

# LAB NEWS

VOL. 26, NO. 13

JUNE 21, 1974

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



J.T. "THEE" WHEELIS (1739) with message entry unit located in test vehicle. Location and status of vehicle is given by dialing various numbers on the display panel of the message entry unit. Located on dashboard above the unit is a radio telephone, transceiver control and signal strength meter.



TOMMY SELLERS (1739), front; Cecil Sonnier (1739), left, and Wayne Olson (1733), look at map showing the 10,000-mile, 31-state route taken in April by the prototype-equipped vehicle to test the new radio communications system.

## ***New System Provides 2-Way Radio Contact Over US***

A prototype radio communications system for maintaining contact with vehicles carrying shipments of nuclear materials is being developed and tested by Sandia Laboratories. Jim de Montmollin, attached to Dept. 1730, and Tommy Sellers (1739) proposed the original concept for the system, while Cecil Sonnier (1739) and Wayne Olson (1733) set up and carried out experimental work.

The system, which permits the vehicle to maintain two-way radio contact while traveling anywhere in the U.S., is being developed as part of the AEC's Safeguards program to improve the security of special nuclear material in transit, including prevention of hijacking.

Special nuclear material is plutonium or enriched uranium in quantities sufficient for possible use in constructing a nuclear weapon. Safeguarding such material, typically contained in nuclear fuels, is of increasing importance because the nuclear power generation industry is expanding rapidly.

The new communications system, which for the first time will allow reliable, real time communication between dispatchers and commercial vehicles traveling throughout this country, is made possible by a combination of computerized data handling and multi-channel, multi-station sending and receiving of high frequency radio signals.

In a recent test with a prototype equipped vehicle as it made a 10,000 mile, 31-state trip across the U.S., the system enabled radio contact to be made on the first try 98 percent of the time.

This means that the driver's first attempt to make radio contact with the central transmitting and receiving station succeeded 98 percent of the time within a period of a few seconds. The results of field tests to date give high confidence that the reliability of the operational system will approach 100 percent.

The system is relatively simple, consisting of a message entry unit and a HF radio transmitter-receiver in the vehicle, five HF relay stations located at widely-scattered points throughout the U.S., a central terminal, and dispatcher terminals at various locations.

The message entry unit is a small box containing electronic circuitry which permits the vehicle driver to enter — by dialing various numbers on the display panel — information giving the location and status of the vehicle.

The unit also confirms whether the message has been received by the central terminal and permits communication with the driver using prearranged messages. All information is sent and received in digital form — numbers, not voice, are used.

The information passes from the message entry unit into the HF transceiver in the vehicle, and is then transmitted on four different frequencies, or channels, to five relay stations located in Maryland, South Carolina, Iowa, New Mexico, and Idaho.

These stations relay the message by leased telephone wire to the central switching station in New Mexico, which then routes the message to the appropriate dispatcher terminals. The dispatcher terminal displays

the message on a panel and transmits responses via the central terminal.

The system's exceptional reliability results from the fact that messages are transmitted on four separate frequencies, can be picked up by any of the five relay stations, and consist only of digital information which can be filtered and processed by computers to eliminate noise and misinformation.

Additional development and testing of the system is continuing with the goal of providing an operational system in 1975.

Development of the system is being supported by the AEC's Division of Nuclear Materials Security.

### ***Pilferage***

Have you lost some item from your desk or work bench lately? Security Standards Division 9541 has expressed concern about the pilferage of both personal and government owned property at the Labs. Serious consequences, including discharge and criminal prosecution await the offender. Be sure to call Security Standards to report missing items, whether personal or government owned. Better yet, if at all possible place valuables in a lockable drawer or cabinet.

# Afterthoughts

Those breakthroughs just keep comin'--A news release reports that Dial-A-Joke, the latest addition to the recorded announcement field, has proved a hit in New York. In its first month, more than 100,000 calls a day were made to hear Henny Youngman deliver one-liners. As prescient as he was, do you think that Mr. Bell ever telephoned his assistant "Mr. Watson, have you heard the one about...?"

\* \* \*

**Bikers & the Wyoming Gate**--A copy of the minutes of an organization's safety meeting was sent to LAB NEWS. It states "... there have been many near misses with bicyclists. They are forced to ride in the traffic stream coming through the gate, which is very dangerous... many instances where bicyclists used poor judgement... The LAB NEWS should caution bicyclists to know and observe the laws governing operation on public streets."

The fact is that cyclists have an incentive to learn the law, and most do know it, and the substance of that law is that a bike is a vehicle and it may as legally occupy the roadway as any other vehicle. A few years ago it was possible for a cyclist to enter the Base safely through approved fence openings and to proceed to the Tech Area using residential streets. Since that time, a series of steps have been enforced that bring the biker to today's condition: if the system were designed to maximize peril, it couldn't do much better than to bring the biker through the Wyoming Gate at the height of the rush hour. And once on Base, there is no ready exit off Wyoming so that the biker must continue on that arterial at least for a few blocks.

As a bicyclist, I can assure you that bikers are dismayed by the problem. And the executive committee of the Sandia Bicycle Ass'n. has repeatedly tried to gain relief. A KAFB bikeway system, still in the talking stage after nearly two years, would presumably recognize the lethal potential at the Wyoming Gate.

\* \* \*

**Try a little Mencken, H.L.**--"The great artists of the world are never Puritans, and seldom even ordinarily respectable."

"The difference between a moral man and a man of honor is that the latter regrets a discreditable act, even when it has worked and he has not been caught." \*js

# Supervisory Appointment



CHRIS PADILLA to supervisor of Design Definition Support Section 9631-2, effective May 16. In this new position Chris' work involves support of various drafting activities — product definition, specifications, computer input, drawing releases — a job with which he is completely familiar.

Except for an early two years in field test after joining the Labs in July 1948, Chris has worked 23 years with Sandia's drafting organization.

He is a graduate of Albuquerque High School and the International Correspondence School of Drafting and Design. He has attended classes at UNM and Albuquerque Business College and has taken many of Sandia's noon-hour courses, primarily in the computer, drafting, and mathematics areas.

Chris enjoys bowling and water skiing, and for the past eight years has been active in Little League baseball. He and his wife Rita have a married daughter living in Omaha, and a son and daughter at home. They live at 2721 Charleston NE.

# Skylab 1 Visible Here Next Week

Skylab 1, NASA's orbiting laboratory and workshop, will be visible from Albuquerque next week. The following table, prepared by Grover Hughes (9474), gives approximate times and location. To use the table, face the direction given and look above the horizon by the number of degrees given and look above the horizon by the number of degrees given in the "elevation" column. (0° corresponds to the horizon; 90° means straight over head.)

Date	MDT,PM	Face	Elev.
24	10:55	N	12°
25	10:11	N	11
25	11:48	NNW	20
26	11:05	N	30
27	10:20	N	20
28	9:35	N	15
28	11:12	WNW	20
29	8:50	N	10
29	10:28	NW	30

# Events Calendar

**Thru June 24** — Arabian Horse Show, 9 a.m., Horse Arena, State Fairgrounds.

**June 21** — Alb. Children's Theatre, "L. Sagebrush's Dilemma" and "Wake Up, Aurora," 12:30 p.m., Downtown YWCA.

**June 21-23** — Antique Show & Sale, Convention Center.

**June 21-23, 27-30** — Corrales Adobe Theatre, "The Gingerbread Lady," Old San Ysidro Church, 8:30 p.m.; reservations 898-3323.

**June 21-23, 28-30** — Alb. Civic Light Opera: "110 in the Shade," 8:15 p.m., Popejoy Hall.

**June 22-23** — Arts in the Park: Alb. Dance Theater, 3 p.m., Tingley Park.

**June 24** — Lecture Under The Stars, Santo and Neal, "A Time for Two At Two Pianos," 8 p.m., UNM Mall.

**June 26** — Alb. Children's Theatre (See June 21), Esperanza Library, 2 p.m.

**June 28-30** — New Mexico Arts & Crafts Fair, 12 noon (28th), 10 a.m. (29-30). State Fairgrounds.

**June 29-30** — NM Mt. Club, Nambe Basin backpack, 6-8 miles, call Sylvia, 243-7871, ext. 294.

**June 29** — San Pedro Day, various Pueblos.  
**July 1** — Lecture Under The Stars, "Death of Privacy," Chuck Daniels, 8 p.m., UNM Mall.

**July 4** — NM Mt. Club, La Luz Trail, 12 miles, 7 a.m., Gulf Mart.

**July 5** — Santa Fe Opera, "La Boheme," 9 p.m.

**July 6** — Moonlight excursion on Cumbres & Toltec Scenic RR, leave Chama at 6:30 p.m., reservations (505) 756-2315.

# LAB NEWS

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bill laskar takes/makes pictures

&

in livermore lorena schneider does all

# Variable Annuity Unit Value

July	1.391
June	1.433
Average 1973	1.752

# Congratulations

Mr. and Mrs. George Williamson (1126), a son, George Allen, April 13.

Mr. and Mrs. Eliseo Martinez (9718), a daughter, Carmen Elisea, June 12.

Mr. and Mrs. Carl Konrad (5163), a son, Brian Keith, June 15.



TOP OF CLIFF at Dillon Beach (left), Miles Clift (8313) balances hang glider for Ted Mamaros (8114) until he gets up to air speed; (center) Ted becomes airborne; and (right) in flight.

# LIVERMORE NEWS

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LIVERMORE LABORATORIES

JUNE 21, 1974

## Hang Gliding or Skysurfing

### He Flies Through the Air

Self-launched flight, one of man's oldest fantasies, is a fast growing sport. Called hang gliding, or skysurfing, enthusiasts strap on huge triangular, batman-like kites or wings and see how long they can stay aloft.

"We're challenging the domain of Jonathan Livingston Seagull," says Ted Mamaros (8114) who has been hang gliding for over a year and now instructs. "Both the seagull and the hawk have about the same wind loading as a man when skysurfing, so the responses are quite similar. In fact, a lot of my techniques have come from watching the birds."

Ted bought his glider in kit form for about \$400 and, with assistance from friends, assembled it in a weekend. Made of multi-colored dacron and aluminum tubing, it has a wing span of 35 feet and a sail area of 240 square feet. The wings fold for easy transporting on top of a car.

After assembly, Ted spent several days on the beach learning hang gliding techniques. Basically, he says, you set up at a chosen jump site, position yourself under the wings and fasten the strap, then bounce around a bit until the wind picks up and takes over. You can use either a sitting or prone position — both give full control and a perspective not afforded by any other sport. To go up you push out on the control bar; to come down you pull in; and to move left or right you merely shift your body weight in that direction.

"My kite took a lot of abuse at first," he recalls. "In three or four tries I became airborne and flew about half a second; soon I was reaching altitudes of over 50 to 100 feet. Since there is no instrument control, you learn very quickly to rely on your senses. My longest flight has been at Torrance Beach, near Los Angeles, where 500-foot cliffs extend for miles. I stayed up almost 20 minutes — just rode the air currents about four miles."

Ted's glider, a Seagull III, was first developed and patented in the late 40's by aeronautical engineer Francis Rogallo. One Otto Lilienthal actually built and flew the first

hang glider in 1891, but unfortunately Otto didn't wear a crash helmet and, while making a hard landing, banged his head against the wooden frame, killing himself. Not until this year did the sport really take off after stunt expert Bill Bennett developed the trapeze bars which give better control than parallel bars.

According to Ted, NASA examined the Seagull design and tried to better understand the aerodynamics involved. The glider was considered for use in reentry in a space shuttle, but performance of the semi-rigid wing was not entirely satisfactory. NASA did, however, develop the parawing, a parachute which flies, although it doesn't have near the response of the Rogallo wing. NASA is continuing its research into the aerodynamics of Rogallo's design.

Popularity of hang gliding is growing — besides being nonpolluting, relatively inexpensive, exhilarating and refreshing to the spirit, it requires no licensing and is "fairly" safe. However, Ted always cautions his students to keep their health insurance paid up. "Trees or powerlines can be hazardous, especially when the wind direction changes," he warns. "Be sure to choose an area with wide open space.

"In any event," continues Ted, "I'll take gliding over motorcycling or skiing. It's also probably the hardest physical thing anyone can do — the kite weighs about 47 pounds and after flying off, say, a 200-foot cliff, remember it has to be carried back up." • Is

### Sympathy

To Dez Brown (8312) on the death of his father in Panama, Okla., May 3.

To Ort Thomas (8442) on the death of his father-in-law in Garland, Utah, May 17.

To George Perry (8421) on the death of his grandmother in Oakland, May 18.

To Blanche Matter (8264) on the death of her father in Fullerton, Calif., May 22.

## Take Note

For the second year, the bowling team captained by Jan Inzerilla (8442), took first place in the Sandia Mixed Handicap Bowling League's winter competition. The "Happy Hookers" team, captained by Jerry Moore (8423), finished second.

Individual awards won by Sandia men and women were: High Scratch Game — Bill Ormond (8261) with a 258 and Shirley Esquibel (wife of Gil, 8183), 225; High Scratch Series — Tom Imler (husband of Chris, 8440), 663, and Mary O'Shea (8266), 591; High Handicap Game — Bill Little (8430), 275, and Gayle Tschritter (wife of Ken, 8332), 254; and High Handicap Series — Gil Esquibel, 711, and Jan Inzerilla, 670.

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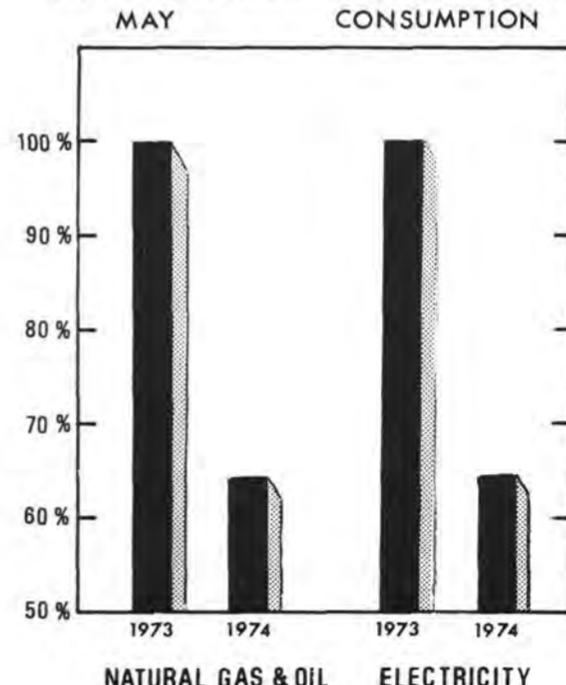
Two winners in the recent Sandia bridge event at Sunol Valley Golf Club placed high in the 11th annual Postal Duplicate Contract Bridge Tournament sponsored by the National Industrial Recreation Association. Pat Leary (8441) and her husband Jim (LLL) came in first in regional competition, winning an art book and a trophy. Nationally they placed fourth, for which each will receive a \$25 Savings Bond.

## Congratulations

Mr. and Mrs. Pete Royval (8313), a son, Jonathan Michael, May 8.

Mr. and Mrs. Steve Halleck (8323), a son, Steve Jr., May 27.

## THE LIVERMORE ENERGY PICTURE





## Retiree Mike Weber at Arts and Crafts Fair

"I guess I'd have to call it a successful show because I even sold my sign," says Mike "Miguel" Weber, a Sandia retiree. Mike retired in 1970 from the auditing department and immediately began his new career as a wood carver. Recently, his work was on display at a fair in Mesilla Park, near Las Cruces. The wood carvings were popular and Mike had sold all the items when a young man, disappointed because he was too late to make a purchase, asked to buy Mike's sign. "I sold him the sign, he was happy, and I came home and made another sign," Mike says.

Mike's father, a cabinetmaker, passed down some knowledge of the craft and, when wife Ruth asked Mike as a first project to replace their fireplace mantel, he didn't hesitate. An old railroad tie was used and it now boasts a dark, high-gloss finish and a carved relief design, adapted by Mike from the design on a beam in Gran Quivira National Monument.

One of his most satisfying works has been carvings of the Stations of the Cross, now hanging in the church at Zia Pueblo. Ruth's favorite is a nine-and-a-half-foot long table which carries a carving adapted from a 16th century Spanish motif. Most of Mike's wood carvings are small gift items — wooden spoon racks, candle sconces, pendants, jewelry boxes, wine racks, shelves, plaques and crosses. His most popular items are disk or cross pendants strung on rawhide and wedding crosses.

Mike prefers to work with Honduras mahogany because of its fine grain. He also uses sugar pine and Philippine mahogany. He is meticulous in construction; fittings are dovetailed and the wood is hand sanded. He then draws a pattern on the wood and here is where the really intricate work begins. Once the carving is completed, Mike applies stain, a compound to seal the pores, and wax.

For the third year, Mike will have a booth at the New Mexico Arts and Crafts Fair which opens next weekend at the State Fairgrounds. Stop in. You'll see some first class wood carvings. •nt



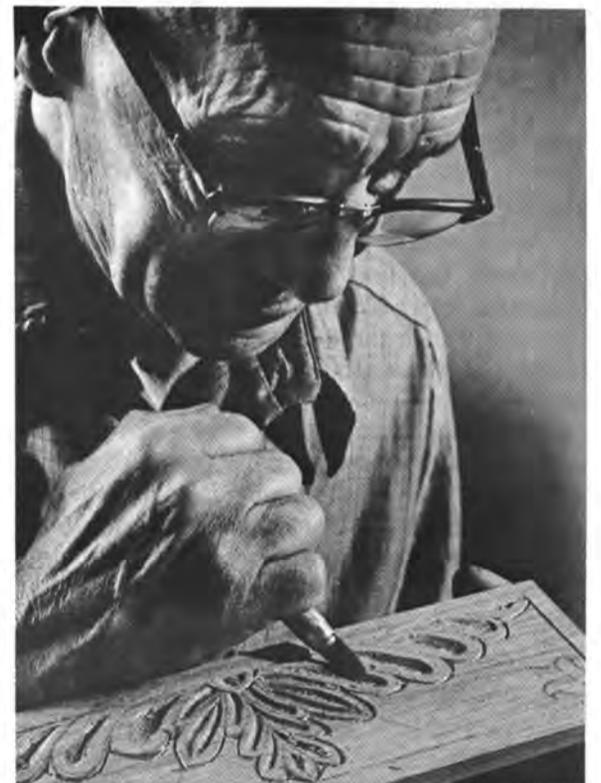
RETIRED SANDIAN Mike Weber displays his wood carvings.

## Academy of Science Holding Conference On Professionalism

The New Mexico Academy of Science is hosting a summer conference on professionalism July 11-14 at the D.H. Lawrence Ranch near Taos. Dick Meyer (5824), president, invites all interested persons to attend. Participation is not limited to members of the Academy. Cost is \$45 per person which covers three nights' lodging and eight meals. Contact Dick, ext. 8140, for more information or for registration forms.

## Sandians at A & C Fair

A number of Sandians are exhibiting at the Arts & Crafts Fair next weekend, June 28 to 30 at the State Fairgrounds. They include Ed Kjeldgaard (2515), booth 108, clocks; Ken Miller (3153), booth 113, paintings; and Joe Rivard (5221), booth 175, paintings. Mike Weber of this article will be in booths 53/54.



DELICATE WORK takes concentration and a steady hand.

## Sympathy

To Eliseo Martinez (9718) on the death of his father-in-law in Albuquerque, June 6.

To Ray Beall (4821) on the death of his son in Albuquerque, June 7.

To George Dennis, Office of Information, AEC/ALO, on the death of his wife in Albuquerque, June 11.

To Marv Austin (9718) on the death of his father-in-law in Wisconsin, June 12.

To Anna Marie Carroll (5222) on the death of her mother in Albuquerque, May 8.



commuting  
information  
DIAL 4-RIDE



# Speakers

W.D. Smith (5113), invited paper, "Memory and Display Applications for PLZT Ceramics"; D. Emin (5155), "On the Energy Spectrum of a Carrier in a Deformable Lattice: A Mechanism for an Abrupt Conductivity Transition"; D. Emin, "Transport Properties of Small-Polarons," International Symposium, Electronics Properties of Oxides/Applications and Science, May 29-June 1, Purdue Univ.

F.M. Bacon (2412), "A Spectroscopic and Theoretical Investigation of the Anode Plasma of a Pulsed Vacuum Arc," Conference on Electrode Phenomena in Gas Discharges, May 30-June 1, Bucharest, Romania.

H.J. Sutherland (5163), "On the Separation of Geometric and Viscoelastic Dispersion in Composite Materials"; J.B. Rivard (5221) and M.R. Scott (2642), "The Two-Phase, Three-Zone Melting Problem: Response to Pulse Heating"; D.B. Longcope (1541) and C.R. Steele (Stanford Univ.), "Pulse Propagation in Inhomogeneous Media," 7th U.S. National Congress of Applied Mechanics, June 3-7, Boulder, Colo.

R.C. Hughes (5814), "Charge Transport in Disordered Molecular Systems," Photoconductivity in Polymers Course, Summer Institute in Science and Technology State University College, June 4, New Platz, N.Y.

D.E. Munson (5163) and R.J. Lawrence (5166), "A Modified Maxwell,  $p-\infty$  Model for Wave Propagation in Porous Composites, as Applied to 3DQP," June 4-6, SLA.

L.C. Beavis (2413), "The Instantaneous Flow Rate of Helium-3 From Erbium Tritide"; R.P. Wemple (5824), "High Pressure Differential Thermal Analysis Experiments With the LaNi<sub>3</sub>-H System"; C.J.M. Northrup, Jr. (5824), "Hydride Phase Studies at High Hydrogen Pressures," Third ARAZ Symposium, June 5-6, SLA.

H.J. Rack (5832), "Grain Boundary Embrittlement in Beta-C Titanium," Spring Meeting of Metallurgical Society of AIME, June, Pittsburgh, Pa.

R.A. Anderson (5814), "Formation of the Plasma Channel During Surface Flashover," March Meeting APS, March 24-28, Philadelphia, Pa.

N.J. DeLollis (5813), "Adhesive Properties of Urethane Resins," 20th National Symposium/Exhibition "Technology in Transition," April 15-17, San Diego; and "Metrication and International Standards," Old Town Optimist Club, May 29, Albuquerque.

H.C. Monteith (9344), "ESP Research in Russia, England, and America," May 2, Grant Jr. High science class and May 29, Heights Optimist Club; "Psychology and Happiness in Human Relations," May 2, Lincoln Jr. High career education class.

O.L. Wright (4820), "History of Sandia Base," May 8, Old Town Optimist Club.

H.E. Guttman (1642), "Human Factors," May 10, Southwest Business College class, Albuquerque.

S.C. Levy (2523), "Electrochemistry of Chromium and Chromates in Molten Lithium-Chloride Potassium-Chloride," Graduate student seminar, May 10, UNM.

G.C. McDonald (9623), "Backpacking Made Easy for Sedentary Citizens," May 14, Duke City Civitan Club; "Existing Wilderness Areas in New Mexico," May 21, Sandia Kiwanis Club.

T.F. Marker (6010), "The Invention Process," May 17, AIEE program, Albuquerque.

J.R. Freeman (5241), "Yesterday, Today and Tomorrow," May 24, Gallup High School commencement exercises.

J.L. Wilson (8413), "Metrication and Standards," tutorial paper; and N.R. Keltner (9331), "Intrinsic Thermocouple Response," ISA 20th International Instrumentation Symposium, May 21-23, Albuquerque.

W.D. Smith (5113), "Memory and Display Applications for PLZT Ceramics," International Symposium - Electronic Properties of Oxides/Applications and Science, May 29-June 1, West Lafayette, Ind.

R.W. Rohde, T.V. Nordstrom (both 5532) and D.J. Mottern (deceased), "Inhomogeneous Aging and Mechanical Properties of a Copper-Beryllium Alloy," Fourth Bolton Landing Conference on Grain



**TAKING IT FOR GRANITE** — This four-ton hunk of granite is being sawed in two with an ingenious saw devised by Howard Austin (1124), left, and Frank Dain (1126). Saw consists of blade with diamond cutting edge, electric motor and eccentric drive wheel. Cut took a week's sawing. Blocks will be used in study to determine effects of nuclear wastes buried in underground granite.

Boundaries in Engineering Materials, June 9-12, Sagamore, Lake George, NY.

H.A. Watts (2642), S.M. Davenport (LOA from 5122) and L.F. Shampine (5122), "Comparison of Some Codes for the Initial Value Problem for Ordinary Differential Equations"; M.R. Scott (2642), "On the Conversion of Boundary-Value Problems into Stable Initial-Value Problems via Several Invariant Imbedding Algorithms," Conference for Numerical Solutions of Boundary Problems for Ordinary Differential Equations, June 10-13, University of Maryland.

J.N. Olsen, J.F. Cuderman and M.A. Duguay (all 5243), "Picosecond X-Ray Pulses"; R.E. Palmer and M.A. Gusinow (all 5215), "The Late Time Gain of the CF<sub>3</sub>I Iodine Photodissociation Laser"; G.L. Cano, J.F. Cuderman (both 5213), K.M. Gilbert (1112) and J.E. Powell (5213), "Laser-Plasma Studies with the Sandia Four-Beam System"; E.D. Jones and P.J. Brannon (both 5214), "Sandia Four Beam Laser System"; C.W. Mendel (5213), "Electric Field Measurements in Laser Plasmas"; A.W. Johnson and J.B. Gerardo (both 5212), "The Vacuum-Ultra-Violet Xenon Laser"; J.M. Hoffman and F.W. Bingham (both 5212), "Parametric Study of a Cold-Cathode Electron-Beam-Controlled CO<sub>2</sub> Laser," International Quantum Electronics Conference, June 10-13, San Francisco.

A. Narath (5000), "Relaxation of Local-Moment Nuclei in Metals," International Conference on Hyperfine Interactions Studied Decay, June 10-14, University of Uppsala Institute of Physics, Uppsala, Sweden; and "Magnetic Properties of Cobalt Impurities in Mo and W: A Nuclear Resonance Study," Informal Seminar, Institut für Atom- und Festkörperphysik, Freie Universität Berlin, June 20, Berlin, West Germany.

A.B. Donaldson and A.R. Shouman (both 1543), "Analysis of Incompressible Flow in Porous Media"; C.W. Peterson (5645), "Pressure and Temperature Surveys in a Cold-Wall Hypersonic Turbulent Boundary Layer"; Heat Transfer and Fluid Mechanics Institute, June 12-14, Oregon State Univ., Corvallis.

W.A. Von Riesenmann (1541), "Nonlinear Continua"; S.E. Benzley (1541), "Fracture Mechanics"; Benzley and Z.E. Beisinger (1541), "CHILES — A Finite Element Computer Program that Calculates the Intensities of Linear Elastic Singularities"; R.E. Nickell (1541), "Thermal Stress and Creep," International Symposium on Structural Mechanics Software, June 12-14, Univ. of Maryland.

L.C. Bartel (5151) and P.C. Lysne (5131), "Electrical Response of Shock-Loaded Ferroelectrics"; P.C. Lysne, "Dielectric Breakdown in Ferroelectric Ceramics: A Correlation of Dynamic and Quasistatic Experiments"; R.A. Langley (5111), "Absolute Stopping Cross Sections of H<sup>+</sup> and He<sup>+</sup> in Gases - A New Technique"; A.R. DuCharme (5154), "A New Theory for Impurity Diffusion in Metals"; R.A. Graham (5131), "Pressure Dependence of the Piezoelectric Polarization of Lithium Niobate and Lithium Tantalate," American Physical Society Meeting, June 12-14, Salt Lake City.

D.C. Bickel (9322), "Aerial Cable Facility," 1974 AFOSR Contractors Meetings on Fuel-Air Explosion, June 13-14, Eglin AFB, Fla.

B.M. Bulmer (5628), "Study of Base Pressure in

Laminar Hypersonic Flow: Reentry Flight Measurements"; R.R. Eaton (5643) and D.E. Larson (5625), "Laminar and Turbulent Viscous Shock Layer Flow in the Symmetry Planes of Bodies at Angle of Attack"; 7th AIAA Fluid and Plasma Dynamics Conference, June 17-19, Palo Alto, Calif.

J.M. McKenzie (2115), "Radiation Degradation in Mixed Radiation Fields," International Conference on Evaluation of Space Environment, Centre National d'Etudes Spatiales, June 17-21, Toulouse, France.

S.T. Picraux (5111), "Nuclear Reaction Analysis of Hydrogen and Helium in Solids," U.S.-Italy Seminar on Ion Beam Analysis of Near Surface Regions, June 17-20, Catania, Italy.

The article prepared by the following people will be presented by D.W. Swain (5242) at the Eighth Symposium on Fusion Technology, Fom Instituut voor Plasmafysica: "Technology of Electron Beam Induced Fusion," J. Chang (5242), M.J. Clauser, J.R. Freeman (both 5241), D.L. Johnson (5245), J.G. Kelly, G.W. Kuswa (both 5242), T.H. Martin (5245), P.A. Miller, L.P. Mix (both 5242), J.W. Poukey (5241), K.R. Prestwich (5245), D.W. Swain, A.J. Toepfer (both 5242), M.M. Widner, T.P. Wright (both 5241), and G. Yonas (5240), June 17-21, Noordwijkerhout, Netherlands.

D.L. Preston (9333), "Sandia's 6" High Velocity Blowdown Water Tunnel," American Towing Tank Conference, June 18-20, Pasadena, Calif.

N.J. Magnani (5831), "Hydrogen Generation From the Uranium Alloy Water Reaction," JOWOG 12 Meeting, June 18-21, Aldermaston, England.

W. Herrmann (5160), "Dynamic Constitutive Equations," U.S. National Congress of Applied Mechanics, June 3-7, Univ. of Color., Boulder.

R.S. Blewer (2413), "Depth Profiles of Fusion Plasma Products in First Wall Materials," Conference on Physics Problems Relating to Energy Technologies, June 17-28, Brookhaven National Lab, N.Y.

## ENERGY SAVINGS

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

ELECTRICITY	1973 68,200 MWH	12.3%
	1974 59,800 MWH	
STEAM PLANT FUEL (EQUIV. OIL)	1973 173,400 BBLs	13%
	1974 150,900 BBLs	
VEHICLE MILES	1973 1,884,000 MI.	16.5%
	1974 1,574,000 MI.	

## FUN & GAMES

**Ski Patrolling** — Dick Volk (2414) is the newly elected leader of the Sandia Peak Ski Patrol, succeeding Paul Souder (1564). The Patrol, which assists injured skiers, currently numbers 60 members. Dick states that additional members are needed who can ski and patrol on weekdays (as opposed to weekends). If your husband/wife or son/daughter 18 or over might be interested, Dick can be reached at his home on 299-1702.

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**Photography Competition** — The Bosque del Rio Grande Nature Preserve Society is a neat group of people who seek to preserve the natural beauty of the Rio Grande floodplain, i.e., the bosque, within our city. To this end they are sponsoring the first Rio Grande Photography Competition and seek entries, by July 1, of photos relating to the river area between the Sandia and Isleta Pueblos. Best entries will be shown in exhibitions and prizes will be awarded. Call LAB NEWS, ext. 1053, if you'd like an entry blank.

\*\*\*\*

**Sandia Runners Ass'n.** — That recent UPI article in the *Tribune* quoted from the respected British medical publication *Lancet* to the effect that "all the things that logically should help prevent heart attacks . . . simply do not do so" and its list of things included low-fat diets, loss of weight, adequate

exercise, no cigarettes, and emotional stability. "There is no proof that such activity offsets coronary disease. . .". But before you rush pell mell to the incinerator with your running togs, consider this rebuttal from two MD's of the American Medical Joggers Ass'n. They said they had never seen or heard of a case of fatal coronary heart disease in three classes of individuals: non-smokers who had finished a marathon run at any time in their lives; non-smokers who scored well on a maximum treadmill stress test; and non-smoking cardiac patients who have achieved six miles a day in a supervised rehabilitation course. To the question "Can I avoid a heart attack?" these doctors reply "Yes — by assuming the life style associated with immunity to heart disease — that of the marathon runner." While you're contemplating the rewards of such a life style, bear in mind that a "marathon," by definition, is 26 miles.

\*\*\*\*

**Sandia Bicycle Ass'n.** — Gordon Pike (5155) is drumming up interest in a Velo Sport bike tour of the Puye Cliff Indian ruins on Sunday, June 23rd. The ruins are located north of San Ildefonso Pueblo and Gordon sees the tour in terms of 40-60 miles, depending on the individual biker's wishes. The \$2.50 fee covers admission to the ruins and gas for the vehicles carrying the bikes to the launch points. Meet at Gulf Mart at 8:30 a.m.



**METEOR MISSILE MODEL**, built for Exploratory Projects Division II 5713, is undergoing wind tunnel testing at General Dynamics in San Diego. Representing 800 hours of machining and 500 hours of hand polishing and fitting, model is the work of (l to r) Bruno Paoletti, Royce Bewley, Antonio Saavedra (lead man) and Bill Weinbecker of Miniaturization and Projects Section 3644-1 under Jake Gonzales.

**Sandia Tennis Ass'n.** — Don Hardesty reports that in the Labs' Spring tennis tournament 40 players duelled in the singles matches, while 24 doubles teams squared-off. Before one of the largest crowds to witness a singles finale in years, Herman Smith (AEC) prevailed over Don Hardesty (5131) in a hard fought contest — 5-7, 7-5, 6-3. Both spectators, Elaine and Don Lundergan (1721), provided tumultuous support.

Charlie Chaves (3733) and Bob Scipes (4123) thrashed all comers including Dick Kavet (1713) and Herman Smith by 6-2, 6-1, in the final match to take the doubles championship. In the consolation bracket, Bill Hereford (9483) defeated Dan Blazek (9624) to win the singles, while Jim Solberg (9393) and Tex Windham (9414) defeated Norm Smith (2634) and John Walter (2326) in the doubles match.

## Take Note

Sandians are reminded of the organized program for school age children offered by the KAFB Day Care Centers this summer. The program includes picnics, movies, bowling, field trips, and other activities. Call the nursery for information: East 264-2314, West 247-2711, ext. 3296.

\*\*\*\*

Bill Drozdick (9654) is on a committee of industrial educators working on revisions to the drafting program in Albuquerque schools. New concepts now being incorporated into the curriculum emphasize creative thinking, true position dimensioning, and use of a plotter.

\*\*\*\*

Jack Hickman (1653) has been elected president for 1974-75 of the NM System Safety Society. John Joyce and Walter Hogan (both Air Force Weapons Lab, KAFB) were named vice president and secretary treasurer, respectively. Jack's objectives for the new chapter include arrangement of an information exchange conference, the scheduling of speakers who work in system safety outside the defense/aerospace field, i.e., in general aviation, nuclear power, mass transportation, and consumer oriented products, and the promotion and improvement of system safety as a profession.

\*\*\*\*

New fenced-in acreage at the northeast corner of the Tech Area (between the Exhibit Center Sphere and the Personnel Building) is the Solar Total Energy Test Bed, one phase of the pilot study on the feasibility of a solar community. The bed includes a collector field, a turbine-generator, and a control building. Dick Braasch's Solar Energy Projects Division 5712 is coordinating the Test Bed project.

\*\*\*\*

New society for solar energy experts and aficionados. It's the New Mexico Solar Energy Association, and it's accepting membership from those willing to spend some time, some effort, and some cash (\$5 per year with checks to N.M.S.E.A.). Several Sandians are charter members; Ben Petterson (5712) is one of the 12 members on the Board of Directors, but send checks to and get info from: Keith Haggard, 602 1/2 Canyon Road, Santa Fe 87501.

# Authors

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P.B. Bailey (5121), "On the Problem of Diffraction," Vol. 15, No. 4, JOURNAL OF MATHEMATICAL PHYSICS.

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R.J. Thompson (5122), "Ray-Acoustic Intensity in a Moving Medium. I." and "Ray-Acoustic Intensity in a Moving Medium. II. A Stratified Medium," Vol. 55, No. 4, JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA.

J.M. Hoffman, F.W. Bingham (both 5212), and J.B. Moreno (5643), "Parametric Experimental and Theoretical Study of a Cold-Cathode Electron-Beam-Controlled CO<sub>2</sub> Laser," Vol. 45, No. 4, JOURNAL OF APPLIED PHYSICS.

H.S. Levine (5824), "Communication: Surface Structure Concepts in the Theory of Homogeneous Bubble Nucleation," Vol. 5, No. 4, METALLURGICAL TRANSACTIONS.

E.L. Patterson, R.A. Gerber (both 5212) and L.S. Blair (LASL), "HF Laser Initiated by a 300-keV Electron Beam," Vol. 45, No. 4, JOURNAL OF APPLIED PHYSICS.

L.I. Weingarten (1542) and H. Reismann, "Forced Motion of Cylindrical Shells — A Comparison of Shell Theory with Elasticity Theory," Vol. 54, No. 3, ZEITSCHRIFT FÜR ANGEWANDTE MATHEMATIK UND MECHANIK.

G.L. Cessac (5813) and J.G. Curro (5811), "Raman Scattering in Uniaxially Oriented Samples of Planar Zigzag Polyvinylidene Fluoride," Vol. 12, No. 4, JOURNAL OF POLYMER SCIENCE.

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M.M. Karnowsky (5831), M. Moss (5844) and C. Stein, "The Activation Energy for the Precipitation of Al<sub>6</sub> Mn in Plasma-Sprayed Al-2.9 w/o Mn Alloy," Vol. 8, No. 5, SCRIPTA METALLURGICA.

R.C. Lincoln (5823), A.B. Donaldson (1543), and R.C. Heckman (5823), "High-Temperature Thermal-Diffusivity Measurement by a Negative-Pulse Technique," Vol. 45, No. 5, JOURNAL OF APPLIED PHYSICS.

G.J. Lockwood (5226), "Total Cross Sections for Charge Transfer for F<sup>+</sup> in H<sub>2</sub>, N<sub>2</sub>, He, Ne, and Ar," Vol. 9, No. 5, PHYSICAL REVIEW A.

G.W. McClure (2412), "Plasma Expansion as a Cause of Metal Displacement in Vacuum-Arc Cathode Spots," Vol. 45, No. 5, JOURNAL OF APPLIED PHYSICS.



59 TONS of gun barrel leave Sandia for Oblivion. With an equal-sized partner, it served as a test facility in Area III since the mid-fifties. Originally from the Naval Gun Factory, the 45-foot barrels were bored out to a 26-inch diameter and used both as a pressure vessel and as an explosive gas shock tube. Subroc missile, now in the fleet, was its biggest test. Here it's a test of traction and power as a contractor/purchaser eases the big barrel across Tijeras Arroyo.

E.J. McGuire (5211), "Atomic N-Shell Coster-Kronig, Auger, and Radiative Rates and Fluorescence Yields for 38  $Z \geq 103$ ," Vol. 9, No. 5, PHYSICAL REVIEW A.

G.L. McVay, R.A. Lefever and R.J. Baughman (all 5154), "Preparation of Hot-Pressed Silicon-Germanium Ingots: Part II - Reduction of Chill Cast Material," Vol. 9, No. 6, MATERIALS RESEARCH BULLETIN.

R.E. Palmer and M.A. Gusinow (both 5215), "Late-Time Gain of the CF<sub>3</sub>I Iodine Photodissociation Laser," Vol. 45, No. 5, JOURNAL OF APPLIED PHYSICS.

P.M. Richards (5132) and W.J. Brya (formerly 5132), "Spin-Fluctuation Light Scattering at High Temperature," Vol. 9, No. 7, PHYSICAL REVIEW B.

R.K. Quinn (5154), "Compositional Dependence of Structural and Thermal Properties of As-Te Amorphous Alloys," Vol. 9, No. 6, MATERIALS RESEARCH BULLETIN.

D.W. Schaefer (5814) and B.J. Berne (Columbia Univ.), "Dynamics of Charged Macromolecules in Solution," Vol. 32, No. 20, PHYSICAL REVIEW LETTERS.

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J.P. Van Dyke and W.J. Camp (both 5151), "High-Temperature Series for the Susceptibility of the Spin-S Ising Model," Vol. 9, No. 7, PHYSICAL REVIEW B.



THE LIMELIGHT caught up with a modest man. Quietly for six years heading Explorer Post 432, a search and rescue unit of high school and college students, Paul Kirby (4273) was honored recently with this plaque from the Exchange Breakfast Club of Albuquerque. The plaque reads "In grateful appreciation for his work with youth in Albuquerque, in recognition of his interest, responsibility, enthusiasm and dedication. Thanks for a job well done!" The Explorers conducted 19 search and rescue operations in the past 15 months, many of them in freezing weather on the slopes of the Sandias.

**CONSERVE**  
SANDIA'S ENERGY AND RESOURCE CONSERVATION



The Redistribution and Marketing Division 4822 has posted signs designating pick-up stations.

Boxes at each station are labeled:



The Labs has a potential of 150 tons a year of

salvageable computer cards and paper. So far, we've collected over 55 tons. We've got a long way to go.

Russ Leahy (4822) says, "We'll break even one of these days over the cost of handling it."

His slogan is available on a 3" x 10" poster. If you would like one to remind you and others of our goal, call Russ Leahy, 4-2746.



If you have any energy or resource saving idea, please drop a note to: CONSERVE 3155.

Current "Pickup Stations" for the paper and cards:

Bldg. or Area	Rm. or Bldg.	Phone
634	Southwest End	4 - 8048
800	Rm. 230	4 - 8048
802	Rm. 133, 211	4 - 8482
	Rm. 252, 333	4 - 8482
804	Rm. 5	4 - 8048
806	Loading Dock	4 - 1240
836	Rm. 204, 224	4 - 8482
	Rm. 226, 270	4 - 8482
	Rm. 272	4 - 8482
860	Northeast Dock	4 - 8048
865	Rm. 6	4 - 8048
880	Rm. A-9, C-5	Janitorial
	Rm. C-6, D-10	personnel
	Rm. D-14, D-21	assigned
	Rm. X-5	to Bldg.
Area III	Bldg. 6584	4 - 1872
	Bldg. 6650	4 - 1872
Area V	Bldg. 6588	4 - 1607

# MILEPOSTS

## LAB NEWS

July 1974



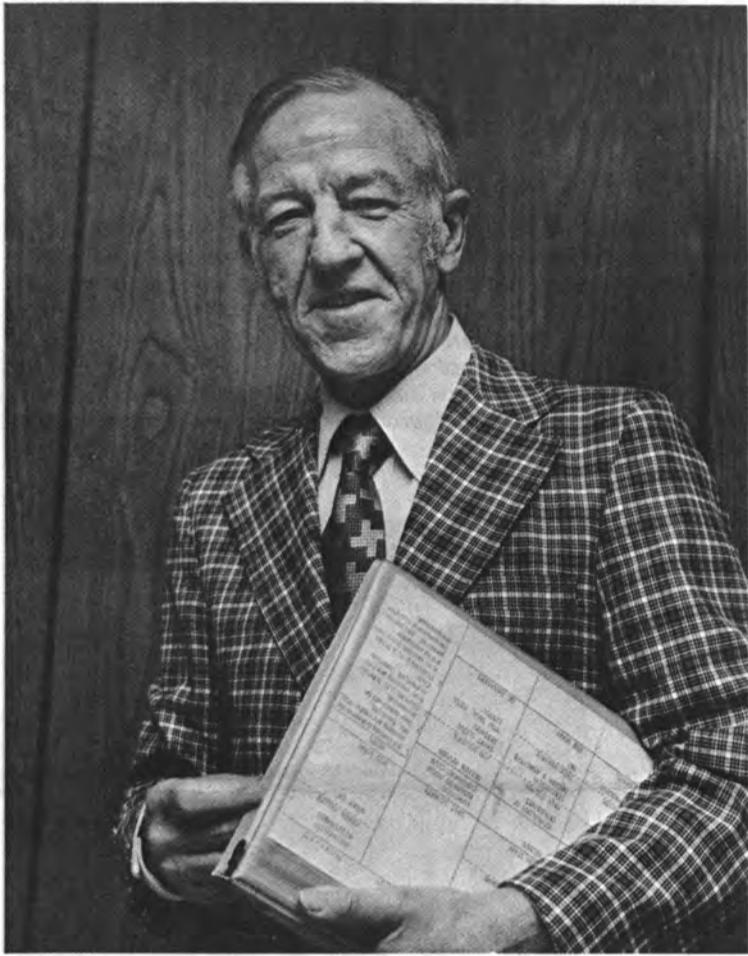
Tom Hoover - 1551

20



Carolyn Kersey - 8212

10



John Wimpling - 9516

20



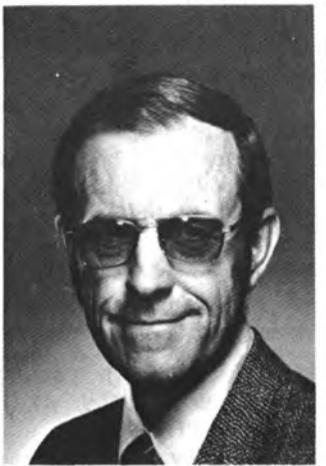
Al Bustamante - 5723

15



George Bradley - 1641

20



William Thomas - 9513

25



Ken Marx - 8341

10



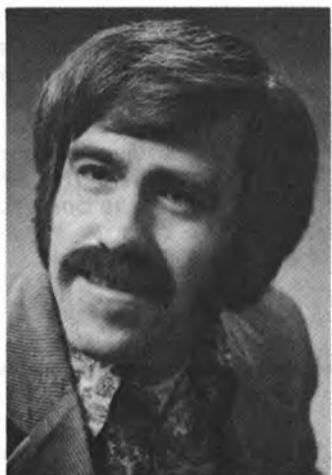
Dirk Dahlgren - 4762

10



Arnie Rivenes - 8158

15



Mel Brown - 8362

15



Earle Chapman - 1525

15



Robert Buxton - 2516

15



Dora Elick - 3147

25



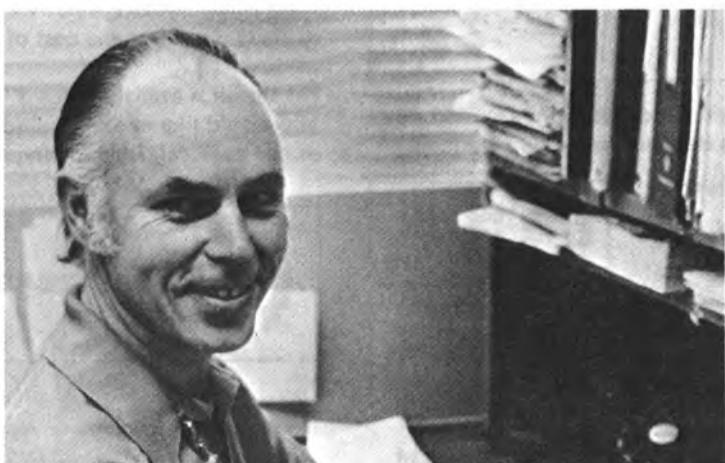
Jim Barham - 8360

15



Don Bohrer - 8333

15



Wayne Sebrell - 1544

15



Robert Stinebaugh - 1133

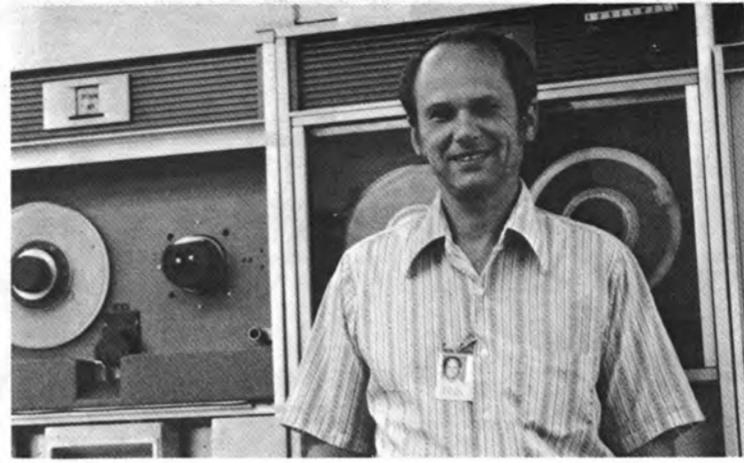
15



Hal Norris - 8156 15



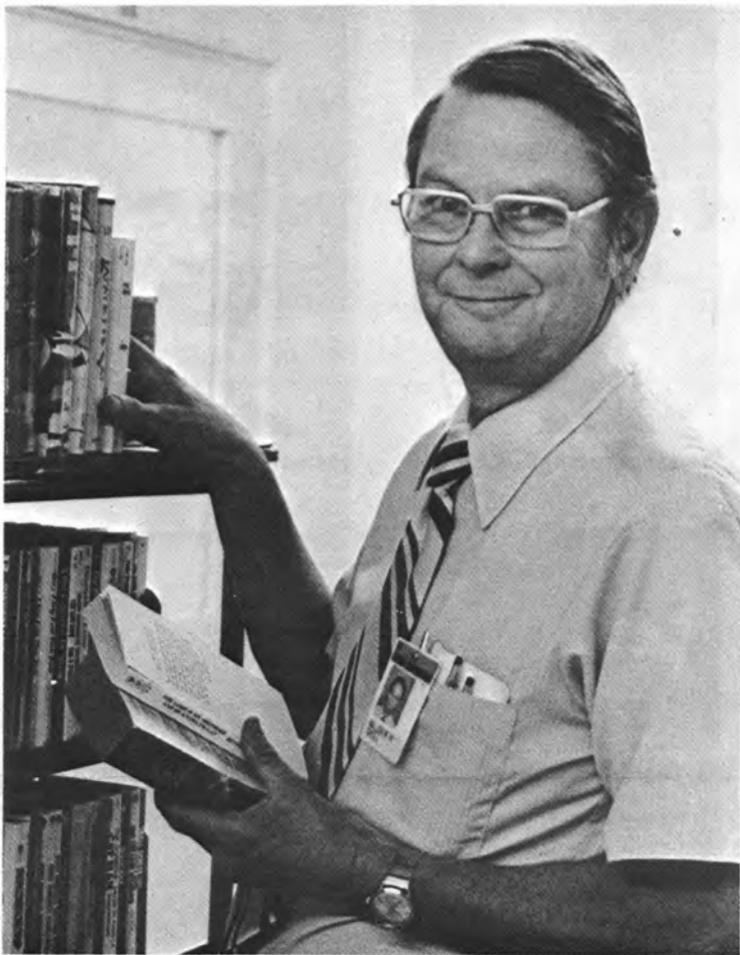
Bob Facer - 8166 15



Leon Maschoff - 9471 15



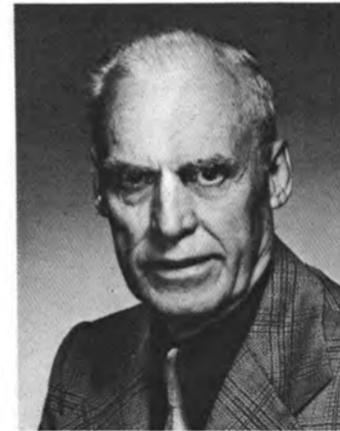
Gene Frye - 3623 20



Mac Groll - 4152 25



Ralph Cozine - 8410 15



Hugh Smith - 3612 20



Dick Finn - 8432 15



Edward Sanchez - 9711 10



Josephine Trujillo - 3613 15



Arminta Robinson - 3151 15



Verne Ivins - 8421 15



Max Schell - 8183 15



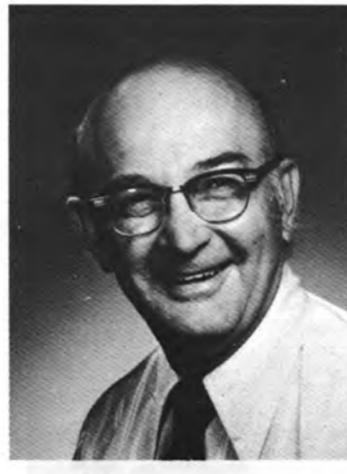
John Leeper - 8182 15



Walter Howerton - 9486 25



Clayton Mavis - 8148 15



Kenneth Weidner - 9623 25



Julia Polito - 3151 25



Cecil Johnson - 2133 25



Sidney Thomas - 1130 20



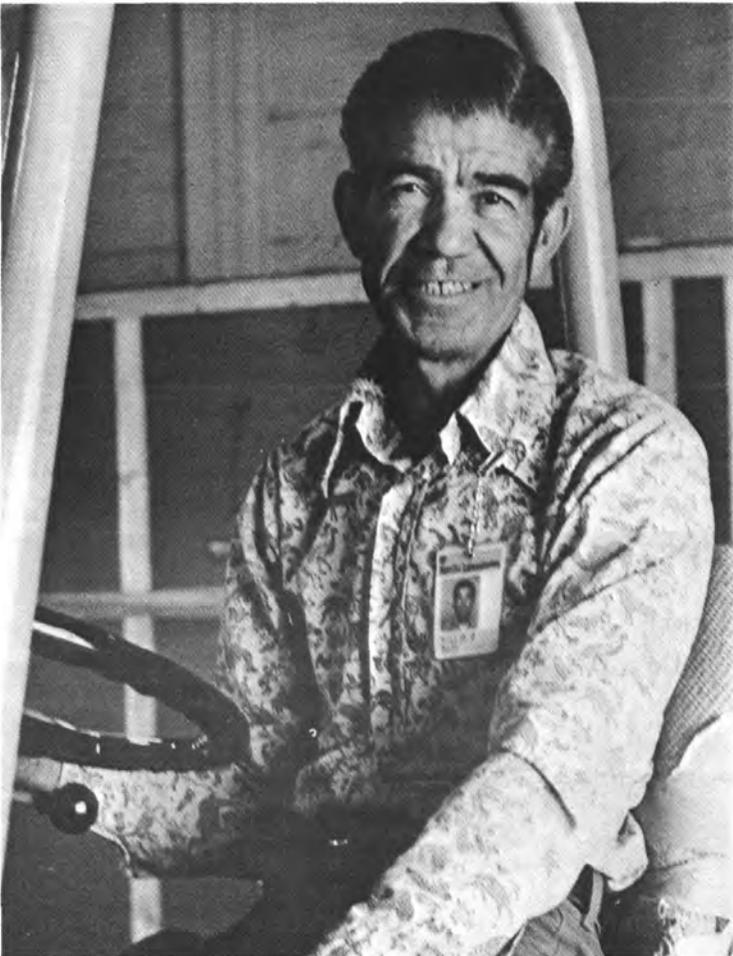
Bill Peay - 9626 25



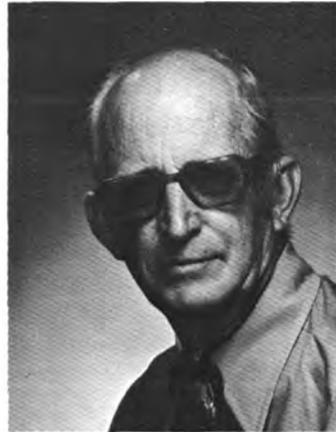
Bernie Kayate - 200 10



Carl Frantz - 9522 25



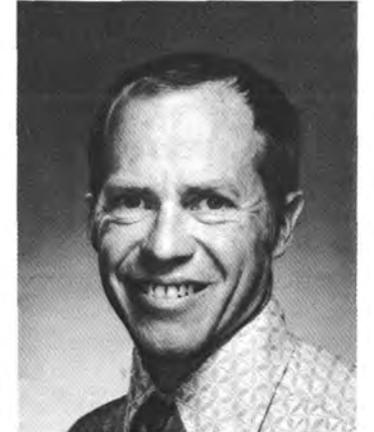
Willie Baca - 9715 25



Wilber Grisham - 1611 20



Winsor Alexander - 4752 10



Richard Beasley - 1531 15



Joe Abbin - 2342 10



Glen Brandvold - 5710 15



Leon Parrish - 1544 15



Calvin Smith - 2314 10



Clifford Diem - 9536 15



Fred Cericola - 9342 15



Duane Arlowe - 9324 15



Ron Ewing - 1112 15



Dick Kavet - 1553 20



Raymond Peabody - 1332 15



Robert Moyer - 9532 15



GENE IVES (1560) as Starbuck the Rainmaker opens tonight at 8:15 p.m. at Popejoy Hall in the Albuquerque Civic Light Opera's production of "110 in the Shade." Leading lady is Frances Robertson. (See Events Calendar.)

## Join the Payroll Savings Plan.



Build a nest egg.

Take stock in America.

Buy U.S. Savings Bonds

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

**CLASSIFIED ADVERTISING**  
 Deadline: Friday noon prior to week of publication unless changed by holiday.  
 A maximum of 125 ads will be accepted for each issue.

**RULES**

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

### MISCELLANEOUS

'61 WARDS Hawthorne Traveler tent, \$200. Dolce, 296-4033.  
 ROTARY mower, \$20; push mower, \$5; baby car seat, \$5; car bed, \$4. Davis, 344-0703.  
 JAPANESE Naval officer's sword, \$55; 1890 picture album, \$20; old pictures; Lady Sunbeam hair dryer, \$6; boudoir set, \$15. Smitha, 293-1177.  
 AIR conditioner for pickup truck, 3 air vents, 3-sp. fan, adj. cold setting. Jones, 298-3165 after 5.  
 FREE Springer Spaniel pups. Westman, 255-6048.  
 FREE kittens, 2 male yellow weaned & box trained. Skillern, 298-5150.  
 RABBITS, young breeding stock. Robinson, 296-2753.  
 CALF, Charolais cross, steer, 11 wks. old, \$170. Shank, 877-4497.  
 8" TABLE saw, Sears, tilting arbor, blades, metal stand w/wheels, 1/2 hp ball bearing motor, \$165 value for \$70, delivered. Armijo, 869-2109.  
 WHITE, modern cast iron bathtub, \$15. Houghton, 299-3386.  
 15" WESTERN saddle, \$150; new reins, \$3; girth, \$2; Wards portable sewing machine w/case, \$40. Bassett, 898-1840.  
 SHADE canopy, 11 x 11, blue & yellow, cost \$20, sell for \$11; 2-man rubber boat w/pump, cost \$26, sell for \$16. Schreiner, 268-4159.  
 ALUM. lawn furniture; electric 6-qt. ice cream freezer; maple desk; cedar chest; classical

guitar; manual typewriter. Crumley, 299-5293.  
 GOLF irons, 2 thru 9 plus PW, man's, Wilson Staff, never used, retail price, \$225, my price, \$135. Durkee, 294-6151.  
 NORWEGIAN Elkhounds, 5-1/2 month old female, 1-1/2 year old female. Klein, 294-0888.  
 AKC registered Airedale pups, large, gentle variety. Carstens, 898-0065.

SOFA, blue, Danish modern, \$75; matching chair, floral print, \$15; golf wood, man's Spalding Top-Flite, \$20; bag, \$10. Longcope, 292-2141.  
 BABY bed w/mattress. Filusch, 299-5932.  
 NEW ZEALAND white rabbits, 2 mos. old, \$2 ea. Cassidy, 268-1106.  
 BABY ITEMS. Cosco walker jump seat, car seat, stroller, Cosco high chair, sterilizer & bottles, buggy (lifts out for car bed), crib bumper pad. Linnerooth, 299-6154.  
 NIKON System: 1 camera, 5 lenses, numerous accessories, \$750. Shipman, 255-2523.  
 WHITE French provincial bedroom set, includes dbl. bed, box spring, mattress, desk, dbl. dresser w/mirror. Ogle, 296-7125.  
 BABY furniture, potty, dressing table, stroller, playpen, pack, lamp, jump seat, bathtub, clothes, diapers, black vinyl chair. Self, 296-4137.

HAMMOND organ, Model M-3 with reverberation unit and bench, blond mahogany. Magruder, 268-4401.  
 TEAC 1230 tape recorder and Garrard AT60 changer for sale. Russell, 266-4878.  
 GARAGE sale, June 23. Sinks, pipe, old carpet, electric clock, misc. household items. Teresi, 255-6937.  
 GOLF clubs and bag, \$35; vinyl car top carrier, fits all sizes, Sears (\$35), \$25. Adams, 293-2928.  
 '70 COLEMAN camping trailer, model 480, sleeps 6. Switendick, 265-0345.

'68 VOLVO parts, transmission, \$40; AC, \$50; radio, \$25; front end, \$30; rear end, \$30; radiator, \$10. Nelson, 867-2746.  
 INFANT seat, \$2; crib bumper pad, \$3; Heathkit stereo amplifier, \$25. Watterberg, 294-6759.  
 RABBITS, 6 weeks old. Weaver, 299-0245.  
 REFRIGERATOR, white, GE, 15 cu. ft., frostfree, \$75; AC, Westinghouse, window unit, 8000 BTU, \$25. Rice, 296-8252.  
 GERMAN shepherd puppies, excellent bloodline, will be large dogs. Souder, 281-3121.  
 POOL, 8' dia. x 20" deep, Sears, aluminum sides, vinyl liner, used one season, half-price. Lockwood, 298-9563.  
 DELTA one lever, 1-1/2 yr. old kitchen faucet, \$10; bathroom light fixture, \$3. Biffle, 293-7042.  
 SOFA, 92", cream and gold, silk brocade, \$125; decorator chair, gold w/white wood, \$35. Ray, 298-4310.  
 DINETTE set, \$17.50; Eat 'n Play table, \$15; kid carrier, crib, oscilloscope, \$10; temporary utility pole, \$40. Hansche, 281-5350.

### TRANSPORTATION

GIRL'S bike, \$10; boy's bike, \$10. Campbell, 256-1015.  
 2 GIRL'S 20" bikes, \$35 ea. or \$60/both. Stuart, 265-7315.  
 GIRL'S 26" bike, Sears, \$15. Burnett, 299-6770.  
 '71 HONDA 350 CB, 6000 miles, \$500. Gourley, 298-5090.  
 '71 KAWASAKI 500, rebuilt, expansion chamber and paint, make offer. Mason, 299-2836.  
 '73 HONDA 750, fairing, crash bars, back rest, 10,000 miles, \$1600. LeRoy, 296-2953.  
 AJS-410, dirt bike; free kittens. Rand, 299-1048.  
 '71 YAMAHA 350 Enduro, \$550. Roth, 877-4997.  
 '60 GTO conv., PB, PS, tilt

steering, AC, \$900 firm. Lutheran, 293-8364.  
 '73 KAWASAKI 500cc w/helmets, \$800. Galloway, 255-0262.  
 '60 CHEVY, 6-cyl., std. trans., 4 door, one owner, \$150. Shank, 877-4497.  
 '68 BSA 441cc Victor, 55 mpg., spare parts, street or trail. Vigil, 256-9112.  
 SCHWINN 3-sp., man's, 26" wheels, recently overhauled, new thornproof tires, new brake pads, \$35. Atkins, 298-5762.  
 '62 VW, rebuilt engine, '74 license, for Dune Buggy or parts, body damage, \$300. Lowe, 299-7725.  
 '65 RAMBLER, 6-cyl., AT, \$185, or best offer; '59 Ford pickup, short, wide bed, V8, \$70. Baca, 247-4841.  
 '69 CHEV., 9-passenger wagon, AC, AT, PS, PB, radio, steel radials, \$1300. Arthur, 256-7359.  
 '72 TOYOTA Land Cruiser, soft top, approx. 4000 miles. Edwards, 281-3348 or 256-0418.  
 '69 FORD Club wagon, V-8, AT, AC, 8-pass., below book. Fisher, 298-0526.  
 '70 MGB-GT, wire wheels, new tires, new paint, leaving for Navy. Ask for Joey. Chandler, 296-3323.  
 '60 AUSTIN-HEALY 3000, partially restored, asking \$1000, see and offer; cycle trailer, \$125. Butler, 296-8095.  
 '70 HONDA 50 Mini-Trail, \$125. White, 299-6411.

### FOR RENT

2-BDR, large apt., enclosed lawned yard, storage room, near base, no pets, \$135, water and gas paid. Aragon, 266-8597.  
 1-BDR, large apt., available Aug. 3, electric kitchen, AC, carpet, close to base, no pets, \$121, water pd. EerNisse, 298-3968.  
 2-BDR, large apt. and living room, new carpet, large electric kitchen, carport, \$145/mo., \$50 deposit. 505 Texas NE. Duvall, 255-4678.

### WANTED

LADY companion to live in nice home with elderly lady. No heavy housework. Salary info call after 6, Stamm, 255-2640.  
 SPARE tire for trailer, with or without rim, size 18-850-8. Carrillo, 247-9700.  
 TAOS tickets eligible for revalidation should be returned by June 25, "Last Chance" for revalidation. Westman, 255-6048.  
 SWING set and slide. Nordstrom, 296-0619.  
 EQUIPMENT for home shop: table saw, drill press, power hack saw, welding, lathe wood-metal, etc. Westman, 255-6048.  
 OLD copies Etude music magazine. Graff, 268-5291.  
 VOLUNTEER EE to assist small college in development and documentation of EE lab courses and experiments, contact Jones, Org. 2647.  
 OFFICE/BOOKCASE needed for worthy cause (books). We pick up. No honorable offer refused. Lab News, ext. 1053.  
 TRADE, console TV, stereo radio-phonograph, boy's 26" Schwinn bike, aquarium lids, metal hamster cage. Porter, 298-3623.

### WORK WANTED

WILL GIVE classical guitar instruction by advanced student of Hector Garcia. Felicity Muench, 867-5509.

### LOST AND FOUND

LOST — Man's aluminum frame RX sunglasses, one car key on leather tab with MC on it, small brown purse w/chain strap, purple suede wallet, set of Sargent keys w/brass tag-bldg. 807, 3-circled silver looped dangle earrings. LOST AND FOUND, Bldg. 832, tel. 264-3441.  
 FOUND — Blue centered watch head, master key. LOST AND FOUND, Bldg. 832, tel. 264-3441.

# Can You Spot Who'll Miss The C-Club's Glorious 4th?



1. No. That's C-Club's real Dish, Emma Out. So eager to please she's also called Rabid Service.
2. No. Meet E. Orologist. He's predicted clear weather for 17 Independence Days in a row. Figures this year it has to rain. Favorite saying: "For every silver lining there's a dark cloud."
3. Uh-uh. Meet "Evil" Kin Eval — when he's not evaluating his kin, he's shooting off his mouth. Or his rocket. Says his rocket gives him hoppiness. When he gets close to Bug's cigarette, there'll be fireworks.
4. No again. That's Bug E. Whip — which is what he does to insects approaching his sacred picnic spot. Also drops tiny infernal machines down ant holes. The gases therefrom send ants into fits of depression and they commit insecticide.
- 5 and 6. No and no. That's Mark and S. Terwill Yurns. Mark spits, but that's just because he's never learned to close his mouth underwater. She stays upwind.
7. Right. That's Tab Runreader, in charge of Sandia's latest computer — the Platitudinous Pronouncement Originator (PPO) — designed to free the time of those seeking fresh platitudes. Can't relax even at the C-Club's Fourth of July picnic.
- 8 and 9. No twice. That's Aunt Tagonist and Aunt Teek. What would a picnic be without aunts?



FRIDAY	SATURDAY
21 — HAPPY HOUR SEAFOOD BUFFET Adults ..... \$2.75 Under 12 ..... 1.75 SOL CHAVEZ Lounge Yolanda	22 — LUAU Cocktails @ 6 Entertainment @ 7 Buffet @ 7 Dancing @ 9 Reservations Required
28 — HAPPY HOUR SWISS STEAK Adults ..... \$2.75 Under 12 ..... 1.75 SHILOH TALENT SHOW Denny on Stage	29 — SOUL SESSION 8:30 - 12:30 ERNIE & THE SAINTS Happy Hour Bar Members Free Guests \$1

WOW, LUAU — If you have your tickets, you're headed for the June Biggie tomorrow night. Hawaiian music, Hawaiian delicacies, liquid specialities, UNM personalities (Moses Malone permitting), and a great time to be had by all.

GLORIOUS FOURTH — of July celebration includes games for all (races, bell buoy pole climb, etc.), games for kids (pie-eating, coin toss, etc.), the Albuquerque Municipal Band (12-2), Happy Hour prices (and 15c beer), special dollar lunch (hotdogs, beans, etc.). Come at 11, stay till 6, swim all day long if you like, and enjoy celebrating the nation's 198th.

HONE — that monolog you've been trying on your great aunts, that soft shoe routine you've been doing since ought-seven, that tuba solo you've been getting down since high school. Then show up on the 28th when Denny will introduce, accompany, and generally mastermind the Talent Show. Prizes for winners, fun for all. (Tomatoes and eggs will be checked at the door.)

BODY & SOUL — session (it turns both on) is the 29th. Ernie and the Saints ring the rafters; C-Clubbers and guests flock the floors.

MARGE & JO — They're the ones to call for info on the June 26 square dance. 299-1375 and 242-4873 respectively.

AH, AUSTRIA — A few spaces have opened up on the August 14-22 trip and are offered to C-Clubbers for their friends and relations. Call the Club office for more information. MORE INFO — 265-6791.

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