japan, 1974.

MILEPOSTS

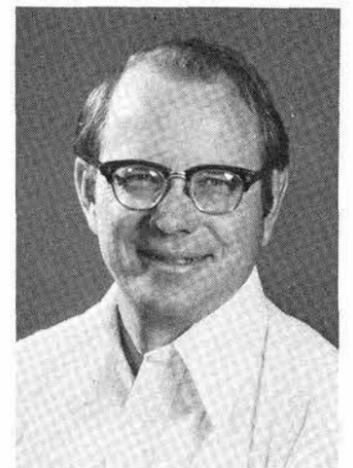
LAB NEWS

May 1975



Grant Johnson - 4821

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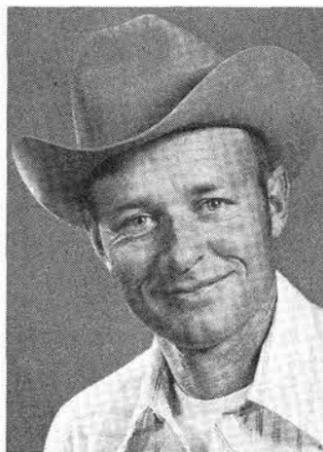
Marlin Aker - 1133

15



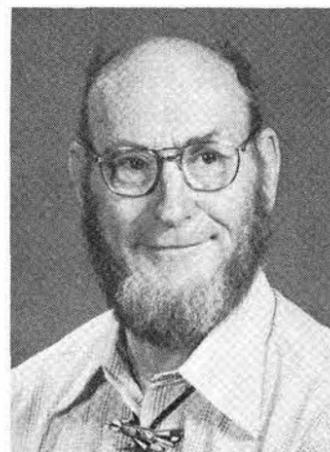
Mary Beth Brown - 6021

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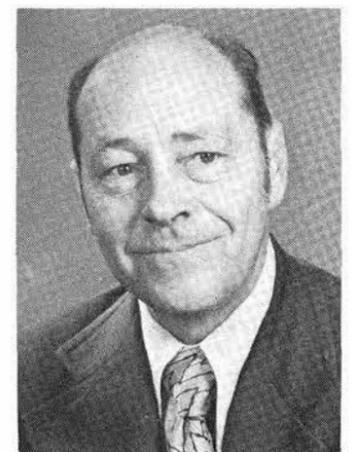
James Clark - 9333

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Harold Neuhaus - 9712

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Robert Hannigan - 9512

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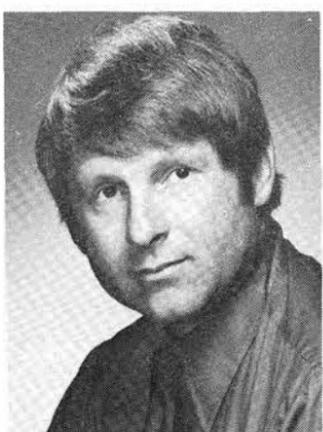
Frank Kohut - 9511

25



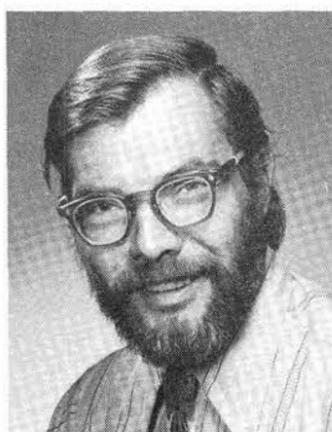
Benton Jolliffe - 9535

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John Moyer - 1254

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Jay Benson - 1115

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Anthony Repetti - 2415

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Leonard Flesner - 9521

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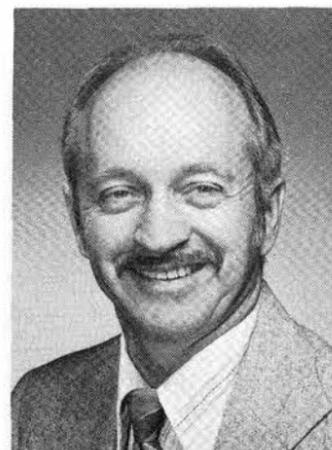
Britt-Marie Manrow - 8411

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John Tootle - 8412

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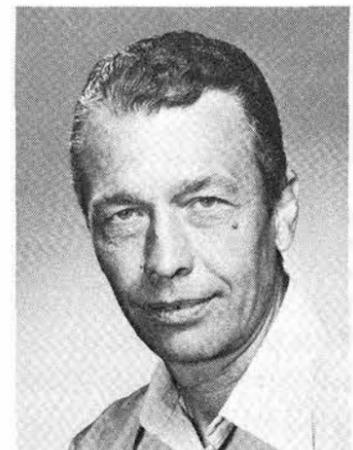
Robert Leslie - 9526

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Clara Gearhart - 3141

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Donald Loehle - 4811

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Catherine Tinsmith - 2632

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Bob Hartenberger - 9718

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Charlie Ray - 6021

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Bill Burnett - 3311

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Alexander Hachigian-1613

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Mahlon Baker - 9531

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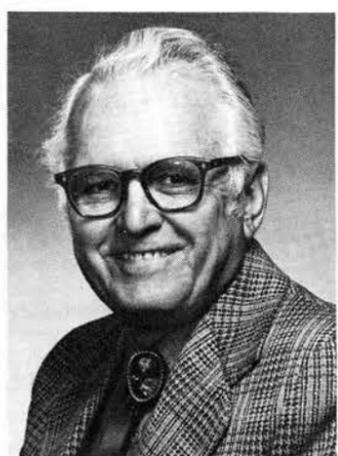
James Hann - 1522

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James Gibbons - 9532

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William Carman - 2433

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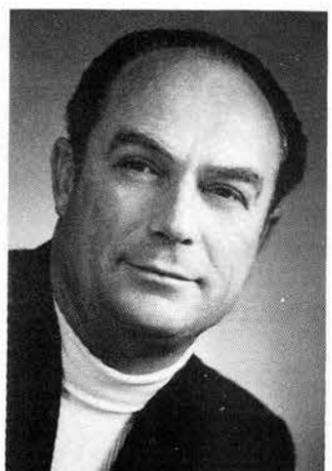
Jim Pennington - 3171

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Pat Conlon - 3622

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Wayne Townes - 8257

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William Farrar - 3612

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Donald Cox - 5222

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TELECON'S Harry Cherb (9753) reports that some 75 requests for plant maintenance are handled daily.



RAY BERG (5834), program chairman, reports that the annual symposium of the NM Chapter, American Vacuum Society, will be held May 6-8 at the Four Seasons Inn. Speakers, workshops, display and banquet are scheduled. For a copy of the program, call Ray, 4-1668.



BOSTON MARATHONER Mark Percival (2411) was one of 2000-plus entries in the event and, with a fast 2:52 time, came in well ahead of the pack — 626th. Mark averaged nearly 6-1/2 minutes/mile over the 26 mile course, attributes good showing to rich sea level air and cheers of 26-mile-long crowd.



BILL ANDRZEJEWSKI (5821) reports that the NM Cactus and Succulent Society is holding a sale (bargains galore) of plants at the State Fair Flower Building this weekend. Saturday hours from 2 to 5:30; Sunday from 9:30 to 5.



BILL PATTERSON (5716) figures that the sight of a Model A Ford quickens the pulse of the American male, and each year he and the Amigos de Las Americas raise money by sponsoring a Model A raffle. Winner of this nicely restored sedan will be named on July 7. The Amigos are a group of teenagers who go to Central and South America to provide volunteer medical assistance.

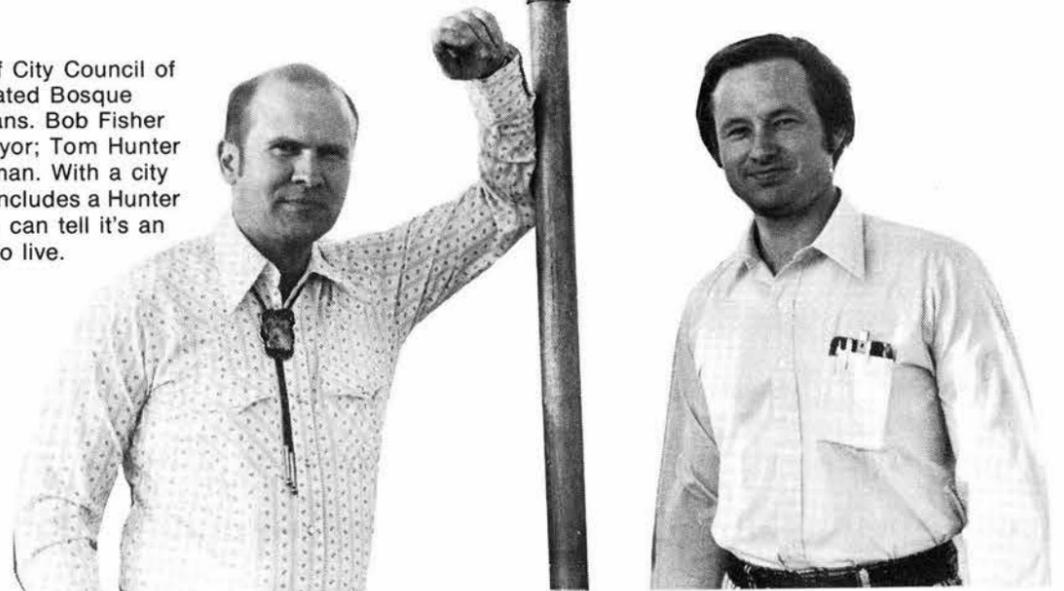
sandia PEOPLE Report



GEORGE MATVICHUK, part-time radio and TV repairman, is one of 35 Sandia retirees participating in the LAB NEWS job reference service. Skills listed range from handyman to plumbing, watch repair to coin assaying. If you need help, stop by LAB NEWS office, Bldg. 832.



MAYOR & 20% of City Council of recently incorporated Bosque Farms are Sandians. Bob Fisher (5833), left, is mayor; Tom Hunter (1133) is councilman. With a city government that includes a Hunter and a Fisher, you can tell it's an outdoorsy place to live.



FUN & GAMES

Pool biz — This summer it'll cost you to swim in the military's Olympic Pool. As near as we can discern, that's the substance of a communique from the KAFB Bulletin: "During the past year, the increased cost of labor and goods in nonappropriated fund activities, together with continuously diminishing appropriated fund support dollars, have resulted in fee increases in all recreation activities for which fees had previously been established. Aggressive efforts to reduce expenses have been concurrent with efforts to increase revenue. However, the increased Central Base Fund profit margin for these actions have [sic] not kept pace with the loss of appropriated fund support. . ." There's much more in this rich Pentagonese narrative, but it seems to come down to this: from May 30 to Sept. 1 you'll pay 25¢/day, or \$5/season to swim in the Olympic pool.

* * * *

Sandia Bicycle Ass'n. — The MSR bicycle helmet is discounted to SBA members at the Wilderness Center, 2421 San Pedro NE. Gordon Pike (5155) sent us a clipping from *Bike World* describing the MSR-helmeted biker who sailed over the handlebars at 20 mph, landing on his helmet. "The sound of impact, rather like a giant coconut, could be heard for blocks, but Jeff wasn't even stunned."

Read the *Time* magazine essay *The Full Circle: In Praise of the Bicycle*. The author, Stefan Kanfer, is lyrical on the subject. It's in the April 28 issue.

BASKETRY from a number of cultures is currently on display at Maxwell Museum of Anthropology at UNM.



Indian Culture, Basketry Displays Now at Maxwell Museum at UNM

A museum that concentrates on Indian civilizations of the Southwest is now open daily and is conveniently located on the UNM campus. Near University and Roma Streets, the Maxwell Museum of Anthropology operates from 9 to 4 during the week, from 10 to 4 on Saturdays and from 11:30 to 5 on Sundays.

Although oriented to cultures of the Southwest, the museum looks at other cultures as well. Eskimo and South Pacific exhibits are currently featured. In addition, a new extensive collection of basketry is on display.

The museum was founded in 1935 by Prof. Frank Hibben of the Dept. of Anthropology and, from a slim beginning in a hall of the Administration building, has grown into its

present spacious quarters. Current director is J.J. Brody.

Gilbert and Dorothy Maxwell became benefactors of the museum in 1963, resulting in the move to the present building and the addition of a new wing. The Maxwell Museum is accredited by the American Association of Museums.

LAB NEWS
PAGE ELEVEN
MAY 2, 1975



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

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

RULES

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

MISCELLANEOUS

- 20" BIKE, \$15; Dutch, Angora & Satin bunnies; Guinea pigs. Hickman, 298-3804.
- RACING go-cart, runs fast, ideal for beginning cart racer, ages 9 & up. Hudson, 296-6978.
- HOOVER upright vacuum sweeper, \$20; several good fractional electric motors, \$12.50. Grant, 255-6105.
- PIONEER QX-8000A 4-channel receiver, \$350. Garrison, 881-1851.
- 8 MATCHED Burke irons, 3 thru pw, used 12 times, original retail \$90, sell \$40. Finley, 299-0739.
- ADD-ON auto air conditioner, large capacity, complete, \$70. Rakoczy, 881-1372.
- GREAT BOOK set, plus Gateway to the Great Books & The Great Ideas Program, 74 volumes, bookcase. Plein, 293-5041.
- POWER reel-type lawn mower, King-O-Lawn, front delivery, 4hp model, 22" cut, \$75. Barnard, 256-7772.
- FAIRING for Z-1 Kawasaki, \$50,

- will also fit 750 Kawasaki & Honda. Schulze, 898-2880.
- MOTORCYCLE fairing, has new shield, fits Honda 450, \$40. Gallo, 296-0112.
- BLACK Shetland gelding, 11 yrs. old, well mannered, w/bridle, healthy, durable, an easy keeper, \$75. Baker, 898-3206.
- CAMPER shell, homemade, fits narrow short pickup bed, insulated, w/windows, light, carpeted, \$50. Van Den Avyle, 898-6474.
- FOUR 7.50-16 6-ply Firestone w/tubes & flaps, 2/32 to 3/32 tread, good recaps, \$5 ea., all for \$18. Erdman, 298-3097.
- 2-WHEEL flat bed utility motorcycle trailer. Archuleta, 821-5405.
- FLORSHEIM shoes, size 10-D, new, cost \$38, sell \$30; 1 slightly used pair, \$16. 6500 Cochiti Rd. SE. Hiltunen.
- BLACK gelding, gentle, spirited enough for most, \$300; 2-dr. refrigerator freezer, 14 cubic ft., \$75. Patterson, 877-3158.
- TROLLING motor, 3 hp, water cooled, 2-cyl., Evinrude Sportwin, very few hours, \$65. Baxter, 344-7601.
- TRAILER hitch, Eaz-Lift, 450 lb., complete, \$50; 2 ea. nearly new fender mount mirrors, \$10. Smith, 281-3430.
- 4-PIECE sectional sofa, traditional style, green frieze, Kroehler, in fair condition, \$60. Deterie, 299-1868 after 5.
- SHALLOW well pump, Sears, 1/2 hp motor, \$45. Barton, 281-3349.
- CHILD'S desk, girl's bicycle w/training wheels, tricycle, child's table & 2 chairs,

- drafting board. Jackson, 296-1307.
- CHIFFOROBIE, wagon wheel twin bed, left hand golf clubs & shoes, child's bicycle & luggage carrier. Easterling, 299-7828.
- REFRIGERATOR, Coldspot, needs freon, \$50; area rug, swag lamp, kingsize bedspread, wheel from '65 Mustang, car jack, grease gun. Chandler, 296-3323.
- BOAT trailer tires & rims, 3 5.70/5.00 8" 4-ply on 5 bolt rims, cheap. McGovern, 293-9448.
- LAWNMOWER, Jacobsen, 18" reel type, Estate model w/grass catcher. Gobbels, 299-8089.
- ROLLAWAY bed w/mattress, clean, used very little. Windham, 293-8107.
- RADIO, AM/solid state, 6 & 12 volt, 2 speakers, \$30. Vallejos, 296-7292.
- BIKE BABY carrier, Sears, \$7.50. Stevens, 296-6326.

REAL ESTATE

- 1-ACRE in Bosque Park, leveled with 5' chain link fence. Young, 256-1860, evenings & weekends.
- 3-BDR., 2-bath, den w/fireplace, heated garage, large patio & trees, new carpet & roof, Roberson, FHA, \$32,750. Acton, 299-3276.
- 4-BDR., 2-1/2 baths, den, formal dining, extra large heated garage, Glenwood Hills, lot bounds city limits & Gallegos Grant, \$55,000. Zanner, 294-7613.
- 1-BDR., 790 sq. ft., near KAFB-E,

large front room, kitchen, dining area, utility room. \$15,800, including \$2400 down. Ortiz, 255-2121.

TRANSPORTATION

- '69 FORD pickup, 1/2-ton, LWB, V8, \$1100. Willis, 281-3314 after 6.
- '70 LTD Ford, 4-dr., for the do it yourself mechanic, \$650. Hendrix, 299-8872.
- '60 FORD Starliner, 2-dr., hard top, \$100 or best offer. Thatcher, 294-2731.
- '72 PINTO wagon, red, AC, AT, tinted glass, luggage rack, 33,000 miles, 2000cc engine, \$2000. Schmierer, 299-2352.
- '67 MG 1100 2-dr. sedan, \$300. Troyer, 298-3092.
- '73 HONDA, 350cc, 4-cyl., 9000 miles, includes \$25 crash bars plus Bell Star & RT helmets (\$100 cost), \$995. Weber, 256-0889.
- '70 YAMAHA 125MX, plastic tank, Girling shocks, Ceriani forks, 30mm carb., \$350. Cunningham, 344-9841.
- SCHWINN, girl's 24" w/thornproof tubes & basket, \$20. 3208 Texas NE. Erickson, 298-4416.
- '72 HONDA CL-450, \$550. Anderson, 266-6342.

WANTED

- GARBAGE GENERATORS desirous of sanitary containment for product. Trash bags available in 832/20. \$3.50 per box of 50. So. 10/14 Village Project.
- COUNTRY home offered for unwanted Easter bunnies & chickens. Holloway, 898-2110.
- GAS tank for Johnson or

- Evinrude outboard motor. Rowley, 299-8419.
- SPEAR GUN. Shay, 299-2634.
- SHREDDER chopper composter, at least 5hp. Roberts, 255-9527.
- CAMERA, 35mm SLR, also Colt 44 or 45 single action revolver; pay cash or trade Indian jewelry. Zaluga, 344-1564.
- METAL basketball goal post, backboard, basket, the whole works. O'Bryant, 268-9049.
- 35MM semi-auto slide cartridges holding 36 slides each, Argus or Aeroquip type. Sherwood, 299-2169.
- JUNGLE JIM swing set. Stevens, 296-6326.
- USED putter & irons for 13 yr. old girl. Chandler, 296-3323.
- '71 VW pop-top camper in good to excellent condition; 10-speed bike. Buck, 296-5963.

WORK WANTED

- UNM student, female, available for baby sitting, house sitting or other part-time employment. Robinett, 344-6507.
- YARD jobs for a 15 yr. old male. Also want to buy a used baby bed w/mattress. Barton, 265-8607.

LOST AND FOUND

- LOST — Lady's black rim photo-gray glasses; Metal frame sun glasses.
- FOUND — Man's wire rim photo-gray Rx glasses; Leather key ring w/3 keys; Silver earring, screw back; Paper clip key ring w/5 keys. LOST AND FOUND, Bldg. 832, tel. 264-3441.

● MARIACHI ● C-CLUB ● SANADO BALL ● ROAST BEEF ● BRIDGE ● FIESTA ●

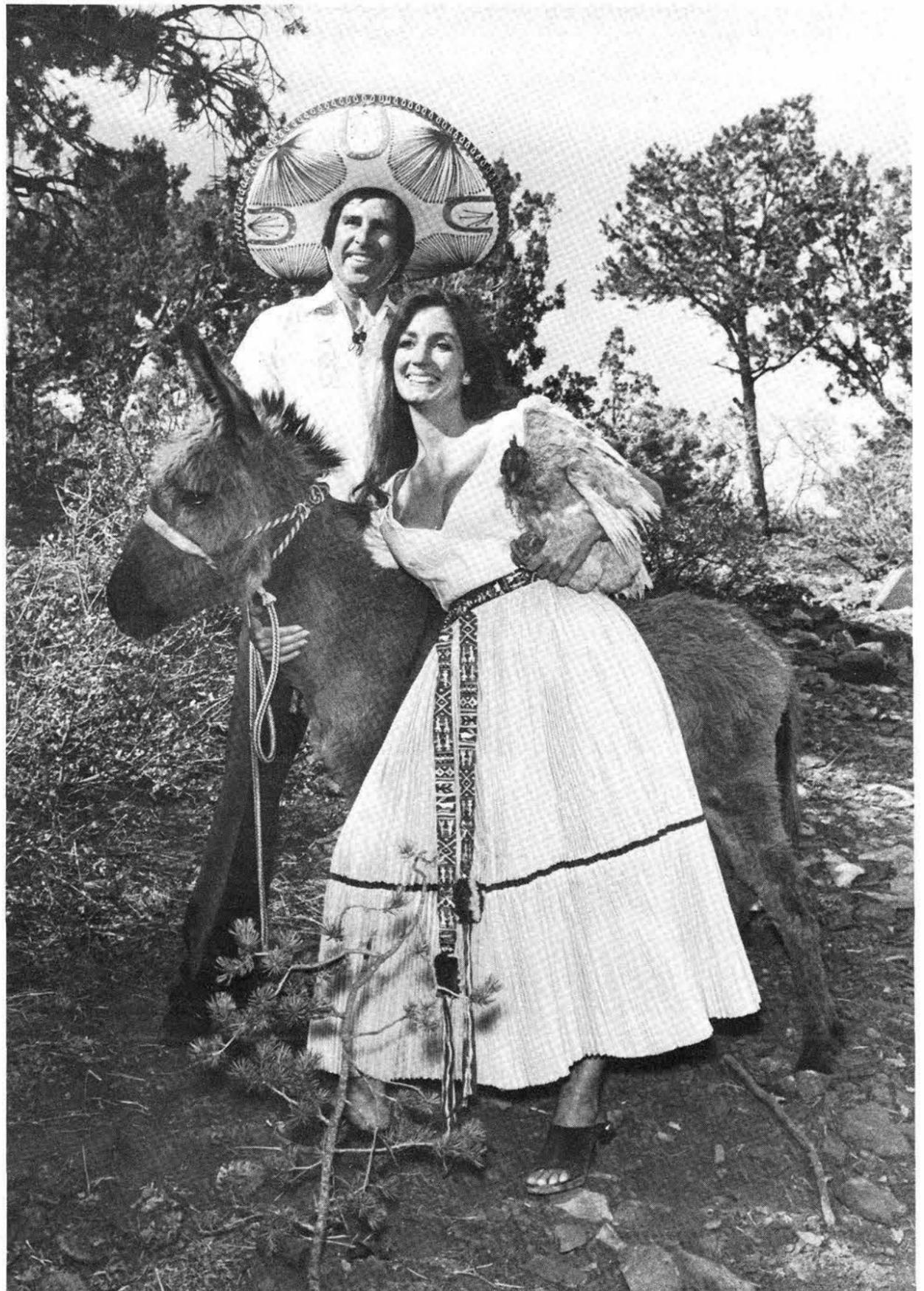
FRIDAY	SATURDAY
2 — HAPPY HOUR JAPANESE BUFFET Adults \$2.95 Under 12 1.95 <i>Thomás & Marcia</i> On Stage MOSE REBE TRIO	3 — SANADO BALL
9 — HAPPY HOUR Mothers Day Special ROAST BEEF BUFFET Adults \$2.95 Under 12 1.95 Tim & Paul On Stage TOGETHER	10 — FAMILY VAUDEVILLE Albuquerque Intertribal Dancers <i>Adventures of Bullwhip</i> Griffin Food @ 6 Show @ 7 Members Free

SAVE — several hundred dollars. And enjoy Switzerland too. Normally airfare there and back would run over \$900. For only \$550 you not only jet to and from but also spend a week (August 18-26) in a resort hotel on picturesque Lake Thun. The area is crammed with old castles, old cathedrals, old customs (and new cameras). Trains leave for Zurich every few minutes. Rental cars and sightseeing tours by land and lake too. May 15 is the last chance for Club members and families to sign up, save \$, and see Switzerland.

ENERGY — returning with Spring? Save some for the May-gala on the 17th. It's a Fiesta Mexicana and it's a Fantastic Menu — all the dishes that titillate the mind and warm the heart (not to mention the tongue). Specials on margaritas and tequila sunrises. Special music too — a mariachi band and a Spanish dance troupe. Plus a dance band. Members \$4.50, guests \$5.50, reservations by the 10th.

BREATHE — an admiring sigh at the Intertribal Dancers at Family Vaudeville. Without any reservations, these are the finest Indian dancers in town. A movie too — *Bullwhip Griffin*. He's a real cut-up.

EVERY — May brings Mother's Day. It's May 12 this year, but you can pre-celebrate at



OFF TO FIESTA MEXICANA go Dianne Lane and Leo Chavez (4821) and menagerie. Don't be chicken; be decisive — burro your way into someone's heart with tickets for the May-gala on the 17th. Reservations by the 10th.

the Club on the 9th by abducting Mom from the kitchen and treating her to Happy Hour buffet. What else could she want? A couple of handsome guys to serenade her, that's what. Voila! Tim and Paul to do nice things to her eardrums.

OTHER — attractions at the Club that don't get mentioned often (but should) are: Ladies Bridge (women also accepted) on first and third Thursday afternoons (info 299-1140); Duplicate Bridge for those who enjoy Duplicity every Tuesday eve; and the Toastmasters Club for would-be, has-been, and current public speakers every Wednesday noon.

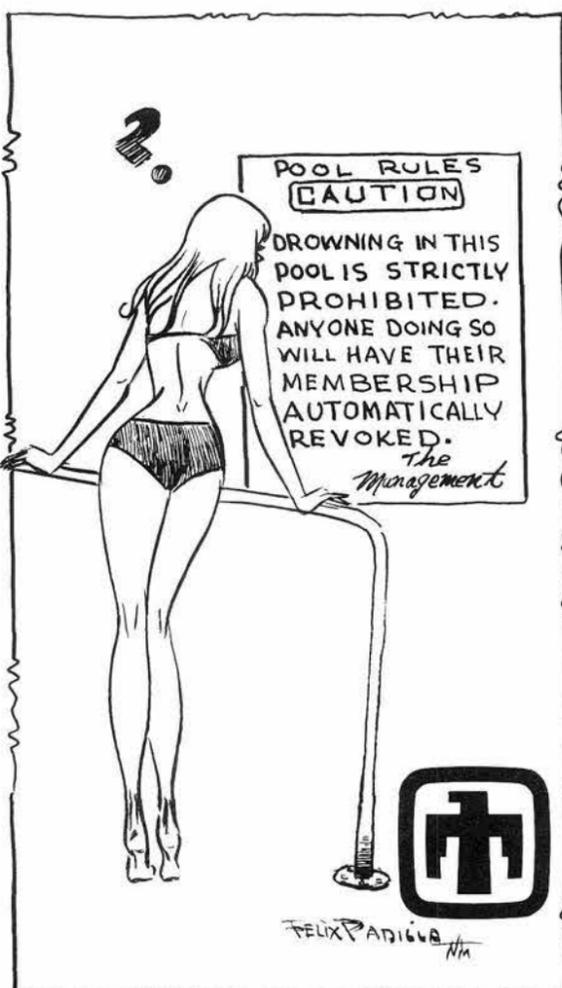
TIME — now to call your spouse and arrange to meet at tonight's Happy Hour.

Guests are welcome. Each member couple can bring one guest couple free. After that it's a buck a head (bodies free).

MORE INFO — 265-6791.



BERNE, the federal capital of Switzerland. You can be Berned in August.



TEQUILA ● THUN ● TOGETHER ● TOASTMASTERS