

Supervisory Appointments

RICHARD LINCOLN to supervisor of NTS Waste Management Overview Division 5338, effective May 1.

Joining the Labs in 1971, Richard investigated properties of high temperature materials such as the carbon/carbon compounds. This work led to high temperature studies of geologic materials for possible nuclear waste disposal. Four years ago Richard transferred to the nuclear waste management directorate where he has worked with AEC, ERDA, DOE and NRC on federal studies for the development of waste management programs. Richard will continue these studies in his new position, specializing in the evaluation of NTS as a potential nuclear waste disposal site.

Richard earned a BS in engineering physics, MS in applied physics and PhD in material science, all from Cornell University. His leisure activities include photography and camping. Richard has two children and he and his wife Sherry live in NE Albuquerque.

* * *

BRUCE VARNADO to supervisor of Nuclear Facility Analysis Division 5414, effective May 1.

Bruce joined the Labs in 1967 as a staff member in the electromagnetic radiation effects division, where his work included studies of the vulnerability of weapon systems to electromagnetic environments. In 1974 he transferred to the Nuclear Fuel Cycle Systems Safety Division 5412 where his most recent work has been with computer graphics and with problems related to the sabotage of nuclear facilities. His new division will continue in this work with the primary goal being the characterization of nuclear facilities from the standpoint of safeguards and safety.

Bruce earned a BS in EE from Mississippi State University and, as a member of Sandia's last TDP program, he received his MS in EE from UNM in 1969. He is an avid backpacker, a member of the Sandia Search and Rescue Team, enjoys skiing,



Bruce Varnado (5414), Paul Pickard (5424), and Richard Lincoln (5338).

and works with his church youth group. Bruce and his wife Johnell have two boys and are in the process of moving into a new home in Cedar Crest.

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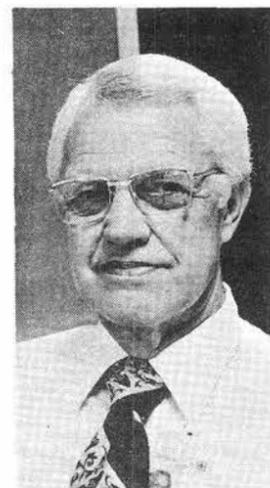
PAUL PICKARD to supervisor of Advanced Reactor Safety Analysis Division 5424, effective May 1.

Since coming to Sandia in 1974, Paul's work has chiefly related to the upgrade of the Annular Core Pulsed Reactor (ACPR). Paul was responsible for the core and nuclear design. The upgraded ACPR went critical last month. In his new position, he

will be responsible for the development of a computer code which will analyze containment systems for advanced reactors.

Paul earned a BS in physics from Wheaton College (Ill.), and his MS and PhD in nuclear engineering from the University of Arizona. Before joining the Labs, he served two years in the Army and was a faculty member in the nuclear engineering program at the University of Illinois for two years. Paul's hobbies include playing tennis and restoring antique automobiles. He and his wife Linda and their two children live in NE Albuquerque.

Retiring



Don Emrick (2635)



Ellen Martin (2633)



Harold Neuhaus (9712)



Matt Mathias (3715)

Events Calendar

May 28—Antique Car Show, Main Street, State Fairgrounds.

May 31-June 16—June Music Festival, orchestra and ensemble concerts, Wednesdays and Sundays, UNM Woodward Hall, 8:15 p.m.

June 4-July 15—Art exhibit "A Fine Distillate—Two Decades of Albuquerque Art," Museum of Albuquerque.

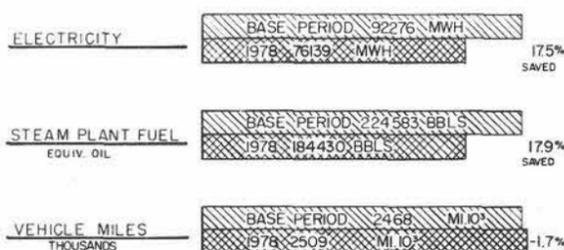
June 6—Zuni Pueblo Rain Dance.

Congratulations

To David Berry (2345) and his wife Janee on their marriage in Albuquerque on April 29.

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD—JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING APR '78



LAB NEWS

Published every other Friday
SANDIA LABORATORIES
An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA
Editorial offices in Albuquerque, N.M.
Area 505 264-1053
FTS 475-1053
ZIP 87185
In Livermore Area 415 422-2447
FTS 532-2447

john shunny is editor
&
don graham ass't. editor

chuck cockletras & norma taylor write
bill laskar does picture work
so does russell smith

bruce hawkinson & lorena schneider report livermore

Safeguards Computer Game Announced

A new tactical game to help evaluate the physical protection of a convoy transporting nuclear material has been developed by Rob Rinne's Systems Studies Division 8321. Called AMBUSH, the game will also be a teaching aid for convoy drivers and guards.

Under an NRC contract, Bob Gallagher (8321) and Stew Keeton (now 8352) began two years ago to develop ways to judge physical protection systems for the transporting of nuclear material. Creating a useful mathematical or computer model of an ambush—given such variables as vehicle vulnerability, size of the adversary force, terrain, ambush location, and so on, as well as such human factors as panic and fear—is difficult.

So Ted Gold (8320) and Rob suggested the team explore high resolution (focusing on individuals) tactical war games as one way to understand the interaction of the variables in a computer model.

The adaptation worked. "We now have a game that focuses on the ambush of a transportation system," says Bob. "We can better understand combat among small forces and some of the human factors. And the game helps convoy members learn their jobs. As a teaching tool, it's much less formidable than telling prospective guards, 'Well, first you've got to learn FORTRAN. . . .' It's much cheaper, too, than a computer model.

"But computer models have their place. They allow us to examine in detail selected parts of the safeguards system. So the game and the model complement each other nicely."

Called AMBUSH, the game allows players to choose from several scenarios and terrain possibilities, many types of weapons, communications, and other variables. If players prefer, they can introduce their own scenarios and terrain. AMBUSH takes "quite a while" to learn to play and three- to eight-hour games are the norm.

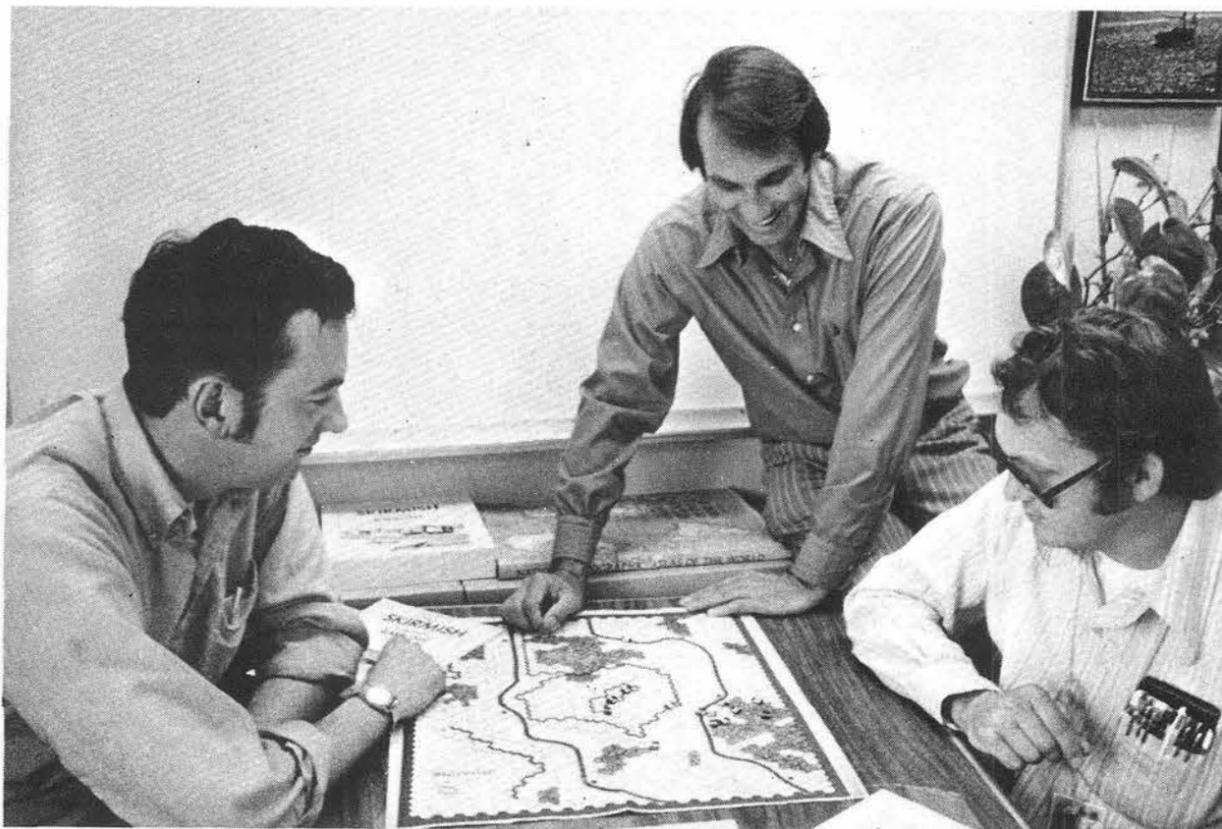
A simplified version, called SKIRMISH, lasts one to two hours and takes "about as long to learn" says Bob, "as Monopoly. Playing an orientation game or two gives you all the training you need. The more you play, the more skillful you become."

LIVERMORE NEWS

VOL. 30, NO. 11

LIVERMORE LABORATORIES

MAY 26, 1978



GAMES ANTI-TERRORISTS PLAY—As Rob Rinne looks on, Bob Gallagher (left) and Stew Keeton play SKIRMISH, a tactical game useful in evaluating safeguards for in-transit nuclear material. Both SKIRMISH and its more complex—and more realistic—parent, AMBUSH, can be played on one board like this or "blind," that is, with two boards shielded from view and a referee to indicate when one side inflicts damage on the other.

Skill is developed by improving the player's interpretation of the battle situation and of the strategies that appear to have the best chance of success. Each game turn represents one minute of elapsed time and calls for the execution of several tasks, each demanding a decision.

For example, assume that a convoy ambush from a steep hillside near an interstate highway results in both death and injury to the transport vehicle crew. These defenders, including the injured, seek protection in a woods across the highway. Meanwhile, some of the adversaries work on the vehicle's cargo barriers while the others watch for the arrival of additional defender vehicles.

At this point, a player representing the defenders has several choices: an assault to

recapture the transporter; harassment of the adversaries from a distance until reinforcements arrive; or simply hiding unnoticed in the woods until reinforcements make the odds more favorable.

"Methodologies for both AMBUSH and SKIRMISH are complete," says Rob. "What we have is not only a game that's fun to play—and that's important too—but also one that acquaints someone new to the art with the elements of protection systems, that teaches decision-making, and that reinforces the best strategies."

Don't, incidentally, plan to give your kids SKIRMISH for Christmas. While the decision is NRC's, Rob guesses that only NRC licensees will ever get to play these games.

Take Note

Chairperson for the Livermore Art Association's annual Art in the Vineyard show is Pat Childers (8261). The event, open to the public without charge, is set for May 28, the Sunday of Memorial Day weekend, at the Concannon Vineyards on Telsa Road from 10 a.m. to 5 p.m. In addition to winetasting throughout the afternoon, art-in-action by LAA members will be featured. Various local entertainers will provide music during the show.

* * *

Safety engineer Scotty Romine (8252) chaired the recent 16th Explosives Safety Engineering Conference held at Mason

and Hanger's Pantex Plant in Amarillo, Tex. The annual meeting brings together safety people from within the DOE complex.

In addition to chairing the conference, Scotty served as a session coordinator and was the post luncheon speaker. Other Sandia speakers included Verne Christy (3442) who discussed "Techniques for Videotape Recording of Accident Scenes," and John Weber (4371), "Accidental Pressure Release."

Congratulations

Mr. and Mrs. Mike Soderstrand (8466), a son, Matthew Alan West, May 3.

Successful SLL Blood Bank Drive

Sandia employees donated 132 pints of blood during the recent Blood Bank Drive at Sandia/Livermore. Fifty pints went to the Sandia Blood Bank and 82 to the Kaiser Health Care Plan.

Coordinator Jim Henderson of Benefits Division 8214 reminds employees with Kaiser Family Plan coverage that a one-pint donation covers the entire family for a full year. Therefore, each donation after the first in any calendar year should be assigned to the Sandia Blood Bank so that maximum coverage is possible.

Bob Stromberg Builds Home Solar System

On the roof of his home in the southeast heights, Bob Stromberg (5714) has built a solar hot water heating system using a parabolic collector system that tracks the sun.

Assembled mainly from surplus materials, the system cost about \$400. Bob hopes to recoup his investment through savings on his gas bill and tax refunds—New Mexico refunds 25 percent of the cost of home solar installations; similar federal legislation is expected to be passed.

The collector troughs have an area of about 55 square meters and cost less than \$3 per square meter to build. Constructed from a plywood and sheet metal frame and covered with a mirror-like material, the troughs use guy wires for structural rigidity and strength.

At the focal point of the parabolic reflectors, Bob has installed iron pipe (painted black) along the length of the collectors. This is the heat exchange unit. Water heated here flows into a 60-gallon tank for storage until needed in his regular hot water tank. (The storage tank was salvaged from a surplus water softener system.) The heated water is stored between 115° and 140° F. All plumbing is insulated.

Key to the system's effectiveness is a sensor that tracks the sun and controls the drive motor which orients the collector troughs. Bob built the sensor using bi-metal strips.

The drive motor is an automobile window motor purchased at a junk yard. It turns a long threaded rod connected to the collectors. The "bearings" are maple hardwood blocks with holes for the water pipe used for the rotating shafts holding the troughs.

A timer, 1/20 hp pump, and commercial control unit which reads sensor information and temperatures within the system complete the installation and provide for safety. When the water temperature in the collector gets 15° hotter than water in the tank, the pump drives it through the heat exchanger to begin heating the water. If the temperature reaches 190°, the system automatically moves the collectors out of focus.

The electrical system (backed up by a battery in case of power failure) uses about 5 watts of power when operating. Bob figures the solar system delivers about 3500 watts of power. The system is 70 percent efficient in recovering solar energy deposited on the collector.

Once the controls of the system are set, its operation is automatic.

At Sandia, Bob is supervisor of Solar Technical Liaison Division 5714. He has worked with solar energy technology since late 1972 when he wrote the first proposal for the solar total energy community.

"Obviously, my experience in solar development was a great help in designing a home system," Bob says. "Still, I had some engineering goals. First, I wanted to



UP TO THE SUN. Bob Stromberg (5714) uses solar energy to heat hot water for his home. Sensor he designed and built tracks the sun and keeps rooftop parabolic collector troughs properly oriented. Entire system was built in about five months (nights and weekends), mostly from surplus materials.

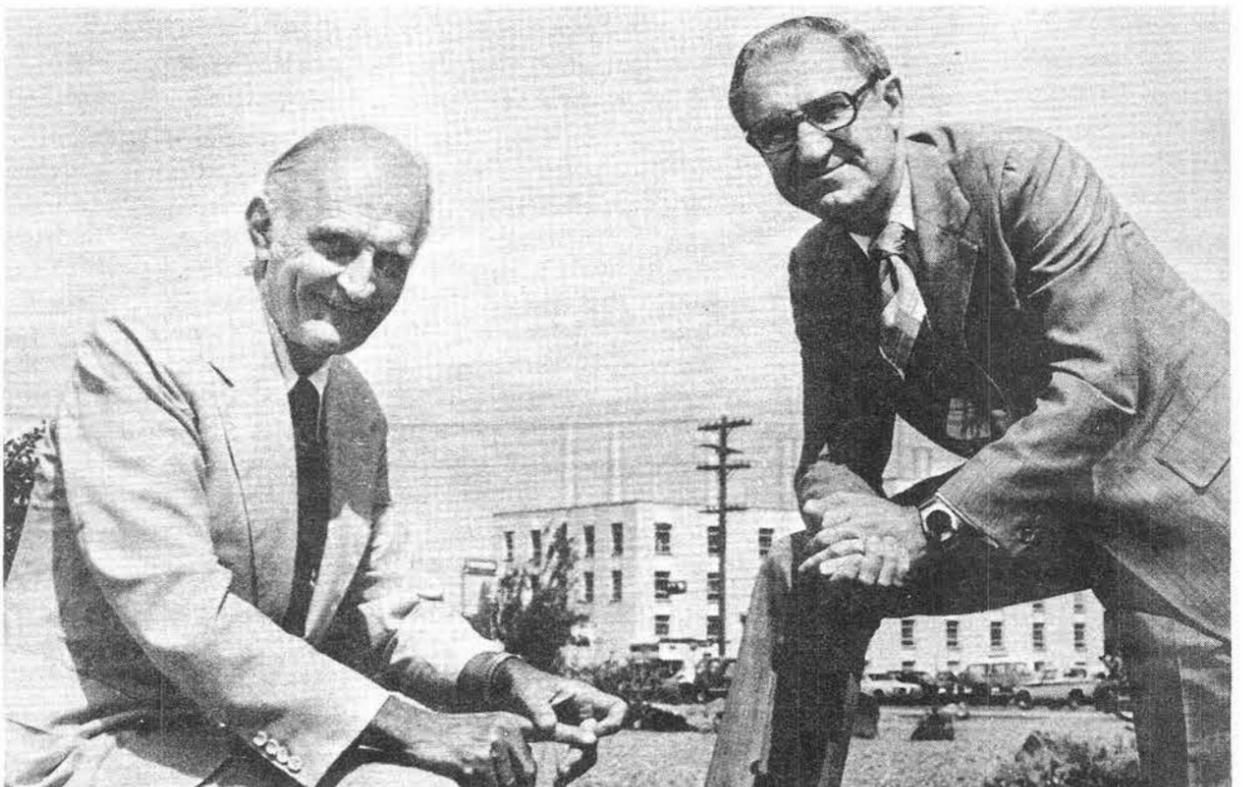
build a tracking parabolic collector at less cost than a flat plate collector. Second, I wanted to show how simple and inexpensive it is to make a tracking, rather than a fixed position collector. Parabolic collectors are more efficient so they require less area for the same output. There are some esthetics involved—because of their large area, flat plate collectors become a dominant architectural feature. My parabolic trough is barely visible from the street. I also wanted to build a strong, but lightweight (meaning economical) installation. The guy wires solve this problem. I believe my installation can survive high

winds in Albuquerque."

Bob's system has been operating about a month. He's keeping records to check gas savings and economics. He eventually plans to add a second storage tank to the system.

He spent about five months evenings and weekends building the system.

"There's only one remaining problem," Bob says. "I've trimmed a large tree in the backyard to pick up more of the late afternoon sun. In the mornings, the system is shaded by another tree until about 9:30. There's no way my family is going to let me trim that big cottonwood."



PRESIDENTS CONFER—Donald Procknow (right) is president of Western Electric and a member of Sandia's Board of Directors. He visited with President Sparks this week for briefings on Labs' programs and a tour of the solar thermal test facility. While in Albuquerque, Mr. Procknow was keynote speaker at national American Industrial Development Council meeting.

Getting Here: Sandians Still Mostly Lone Rangers

How did you get to work this morning? If you drove in alone in your own car, then you're one of the majority. That may be comforting, but it's not necessarily best, either for you or for the nation.

LAB NEWS conducted a count recently of vehicles entering the Base during the morning rush hour at the Wyoming, Gibson, and Eubank gates. We also made a separate count of each vehicle with two or more people, by definition a "car pool." There was close correspondence among the three gates in the percentage of car pool vehicles—16.2% for Wyoming, 16.6% for Gibson, and 16.8% for Eubank. We did some rough calculations and concluded that some 30% of employees are car pooling, not quite a third of the population.

So what are the other 70% doing? They're busing, motorcycling, biking, walking, running and, alas, driving to work by themselves.

A few hundred by bus. With the new grid system the bus population is in a state of flux, but we'd estimate that 400 or so are busing. Another hundred motorcycle in. Then there's the bikers. A Tech Area gate count last month reveals that 180 went through the gates during the morning; round that off to 200 to account for those who work outside the Tech Area. Walkers and runners might account for, say, 20 or 30. It's probably safe to say that the non-drivers amount to, in toto, around 700—12%—leaving 58% who are the lone rangers. Call it 55 to 60%.

It that good? Bad? Or what? One is



SINGLES; LOTS OF 'EM, continue to dominate BASE traffic, moral equivalent of war notwithstanding.

tempted to respond, "Compared to what?" A comparison with the car pooling/busing/etc., performance of, say, LASL or LLL is really rather irrelevant. It's better that we evaluate ourselves in terms of the clear and present fuel crunch. It does exist, it won't go away and, of all the things that we can do about it, conservation is the

single most important measure.

Sandia Employees Response to Gasoline Conservation Measures is the title of a recent study prepared by Dody McKelvey-Hoffman (3431). The author, who surveyed some 400 Sandians, reaches these conclusions about Sandians and conservation:

"The survey showed that Sandia employees are more concerned about the energy problem than the participants in the nationwide CBS News/New York Times poll (also on energy and conservation). The Sandia survey ranked the energy problem as most important while the CBS poll ranked it last. There was overwhelming approval of President Carter's emphasis on conservation as a way to reduce energy consumption. More than half of the employees said the drivers in their households are now driving less than they were a year ago, but they rejected the proposal to increase gasoline taxes so that people would drive less. Even if the cost of gasoline is increased, employees indicated they would not be likely to use buses to commute to work nor to increase their use of carpools. More than half of the participants believe there is an oil shortage. About 47% also know that the U.S. imports about 50% of its petroleum needs. Even with this awareness and their approval of President Carter's approach to the problem, they essentially rejected his specific proposals."

Summing up: we appear to accept intellectually the fact of the energy problem. It's the taking of that next logical step that bothers many people.

feed back

Q. There appears to be significant evidence that the "static" EKG used in our periodic medical examinations may fail to detect critical defects. Acknowledging that the "stress" EKG may be more complex to administer and to interpret, perhaps the intent of the examinations could be better accomplished by changing the test?

A. The "static" EKG remains the best standard screening test for heart trouble when used in conjunction with the history and physical examination. As with every test, it has its limitations, but the fact remains that many abnormalities are uncovered with its use. There is no one test that encompasses the entire field of cardiology.

The "stress" EKG is never performed without a baseline "static" EKG. There are definite indications when it should be ordered and is in no way to be considered a "routine" examination. The economics of its use are not the prime consideration in our not including it as part of our examination, rather it should be ordered on an individual basis and, when indicated, we do advise people to have it

performed. It is covered by our health insurance plans.

Paul B. Mossman, M.D.
Medical Director—3300

Q. Can we have a non-smoking section in the new cafeteria?

A. A portion of the new cafeteria will be designated for non-smokers. The current plan is to put a small no-smoking sign on the tables. The number of signs—and tables—required will be determined by actual use.

R. E. Hopper—9700

Q. I would like to request that someone review the possibility of lengthening our lunch "hour" again. My reason for this request is that there are a great number of Sandians who are avid runners and the lunch hour is the optimum time to do this. It is true that a dedicated runner will find time to run before or after work, but for those of us who seriously try to help our energy problem by carpooling, this really leaves us without ample time to try to keep physically fit. Even a simple thing such as a

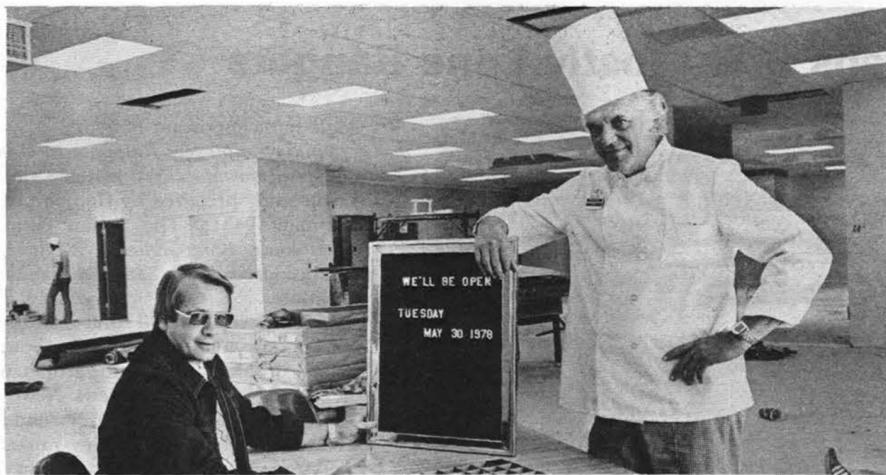
deviated work schedule for those of us who are serious, might be the answer. Could management consider this request?

A. The length of the lunch period is one of the many administrative questions that is constantly under study by management. The arguments you advance for a longer lunch period are valid and attractive.

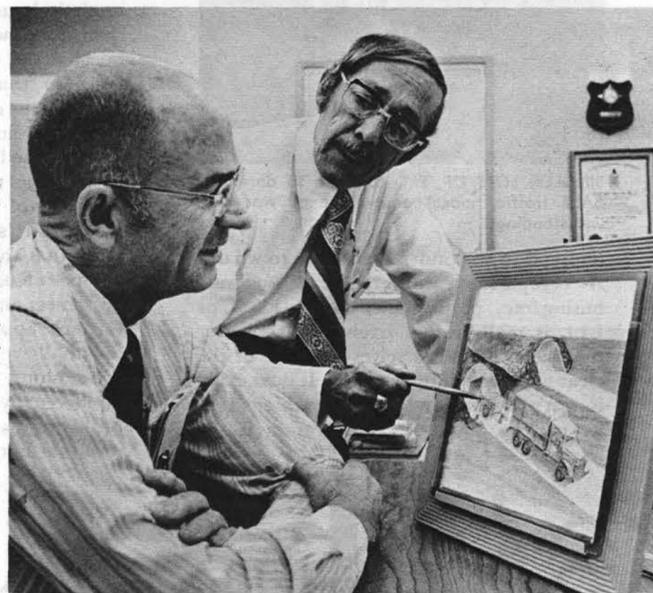
But the considerations that prompted us to go to the half-hour lunch period originally are unchanged, so for now, at least, the shorter break will continue.

The 30-minute lunch period was adopted in November of 1973 in response to the President's request for greater conservation of energy and in cooperation with the Air Force and AEC facilities on the base. The Sandia Bulletin announcing the change stated that "cutting building occupancy by half an hour will represent a significant savings; in addition, we will be conserving a good deal of gasoline by reducing noon-hour dining, increasing car pools, and busing." These expectations have been realized to a significant extent.

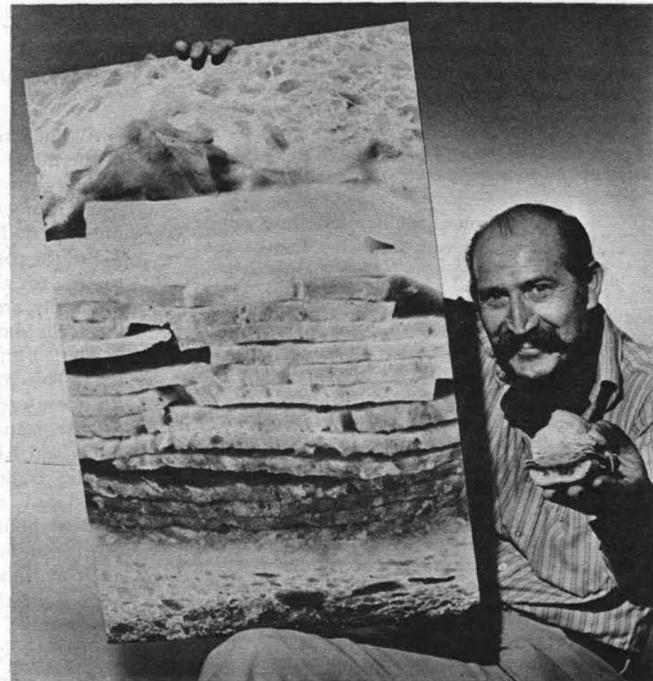
J. R. Garcia—3500



NEW LABS' CAFETERIA—When this picture was taken this week, Dave Foster of Szabo (the food concessionaire) and chief Pat Downey put this sign together. They were thinking about adding "maybe" because of the amount of work yet to be done, but Dave decided to go for broke. So come see the place Tuesday next—it's east of Bldg. 860, outside the Tech Area.



DUANE SEWELL (left) is nominee for DOE's Assistant Secretary for Defense Programs, succeeding Gen. A. D. Starbird who has retired. Mr. Sewell, an alumnus of LLL, is shown with Andy Lieber (1310) during a visit to the Labs this week.



HAVING YOUR ART AND EATING IT, TOO. Originally impressed with the artistry of the sandwich chef at Tamarind, Joe Laval (3163) broke out his macrolens and focused on the sandwich as texture, form and color. This led to an exploration of the culinary artistry of other Albuquerque sandwich makers. An exhibit of the mouth-watering results (plus other works) goes on display at UNM's Janson Gallery on Sunday, May 28, and runs through June 22. This is Joe's sixth one-man show at the Janson Gallery.

Speakers

M. L. Knotek (5155) and P. J. Feibelman (5151), "Ion Desorption in Ionically Bonded Systems by Core Hole Auger Decay"; D. J. Sharp (5834), "Low Energy Hydrogen Ion Erosion Studies of Various Low Z Materials Using a Kaufman Ion Source"; M. M. Karnowsky (5832), "Field-Ion-Microscopy of Pd-Ag-Cu Alloy," 14th annual symposium of N.M. Chapter of AVS, April 11-13, Albuquerque.

R. S. Blewer (2353) et al., "Spatial Distribution of Limiter Material and Impurities of the First Wall of TFR 400," "Trapping and Replacement of 1 to 15 keV Hydrogen and Deuterium in Stainless Steel," "Surface Preparation Effects on Blister Formation and Stress Buildup in Polycrystalline Vanadium," and "Behavior of Implanted D and He in Pyrolytic Graphite"; S. T. Picraux and J. A. Borders (both 5111), presented by Borders, "Long-Term Changes in the Surface Conditions of PLT"; J. A. Borders, "Low Energy Deuterium and Hydrogen Sputtering of Graphite and BeO"; R. A. Langley (formerly 5111) and J. A. Borders, "Sputtering of 304 Stainless Steel by Hydrogen and Deuterium"; G. C. Nelson (5825), "Changes in the Surface Composition of SiC as the Result of Exposure to Hydrogen"; T. W. Hunter (1133) and G. L. Kulcinski (Univ. of Wis.), "Surface Damage and Thermal Effects from Transient Thermonuclear Radiation in Inertial Confinement Fusion Reactors," 3rd International Conference on Plasma Surface Interactions in Controlled Fusion Devices, UKAEA Culham Laboratory in association with the Institute of Physics, April 3-7, Abingdon, Oxfordshire, UK.

H. C. Monteith (5411), "ESP Reserach in Russia and America," Host Lions Club, March 7; "UFO's and Their Mission to Earth," Los Altos Kiwanis Club, March 30, Albuquerque.

L. P. Robertson (1758), "Brazil—A Sleeping Giant," Los Lunas High School English classes, March 7; "The Shroud of Turin," Adult Fellowship Group, First Presbyterian Church, March 12, Albuquerque.

K. L. Swanson (9636), "Think Metric," ASCE Student Chapter, UNM, March 9, and La Noche Garden Club, March 16, Albuquerque.

H. F. Burgess (retired), "UFO Research," Los Altos Kiwanis Club, March 9, Albuquerque.

E. C. Boes (5719), "Solar Energy Research," Socio-economic Information class, UNM, March 14.

W. K. Bell (5714), "Solar Energy Research," Sandia High School civics class, March 31, Albuquerque.

J. M. Harris (2353) and J. A. Borders (5111), "Ion Beams Analysis of CuBe," Third Critical Process Meeting, Feb. 28, St. Petersburg, Fla.

T. W. H. Caffey (9421), "Locating a Buried Magnetic Dipole," E.M. Guided Wave Workshop, March 28-30, Boulder, Colo.

E. D. Reedy, Jr. (5844), "Development of a Composite-Rim Rotor," DOE Flywheel Contractor's meeting, March 29-30, Washington, D.C.

R. Jones (2613), "The Role of the Software Librarian," Texas Conference on Mathematical Software, March 29-31, Austin.

H. D. Sivinski (5335), "Beneficial Uses of Nuclear Fission Wastes," U.S. Senate Commerce, Science and Transportation Subcommittee on Science, Technology and Space, March 31, Albuquerque.

I. R. Lindemuth (LLL) and M. M. Widner (5241), "Numerical Computation of Plasma Behavior in Relativistic Electron Beam Targets," annual meeting on Theoretical Aspects of Controlled Thermonuclear Research, April 1978, Gatlinburg, Tenn.

R. G. Easterling (1223), "Comments on Some Reactor Safety Study Methods," Risk Assessment Review Group, April 4, Berkeley.

J. H. Graham (9583), "Utilizing N/C and CAM in the Manufacturing Process," Student Chapter of AIIE at N.M. State Univ., April 5, Las Cruces.

A. R. Iacoletti (2644), "Installation Report for the Third Annual DOE Computer Graphics Forum at Brookhaven National Laboratory," April 12-14, Upton, NY.

R. W. Harrigan (5711), "Factors Affecting Market Initiation of Solar Total Energy," Energy '78, IEEE, April 16-18, Tulsa, Ok.

R. B. Pettit (5842), "Optical Property Measurements of Solar Selective Coating," American Electroplaters Society Symposium on Finishing of Solar Collectors, April 17-18, Colorado Springs.

J. G. Taylor (1333), "Ignition Criteria for Non-premixed Stagnation Point Flow," Western States Section Combustion Institute, April 17-18, Boulder.

D. O. Smallwood (9332), "Digital Control Systems for Environmental Test Equipment—Yes or No?" and "Multiple Shaker Random Control With Cross-Coupling," 24th annual meeting of the Institute of Environmental Sciences, April 17-20, Ft. Worth.

J. L. Colp (5731), J. F. Hermance and D. W. Forsyth (both Brown Univ.), "Summary of Geophysical Sensing Experiments on Kilauea Iki Lava Lake"; J. P. Luetze (1132), "Radiated Power Line Harmonics Detected by the OGO-4 Satellite"; H. C. Hardee (1262), "Heat Transfer Measurements in the 1977 Kilauea Lava Flow"; W. R. Wawersik (5163), "Effects of Pressure, Deviator Stress and Temperature on Transient Creep of a Rock Salt at Low Confining Pressure"; J. L. Colp (5731), "A Lava Lake Geophysical Sensing Experiment"; J. B. Rundle (5163), "Exact Green Functions for Viscoelastic Crustal Deformation"; J. Lipkin, K. W. Schuler (both 5163) and T. Parry (Univ. of Oxford, England), "The Response of Solenhofen Limestone to Dynamic Loading in Pure Shear"; D. E. Grady (5163) and R. E. Hollenbach (8353), "Dynamic Tensile Fracture of Twelve Rocks," 1978 Spring Meeting of the American Geophysical Union, April 17-21, Miami Beach, Fla.

P. Holloway (5825), "Quantitative Auger Electron Spectroscopy - Problems and Prospects," Scanning Electron Microscopy 1978, April 17-21, Los Angeles.

C. E. Land (5133) and P. S. Percy (5112), "Photoferroelectric Image Storage and Contrast Modification in PLZT Ceramics," 1978 International Symposium of the Society for Information Display, April 18-20, San Francisco.

R. H. Croll (1334) and C. W. Peterson (1332), "A Computer-Controlled Video Instrumentation Technique for Wind Tunnel Testing of Full-Scale Lifting Parachutes"; C. W. Peterson (1332), "A Survey of the Utilitarian Aspects of Advanced Flow-Field Diagnostic Techniques," AIAA Testing Conference, April 19-21, San Diego.

H. J. Stein (5112), "Neutron-Produced Defects in Semiconductors," 2nd Annual Conference on Thermal Neutron Transmutation Doping, Univ. of Mo., April 24-26, Columbia.

D. W. Palmer and F. P. Ganyard (2151), "Aluminum Wire to Thick Film Connection for High Temperature Operation," IEEE conference, April 24-26, Anaheim, Calif.

J. D. Heightley (2110), "Hi-Rel Applications of Custom LSI," Industry/SAMOS Conference and Workshop on Mission Assurance, April 25-27, Los Angeles.

R. E. Jones (2613), "Report on the Development of the SLATEC Library," NASIG '78, April 12-13, Argonne, Ill.

F. P. Gerstle, Jr. (5844), invited presentation, "Composite Flywheel Rotor Design and Materials Development," Composite Materials Seminar Series, April 19, Purdue University, West Lafayette, Ind.

D. E. Bishop (9352), "Ultrasonic Examination of 95/5 PZT Ceramic Slabs," 21st meeting of the Weapon Agencies Nondestructive Testing Organization, April 19-21, St. Petersburg, Fla.

M. E. Lord and H. A. Watts (both 2613), "Computation of Eigenvalues/Eigenvectors for Two Point Boundary Value Problems," Applied Nonlinear Analysis Conference, April 20-22, Arlington, Texas.

R. J. Chaffin (2345), "Radiation Effects in Microwave Semiconductor Devices," Boston Section IEEE Meeting, April 20, Boston.

M. G. Thomas (5731), "Chemical Problems Associated with Coal Liquefaction," Division of Sciences, Eastern New Mexico Univ., April 24, Portales.

R. P. Stromberg (5714), "Solar Energy," Los Altos Kiwanis Club, April 6, Albuquerque; "Passive Systems," Sun Energy '78 International Solar Energy Conference and Fair, April 15, El Paso.

J. T. Holmes (5713), "5MW Solar Thermal Test Facility," STTF Users Assoc., April 11, Golden, Colo.

J. M. Heuter (3521), "Employee Motivation—Move It or Lose It," keynote, Superintendents Conference, National Park Service, April 3, Santa Fe; "Resistance to Change—Close Encounters of Another Kind," engineering freshman seminar, UNM, April 14.

K. W. Mitchell (5133), "Motivation for High Efficiency, High Concentration Multijunction Photovoltaic Structures," seminar at ASU, April 6, Phoenix.

A. G. Beattie (9352) and J. E. Schirber (5150), "Acoustic Emission and Hydrogen Embrittlement," A.E.W.G. meeting, National Bureau of Standards, April 18, Gaithersburg, Md.

M. K. Matzen (5211), "Structure and Observable Characteristics of Laser Driven Ablation"; M. A. Gusinow (5215), J. P. Anthes (5214) and M. K. Matzen (5211), "Experimental Observation of Laser Driven Ablation," 8th annual Anomalous Absorption Conference, Univ. of Arizona, April 19-21, Tucson.

E. P. EerNisse (5133), "Energy From Concentrated Sunlight," Rockwell Science Center, April 24, Thousand Oaks, Calif.



MANUSCRIPT of a 5200-page report, "Typical Meteorological Year for Solar Applications," is examined by Irv Hall, Dick Prairie and Herb Anderson (all 1223).

Org. 1223 Defines 'Typical' Solar Year

A 5200-page report, "Typical Meteorological Year for Solar Applications," is nearing completion in Dick Prairies's Statistics, Computing and Human Factors Division 1223. It is expected to become widely used in solar energy systems development.

"The work provides solar radiation and meteorological data which show typical solar and meteorological conditions over a calendar year for 26 weather stations in the Continental USA," Dick says.

Almost nine months in preparation, the report represents a staggering amount of computations.

"We were working with a data base of more than 16 million measurements," explains statistician Irv Hall. "These are the meteorological readings taken hourly since 1953 at 26 US Weather Bureau stations. From these hourly readings we calculated daily indices for temperature, humidity, wind and solar radiation."

"Our first approach," Dick says, "was to develop a mathematical model, using time series techniques, that would give us a joint profile for the meteorological variables of interest. But then, because of difficulties encountered with the model, we decided to take a more empirical approach."

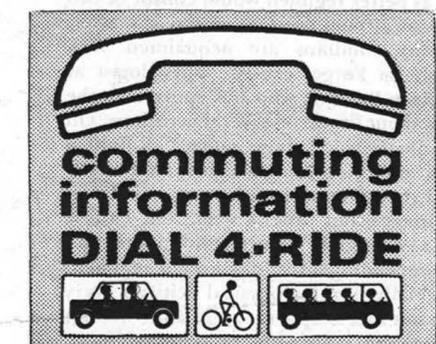
Using statistical techniques, typical months were selected from the long term data base and strung together to form a typical year. Thus, for a given station, a typical year might consist of January from 1953, February from 1975, March from 1968, etc. Smoothing techniques were used to join the months together.

Herb Anderson, who did the computer programming for the project, says that this approach gives a meteorological year

which incorporates "normal" weather fluctuations and patterns.

Using computer output, camera-ready copy for the report is being prepared by the Vocational Clinic of the Rehabilitation Center under Sandia contract. In addition to the published report, the data representing typical years for the various areas are being made available on computer magnetic tapes in standard format. The tapes will be available to the public through the National Climatic Center, Asheville, N.C.

Idea for the project was proposed by Eldon Boes of Photovoltaic Systems Definition Projects Division 5719. The work was performed under a contract from DOE's Division of Solar Energy, Environmental and Resource Assessment Branch.



And laughter shall make you free. A bit of a twist on an old political observation, but apparently true nonetheless. A professor at Tel Aviv University studied a group of 10th graders and concludes that laughter liberates the flow of creative ideas. "Laughter won't automatically make you creative," he says, "but it will weaken the cultural pressure to be logical, practical and economical. That opens normally hidden pathways to creativity."

Workouts: How Often, How Long, How Intense?

People who show up at the Base gym may be divided into two categories: (a) those who are there because they want to be—they enjoy physical activity; and (b) those who are there but would much prefer to be somewhere else—they don't really care for physical activity but are willing to endure a certain amount because of its benefits. In this column, we hope to offer something of value to those in either camp with a discussion of the maxima and minima of physical activity.

First, how little can you do and still gain significant benefit? ("Significant" in terms of enhanced cardiovascular performance.) The several sources we consulted approach consensus. From the *Harvard Medical School Newsletter*: "In general... the recommendations suggest sustained exercise for at least twenty minutes (after a warm-up period) for at least three times per week." From "Exercise and Your Heart," *Consumer Reports*: "The exercise must be performed at a suitable level of intensity for about 10 to 20 minutes, exclusive of warm-up or cool-down periods. Ten minutes is ordinarily sufficient during the initial months of training, after which a gradual increase to 20 minutes or more is recommended. (It) should be performed at least three times a week, preferably on alternate days."

Dr. Kenneth Cooper, high priest of aerobics [*The New Aerobics*], takes a different tack, but you end up at just about the same place. To gain, or maintain, a certain level of fitness, Cooper has developed a point system under which you rack up a certain number of points for running a given distance in a given time. For example, if you run one mile in 8½ minutes you get 5 points. Thirty points per week will ultimately put you in Cooper's "Good" category of fitness. Does this mean you can do a mile a day, six days a week and be "Good"? Probably, but when you consider your make-ready and clean-up time, plus warm-up and cool-off, your investment in time will be considerably more than the 8½ minutes it takes you to run the mile, and a more economical as well as better regimen would consist of two miles at a time, every other day.

Many Sandians are acquainted with Ralph La Forge, exercise physiologist at Lovelace-Bataan, who has spoken at the Labs about fitness on several occasions. On the question of "how much," Ralph is admittedly more enthusiastic than most. "I know that most authorities say a minimum of three or four times a week, but I think that's changing. More and more are recommending a five-day-a-week regimen. Personally, I'm for physical activity every day, but mix it up—throw in some hiking, biking and swimming or other vigorous activity with the running so that you don't become stale."

So much for the minimum. Bear in mind through all of this that there has to be a certain level of intensity in whatever activity you pursue if cardiovascular fitness is your goal. The exercise must be strenuous enough for you to reach a

"threshold" level of exertion that is about 70 to 85 percent of your maximum heart rate (roughly, 220 minus your age).

But what of the other end of the spectrum? Physical activity can become addictive, and one bizarre outgrowth of the fitness cult is the devotee whose life has come down to three elements—running, working, sleeping. He takes showers, eats a bit, and exchanges a few essential communications at home, but these moments are fleeting and, for him, the only meaningful world is that which he finds doing mile after endless mile.

What are the physical benefits of such a regimen? Or, for that matter, of any regimen that exceeds the minima discussed earlier? Ralph La Forge: "If you invest twice the time—say an hour instead of 30 minutes—you don't get twice the benefit. You'll show improvement in many areas relating to your cardiovascular fitness, but the degree of improvement will be small compared to that which you realized with the initiation of your 30-minute regimen. I'd say the principal benefits from the longer regimen would be a lowering of the blood fat levels, particularly the triglycerides, and, obviously, greater weight reduction—you run more, you lose more. Also, you'll realize some beneficial changes in skeletal muscle."

If you're inclined to more rather than less physical activity, our suggestion is that you establish a regimen in terms of what you want to do with this abundant physical fitness. Consider, for example, this sample of activities:

- a Saturday morning 3-mile fun run
- a weekend backpacking in the mountains
- the 100-mile "Century" bike ride

- a day or weekend of hard downhill skiing at Taos Ski Valley
- the La Luz Trail Race
- a 10-mile cross country ski outing
- the Triathlon (10 miles of biking, 5 of running, and a quarter-mile swim)
- the Boston Marathon.

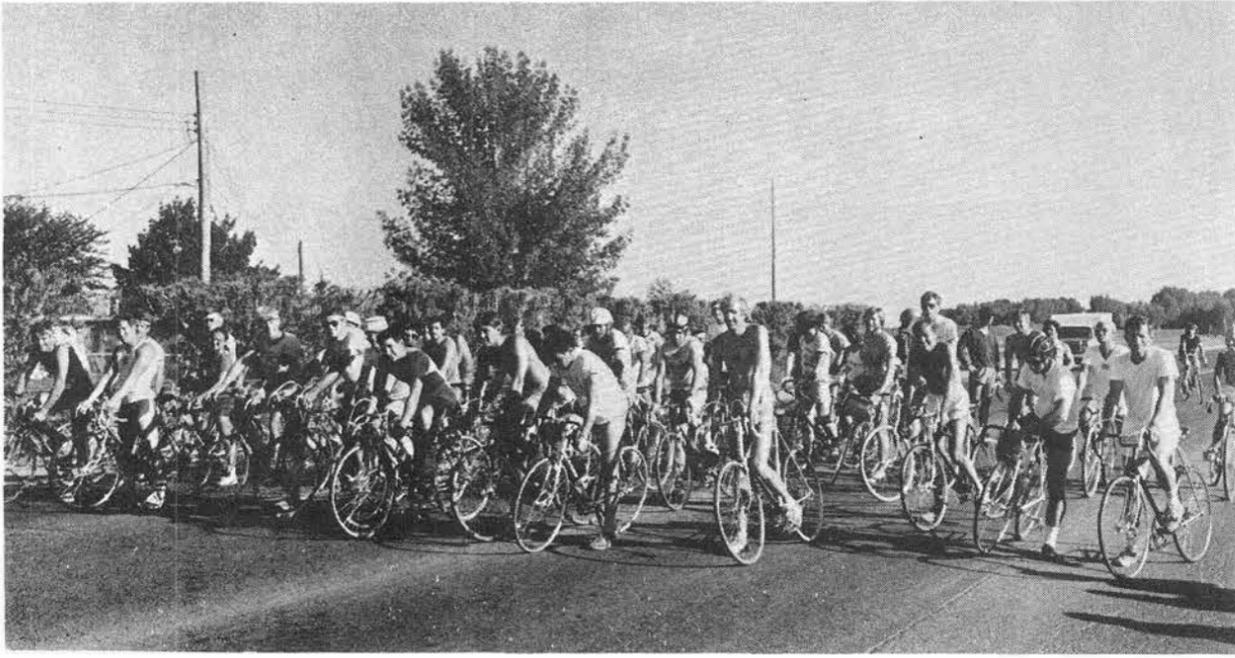
A minimal regimen would probably enable most to complete the 3-miler, to go for a weekend of backpacking without undue strain, perhaps even do some energetic downhill at Taos for a weekend. But more endurance is needed for the others and, if you aspire to these more demanding events, you'll have to put in the time. Do you want to do a marathon? I'd say you're looking at 60 to 90 minutes a day of training, six or seven days a week, if you want to cross the finish line not a basket case.

You should be aware, too, that longer regimens of activity sometimes bring injury. In fact, a *Runners' World* report on foot, leg and other physical problems of runners showed a virtual one-on-one correlation between an increasing number of miles run per week and an increasing number of reported injuries. Dr. Hemming Atterbom, director of the Human Performance Lab at UNM, was recently interviewed in the *Albuquerque Journal* on this subject. His words: "People become addicted to running and push the body beyond reasonable limits. There is such a thing as too much exercise."

As in many things, moderation would seem to be the watchword here. But even with that sore heel or bothersome knee, you're still probably better off than in your pre-activity days. Or, to paraphrase George Sand, "Of all physical aberrations, inactivity is the strangest." •js

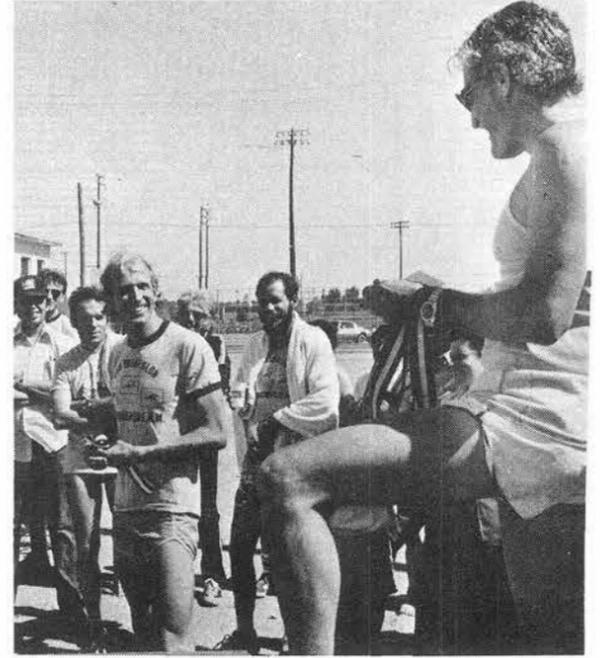


A PIECE OF CAKE? The people in the Mail Room did a number on U.S. Savings Bonds—like 100% signup during the recent Bond drive. That's what the cake says. Bill Martin (3430), chairman of the Labs' Bond drive, enthusiastically reports that the entire Labs outdid itself, going from 87% participation in 1977 to 93% this year. Org. 6000 had 100% participation, as did Orgs. 3200 and 4100. Fifty-two departments and 284 divisions also came up with 100% participation.



TRIATHLON this year was sponsored by C-Club and attracted 55 entrants. Here the pack lines up at the start for the 10-mile bike phase, which is followed by a 5-mile run, which is followed by a quarter-mile swim, without pause between phases. Ron McCurley (5413/UNM) won again with a time of 62:22, some three minutes better than his winning time of last year. Ron is shown above (right),

accepting medal from event chairman John Shunny (3162). In the women's division Margaret Johns (1282) was first with an 81:23. Of special note was performance of Sandia retiree, O. J. Foster. At age 60-plus, O. J. took second place in the 50-plus bracket with a time of 93:46, demonstrating that winners come in all ages.



Take Note

Sailplanes are those lovely soaring creatures that stay aloft for hours at a time (if the thermals cooperate). Leo Doyal (2113) is one of the several Sandians in the Albuquerque Soaring Club and he called to report a regional soaring contest over this coming long weekend, May 27 to 30. It's being held at the Santa Fe Airport, and activities begin each day at 11:30 a.m. Once the sailplanes take off, you probably won't see much with the unaided eye, so you might bring binoculars.

* * *

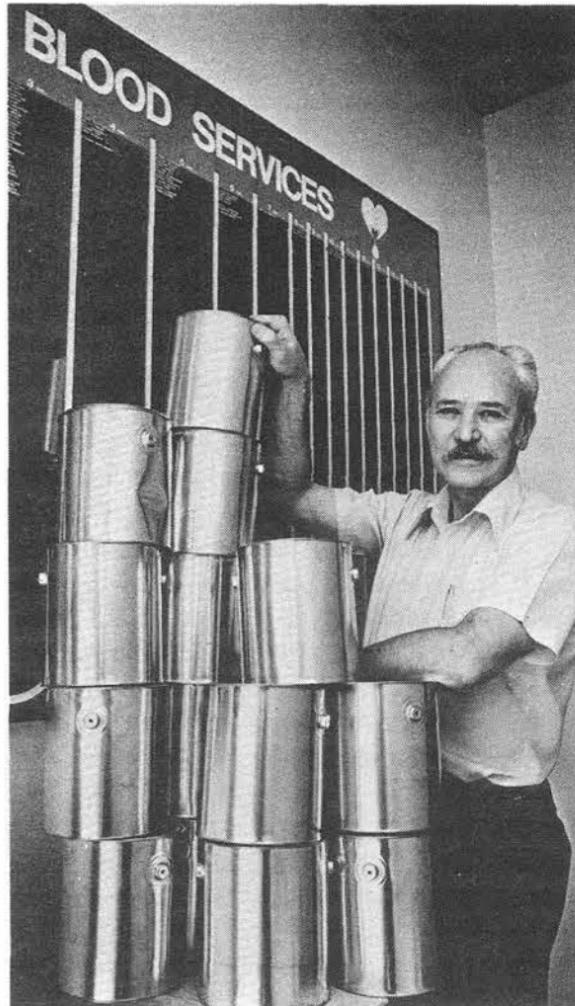
Speaking of aircraft, LAB NEWS photographer and certified airplane nut Bill Laskar reported to us the recent passing of a special day, totally unnoted by the media. On May 15, 1928, fifty years ago, one Ross Hadley out of Hollywood, California, made the very first landing in a Stearman biplane at the Albuquerque Airport. The old airport occupied the area on which we—Sandia Labs—now sit, and its two main buildings—a hangar and a shop—still stand. The shop now houses the tire shop for the KAFB motor pool. Bill Laskar had one other ancient history item: it seems that a very young Bill Laskar was the night watchman for the old airport in late '41 and early '42, operating out of the building that is now the military credit union (just south of the steam plant). Things changed out here when something called WWII came along.

* * *

The Historial Society of the Eighth Air Force is making a nationwide drive to sign up veterans of the Eighth. A local chapter is being organized, and veterans can call Edie Montano (9712), 247-9332, for more information.

* * *

Albuquerque's 29th Annual Rose Show is scheduled June 3-4 at the Garden Center, 10120 Lomas NE. Hours are Saturday, 3 to 8 p.m.; Sunday, 10 a.m. to



BILL McKinney (2552) first gave blood in the 30's to a small girl who was a patient at Carrie Tingley Hospital. Since then he's donated enough to fill all these gallon cans—14 of them. Bill says he feels better after a little blood letting, but admits that may be psychological. Only one in ten Sandians gives blood, a performance which could stand improvement when the urgency of the need and the ease of the blood donating procedure are considered. You can give blood any Tuesday—just show up at Medical after 9 a.m., and you can become a member of this exclusive club.

4 p.m. In addition to prizewinning displays, slide shows of roses are scheduled every half hour. Admission is free. Rose Society members will also run pH tests on your soil samples for a donation of 50 cents.

Fun & Games

Biking—A concerned SBA'er called to ask that we urge bikers using the Los Altos golf course route to do what they know they're supposed to do: get off and walk in the sidewalk area and don't ride the wrong way—north—against the traffic in the parking lot. The blind corners make sidewalk riding particularly hazardous, and more pedestrians are now likely to be in the area with the advent of warm weather.

* * *

Fitness for Women—The wife of a Sandian called to describe a goodie that we hadn't heard of before. Every Monday, Wednesday and Friday between 9 and 10 a.m. a women's fitness class is run in the Base gym. Its 20 or so participants are mostly wives of military people, but Sandia spouses are eligible and you can't beat the price: for free. Don't sign up, just show up, and be sure to bring your Base ID in order to get into the gym. For those who haven't been there, the gym has a women's locker room with showers and a sauna.

* * *

Running—The City Parks & Recreation Dept. is sponsoring its 3rd annual Five and Ten Miler this Sunday, the 28th, at 8 a.m. in San Gabriel Park at the foot of Mountain Rd. NW. LAB NEWS, 4-1053, has info and an entry form.

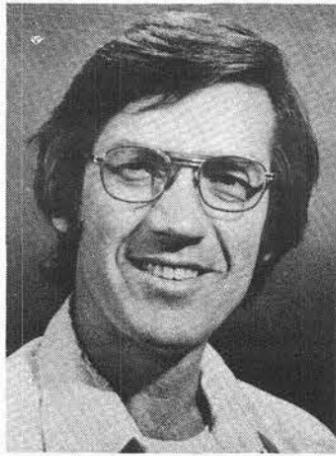
On Tuesday, May 30, at 6:30 p.m., the Roadrunners meet at Kit Carson Park (Kit Carson & Iron Ave. SW) with a program of men's, women's, boys' and girls' events ranging from 1½ to 4 miles.

Retirees—Remember the annual retiree picnic next week: Tuesday, May 30, Coronado Club patio, 4-7 p.m. Guards at the Wyoming Gate will be informed that visitors will be entering the Base. To facilitate entry, retirees should bring their picnic invitations and Sandia retiree identification cards.

MILEPOSTS

LAB NEWS

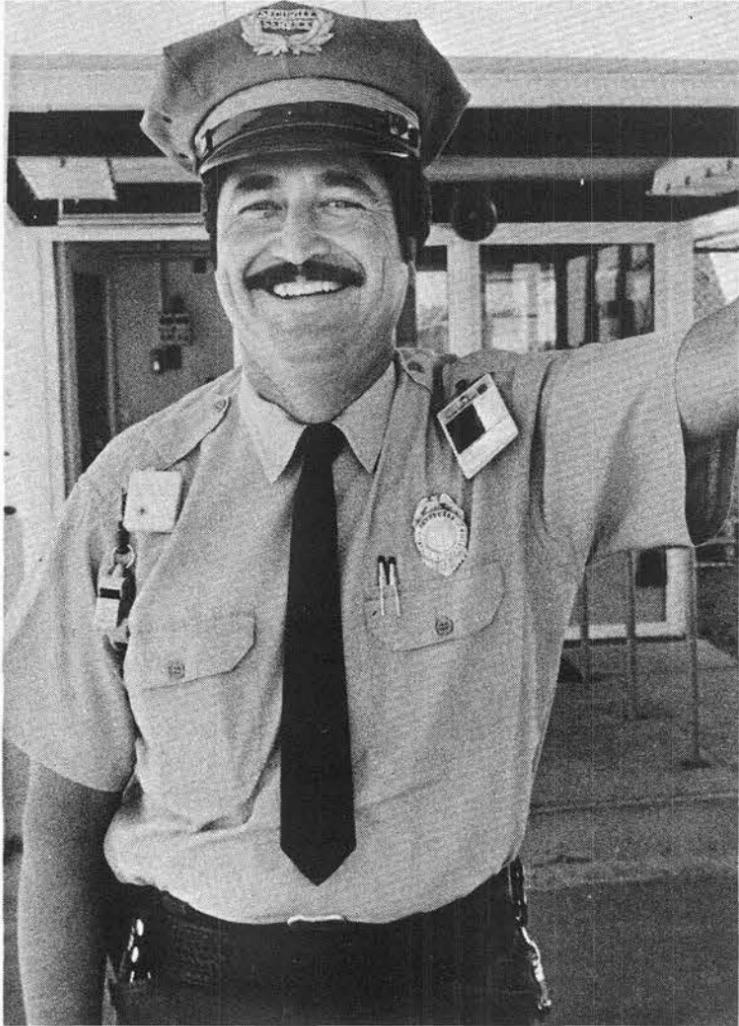
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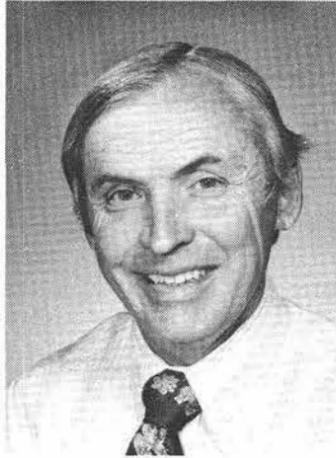
John Bagg - 1761 15



Erineo Jaramillo - 3422 20



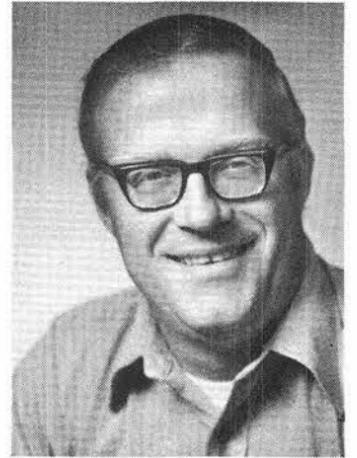
Jim Armijo - 3432 10



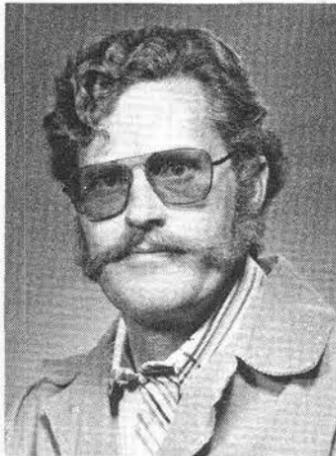
James Cole - 1336 20



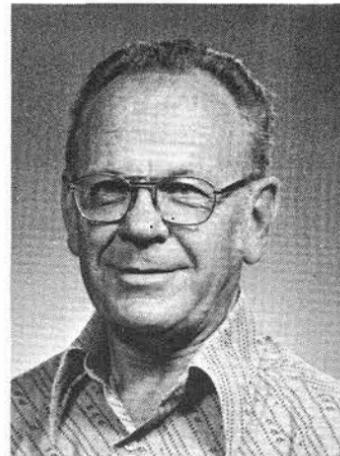
Vera Chandler - 8273 15



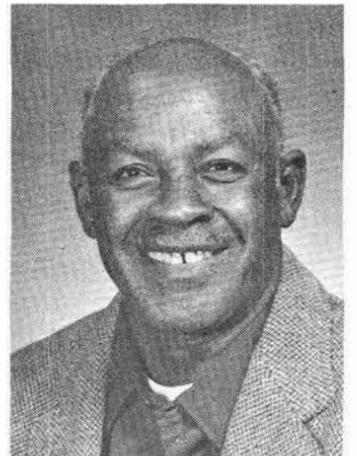
John Freie - 8181 15



Frank Perry - 5242 10



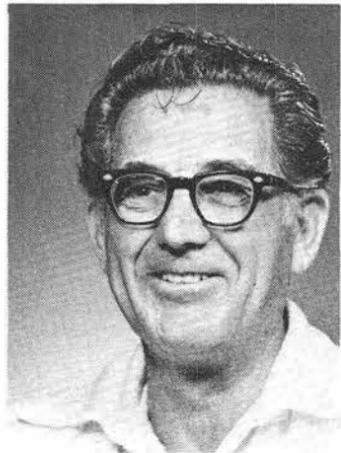
Gene Mead - 4323 25



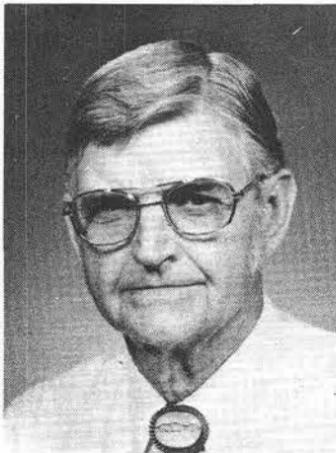
Lewis Butler - 3423 25



Sherlon Fortenberry - 8323 10



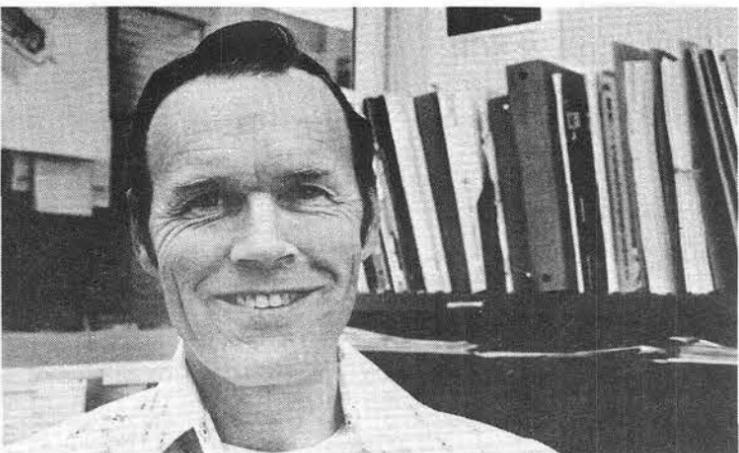
James Reck - 9562 30



John Hertweck - 9710 30



Jeanette Diamond - 9420 10



Ken Payne - 2153 20



Ernest Norton - 1125 20



Whitey Sorensen - 8183 20



Joyce Coffee - 9581 20

Authors

R. J. Hanson (5122), "Numerical Solution of Two-Dimensional Integral Equations Using Linear Elements," Vol. 15, No. 1, SIAM JOURNAL ON NUMERICAL ANALYSIS.

M. J. Knotek (5155) and P. J. Feibelman (5151), "Ion Desorption by Core-Hole Auger Decay," Vol. 40, No. 14, PHYSICAL REVIEW LETTERS.

P. J. Slater (5121), "Enclaveless Sets and MK-Systems," Vol. 82, No. 3, JOURNAL OF RESEARCH.

H. J. Stein (5112), "Ion-Bombardment-Induced Transfer of H from N to Si in Amorphous Si₃N₄," Vol. 32, No. 6, APPLIED PHYSICS LETTERS.

B. Morosin (5154), et al., "The Crystal Structure of the Charge-Transfer Complex Between N-Ethylphenazinium (EtP) and Dimerized 7,7,8,8-Tetracyanoquinodimethanide (TCNQ) Ions, (C₁₄H₁₃N₂)₂.C₂₄H₈N₈," Vol. 34, Part 2, ACTA CRYSTALLOGRAPHICA.

D. E. Amos (5122), "A Definite Integral of N. Bohr (Schweitzer)," Vol. 20, No. 1, SIAM REVIEW.

W. B. Boyer (5243), "Data Acquisition and Processing on Electron Beam Fusion Accelerators," Vol. 25, No. 1, NUCLEAR SCIENCE.

P. J. Chen (5131), "Boundary Effects on the Normal-Mode Response of Linear Transversely Isotropic

Piezoelectric Materials," Vol. 49, No. 2, JOURNAL OF APPLIED PHYSICS.

I. J. Fritz (5132), "Ultrasonic Dilatometric, and Dielectric Study of Uniaxial-Stress Effects in a Barium-Calcium Titanate Ceramic," Vol. 49, No. 2, JOURNAL OF APPLIED PHYSICS.

S. Humphries (5244), "High-Current-Pulsed Linear Ion Accelerators," Vol. 49, No. 2, JOURNAL OF APPLIED PHYSICS.

E. J. McGuire (5211), "The L₂₃-M_{4,5}M_{4,5} Principal and Satellite Auger Spectra of Cu, An, and Ga," Vol. 17, No. 1, PHYSICAL REVIEW A.

A. Owyong and E. D. Jones (both 5214), "Control by Temporal and Spectral Jitter in Single Mode Pulsed ND:YAG Oscillators," Vol. 49, No. 2, THE REVIEW OF SCIENTIFIC INSTRUMENTS.

E. Randich (5834), "Cooling Rates of 7 Hexahedrites," Vol. 42, No. 3, GEOCHIMICA ET COSMOCHIMICA ACTA.

D. E. McKelvey (3431), "There's a Gun in My Mailbox," March issue, LAW AND ORDER.

R. G. Kepler (5810) and R. A. Anderson (5814), "Ferroelectricity in Polyvinylidene Fluoride," Vol. 49, No. 3, JOURNAL OF APPLIED PHYSICS.

Death



Don Atkinson, a machinist in the Bldg. 892 Branch Shop, died suddenly May 11. He was 63.

He had worked at the Labs since December 1951.

Survivors include a son and a daughter.

Sympathy

To Aurora Molina (3422) on the death of her sister in California, May 12.

To Perry Randall (9572) on the death of his father-in-law in Albuquerque, May 11.

To J. E. Gonzales (9572) on the death of his infant son Diego, May 11.

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. Mail to: Div. 3162 (814/6).

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and ERDA employees.
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

TRASH BAGS, city approved, \$4/box, \$20/case of 6, South Hwy. 14 Project. LAB NEWS office, Bldg. 814.

TERRIBLE BOOK SALE—Culls, losers, trash, 5 cents each. LAB NEWS office, Bldg. 814.

AUSTRALIAN SHEPHERD, spayed female, 1 yr. old, gentle, good w/ children, affectionate, easily trained. Holloway, 898-2110.

96" BROWN NYLON couch, contemporary style, \$100. Kaiser, 296-5215.

TRUCK WHEELS: 16.5" 8-bolt Ford rims, \$12 per rim. Mendel, 265-3840.

PORTABLE drafting board w/parallel bar, 42x30 Mayline; camper shell, insulated, 8' wide bed, \$150; 2-cushion love seat, \$100; castle spinning wheel, w/extras, \$70. Jensen, 821-6178.

FOUR FUNCTION desk-top calculator w/paper tape, \$45. Reed, 299-7425.

DINETTE TABLE, 4 chairs, \$45. Metzger, 242-1028.

76 FIBERGLASS SHELL, long wide, sliding front window for cab access, extra vents, \$300; Wilson Staff golf clubs: 2-9 irons, 1-4 woods, Pro bag on cart, wedges & putter, \$60. Walker, 299-0696.

RADIAL ARM SAW, Black & Decker 8", w/stand & extra blades, \$120. Wrobel, 255-3062.

TRAILER TONGUE LOCK 2 5/16; water regulator, lock & regulator never used; hydraulic trailer tongue jack. Windham, 293-8107.

BEDROOM FURNITURE; marble top coffee table; Gulbranson organ; humidifier; side chairs; fireplace tools; lounge chairs; lamps, desk & more. Thompson, 298-4119.

CORONET, Reynolds, \$150. Stirbis, 299-5363.

18" DIAMETER SEARS swimming pool; sun deck; Dima earth filter; ladder, test kit; \$200. Martin, 869-2049.

FULL-LENGTH roof-top luggage rack for VW bus, easily removable, \$80. Rea, 299-9315.

WARDS port. room air conditioner, \$35; Fearing for Moto-Guzzi, almost new, \$40. Davis, 821-8388.

TRAILER HITCH, fits '77 Ford LTD, \$20. Langston, 821-2742.

TRIPLE DRESSER w/mirror, dark wood, top slightly marred, \$50. Ruvalo, 296-1316.

LAWN Mower, Jacobsen reel type,

21", \$35; camera, 8mm Yashica w/zoom lens, \$25. Siska, 298-5756.

KENMORE floor conditioner, 3-spd., 14" path, floor & carpet, shampooer, scrubber, buffer, 3 sets brushes, pads, \$30. Cox, 299-0480.

KITCHEN TABLE, \$75; queen bed, spring, mattress, frame headboard, \$100; make offer. Samuelson, 821-5243, after May 31.

CLOTHES DRYER, GE, High & low temps & fluff, \$79. McGuckin, 299-1342.

PATIO SALE: May 26-27, 9 a.m.: silver-plate wedding gifts, children's items, old trunks, new Hoover vacuum, cash only, 722 Carlisle SE. Schroeder, 344-1011.

GAMBLING TOKENS—\$10 buys \$200 worth, good in Las Vegas or Reno; French horn, \$200 or best offer. Davie, 296-3950.

MODEL AIRPLANE R/C unit, 5-chan. transmitter & receiver, w/charger, never used, \$325 new, sell at \$250. Vernon, 293-0752.

SEWING MACHINE, Wards best zig-zag w/built-in buttonholer & 12 pattern cams, carrying case, \$50. Allen, 296-6453.

COMPONENT STEREO—Scott solid-state amplifier & tuner, Garrard Lab-80 changer, Realistic electrostat-4A speakers, 11 yrs. old, \$250. Schkade, 293-7453.

'66 STEREO CONSOLE (Nivico-RCA parts) w/tape deck, AM-FM, record player, some maintenance required, \$100 or best offer. Gallaway, 268-0463.

20" BABY DUCKS & chickens, 3 mos old rare breed chicks & bantam chicks, \$3; Top Knot chicks will trade, need hay or building material. Lackey, 898-6638.

TWO utility trailers, 1 made from Ford pickup short wide box; other from Chevy Luv, \$135 & \$105. Hurt, 281-3675.

25" COLOR GE TV, \$75; 12" B&W RCA TV, \$60; exercizer, \$20; 3-piece living room set, \$60; shotgun, \$50. Rupe, 881-2214.

CONTINUOUS cleaning electric stove; 20" boy's 3-spd. bike; all wool, hand woven, kingsize bedspread, green & blue. Cole, 293-6122.

SWIMMING POOL FILTER, 19 sq. ft. w/vacuum cleaner, \$50; 18x4' round swimming pool liner, 3 yrs. old w/wooden access ladder, \$25. Martin, 869-2049.

VW CAMPER equipment (Westfalia), fold-down bed & table, seats, cabinets, ice box, sink, curtains, hammock, hardware, \$300. Madden, 296-1082.

22 AUTOMATIC palm-size gun; accordion, Holner Corona brand; Buick LeSabre, '65, needs battery & master cylinder repair. Herrera, 836-1768 after 5.

3 BUCK RABBITS, 2 English Black, 1 English Chocolate, all have excellent markings, one State Fair Blue Ribbon winner. Benson, 268-3586.

CAMPER JACKS, screw type; ABS pipe, 3 & 4" w/fittings; double wall vent pipe, 4 & 6". Tucker, 869-3469 after 5.

RECORD PLAYER, auto. GE 33 or 72 RPM in carrying case w/amplifier & speakers, \$10. Worden, 881-4486.

CHEST, dresser; sofa; end tables; bedroom set, bookcase headboard, twin size; etc. Peterson, 1904 Moon NE, 299-6473.

BOWLING BALL & BAG; Barcalounger chair; books; plants; National Geographic magazines, 10 years; 5 hp gasoline engine. Barber, 299-4287.

GOLD 8' couch & matching chair. O'Malley, 821-0196.

MARINE alcohol stove; zip sled; wooden single bed; metal single bed frames; 2 photo flood lamps; chrome outboard motor bracket; 4-lb. postal scale. Kerns, 821-4122.

TRANSPORTATION

74 LTD Brougham, 2-dr., AC, PS, PB, PW, new tires, cruise control; 10 1/2' El Dorado camper, self-contained, Mohawk. Kaspar, 293-6070.

'65 MUSTANG, 4-spd., 289. Fisher, 881-8072.

74 CUTLASS Supreme, 4-dr., low mileage, equipped, \$3000. Gutierrez, 268-9916.

125 PENTON motocross bike, helmet, boots, leathers, asking \$250, 1006 Dorothy NE. Barbera, 299-6045.

FORD VAN, 18.5 ft., self-contained, air. Melville, 296-3378.

TWO MOTO-CROSS BICYCLES, Graco MX 500, rear shocks, front telescopic fork; Kodak XL-33 movie camera & case; seat for Honda GL-1000. Perryman, 294-6113.

70 CHEV. Kingswood wagon, PS, PB, air, \$475. Magee, 881-1544.

'76 VW DASHER, 2-dr., auto., AC, sunroof, Michelins, 25 mpg on reg. gas, \$4275/make offer. Hinkehein, 256-7683.

'76 HONDA MT125, 500 miles, \$425. Harrington, 292-2034.

'75 MUSTANG II, 2-dr., std., blue, \$2150. Lacher, 242-9882.

'76 FORD Courier w/camper shell, \$3000. Gallant, 293-4453.

FLYING EIGHT CLUB seeks responsible individual to purchase existing full membership. \$20/mo. Wet rates: C-150, \$12/hr.; C-182, \$22/hr. Schkade, 293-7453.

'58 CHEVY Biscayne, 4-dr., 283 V8, AT, \$350; '52 GMC dump truck, 2.5 ton, 5.5 yd. capacity, \$1150. Hurt, 281-3675.

'53 USMC M38A1 JEEP, 24 volt system, rebuilt at depot '67, in military storage until Oct. '76. 4100 miles. Garcia, 266-6596.

74 DODGE B300 van, 318-V8, AM-FM, AC, PS, PB, carpeted, paneled, \$3000. Mitchiner, 281-3086.

'75 MOBILE TRAVELER, 18 1/2', 318 Dodge motor & chassis, completely self contained, sleeps 6, CB, radio, cassette, \$7500. Lanoue, 877-0915.

'63 FORD Galaxie 4-dr. sedan. Burchett, 299-1689.

'68 CHEVY Impala 2-dr. HT, V8, 327, AC, AT, R&H. Padilla, 877-2116.

BICYCLE, girls 3-spd. Sears "Free Spirit," \$50 or best offer. Work, 293-9508.

75 TOYOTA Land Cruiser, low mileage, rebuilt engine, many extras, \$5000. Kovacic, 256-1963.

'73 DATSUN 610 stn. wgn., \$1990; '69 Ford Country Squire, loaded, \$600, make offer. McCulloch, 821-4404.

'77 GMC 3/4-ton van, AC, AT, stereo, carpet, paneled. O'Malley, 821-0196.

'73 VOLVO 1800ES: AT, AC, leather interior. Less than 50,000 miles. \$5500 or offer. 265-9060, days; 256-7570 after 5. Cockleleas.

REAL ESTATE

'69 MARLETTE 12x65 mobile home, 3-bdr., 2 bath, new carpet, AC, drapes, 10x30 patio, skirted, SE location. McBride, 881-2257.

24x 60 MOBILE HOME on 1/2 acre, 3-bdr., den, w/bfp, DR, separate utility rm. Minor, 865-5117 or 243-2423.

SIX ACRES, Baca Grande, Crestone, Colo, adjoins greenbelt w/stream, at base of Sangre de Cristo Mts., \$6900. Palmer, 883-3660.

3-BDR. HOUSE, 2 baths, pitched roof, single garage, 3 yrs. old, \$30,000, Los Lunas. Stone, 255-6507.

80 ACRES in Sandias, east of Ski Area, panoramic view, sell shared interests. Clement, 298-4994.

3-BDR. Roberson, pitched-roof, LR, formal DR, 1 1/2 baths, sgl. garage, ex. lg. patio, garden w/fruit trees, \$43,000 CTL or conv. Evans, 294-3406.

INEZ BRICK, 2310 sq. ft., lg. den, fp, screened patio, lg. lot, carpet, low 70's. Ray, 299-1253.

10 ACRES north of I-40 off Highway 217, \$2000/acre. O'Malley, 821-0196.

FOR RENT

3-BDR., 1 1/2 baths, LR, kitchen-family util. rm., garage, walled yard, NE heights, \$300/mo., available June 1. Hampy, 898-6492.

3-BDR., 1 1/2 baths, LR, kitchen-family, util. rm., garage, walled yard, NE heights, \$300/mo., available June 1. Hampy, 898-6492.

3-BDR., 1 1/2 bath, Mankin, garage, block wall, near base, owner occupied, available early June, \$300, deposit. Morgan, 299-2020.

HOUSE, 2700 sq. ft., 4-bdr., 2 bath, dbl. garage, LR, Eastridge area, avail. June 15, \$475/mo. plus \$300 deposit. Morris, 298-8664.

ADULTS: almost new, lg. 1-bdr. & efficiency apts., \$169 and \$149. 300 Penna. Ave. NE. Erickson, 296-0126.

HOUSE, 3-bdr., LR, DR, den w/fp, 2-car garage, utility, patio, garden, new paint, near schools & shopping. Bailey, 298-0517.

2-BDR. HOUSE, covered patio, attached garage w/workbench, grass front & back, carpet, drapes, stove, refrig., \$225/mo., first, last & damage deposit. Bozone, 298-2527.

LAKE FRONT CABIN on Vallecito Lake near Durango; available day/week, deluxe, fully furnished 3-bdr. w/fp, vacation reservations. Croll, 881-7235.

4-BDR. tri-level, NE heights, first & last mos. rent + damage deposit, \$450, many extras, available June 15. McCoy, 294-1305.

MOUNTAIN HOME, 7-room, 1 1/2 baths, sunken tub; sleeping loft w/sun deck, view; furnished, 2 acres, \$375; available early July. Hawkinson, 455-9034 Livermore.

HOLIDAY PARK, 3-bdr., 1 1/2 bath, FR, appliances, yard/patio, garden, burglar alarm, \$395 + D.D. Morris, 299-6519.

ON MAUII'S GOLD COAST: new deluxe 1-bdr., completely equipped condominium, sleeps 4, \$30/day per couple, \$5 each extra guest, weekly rates. Parker, 299-1485 in Abq., 477-5182 in Livermore.

WILL LEASE 4-bdr. unfurnished, \$385/mo. corner of Copper & 529 Figueroa NE. Moody, 292-2975.

NEW 1-bdr. unfurnished apt., carpeted, AC, off-street parking, \$150 plus utilities or \$180, no pets. 544 Charleston SE. Montoya, 255-8437.

MOUNTAIN CABIN on Hondo River near Taos Ski Valley, deluxe, has everything, sleeps 8, \$35/day, 3-day minimum. Peet, 294-1250.

1-BDR. APT. patio, frost-free refrig., bar, near Base, 541 Espanola SE. Aragon, 294-4275.

WANTED

20 GA MAGNUM semiauto shotgun. Maak, 294-3207.

RIDE from corner Candelaria & Espanola to Bldg. 894. Noel, 298-2142.

NEED someone to do light, general sewing at home, (ex. alterations, make pillow covers, etc., preferably in NE area). Ewald, 881-0297 after 7 p.m.

HUNGARIAN GYPSY with cymbalom. Spriggs, 256-3644.

HOUSE, 2 or 3 bdrs., unfurnished, enclosed backyard, up to \$225 without elec., in SE. DiPaolo, 296-3982 after 5.

KING-SIZE BED FRAME, no headboard. McHaffie, 299-6850.

SPRING ROCKING HORSE for 2-yr. old. Mitchiner, 281-3086.

WOMEN BOWLERS as partners in mixed summer bowling league. Non-smokers only, no experience necessary. Long, 296-2590.

WASHING MACHINE or dryers or household appliances, working or not, will pick up. Herrera, 836-1768 after 5.

SURPLUS nicad batteries (as used at NTS), will pay approx. \$1 per cell. Lipkin, 881-6038 after 5.

WORK WANTED

UNIVERSITY STUDENT needs summer work, specialize in interior & exterior house painting, free estimates. Jay, 293-4751.

HANDYMAN, painter, hauling, house-sitting, college student, 24. Have tools & pickup. Stixrud, 298-0478.

ODD JOBS, yard work, weekly lawn service, trash hauling, vacation yard care. Brian or Patrick, 881-0148.

LOST AND FOUND

LOST—10-ride bus ticket, gold running shorts, 5 keys & small Allen wrench, blue notebook w/computer programs & notes, red pocket calendar, Lexitron Tape #5736, 8 keys on ring, gold bracelet w/chains/Tiger Eyes, silver-rimmed Rx glasses in brown case.

FOUND—Brown/black "Westbrook pipe - Dr. Grabow," 8 keys, gold colored necklace w/3 glass stones. LOST AND FOUND, Bldg. 832, 264-1657.

Pat Corcoran New Coronado Club Manager

Pat Corcoran, a young man with wide experience in club management and food service, is the new general manager of the Coronado Club.

Dave Foster of Szabo Food Service, former Club manager, will operate Sandia's new cafeteria (near Gate 6) scheduled to open next week—Tuesday, May 30.

Pat, who spent six years managing Air Force-officers' clubs and recently worked for the Holiday Inn chain, plans "new and exciting menus" for the Club's Friday evening buffets and special Saturday events.

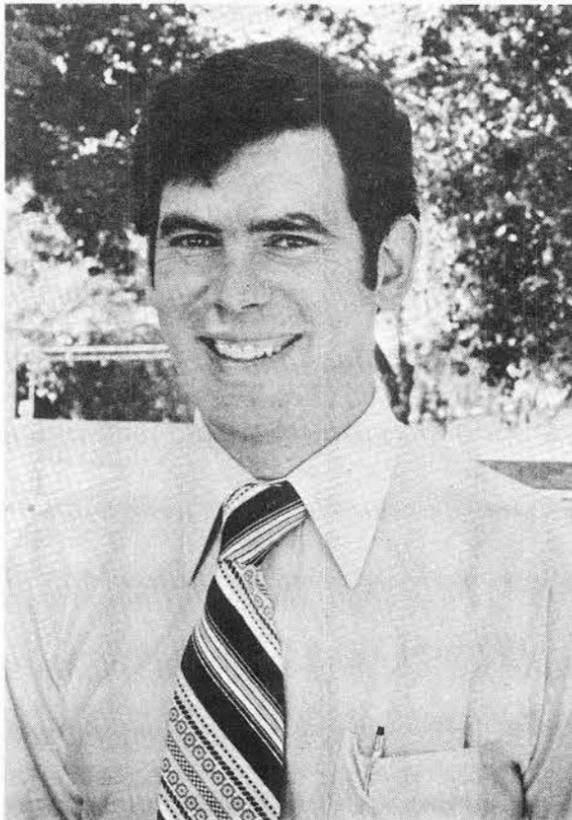
"For instance," Pat says, "we have a London broil set for June 2 to be followed by veal cordon bleu, tenderloin tips and Cornish game hens. We plan to offer quality foods while holding the line on rising costs."

Pat managed the Air Force's largest stateside officers' club at Maxwell Gunter AFB before moving to Thailand to become general supervisor for all clubs in the area. He attended a number of service-related food management schools including Michigan State University. In addition, he holds a political science degree from North Texas State University.

"I started working as a busboy in a country club when I was 13," Pat says, "and I stayed with it with part time and summer jobs through graduation from college. I've done everything associated with a country club, including managing a golf pro shop."

Since most employees formerly associated with the Coronado Club will move with Szabo's operation of the new cafeteria, Pat is currently hiring part-time kitchen help for Club activities.

"There will be a transition period," he says, "as we adjust to a new situation. If Club members have suggestions, I'll be happy to work with them."



Pat Corcoran



MARY RODRIGUEZ (3152)
and AL ARTIAGA (3721).

Coronado Club Activities

Pool Party Tomorrow

TONIGHT Happy Hour features the Club's famous roast beef buffet while Eddie and the Emeralds make the dancing music. Next Friday's buffet will be the first under the new management and kitchen staff. Diners may buy Happy Hour buffet tickets in advance starting Wednesday. At Happy Hour June 2, the buffet menu

includes a London broil flank steak, stuffed tomatoes and rice pilaf. Ernie and the Saints play for dancing.

TOMORROW is grand opening day at the Club's three swimming pools. The party starts at 11 a.m., runs until 6 p.m. Games, entertainment by Mike Michnovicz, Happy Hour bar prices, snack bar service and free admission are all part of the celebration.

SINGLES MINGLE on Friday, June 2, starting at 4:30 outside on the patio. Chips, dips and live entertainment are planned. The singles steering committee has called a meeting of all singles on Tuesday, June 13, at 4:45 p.m. to discuss upcoming activities.

VARIETY NIGHT June 3 features a show by puppeteers Ron and Mary Kay Day. The movie is the children's classic, "Heidi."

SANADO CLUB plans a mother/daughter tea on Tuesday, June 6, at 1 p.m. Special entertainment by the Albuquerque Opera Guild and Alwin's School of Dance is scheduled. For reservations, call Nancy Dodd, 296-1158.

TRAVEL DIRECTOR Ed Neidel (2166) has tour packages open to Las Vegas, Europe, Hawaii, the Mediterranean, Spain, raft trips down the Rio Grande and the Cumbres and Toltec railroad scenic tours. See Ed tonight in the lobby between 6 and 7 p.m.

