



ATTACK TEAM 4 pauses with some of its rolling stock. Standing in front are Ken Grothaus (2552) and Rolyn Baack (9526). On the truck, from left, are Gene Romero (9654), Lou Flores (9343), Doug Drumheller (5163), Frank Zanner (5833)

and John Ashworth (9553). Flores and Drumheller were alternates. Safeguards people have organized six such teams thus far as part of Denial Materials Evaluation Program. See article on Page Seven.

LAB NEWS

VOL. 27, NO. 24

DECEMBER 5, 1975

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



INSTRUMENTATION payload package for rockets launched from the Arctic is assembled by Dennis Armijo, left, and Ted Krein (both 1253). Each of the two rockets fired carried the same type of instrumentation for studying the earth's magnetosphere.

Research Rockets Fired in Arctic

Sandia launched two rockets from the Arctic last week as part of a joint U.S. and Canadian scientific effort to study various phenomena associated with the magnetosphere.

The first rocket was successfully fired Nov. 25, and the second went up Nov. 28. It was "letter perfect" according to John Eckhart, manager of Upper Atmospheric Projects Department 1250. The weather was "amazingly good — only 28° below zero and almost no wind." Both rockets climbed to an altitude of about 500 kilometres (310 miles).

Called Operation Periquito (Spanish for parakeet), the project is part of a continuing study of the earth's magnetosphere, the near-space region that surrounds the earth and affects global weather, communications, radar defense systems and electrical power networks.

Participating in the project were Sandia, LASL, National Research Council (NRC) of Canada and the University of Alaska Geophysical Institute.

The two Black Brant IV rockets were launched by Sandia from NRC facilities at

Cape Parry Distant Early Warning station in the Northwest Territories.

Each rocket carried dual purpose Sandia-engineered payloads containing various measuring instruments and a LASL barium jet generator. The barium generator contained a small amount of barium metal that served as a tracer after it was vaporized by an explosive charge and ionized by solar ultraviolet radiation.

Injections of the barium vapor into the cleft region of the magnetosphere located near the magnetic pole provide a visual tracer for observers to study interactions in this narrow and rapidly moving region.

The stream of barium particles broke up into numerous streaks aligned parallel to the earth's magnetic field. The structure shown by such streaks could affect communications systems that depend on ionospheric propagation of electromagnetic waves.

Key units in the observation post network were two NC-135 flying laboratories loaded with instrumentation capable of recording all necessary experimental data. Operated by the

(Continued on Page Seven)

Supervisory Appointments

ROGER HAGENGRUBER to supervisor of Systems Research Division 4351, effective Dec. 1. Since joining the Labs in July 1972, Roger has been involved with systems analysis. His primary areas of interest have been in arms control, weapons, and safeguard studies, and he will continue in these general areas in his new position.

Roger received his education at the University of Wisconsin — a BS with majors in physics and American Institutions, MS in physics, and PhD in experimental nuclear physics. Before coming to Sandia Roger was an assistant professor of physics at Western Michigan University. He is a member of the American Physical Society and the American Association of Physics Teachers. Roger is an adjunct professor of political science (arms control) at UNM.

He is a little league baseball coach, a member of the Sandia Labs Volleyball Team, and enjoys hiking and camping. Roger and his wife Donna have three children and live at 3404 Golden Gate Ct. NE.

* * *

TEX RITTERBUSH to supervisor of Medical Administration Division 3321, effective Dec. 1. Since coming to Sandia in August 1961, Tex has worked with a number of organizations: sub-contract purchasing, components programming and scheduling, price and cost analysis, systems and procedures, and employee benefits, where he was a member of the employee benefits planning staff. For the past year Tex has been



TEX RITTERBUSH (3321) and ROGER HAGENGRUBER (4351).

with the Compensation Department.

Tex earned a BS in business administration from the University of Nebraska, and an MS in accounting from Arizona State University. He is a member of the Greater Albuquerque Chamber of Commerce.

Two of Tex's three boys are swimmers with the Coronado Aquatic Club and Tex serves as president of the parent's booster club. He also manages a softball team, collects stamps and coins, and enjoys playing bridge. He and his wife Kathryn and their three sons live at 9211 Haines Ave. NE.

VP Addresses Chamber Officials

Featured speaker at last month's Chamber of Commerce membership meeting was Al Narath, VP-5000.

The audience of several hundred was given an overview of Sandia's energy activities by Mr. Narath, including descriptions of work in the solar energy area and the exploitation of fossil fuel deposits. A number of supporting activities were described as well.

The Chamber met at the Albuquerque Convention Center. Bob Garcia, Special Assistant to the President on Equal Opportunity (200), represents Sandia Labs on the Chamber of Commerce.

Retiring



Francis Gunn (3282)

Events Calendar

- Dec. 5-6 — Albuquerque Symphony Orchestra: Leonard Rose, Cello Soloist, 8:15 p.m., Popejoy.
- Dec. 5-7, 12-14 — Old Town Studio: "The Boys in the Band," 500 Marble NW. 242-4602, 8 p.m.
- Dec. 5-8 — University Of Albuquerque: "The Bacchae" by Euripides, Stage 1, 8 p.m.
- Dec. 6 — UNM Music Department: Holiday Concert, University Chorus & Collegiate Singers, 8:15 p.m., Keller Hall.
- Dec. 6, 9-11 — Albuquerque Little Theatre: "Spofford," 242-4750.
- Dec. 7 — Patio Festival of the Arts: Works of

- Judy James, Indoor Garden Patio, 9 a.m., Four Seasons Motor Inn.
- Dec. 7 — UNM Music Department: "Baroque Festival," 8:15 p.m., Keller.
- Dec. 8 — UNM Music Department: UNM Wind Ensemble, 8:15 p.m., Rodey Theatre.
- Dec. 9 — Basketball: UNM vs. NM State, 7:30 p.m., UNM Arena.
- Dec. 9 — Audubon Wildlife Film: "Exploring Big Bend Country," 7:30 p.m., Popejoy.
- Dec. 8 — Hockey, Albuquerque vs. Butte, 7:30 p.m., Tingley Coliseum.
- Dec. 10-Jan. 4 — Barn Dinner Theatre: "I Do, I Do," Cedar Crest, 281-3338.
- Dec. 12 — Albuquerque Symphony Orchestra & Chorus: Handel's "Messiah," 7:30 p.m., Popejoy.
- Dec. 13 — NM Mt. Club, Bandelier, 6-8 mile hike, 8 a.m., Gulf Mart.
- Dec. 14 — Lovelace Bataan Medical Center: "Christmas in New Mexico," Opening 2-4 p.m.
- Dec. 14 — Music Vesper Series "A Christmas Carol," 4 p.m., Sanctuary, First United Meth. Church, 4th & Lead SW.
- Dec. 14-15 — Hockey, Albuquerque vs. El Paso, 7:30 p.m., Tingley Coliseum.
- Dec. 19 — Basketball: UNM vs. Portland State, 7:30 p.m., UNM Arena.
- Dec. 19 — KHFM: The complete "Hobbit" by JRR Tolkien, read by Nicol Williamson, 96.3 FM, 8:30 p.m.



Wallace Pritchard (9550)

Death



Fred Romero, administrative coordinator for Field Instrumentation Department 1120, died Nov. 18 after a lengthy illness. He was 50.

He had worked at Sandia since September 1948.

Survivors include his widow, four daughters and a son.

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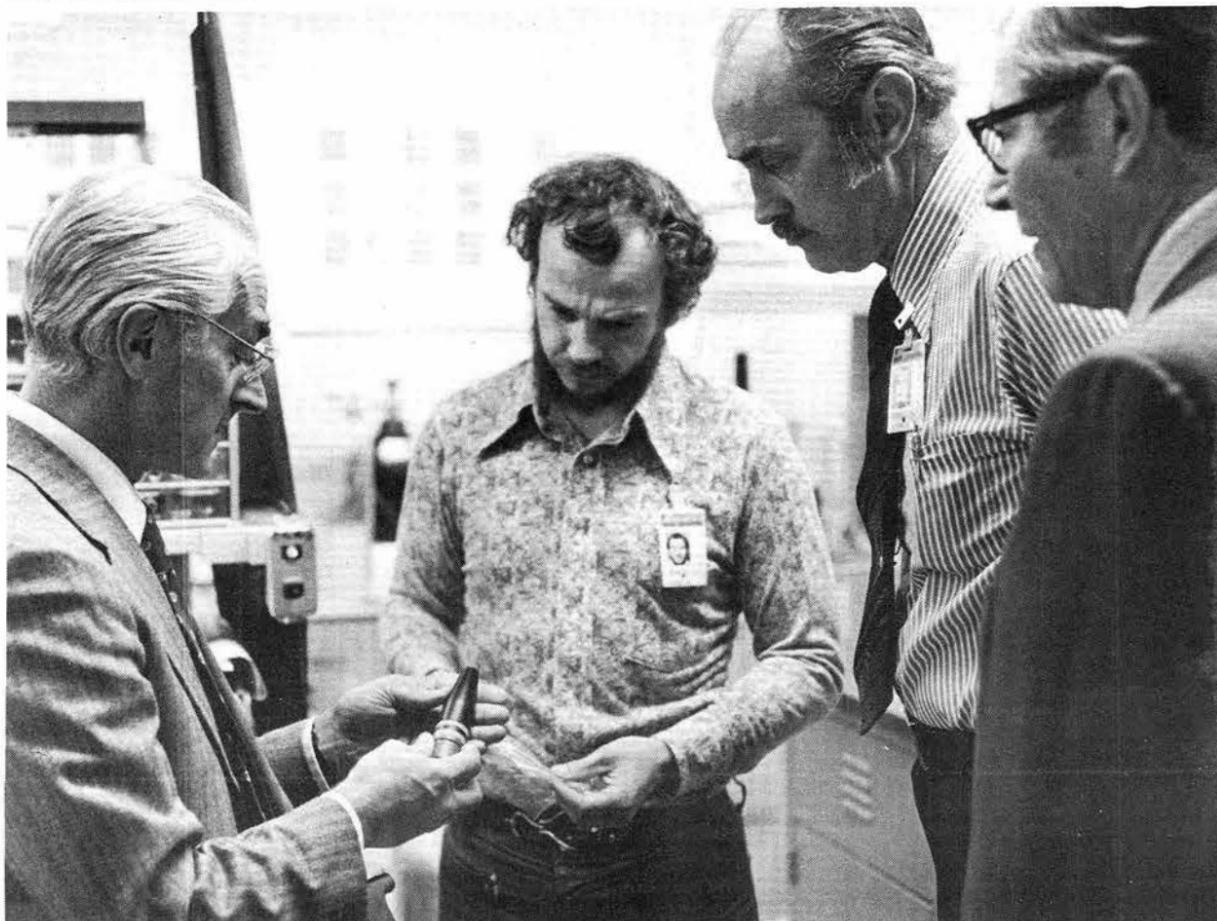


LIVERMORE NEWS

VOL. 27, NO. 24

LIVERMORE LABORATORIES

DECEMBER 5, 1975



VP EUGENE REED (2000), left, visited Livermore recently for briefings on operations and technical programs. The visit was his first since coming to Sandia. He is shown with (from left) John O'Connor (8312), Bob Meiken (8310) and Byron Murphey (8300) during his tour.

Reentry Vehicle Is Recovered

A high performance reentry vehicle has been successfully recovered by a team of Sandia engineers in a project to recover weapon-like RV's intact after they have experienced the severe heating and pressure environment associated with ICBM flight.

Reentry vehicles flying ICBM trajectories normally impact upon the ground at hypersonic speeds. "The task was simply to find some means to slow the vehicle down to speeds at which parachutes could be used," says Ed English, the lead project engineer from Systems Development Division 8362. This rapid slowing of the vehicle low in the atmosphere is achieved by jettisoning about 60 percent of the vehicle's weight. The lightened vehicle then decelerates rapidly enough so that a drogue parachute can be deployed at 5000 feet. Two seconds later the main chute, large enough to permit soft impact, is deployed.

A ram-air flotation bag and homing beacon installed on top of the main chute permits ocean recovery. The parachute system, designed by Bill Pepper (5626), has an unorthodox long, narrow shape to fit available space.

"The mass jettison has to occur quickly and at the right altitude," says Ralph Clark (8362). "We developed an inertial fuzing system which provides the firing signals. A hot gas generator was used to push the two parts of the vehicle away from each other in a few milliseconds."

Rocket sled, wind tunnel, and water entry drop tests showed that the concept was feasible. The demonstration flight was launched at Wallops Island, Va., on a STRYPI VII booster under the direction of Walt Suiter (1254). The vehicle "soft-landed"

in the Atlantic and was picked up by the Coast Guard Cutter *Cherokee* 2½ hours later.

This event, co-sponsored by the USAF Space and Missile System Organization and Sandia, marks the first time a high performance reentry vehicle has been successfully "soft-landed" and recovered. The final shape of the aerodynamic surfaces, particularly the nosetip, is significant in developing an understanding of the various materials and their response to reentry.



RECOVERED NOSETIP, no longer hemispherical, is focus of Ralph Clark's and Ed English's attention. Streaks are aluminum melted by heat generated at the tip.

Supervisory Appointment



BILL WILSON to supervisor of Project Engineering Division 8165, effective Dec. 1.

Since joining Sandia in Feb. 1968, Bill has worked in preliminary reentry vehicle synthesis and design, in expulsion system design, and most recently on a special safeguard study.

Previously for four years, he did underwater vehicle design for the Navy Undersea Center in Pasadena.

Bill has BS and MS degrees in mechanical engineering from the University of Washington and the University of Southern California, respectively. He also holds two patents — one for a controllable unitary regulator and relief valve, the other for a snap-acting ballast release device for a torpedo.

Off the job, Bill enjoys outdoor sports, especially skiing and tennis. He, his wife Jeri, and their two daughters live on Camelia Drive in Livermore.

Death



Herb Turnbull, a systems programmer in Computing Division 8323, died Nov. 7 after a short illness. He was 54.

Herb had worked at Sandia since November 1958.

Survivors include his widow, two sons, his mother and two sisters.

Sympathy

To Bill (8256) and Jim Rego (8424) on the death of their mother in Livermore, Nov. 2.

To Ernie Mikles (8433) on the death of her mother in Waldron, Ark., Nov. 3.

Congratulations

Mr. and Mrs. John Smugeresky (8312), a son, Craig Steven, Nov. 16.

Labs To Manage Major Segment of ERDA Program

Sandia Laboratories has been selected by the Energy Research and Development Administration to manage a major segment of ERDA's National Photovoltaic Conversion Program to develop more efficient and economical methods of converting sunlight directly to electricity.

The Sandia portion of the national program — the Systems Definition Project — has been funded by ERDA's Solar Energy Division at \$2.55-million for the period Nov. 1, 1975, to June 30, 1976.

Two-thirds of this will be awarded by Sandia to sub-contractors for a variety of photovoltaic system studies and hardware development projects; the remainder (about \$900,000) will be spent at Sandia on related work with approximately 17 people assigned to the project.

Aims of the National Photovoltaic Conversion Program are to lower the cost of photovoltaic converters, to make them more reliable, and to develop systems in which panels of solar cells can be mounted on residences or commercial buildings, or arrayed in large solar farms to produce electricity directly from sunlight.

A specific ERDA goal is the establishment, by 1985, of an industrial capacity able to produce solar photovoltaic arrays with an annual output of 500 megawatts of electricity at a sales price for solar panels of less than \$500 per peak kilowatt. Such a price would bring the cost of electricity produced by photovoltaic systems more nearly in line with projected power costs from conventional generating plants, particularly in more remote regions.

Present photovoltaic systems employing single crystal silicon cells produce electricity at a solar cell array cost of about \$20,000 to \$25,000 per peak kilowatt. It takes about 10 square metres of cell area to produce a single kilowatt at peak output.

At present, the most efficient solar cells, made of single crystal silicon or gallium arsenide, convert 15 to 20 percent of the sunlight to electricity, while less expensive thin film polycrystalline silicon or cadmium sulfide cells have a conversion efficiency of two to eight percent. Solar cells are best known for their use in powering on-board instrumentation in space satellites.

As part of its new managerial task, Sandia will work closely with the ERDA Photovoltaics Branch and two other laboratories which have been assigned major parts of the ERDA photovoltaic program. Jet Propulsion Laboratory, Pasadena, Calif., has been assigned responsibility for the Low Cost Silicon Solar Array Project, and NASA-Lewis Research Center, Cleveland, manages the Test and Demonstration Project.

The Sandia Systems Definition Project consists of two major assignments: (1) systems definition and analysis and (2) tracking and concentrator subsystems development.

Objectives of the first task are to provide new system design concepts and to evolve preferred system configurations, preliminary design specifications, and final designs and specifications from these original concepts.

It will also be necessary to provide system performance characteristics based on analytical models of system components and to determine specific subsystem requirements and to identify discrepancies between requirements and existing technology.

The second Sandia task involves



Silicon solar cells which can produce an output of up to 10 watts under concentrated sunlight are held by Don Schueler, supervisor of Sandia's Photovoltaic System Definition Project Division 5719.

development of alternatives to fixed, flat-plate photovoltaic arrays. Such arrays simply face the sun, but do not track it and do not focus its rays through use of curved reflectors or other devices.

If sunlight is gathered by lenses or curved reflectors and focused on the solar cells, their electrical output increases. This in effect lowers the cost of electricity by generating more kilowatts per unit area of solar cell. In this task, a number of optical systems for concentrating sunlight onto solar cells will be explored as well as methods of designing solar cells to operate efficiently under high illumination and at high temperatures. The heat generated by concentrated sunlight is a particularly serious problem, since the solar cells work most efficiently at low temperatures.

Sandia scientists have developed systems concepts which make productive use of this excess solar heat for heating, air conditioning and hot water production. These various hybrid photovoltaic and solar-thermal total energy systems will be studied in greater detail under the present funding.

Don Schueler (5719) is directing the Photovoltaic System Definition Project Division at Sandia.

Sympathy

To Glenn Haycock (9718) on the death of his father-in-law in Grand Rapids, Mich., Nov. 4.

To Michael Butteri (3152) on the death of her husband in Albuquerque, Nov. 13.

To Lessie Lee (5241) on the death of her father in Albuquerque, Nov. 22.

To Tom Marker (6010) on the death of his mother in Denver.

To Dick Moyer (9515) on the death of his wife in Albuquerque, Oct. 8.

feed back

Q. Exercise and health are partners. A healthy worker is more efficient and costs less to the company. The base has a gym and Sandia Labs contributed to its construction costs in exchange for permission to use it. Lockers are not available there for our use, but should be. Can't some real effort be made to obtain locker space for Sandia Labs people?

A. Stoneburn Gym was built with military and ERDA funds with no funding by Sandia Laboratories. There are two locker rooms on the west side of the gym with one reserved for the military and the other room is used by Sandia Laboratories. There are 120 lockers available for Sandia with 160-170 people using these lockers. There is a waiting list for space as it occurs. If more floor space were available in the room reserved for Sandia, more lockers could be put in, but the space Sandia has on the men's side is full. The only place where Sandia could have more lockers is in the women's locker room.

Sandia and ERDA employee usage of the gym is 50 percent of all the people using the gym, but Sandia pays only a nominal amount toward the expense of the gym's upkeep.

R.J. Edelman - 4200

Q. Sandia has traditionally used red/white to identify classified information and material. When people are exposed to the same thing daily for a long period of time, they tend to look at it without really seeing it. Perhaps we should adopt another bright color (i.e., blaze orange) to replace the red/white?

A. Changing our marking to a different color might attract more attention; however, according to a human factors specialist we consulted, the disadvantages resulting from a change outweigh the advantages. Recognizing red/white striping as a flag for classified matter is the result of a learning process and a change could result in increased errors instead of fewer. A change would also result in increased costs in expended time and material throughout the Laboratories and, also, in replacing the red/white preprinted forms on hand in the stockrooms.

L.J. Heilman, 9500

Q. I suggest that each employee's pay stub show the cumulative amount of annual contribution to the Employee Contribution Plan for IRS purposes since the current card provided shows only the contribution for the pay period.

A. Since our present payroll system accounts for this type of deduction on a monthly basis, significant change would be entailed under your suggestion. In addition to changing the computer programs and forms redesign, some periodic effort would also be required to assure the accuracy of the accumulated amounts.

Since the employee can determine the annual deduction for tax purposes by adding the deductions from monthly or weekly pay statements, it is our opinion that the cost of this change does not justify the benefit to the employee.

C.R. Barncord — 3200

Take Note

Harumitsu Iwamoto is head of Japan's International Cooperation Division and Safeguards Office, Atomic Energy Bureau, and he led six colleagues in a visit to Sandia last month for talks with people in the Nuclear Security Systems directorate (1700). The talks are part of a continuing program of information exchange with other countries concerning protective measures for nuclear material. Following the full day of discussion, the Japanese delegation was taken to Old Town for a Mexican food dinner.

* * *

Reelected to serve a two year term on the Albuquerque Arts Council is Crawford MacCallum (5231). Crawford is also serving as chairman of the Council's Economic Impact Study Committee. The Council is an association of artists, craftsmen and performers whose purpose is to support the arts in the Albuquerque area.

* * *

"Know thyself" was the admonition of the oracle of Apollo at Delphi. Some of us know more than we want to about the first person singular, but if you're curious you can take a psychological test, for free, entitled Learning Ability Profile. Margherita Henning, a research psychologist with the Falcon Company (and wife of Vern Henning, 4213), has developed the test and states that it will inform you "... about your adaptability to new work, advanced educational situations, and a changing society." Moreover, states Margherita, LAP has humor and is fun to take. It's being given Wednesday, Dec. 10 at the C-Club, at 4:45 or 7:15; sign up by calling Dr. Henning, 265-7941, or Lynn Rigby (4250), 4-4341.

* * *

John Colp of Advanced Energy Projects Division 5715 was recently elected president of the 60-member Albuquerque Geological Society. He will serve during the 1976 calendar year.

* * *

Ken Sarason (4311) is having a ball. That is, the Air Force Ass'n., of whose local chapter Ken is president, is having a bicentennial ball on Wednesday, Dec. 10, from 8:30 to midnight, at KAFB Officers Club West. The Lamplighters will play, hors d'oeuvres will be served, drinks are "party price," dress is formal, and cost is a mere fiver per couple. Sandians are invited; call the club on 265-3488 for reservations.

* * *

The NCO East Club has added hot sandwiches to their luncheon menu. Lunch is served Monday through Friday from 11 a.m. to 1 p.m. The sandwiches are prepared while you wait and include hot pastrami, \$1; ham and cheese, \$1.10; and hot roast beef, \$1.

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD - JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING OCT. '75

ELECTRICITY

BASE PERIOD	92,276 MWH	
1975	72,109 MWH	21.9% SAVED

STEAM PLANT FUEL
EQUIV. OIL

BASE PERIOD	224,563 BBLs	
1975	199,688 BBLs	11.1% SAVED

VEHICLE MILES

BASE PERIOD	2,468,000 MI.	
1975	1,930,000 MI.	21.8% SAVED



THE SANDIA LABS BOOTH at the Career Fair in the Convention Center was well attended by young people in search of information about the working world. Fred Heard (2125) and Ray Perry (3144), inside the booths, were among the Sandians who talked with the students. Fair took place last month.

Recreation Notes

FUN & GAMES

Sandia Bicycle Ass'n. — Why not take your bike with you? We wrote to TWA and Continental about taking a bike along. Both replied that you can, that it costs \$10, and that handlebars should be turned sideways and pedals removed. TWA furnishes a box, Continental doesn't (so try a bike shop for an empty). On international flights the bike and container are part of the regular weight allowance.

Ski Touring — Curt Frank (5811) is president of the NM Ski Touring Club and he informs us that the initial session of the cross-country ski class was held last week, and that the next session (of four) is tomorrow. The session will feature stride and glide practice using roller-skate type devices. Sessions 3 and 4 will be held on the snow, Dec. 13 and 20. Club membership is three bucks, tuition for the class four bucks. Snowfalls up to this date are encouraging, and it looks like another good X-country skiing season.

Swimming — Olympic pool hours: Monday to Friday, 11 to 1; Tuesday to Friday, 4 to 7; Saturday, 11 to 5; Sunday, 1 to 5.

Sandia Runners Ass'n. — Indomitable Pete Richards (5132) has a passion for round numbers: he completed fifty (50) big ones in last month's endurance run at the Albuquerque Academy. Time 7 hours, 44 minutes. Pete finished first in a field of four. Next, says Pete, the 100 kilometre run, a mere 62 miles.

An interesting aspect of running is the diversity of medical opinion on its benefits to your health. Last time we quoted an MD who commented on the apparent immunity to heart disease of marathon runners. Now along comes a heart specialist, Dr. Earl Silber, who has authored a new textbook, "Heart Disease," in which he states that exercise, diet and weight control have little effect in staving off heart disease. The Alb. Journal article then notes Dr. Silber's prescription: to avoid heart attack, choose the right parents and grandparents. Not exactly a medical breakthrough but, for some, a rather comforting prescription to contemplate.

Grand Canyon Trips — In our last exciting episode, Mark Percival (2411) was seeking people for two boatloads to go down the Colorado River; it's three now. The signers-up have decided on a two-boat trip departing Lee's Ferry on June 22 and arriving at Temple Bar on Lake Mead on July 1. Bus transportation there and back is included in the \$375 or so price. A few spaces remain unfilled. Then there's a 6-to-8-day, one-boat quickie which leaves Lee's Ferry June 16 and ends at Whitmore Wash with a horse trip up out of the Canyon and a plane trip back to Lee's Ferry, all for about \$300. Some space on this one too. Call Mark at 4-7145 immediately if you're interested.

Authors

E. J. McGuire (5211), "Soft-X-Ray Amplified Spontaneous Emission via the Auger Effect," Vol. 35, No. 13, PHYSICAL REVIEW LETTERS.

D. P. Aeschliman (5642) and R. E. Setchell (8115), "Fluorescence Limitations to Combustion Studies Using Raman Spectrometry," Vol. 29, No. 5, APPLIED SPECTROSCOPY.

K. D. Bergeron (5241) and E. P. Gross (Brandeis Univ.), "Modified One-Body Memory Function for Classical Fluids," Vol. 13, No. 1, JOURNAL OF STATISTICAL PHYSICS.

P. J. Feibelman (5151), "Microscopic Calculation of Electromagnetic Fields in Refraction at a Jellium-Vacuum Interface," Vol. 12, No. 4, PHYSICAL REVIEW B.

R. D. Krieg (1541), "A Practical Two Surface Plasticity Theory," Vol. 42, No. 3, JOURNAL OF APPLIED MECHANICS.

P. A. Miller (5242), J. W. Poukey and T. P. Wright (both 5241), "Electron Beam Generation in Plasma-Filled Diodes," Vol. 35, No. 14, PHYSICAL REVIEW LETTERS.

B. Morosin (5154), et al., "Structures of Becton's [Pt(NH₃)₄CuCl₄] and Million's [Cu(NH₃)₄PtCl₄] Salts," Vol. 31, Part 9, ACTA CRYSTALLOGRAPHICA.

J. W. Nunziato (5131), K. W. Schuler (5163) and E. K. Walsh (Univ. of Fla.), "The Influence of Precompression on Acceleration Wave Propagation in a Non-linear Viscoelastic Material," Vol. 42, No. 3, JOURNAL OF APPLIED MECHANICS; Nunziato and Walsh, "Acceleration Waves and Mild Discontinuities in a Non-Simple Mixture of Chemically Reacting Elastic Materials," Vol. 58, No. 2, ARCHIVE FOR RATIONAL MECHANICS AND ANALYSIS.

N. J. Magnani (5831), "The Wedging Action of UH₂ During Slow Crack Growth in U-0.75 Wt% Ti," Vol. 31, Nov. 9, CORROSION.

D. M. Mattox (5834), "Solar-Energy Materials Preparation Techniques," Vol. 12, No. 5, THE JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY.

Speakers

G.P. Steck (1723), "Estimating the Relationship Between Two Distribution Functions," 40th Session of the International Statistics Institute, Sept. 1-9, Warsaw, Poland.

K.E. Lawson (5833), "Pattern Recognition on the Quantimet 720 Image Analyzing Computer, 4th International Congress for Stereology, Sept. 4-9, Gaithersburg, MD.

J.S. Pearlman (5214), "Reduction of Classical Thermal Conductivity Under the Influence of High Power Lasers," invited presentation, Aug. 15, University of Hull, Hull, England; invited presentation, Sept. 8, Max-Planck Institute Fur Plasma Physik, Garching, Germany; and Aug. 23, XIIIth International Conference on Phenomena in Ionized Gases, Eindhoven, The Netherlands.

J.M. Hueter (3131), "Creativity in Engineering, engineering freshmen, UNM, July 10; "Creativity - Choice or Chance?," American Society of Safety Engineers, KAFB, July 11; "Creativity Opportunities Through Value Engineering," VE Seminar, Southwest Indian Polytechnic Institute, Albuquerque, July 22.

H.J. Stein (5112), "Annealing of Memory Quality Silicon-Nitride Films," Electronic Materials Conference, Aug 25, Princeton, N.J.

P.M. Richards (5132), "Anisotropy and Switching Effects in Amorphous Magnets," Seminar, Univ. of Wisconsin, Aug. 26, Madison.

J.M. Alcone (4736), "Low Cost Solar Augmented Heat Pump System for Residential Heating and Cooling," Sierra Club Meeting, Aug. 14, Albuquerque.

J.A. Borders (5111), "Combined Ion Backscattering and Optical Absorption Studies of Photoreducible Ions in a Lithia-Alumina-Silica Glass," Seminar at Bell Laboratories, Sept. 3, Murray Hill, N.J.

R. J. Eagan (5846), J. E. Shelby (8334) and J. C. Swearingen (5847), "Physical Properties of Aluminosilicate Glasses," Fall meeting of the Glass Division, American Ceramic Society, Oct. 8-10, Pocano, Pa.

W. E. Stocum (3311), "Evaluation and Testing of Local Exhaust Ventilating Systems," Navy Environmental Health Center's 18th Occupational Health Workshop, Oct. 9, San Diego.

R. T. Dillon (5441) and J. P. Brannen (5413), "The Effect of Nucleic Acids Upon Dry Heat Inactivation of *Bacillus subtilis* Spores," NM Academy of Science annual meeting, Oct. 10-11, Albuquerque.

R. D. Bentley (9482) and A. B. Campbell (9525), "The Mars Penetrator Telemetry and Control System," 1975 International Telemetry Conference, Oct. 14-16, Washington, D.C.

L. K. Galbraith (2442), "Low Frequency Telemetry from Terradynamic Vehicles"; T. W. H. Caffey (2442), "A Telemetry Link for an Earth Penetrator," International Telemetry Conference, Oct. 14-16, New Carrollton, MD.

R. T. Dillon (5441), "Germination of Heat Inactivated *Bacillus subtilis* var. niger Spores," N.M. Branch American Society of Microbiology, Oct. 10-11, Los Alamos, N.M.

H. R. Shelton (3132), "Learning Resources Center," ASTD Region VII meeting, Oct. 1-3, Austin, Texas.

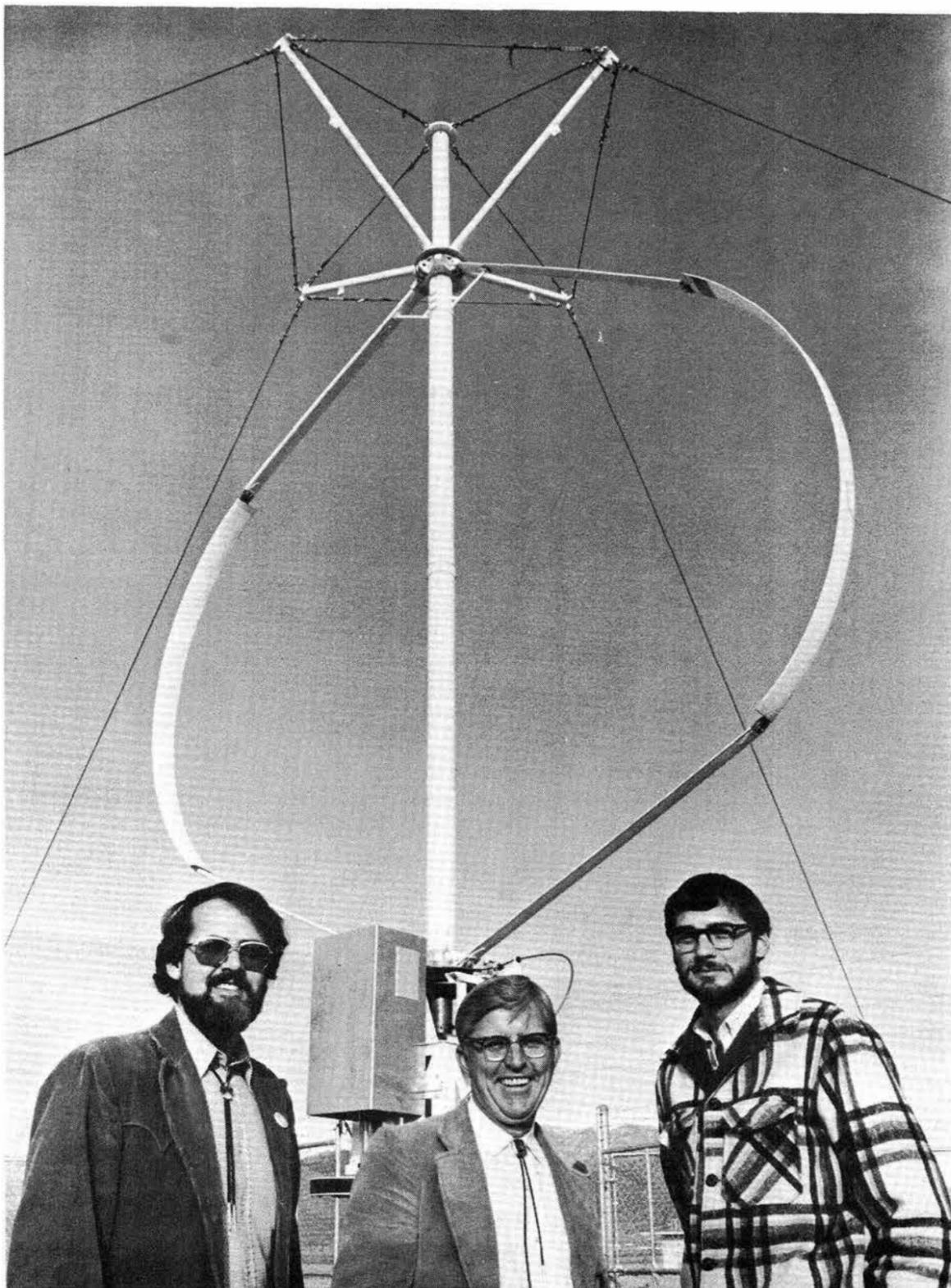
S.W. Key (1541), "A Simple Finite Strain Time-Independent Plasticity Theory for Spatial or Material Coordinates"; W. Herrmann (5160), "The Material Identification Problem." Workshop on Applied Thermo-viscoplasticity, Oct. 13-14, Evanston, Ill.

M. J. Davis (5830), "State of the Art of High Temperature Material for Geothermal Well Logging," Geophysical Measurement and Geothermal Welds Workshop, Sept. 17-19, Albuquerque.

L. S. Nelson (5842) and L. D. Buxton (5412), "Steam Explosion Phenomena," Core Meltdown Workshop, Light Water Reactor Safety Meeting, Sept. 29, Gaithersburg, Md.

D. A. Powers (5831), "Molten Core - Concrete Interactions Study," Third Water Reactor Safety Research Information Meeting, Sept. 29 - Oct. 2, Washington, D.C.

R. R. Lagasse (5813), "The Influence of Domain Structure on Urethane Properties"; R. A. Assink (5811), "Investigation of Domain Structure in Polyurethanes by NMR"; A. J. Quant (5813), "Replacement Urethanes For Adiprene/MOCA System"; C. Arnold, Jr. (5811), "Thermochemical and Adhesive Properties of Various Polybutadiene Based Elastomers"; R. L. Courtney (5811), "Organic Hydrogen Getters"; E. A. Salazar and J. G. Curro (both 5811), "Stress Relaxation of Structural Urethanes"; R. H. Ericksen (5844), "Room Temperature Creep of Kevlar 49-Epoxy Composites"; R. A. Assink and K. B. Wischmann (5813), "Dissipation of Blowing Agents in Polymeric Foams by Cell Rupture"; R. E. Allred (5844), "Mechanical Response of Multidirectional Kevlar Fabric/Epoxy Laminates"; K. B. Wischmann



INVENTORS Ben Blackwell (1333), Randy Maydew (1330) and Lou Feltz (1324) stand with the Sandia vertical axis wind turbine at its new testing site near Bldg. 899. ERDA was recently awarded a patent for refinements and improvements of the design made by the Sandians.

and G. L. Cessac (2313), "Thermoplastic Polyurethanes for Encapsulation," JOWOG 28 Organic Meeting, Sept. 29-Oct. 3, SLA.

B.L. Butler (5844), "Materials for Solar Energy," Graduate seminar, NMIMT, Oct. 7, Socorro, N.M.

J. L. Jellison (5833), "Role of Sintering in Thermocompression Bonding of Gold," IMOG Joining Subgroup meeting, Oct. 8-9, SLA.

C. L. Olson (5241), "Accelerator Technology," 20th meeting of the Joint Strategic Target Planning Staff, Oct. 8-9, Offutt AFB, Nebraska.

K. E. Lawson (5833), "Quantitative Image Analysis: Applications in Physical and Life Sciences," Southern University seminar for chemistry, biochemistry and pre-medical students, Oct. 9-10, Baton Rouge, La.

M. Gordon (5121), "A New Capability for DE/STEP, INTRP," Association of Computing Machinery, Oct. 20-22, Minneapolis, Minn.

J. R. Tillerson (5162), "Validation of Finite Element Codes as Applied in Underground Mine Design"; R. J. Lawrence (5162) and E. G. Young (5163), "Numerical Investigations of Spark Drilling"; H. J. Sutherland, D. S. Drumheller both (5167) and J. W. Nunziato and J.E. Kennedy (both 5131), "Wave Propagation in Unreacted, Heterogeneous Explosive Materials"; J. W. Nunziato (5131), "On Stability in the Linear Theory of Heat Conducting, Chemically Reacting Media"; R. C. Reuter (1544), "Thermal Stresses in Composite Flywheels"; F. P. Gerstle, Jr. (5844) and F. Biggs (5223), "On Optimal Shapes for Anisotropic Rotating Disks"; P. J. Chen (5131), "Some Properties of Three-Dimensional Shock Waves in Elastic Fluids"; D. K. Gartling (1543), "Finite Element Analysis of Problems in Convective Heat Transfer"; L. Davison (5131), "Application of Elasticity Theory at

Sandia Laboratories," Annual meeting of the Society of Engineering Science, Oct. 21 - 23, Univ. of Texas, Austin.

A. W. Johnson (5216) and J. B. Gerardo (5210), "Formation and Decay of Xenon Dimers in Photoexcited Xenon and Xenon-Noble Gas Mixtures"; J. K. Rice (5216), "Electron-Beam Excitation of Rare-Gas-Hydrogen Mixtures"; A. W. Johnson and J. K. Rice, "Formation of Xenon Dimers in Electron-Beam-Excited Xenon and Xenon-Noble-Gas Mixtures"; M. K. Matzen and M. E. Riley (both 5211), "The Effect of Non-Maxwellian H and F Velocity Distributions in an H₂ - F₂ Reaction"; J. R. Woodworth (5216), "Fluorescence Emissions from Mixtures of Mercury and Xenon," Annual Gaseous Electronics Conference, Oct. 21-24, Rolla, Mo.

T. O. Hunter (1133) and G. W. Barr (1134), "Development of Structures for Intense Ground Motion Environments"; F. H. Mathews and B. W. Duggin (both 9321), "Barrel Tamped Explosively Propelled Plates for Oblique Impact Experiments"; R. A. Benham (9321), "Simulation of X-Ray Blowoff Impulse Loading On a Re-entry Vehicle Aft End Using Light-Initiated High Explosives"; P. B. Higgins (9321), "An Arc Light Source for Initiating Light-Sensitive Explosives," 46th Shock and Vibration Symposium, Oct. 21-23, San Diego.

R. J. Eagan (5846) and D. R. Begeal (2413), invited paper, "Glass Ceramic Processing and Permeation Properties"; J. C. Swearingen (5847), invited paper, "Seal Cycle Effects on Molybdenum," Critical Processes Review: Long Life Neutron Tubes, Oct. 23-24, GE Neutron Devices Div., St. Petersburg, Fla.

D.M. Mattox (5834), "Materials for Solar Energy Utilization," Materials Science Seminar, Univ. of Wis., Oct. 24, Madison.



MAGNETOMETER in the nose section of a rocket launched from Cape Parry in the Arctic is checked by Hovey Corbin and Milt Zimmerman (both 1253) at Sandia prior to shipment. The magnetometer serves as a sensor for the rocket's guidance system to align the payload with the earth's magnetic field lines.

Continued from Page One

RESEARCH ROCKETS

U.S. Air Force out of KAFB for ERDA, the aircraft flew from bases at Fairbanks, Alaska, and Rapid City, South Dakota.

The aircraft were manned by personnel from Sandia, LASL, Air Force, EG&G and General Dynamics. Al Hutters (1252) and J.H. Wolcott (LASL) were scientific commanders aboard the aircraft.

Rocket launch operations at Cape Parry were conducted by a 13-man Sandia engineering team headed by Jim Davis (1254). Other Sandians at the site included Ted Krein (1253), payload project engineer, and Bill Barton (1335), aeroballistics.

Clinical Psychologist Joins Medical Staff

Arlene Price, a clinical psychologist, joined the Laboratories' Medical Department last month.

As an undergraduate Arlene attended the University of California in Berkeley and Los Angeles and the State University of Iowa. She obtained her BA and M.Ed. from the University of Massachusetts. She was awarded her PhD in guidance and counseling from UNM. For the past year, she was an intern with the psychological service at the VA Hospital in Albuquerque. Work at both the VA Hospital and the Bernalillo County Medical Center provided Arlene with a varied internship. She worked in the alcoholic treatment program, counseled individual patients and did group counseling and marital counseling as well.

Arlene has also had wide experience in dealing with young people. She taught high school English for two years, directed a day school for pre-school and kindergarten children, did consultant work for the Head Start Program, and counseled students in a private elementary school.

She is a member of the American Psychological Association, the New Mexico Psychological Association, and the Albuquerque Association for Children With Learning Disabilities.

Denial Materials Evaluation Program

Wishes to thank

J.A. Cantwell

a member of the
Attack Team

for participation in the Denial Technology Program

Glenn A. Fowler Vice-Pres 1000

GRADUATES of an Attack Team exercise get this souvenir of their adventure.

Safeguards/Adversaries

'Simulated Terrorists' Test Security Systems

Teams of Sandians have been assembled during the past year for a special task: to simulate terrorists in tests of advanced Safeguards security system concepts.

Work on the test program is centered in the Transportation Protection Department 1710 in Jim Jacob's Division 1712. Wayne Ebaugh is coordinator of what is formally called the Advanced Denial Materials Evaluation Program. He explains the program concept: "Potentially, terrorists can be highly educated and have considerable technical know-how. We are developing methods for denying them access to nuclear materials for extended lengths of time.

Adversary simulation testing, in which teams of security-cleared individuals attempt to develop attack or diversion scenarios for defeating our systems, provide insurance that our designers have not overlooked weaknesses."

Six adversary attack teams composed of Sandia scientists, engineers, and technicians have been formed thus far. A typical team is composed of five people of diverse education and skills. We selected one at random, Team 4, and checked its members' backgrounds, finding both mechanical and electrical engineering plus metallurgical disciplines. In their avocational skills, they collectively had knowledge of welding, explosives, the use of power tools and fire fighting gear, and the health physics aspects of nuclear materials.

Team 4 carried out a typical attack exercise. Its moment of truth came when team members confronted the antagonist, in this case an innocent appearing enclosure from whose interior they were to remove a simulated materials container as quickly as possible. Weeks of planning had preceded the actual assault.

To an outsider, the assault scene resembled the stage set of a shoot-'em-up TV drama. Cameras ringed the site to record the team's efforts for future analysis. Dressed in red coveralls and burdened with equipment and tools, the team was poised and ready when, timers running, they began the attack. All teams in this test series were timed to completion of the task; Team 4 did ultimately obtain the container, but only after significant delay. The objective of these tests is to maximize this delay so that in a real application there would be plenty of time for law-enforcement forces to arrive on the scene and seize control. As with other assaults, this team capitalized upon significant planning, good organization and lots of laborious effort.

Orval Jones, Director of Nuclear Security Systems 1700, comments on the work of the attack teams: "Their ingenuity enables us to identify weak areas in our security systems and then to take corrective measures."



Arlene Price

"I'm happy to be at Sandia," Arlene says. "I've received a warm welcome, and in return I hope people will feel free to drop by the office to get acquainted with me and the services I have to offer."



Richard Demmel - 3251

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Mack Ralls - 9522

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Gabriel Maestas - 9713

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Charles Randall - 3282

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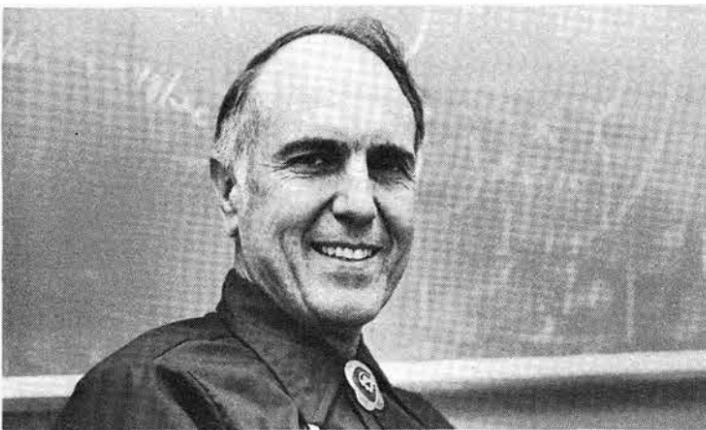
Sam Beard - 5732

10



Don Schubeck - 4277

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Robert Randall - 2323

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Maxine Stephens - 9533

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Wright Van Deusen - 3141

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Dorothy Taylor - 3721

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Antonio Pino - 3644

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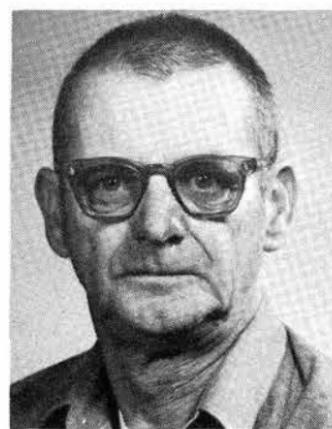
Willis Erwin - 9550

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W.R. Hoagland - 1523

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Donald Quayle - 3647

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Hank Lucas - 8252

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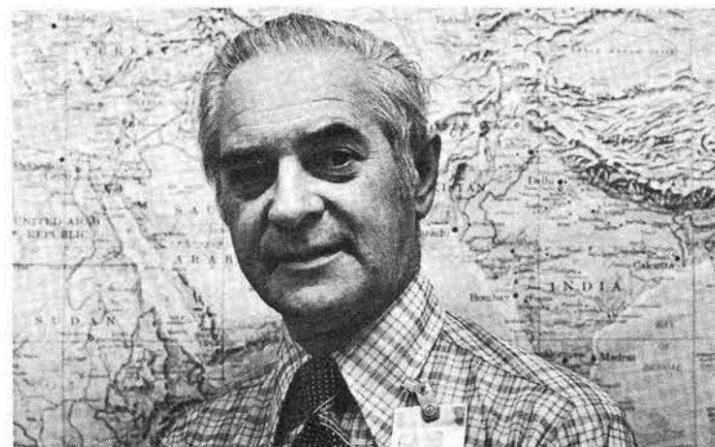
Dorothy Andrews - 8266

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Alton Simpson - 9711

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Theodore Gourd - 9536

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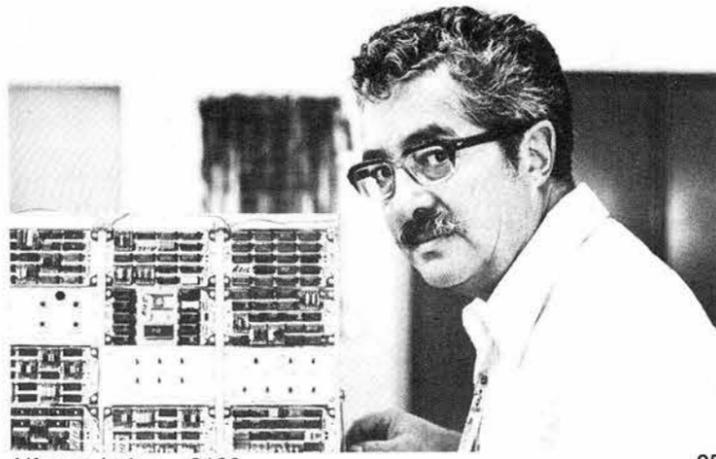
Stanley Lindrith - 3646

25

MILEPOSTS

LAB NEWS

December 1975



Alfonzo Lujan - 2122

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Edwin Bruce - 1714

25



Frank Dean - 1111

10



Stan Brooks - 1125

25



Marcus Herrera - 3645

25



Cecil Mock - 9515

25



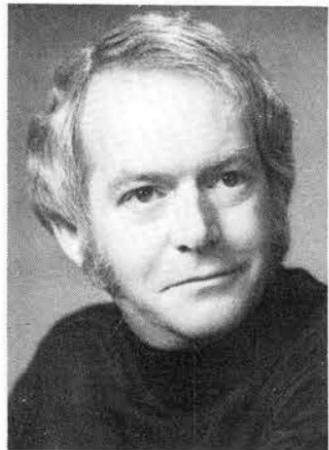
Howard Hadlock - 9550

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Eddie Rael - 3645

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Bill Kent - 8116

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Ed Holbrook - 8411

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Martha Leverenz - 8433

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Jerry Hunting - 8168

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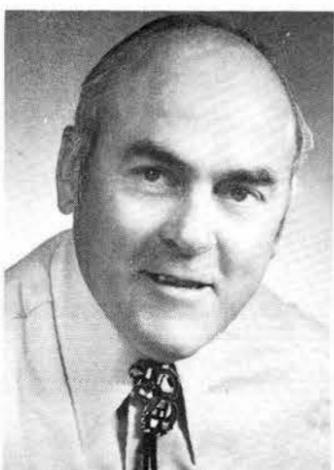
Tex Windham - 1255

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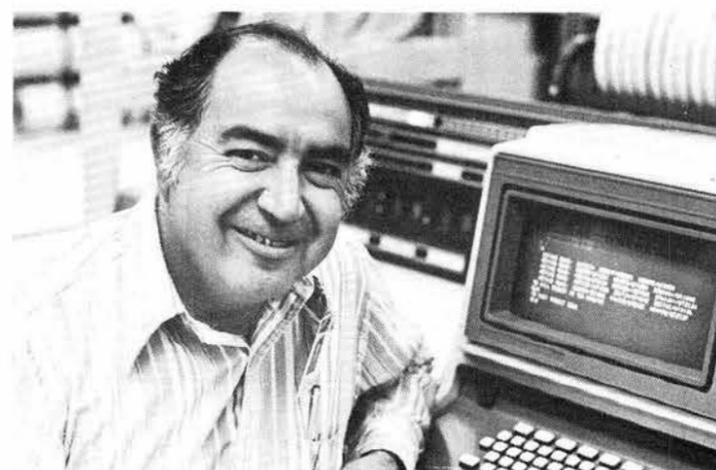
Jim Gibson - 8365

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Joe Bradshaw - 8413

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Wilfred Otero - 2632

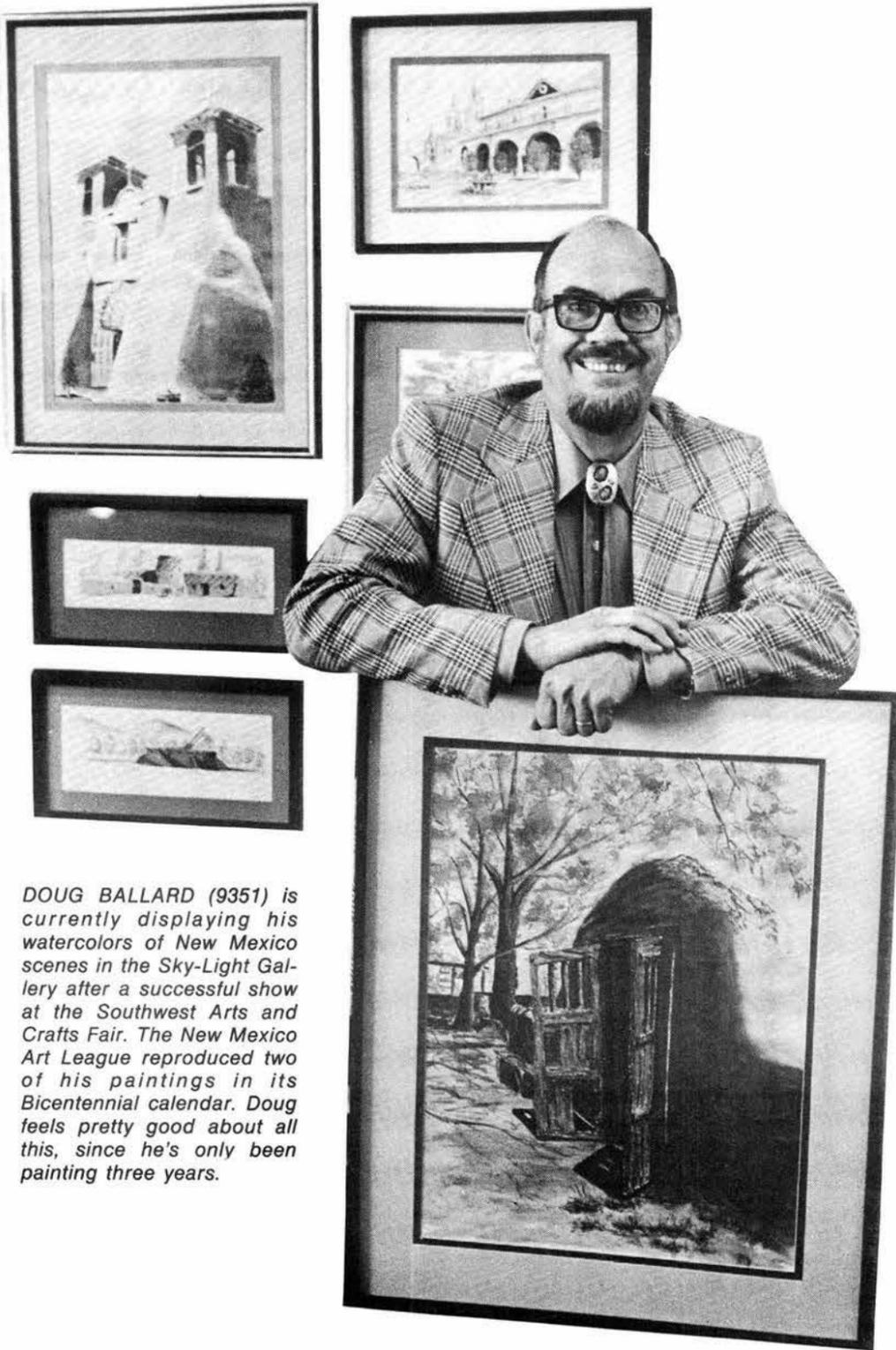
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Tommy Thompson - 1135

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sandia PEOPLE Report



DOUG BALLARD (9351) is currently displaying his watercolors of New Mexico scenes in the Sky-Light Gallery after a successful show at the Southwest Arts and Crafts Fair. The New Mexico Art League reproduced two of his paintings in its Bicentennial calendar. Doug feels pretty good about all this, since he's only been painting three years.



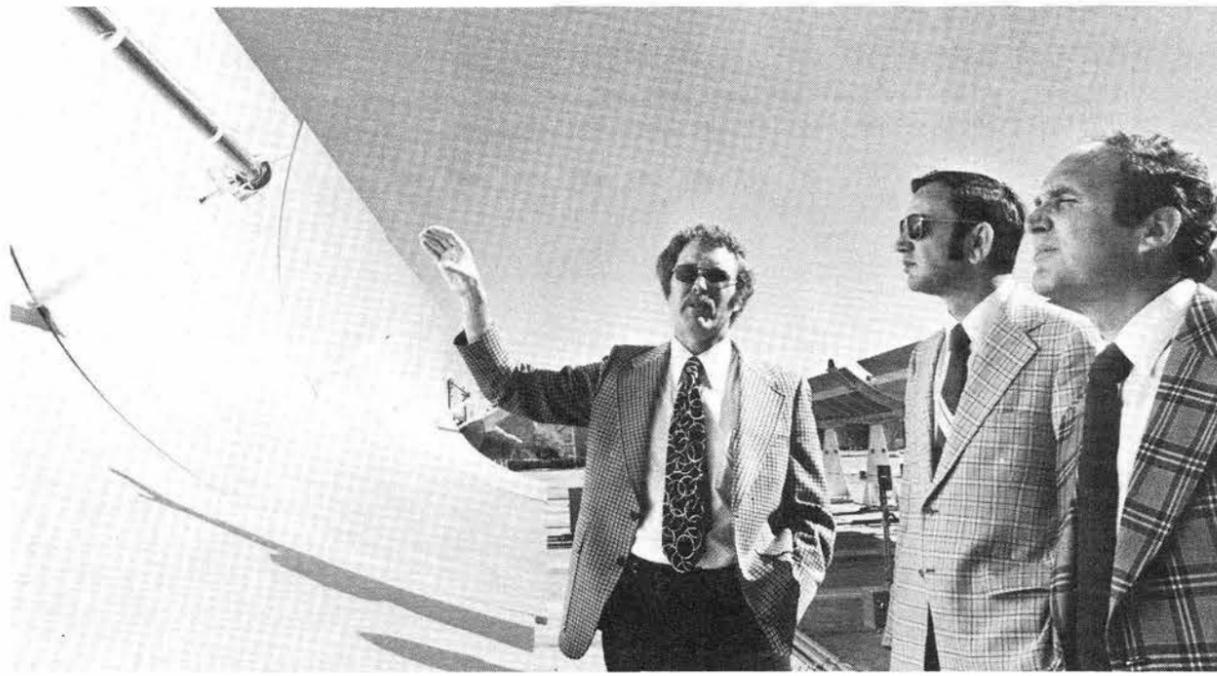
GEORGE COSDEN (3732) recently received certification as a Professional Purchasing Manager from the National Association of Purchasing Management. Active in the local organization (he's first vice president and board member), George reports that the group is seeking new members, will help those who apply to national certification. Call 4-3565 for more info.



EARLENE BRINEGAR (4213) was low net in the recent SGA(W) tournament and, coincidentally, won the group's door prize — a carving by Jack Rex (4813). Others placing in the tournament include Betty Chappell, Joan Gillon, Pat Anderson, Pat Hefley and Alice Smith.



"COMPUTER SOLUTION of Ordinary Differential Equations — The Initial Value Problem" is a new book by Marilyn Gordon and Lawrence Shampine of Applied Mathematics Division 5121. It was recently reviewed by SCIENTIFIC AMERICAN: "This book is unique because it is the first to thoroughly integrate the practical and theoretical aspects of the computer solution of differential equations. This is accomplished by abandoning the traditional text's survey of various methods and concentrating instead on a single numerical technique. This technique — based on the Adams family of methods — is used in developing a series of algorithms and computer codes that are among the easiest to use, most powerful, and most efficient now available. This is truly a state-of-the-art treatise." The book was started while both Sandians were mathematics instructors at UNM.



VISITING SANDIA recently to discuss solar and wind energy projects were two Israeli officials. Jim Leonard, left, supervisor of Solar Energy Projects Division 5712, shows solar reflectors to Eliezar Efrati, scientific counselor, Israeli Embassy, Washington, and Uzi Eilan, professor, Tel Aviv University, and advisor on energy planning to Israeli prime minister.

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LAB NEWS
DECEMBER 5, 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.

TRANSPORTATION

- '70 BLAZER V-350, PS, AC, low mileage, many extras, new steel belted radials, make offer. Gomel, 268-1263.
- '72 SUZUKI GT-550J, 1 adult owner, Konis Windjammer, 45 mpg, \$700 or make offer. Vigil, 268-1558.
- GITAN 10-spd. tandem bike, 27", boy/girl model, easy riding, 42 lbs., 2 yrs. old, \$250. Porter, 877-8027.
- 10-SPD. bike, Sears, \$45; gerbil cage, habitrail, 3 rooms, new '74, \$15. Kenna, 298-6059.
- '67 CHEV. pickup, 1/2-ton, 4-spd., heavy duty bumper, side mirrors, \$1000. Lackey, 898-5175.
- '69 YAMAHA 125cc Enduro, elec. start, \$175. Coalson, 298-0061.
- '71 CHEVY Impala, 4-dr., HT, fully equipped, extras, no trades. Bagley, 294-4706.
- '73 EL CAMINO w/tonneau cover, 350, PS, PB, AT, AC. Williams, 293-0658 after 5.
- '74 CUTLASS Olds, fully loaded, good gas mileage, lots of extras, 14,000 miles, below book \$3600. Simpson, 255-8545.
- '66 CHRYSLER wagon, all power, AC, \$500. Sherwood, 299-2169.

MISCELLANEOUS

- BROWNING Nomad .22 auto, \$96; Finewerkbau match air rifle, \$275; Mayline drawing board, \$10. Watterberg, 294-6759.
- MICRO-WAVE burglar alarm, antenna & controller. Zucuskie, 881-4086.
- B&W 21" portable TV; new twin mattress; bathroom sink, fixtures, mirrored medicine cabinet. Fitzgerald, 296-1341.
- CHAIN saw, 26", David Bradley, \$100. Salazar, 255-1301.
- 8 FT. pool table, slate bed, balls &

- sticks included, \$150. Dillon, 268-2746.
- STUDENT violin, German made, \$200. Huston, 842-1831.
- 64" BAR & 42-piece sterling silver table service, Westmorland, George & Martha pattern. Kent, 256-1221.
- TWO 1 1/2" bronze gate valves, \$4 ea., 1 3-way 1 1/2" bronze valve, \$8. Rainhart, 821-3690 after 5.
- SNOW tires w/studs, H78-14, \$10 ea. Navratil, 293-5527.
- BENTWOOD chair, old fumed oak, \$18; German 7.65 cal. WWII auto. pistol, \$45; elec. portable heater, \$6. Smitha, 293-1177.

- TAPE player, portable, AC/DC, AM/FM 8 track stereo, \$40; b & w console TV, make offer. Cabe, 265-2741.
- WHIRLPOOL gas stove, apt. size, \$85; 5000 btu window AC, \$40; misc. archery equip. Butz, 293-4190.
- RUGS, antique, hand woven, Moroccan, wall or floor use, 1 3'4"W by 6'3 1/2"L, \$150; 1 4'8"W by 7'8"L, \$200. Campbell, 883-9575.
- SEARS dishwasher, 1 yr. old, portable or built-in, 5-cycles, gold, new \$215, sell for \$135. Cummings, 292-0524.
- 42-PIECE set Corningware Centura dinnerware, service for 8 plus cream and sugar, white coupe pattern, \$30. Bear, 881-7128.

- CAIRN TERRIERS, 10 wks. old, Champion blood lines. Walkington, 881-4027 after 6.
- FIREWOOD, S. Hwy 14 project, cut, delivered, stacked, \$60/cord, \$35 1/2 cord, Lab News, 4-1053.
- CAMERA, Nikkorex Zoom 35, f/3.5 Nikkor lens, 43-86mm, needs shutter repair, \$80. Bircher, 268-0723.
- VIOLA, Roth 3/4 student, \$145; snowtires, pair, 6.85-15 tubeless, lots of tread, \$5 ea.; ski rack, roof adjustable, \$5; misc. skis & boots. Church, 299-2175.
- CATALYTIC heater, Coleman, adjustable heat, 3000-5000 btu, uses liquid fuel, \$15; 3 bar stools, \$5 ea. Shepherd, 299-9066.

- PIANO, studio size, French walnut, matching bench, \$895. Winblad, 881-8977.
- POSTER bed, white provincial w/canopy, 6-drawer double chest w/mirror, 2-drawer night stand, \$100. Jercinovic, 255-8027.
- UTILITY trailer, 4 1/2'x6', \$80 firm. Roth, 268-3186.
- KITCHEN dinette set, table w/formica top & 4 chairs; 20" girls bicycle. Schamaun, 298-5192.
- FIVE 8:00x16.5 transporter wheels & 12-ply tires, for 3/4-ton, \$125. Baker, 898-3206.
- ENGLISH Springer Spaniel puppies, purebred, AKC registered, 7 wks. old, liver & white color. Barth, 345-0172.
- ALUMINUM tennis racket, nylon string, Teflon-S coating, 4 5/8 M, with cover, \$12.50. Ard, 299-0863.
- VIKING 443 stereo tape deck, \$75; complete set golf clubs, \$50, 6500 Cochiti Rd. SE, SP-56, Hiltunen.
- PURIFIER, air, absolute filter type complete w/housing, fan, casters, pre-filter & filter, 1 room capacity. Hall, 299-0009.
- GOLD heishi jewelry, silver & men's styles in stone & shell. Benedict, 293-6473.
- BELT vibrator exerciser, Eskasizer model 5000, 3-spd., 1/4hp, 4" belt, \$50. Cox, 299-0480.
- COLT automatic, 25 cal., 2" barrel, pre-war model, holster. Parks, 292-2743.
- FAULTLESS Professional golf clubs, 1, 3, 4, 5, woods, 2-9 irons, pw, sw, bag, \$100; Bianchi Record 10-spd. bike, \$75; ping pong table, \$20. Nielsen, 299-0198.
- GIRLS roller rink skates, size 2, \$15; solid-ox torch, \$15; egg incubator, \$10. Carter, 296-8709 after 5.
- TWO AFGHANS; crocheted cape; maple coffee table; antique mahogany occasional table. Wagner, 881-4840.
- 6 FT. Head skis, \$35; 6 1/2 ft. Starlet skis, \$20; mens ski boots, size 10, \$10; girls ski boots, size 7, \$15. Pope, 255-6702.
- EK-LOGICTROL XMitter 3 channel receiver, brick servos, 72.960 MHz, re-chargeable batteries, charger, \$120. Burks, 821-0132.
- TIRE chains, heavy duty, fits 7:50-13, 7:50-14, 7:75-15, 6:70-15, etc., \$15. Olman, 298-5024.
- PINBALL machine, full size arcade, Williams Black Jack model, \$160. Baack, 296-2312.
- 5 ALMOST new Uniroyal 6:50-16 6 ply traction tires, \$18 ea. Bentz, 299-3448.
- FREE puppies, black/white

- border Collie & ?, 8 wks. old. Tillerson, 293-8543.
- GIRLS 26" bicycle, \$25; tire pump, \$1.50; double bit axe, \$4; splitting wedge, \$1.50. Klett, 298-7892.
- TWO Firestone nylon Super All-Traction tires & 6-hole wheels, 6:50-16, \$40; Henke buckle ski boots, size 5 1/2, \$12. Hawkinson, 281-5239.
- COMPLETE service manuals for Datsun 510, '68-'71, orig. price \$19.80, for \$10. Veneruso, 292-0372.
- BOX springs, twin size, \$10 ea., Gauerke, 299-5806.
- LADIES Henke plastic ski boots, size 8, \$10; Sears child bicycle carrier, \$8; H78-15 radial tire, 10,000 miles, \$20. Harstad, 298-6551.
- BUNNIES; guinea pigs; lady's ice skates, size 8. Hickman, 298-3804.
- '73 14x70 mobile home, completely furnished, low down, take over payments. Padilla, 898-4518.
- HEISHIS & assorted turquoise inlay jewelry, 1/2 store prices, shown by appointment; new couch, light green; Kingsize bedspreads; swag lamp. Chandler, 296-3323.
- HORSE transporter/cattle rack, 1 1/2" pipe construction, fits into long wide pickup bed, \$100 or best offer. Houghton, 299-3386.
- CLASSICAL Spanish guitar; sand painting, 3'x3', collectors item; 14" tires & wheels, \$7 ea. Campbell, 298-9265.
- BICYCLES: 2 girl's 24" wheel; men's 21" frame, 3-spd.; boy's Spyder. Jones, 299-6542.

- restrictions. Gallegos, 898-1839.

- REAL ESTATE**
- 2 LOTS, South Belen City limits, on Anthony Dr., 79x90, 95x95, access to all city utilities, \$1100 ea., both \$2100. Montano, 864-3372.
- 3-BDR. adobe house, 2190 sq. ft., 20x30 den w/exposed vigas, see-thru fireplace between FR & den, 1/2-acre lot. Castillo, 877-3424.
- TWO story mountain cabin, Pecos Wilderness area, National Forest Service land, altitude 9000 ft., \$16,500, 25% down. Predika, 832-4275 (Moriarty).
- NE HEIGHTS home, \$22,900, 4 1/2%, \$77/mo., low down. DeLashmutt, 299-5813 after 6.
- 1-ACRE w/workshop, 1.13 acre w/fence, North Valley Subdivision, excellent

- WANTED**
- HIGH quality short wave receiver. Jacobs, 881-7146.
- CAMPER shell for mini-pickup, need not be insulated or lined, wanted for security not camping. Hobart, 281-5331.
- RAMBLER American or equal, must have 2 doors & AT, will pay cash for a vehicle that has not been neglected. Baxter, 344-7601.
- UNM basketball parking ticket, preferably for season. Moore, 345-4030.
- FORMER ABN or SF NCO's: Reserve A-Team looking for 11Z5S, 11F4S, 11B4S, 12B4S, and 05B4S. Wagner, 299-9594.
- CHEAP 24" or 26" bicycle. Arnold, 898-4140.
- '64 technical service manual to use on Rambler Classic V8, will buy or borrow. Hernandez, 268-5000.
- GO-CART. Boverie, 255-1071.
- USED microscope in good condition. Hickman, 298-3804.
- MENS 10-SPD. bicycle. Harstad, 298-6551.
- 18" TRIHULL open bow, I/O boat w/ski equipment. Chandler, 296-3323.
- DRILL press in good condition, floor model preferred. Bentz, 299-3448.

- LOST AND FOUND**
- LOST — Turquoise & coral earring; H055 calculator, leather case; blue turquoise heishi choker; RX safety sunglasses, gray rims; heart twig earring; RX sunglasses, dark gray; black suit jacket; green plastic change purse; man's leather glove; small blue pocket radio; page box #254; lady's brown glove w/white rabbit fur; turquoise & silver choker; gold filigree wire butterfly pin; safety glasses in soft black case w/gray plastic rims; man's RX glasses, wire frames. LOST AND FOUND, Bldg. 832, 4-3441.
- FOUND — Dangle earring, fetish w/coral & turquoise; heart shaped turquoise earring; brown & yellow tie; metal key ring w/2 keys; man's yellow gold watch; white/silver ballpoint pen, Parker; 3-spd. Sears bike, green, picked up by police near gate 11; brown key case w/3 keys. LOST AND FOUND, Bldg. 832, 4-3441.



THAT'S TONOPAH LIZ, a 1920 Model T Runabout, supporting Sanadoe Charlotte Johnson, Sly Snowman (who will spend the month hanging around the Club) and

Don Shuster (1300) who in turn supports Tonopah Liz. Sanadoes decorated the Club for their Snowflake Ball tomorrow night. Decorations remain the month.

TIME — to salivate: just think of tonight's Super Supper. Roast beef from completely contented cows, ham from hogs dedicated to delectation, top coq of the flock in the sauciest of wines, and lobster newberg for all newburger lovers. Surround the entrees with vegetables, add salads (twelve of them!), and expect to pay \$7.50. But don't. Fork over just \$3.50, and fork into some of the finest eating this side of Grandma's. Get every bite into your mouth on the first try and you're a real fork-lift operator. Then there's the

Prisoners (don't cell them short) for dancing to, with, by, or for from 7 to 10. And Tom McCahon invades the Lounge at 9:30. He'll do his daring Depression of Blacks and Whites till 12:30.

MAY — your days be mellow and laid back, and may those paying their respects get paid back. One way is to get the gang grouped for an office Christmas party at the Club. The 9th, 13th and 20th are still open; some other dates are as yet unpitted as well. Call the Club.

BE — advised, teens, that no matter what the December calendar says, there's a Teen Dance. It's the 27th, it's Moonbeam, and it's 7:30 to 10:30.

A — penultimate reminder: January Dance Lessons. Sign up this month, learn next. Enough Thursdays and you'll be a true terpsichorean talent.

GREAT — fun in store for the under twelve set on the 20th. It's the Club's Kids' Christmas Party including cartoons and featuring Puppets You'll Talk About for Days. There's a Claus in the contract which specifies a Santa too. 10 to noon. Members only.

HEALER — solicitor, native American regulator; financier, pauper, mendicant, peculator — everyone is invited to the Year End Gala called New Year's Eve Party (for Adams too). Spend Happy Hour with Mateus Rosé from 3:30 to 6. Return for fitting time at 8 — get just the right hat, noisemakers, streamers; then practice (and dance) till champagne time at 11:30. Breakfast when 1976 is half an hour old. All for \$10 per member couple, \$13.50 per guest couple (and a one-to-one ratio between them). Check the Club for singles prices or for reserving tables. Tickets by Dec. 18; by next LAB NEWS it's too late.

BUT — why even consider navigating Arena traffic for a ballgame when buses are available, cheaper, and much more social? Lobo buses depart the Club 45 minutes before game time on the 9th, the 19th, and 22nd. Be there early for vocal cord oiling.

IT'S — time we got the C-Club Ski-Club Christmas Club Second Annual Ball rolling. It's a Dinner, with roast beef and the trimmings. And it's a Dance, with Natural Persuasion. And it's \$4.75 per Head (or Hart or Rossignol). Pick up tickets by Dec. 9 from Jack Hanna to make your reservation binding or you'll get the boot at the door. Most important, it's the 16th, *not* the 17th, at 5:30.

SURE — Denny's going to hold forth (maybe even fifth) at Happy Hour on the 12th. He and His Neck Stroking Fingers will do Ballads to Battle Borborygmy By from 7 to 10 (there's no buffet).

A — Christmas week means a schedule change or two. The Office is closed. The Lounge is open: 4 to 10 on the 22nd; 4 to 10 on the 23rd with Happy Hour from 4:30 to 7:30; 2 to 6 on the 24th with Happy Hour jingling all the way; 4 to 10 on the 26th; and from 11 on on the 27th.

LOUSY — time to go swimming, right? Wrong. The Bubble is open and warm and cozy and cheap. Check season prices at the Office.

BEAUTICIAN — work performed by the Sanadoes on the Club in honor of the Yuletide was headed by Marcia Meyers. Assisting were Elizabeth Lee, Sylvia Maier, C.V. Frasier, Judy Love, and Irene Smith. Even the rest rooms are festive.

MORE INFO — 265-6791.

