

Design Information Centers Speed Work Of Draftsmen

Time was when a draftsman often had to rely on a buddy with an up-to-date catalog to find out the dimensions of a chrome plated brass nut (or any other uncommon item) and names of the manufacturers. Now, three design information centers are located throughout Tech Area I to help with problems like this.

The centers are the outgrowth of recommendations of an organization 7600 study team. The team was made up of design-draftsmen with years of experience as well as recent graduates of technical schools. John Coleman (7632) headed the study team and now has staff responsibility for the new information centers.

"A draftsman may spend 5 to 25 percent of his time looking up design information, such things as availability of commercial parts, installation of parts, military standards and specifications," John says. "These centers are designed to provide up-to-date information in a convenient location."

The centers are in rm. 121, bldg. 892, manned by George Duda and Paul Mathews (both 7623); rm. 262-A, bldg. 836, Clarence Olson (7623) and Walt Scott (7633), who is also in charge of the GIDEP (formerly IDEP) files now at this location; and rm. 208, bldg. 894, which is the responsibility of Division 7615.

"The men operating the centers are experienced designers" John says, "and are able to direct designers and engineers to information sources." Although some of the information is found in hard-cover catalogs, much of it is stored on microfilm.

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CURRENT INFORMATION, consolidated specifications, and an experienced draftsman who knows his sources are all features of the new Design Information Center in Bldg. 892. Randy Rozelle (7651) is using one of the microfilm files while George Duda (7621), right, helps Bill Drozdick find needed data in the 7-digit specification file.

Ice Penetration Studies

Field Testers Off to North Pole (Almost)



JACK KIKER (9327) assembles Sandia Ice Penetrometer (SIP) planned for use during Coast Guard-sponsored tests in Greenland and northeast Canada in mid-April.

Sandia Laboratories scientists will stage a new series of tests in the Arctic in mid-April to determine if small instrumented projectiles dropped from aircraft can be used to measure the thickness and hardness of sea ice.

The tests, again sponsored by the U.S. Coast Guard and similar to ones conducted by Sandia off the Alaskan coast in February 1970, are expected to lead to development of a class of expendable, air-dropped penetrometers which can be used to quickly and remotely measure thickness and possibly other characteristics of sea ice in polar regions.

Ice thickness measurements are presently made with hand-operated core drills and are limited to those areas accessible by ship or helicopter.

Using the new measurement technique, the penetrometers would be dropped from an airplane at selected locations and, as they pass through the ice, would transmit data to an onboard receiving station before the plane travels out of range. The data would be reduced to usable form by a computer after the plane lands.

The technique would facilitate the gathering of data for polar ice research and could be used to obtain a general profile of ice thickness and hardness over broad areas—information which would be helpful in selecting shipping lanes in the polar regions.

The ice tests are an outgrowth of earth penetration studies which Sandia has conducted since 1960. Called terradynamics,

the studies deal with the various phenomena associated with the rapid passage of projectiles, or penetrometers, through the earth.

Instrumented with accelerometers and transmitting equipment, the penetrometers relay data which reveal how much various layers of rock, soil, etc., affect deceleration of the penetrators, thus providing information about the thickness and penetrability of these layers.

Penetrometers have been dropped into a variety of earth materials—clay, silts, sand, water, mud, granite, and permafrost. The drops into ice, made last year off the western coast of Alaska, indicated that penetrometers can measure the hardness and thickness of sea ice with considerable precision.

In those tests, seven penetrometers were dropped in ice about four feet thick. Comparisons with core-drill samples taken adjacent to test holes showed that the ice thickness measurements made by the penetrometers had a maximum error of four inches and an average error of less than two inches.

The current tests, which are scheduled to begin about April 15 in Baffin Bay near Thule, Greenland, will include some 20 drops. Purpose of the drops will be to test the penetrometers in various kinds of sea ice.

The drops at Thule, where Sandia and Coast Guard personnel will be assisted by

(Continued on Page Two)

Ralph Flores, an instructor with the Chicano Studies Center at UNM, prepared the following article.

Chicano Literature

In one sense Chicano literature is a product of the past decade for it was in the 'sixties that the Chicano writer stepped forth, seemingly out of nowhere, to claim a place in America's literature. But in another sense the literature of the Chicano goes far back in time and encompasses two different traditions—that of Western, European Spain, and Eastern, pre-Columbian Mexico. The Chicano is a *mestizo*, a mixture, the product of the fusion of those two groups and their traditions, and his literature reflects the impact of both groups. Although the Spanish gave him a language and a religion, his sense of historical pride does not lie in the achievements of the Spanish as much as it does in those ancient Indian tribes of Mexico who achieved degrees of civilization in many ways as subtle and as complex as anything the Western world has seen. The Chicano writer is aware of these two traditions and uses them artistically in his literature.

But the Chicano writer also deals with the world he lives in today. Chicano literature is not the sort of literature one reads when one wants to escape into a fantasy world where all problems disappear and everything is smooth and beautiful. It is not about beautiful "Spanish" ladies with jet black hair and flashing eyes, nor is it about simple rural folk living happily in some obscure mountain village. The Chicano writer forces the reader to look at reality, his reality, the reality of the barrio, of the poor, the struggling, the angry, the beaten, the disinherited. It is frequently brutal and harsh, but it is just as frequently honest, dealing honestly with the spiritual alienation of a people trying to reassert their cultural identity. It is a literature which may shock the reader, even anger him, but it will never leave him unmoved.

Conflict is at the center of Chicano writing. It is a spiritual conflict involving people caught between conflicting cultures, traditions and world-views. Thus, in Jose Villareal's novel *Pocho*, the first novel by a Chicano in English (1959), the conflict centers upon a young Mexican-American growing up in a small California town, trying to find his place in a society that does not accept him as either a Mexican or an American. This is one

of the basic problems for the Chicano, and Villareal handles it with depth and understanding but offers no real solution to the boy's dilemma.

In his poem, "I am Joaquin," Rodolfo "Corky" Gonzales goes into the implications of this cultural conflict which the Chicano undergoes. Gonzales sees the Chicano as having chosen to retain his cultural heritage, but this choice has forced him to exist on the outskirts of American society. . . .

"My fathers have lost the economic battle
And won the struggle for cultural survival."

Again, there is no solution offered as such, but Gonzales exhorts the Chicano to hold on to his heritage with pride, and not to give it up for economic success.

A recent novel (1970), *Chicano* by Richard Vasquez, gives the reader a wide spectrum of the lives and daily problems of a Chicano family through three generations, beginning with migration from Mexico and ending with the virtual destruction of the family in the barrios of Los Angeles some 50 years later. Although perhaps not as good a novel as *Pocho*, it is in many ways a good introduction for the non-Chicano to the world of the Chicano.

Perhaps the best introduction to Chicano literature is the anthology *El Espejo—The Mirror*, edited by Octavio Romano-V. This anthology consists of short fiction and poetry of excellent quality by contemporary Chicano writers. The writing is powerful and gripping, and will give the newcomer to Chicano writing a glimpse into the Mexican-American soul which he may not get elsewhere.

Chicano writing is, for the Chicano, another manifestation of the re-birth of his cultural pride and the reassertion of his cultural identity. For the non-Chicano, reading this literature will not only introduce him to some of the most exciting contemporary writing in America, but it will also give him an opportunity to apprehend the mind and heart of the Chicano people, an opportunity which has not existed before.

The Chicano has refused to give up his culture, and in defense, he created a wall between himself and the non-Chicano world and put on a mask of passivity and indifference in his interactions with that world. Eventually the mask was assumed to be the reality. The Chicano writer has taken off that mask and is breaking down the wall, and perhaps this new communication will make for a better understanding between the Chicano and the Anglo.

The Retiree Story

Too Busy to Be Bored

In a recent LAB NEWS we asked retirees to let us know what they have learned from their experience with retirement. We asked: "What's difficult or different from what you expected? Are you bored, busy, depressed, happy? If you were retiring a few years from now, how would you prepare for this new way of life?"

One respondent was Al Elwell, who left Sandia about four years ago. He writes:

"... since that time have been teaching mathematics and electronics at the Albuquerque Technical-Vocational Institute

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Ice Penetration

Eskimos and their dog sleds, will be in annual ice—ice which has accumulated for only a year. The next drops, scheduled during the week of April 19 in the Lincoln sea near Alert, Canada, will be in thicker pack ice—ice which has accumulated for several years. Alert is on the northern tip of Ellesmere Island about 430 miles from the North Pole.

All drops will be made from a C-54 aircraft flying at 8000 feet. The penetrometers will impact at a velocity of 550 feet per second, sufficient speed to penetrate up to 12 feet of ice—the maximum thickness which the experimenters expect to encounter.

Each of the ice measurements obtained with the penetrometers will be compared to measurements obtained by core drilling adjacent to the points where the penetrometers perforated the ice.

The penetrometers, shaped somewhat like a sharpened pencil, are 42 inches long, 2-3/4 inches in diameter, weigh 50 pounds, and are equipped with tail fins and a nose cone.

The penetrometers are designed to pull apart when they strike the ice, leaving the tail section and its antenna protruding above the surface of the ice, thus enhancing data transmission.

The front portion of the penetrometer, which contains the telemetry package, continues on through the ice, meanwhile paying out an electrical cable which connects the front and tail portions of the unit. This permits the transmission of data from the stationary antenna while the front part of the unit continues to penetrate.

The telemetry package consists basically of a battery, voltage controlled oscillator, and an accelerometer which senses the deceleration of the penetrometer. The package, potted in plastic to help mitigate shock, is about 15 inches long, 1-3/4 inches in diameter, and weighs two pounds.

The package and pencil-shaped steel case in which it will be dropped were developed and tested in approximately 30 drops at Sandia's Tonopah Test Range in Nevada and at White Sands Missile Range in New Mexico.

Funds for the project are provided by the Marine Sciences Branch, Office of Research and Development, U.S. Coast Guard.

Sandia project leader is Wayne Young (9327). Others participating in the project include Gordo Miller, Don Fifield, Lewis Ellis, Calvin Cox (all 7252), Jack Kiker (9327), Douglas Bruce (9323), Leon Keck (9231), Bill Mahaffey (3454), Ray Wood (7281), and Ellis Heustess (7281).

full time. I served on the 'Goals for Albuquerque' commission, have headed three different fraternal organizations for one year, and am active in still another such group. I have served on my church board for three years and . . . my wife and I have found time to take two trips abroad.

"You ask if we were bored, busy, depressed, happy? Have been so busy that some times I wish I had time to be bored."

Sounds a little hectic, Al. LAB NEWS would like to hear from other retirees about their new way of life since leaving Sandia.

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"YOU CAN'T SIT in front of the fire all the time," says retiree Ed Davis so to keep fit he rides and helps with roundup chores at a friend's ranch on the Rio Puerco. Ed and his wife raise Nubian goats and one of their herd last year rated second in the country in milk test poundage. (John Hobart, 4213-2, took the photos.)



Minitouring with CB

Get Away From Civilization — Back Pack

Don't try to convert a former infantryman into a backpacker. He'd never understand that carrying his "house" on his back can be a delightful way to spend a week end.

But equipment and food packaging have improved to such an extent in recent years that backpacking is not the chore it used to be. (On a recent week end in the wilderness, my pack, including sleeping bag, stove, tent, food, and personal items, weighed a mere 20 pounds.)

What does backpacking have to commend it over car or trailer camping? Chiefly it means you can get away from hordes of people—presumably one reason for leaving the city in the first place. Think back about outings when campers have been flank-to-flank on one side of a stream. It probably wasn't your idea of the pristine wilderness, but your gear was too heavy and bulky to move elsewhere.

Another advantage is your ability to hike in wilderness areas prohibited to motorized vehicles. The hushed air and the "you alone in the world" feeling have a special enchantment.

This is a good time—and it's fun—to look at camping equipment catalogs to see what is available and what best suits your needs. Starting from scratch, a good quality, lightweight, backpacking rig will cost about \$150 (and up). Expect to spend most of this on a down sleeping bag—like \$50 plus. This one item alone can be the difference in whether or not you like backpacking. The weight vs. warmth ratio of down plus its compressibility makes it a much more desirable filler than dacron.

Lightweight 36-inch-long plastic foam mattresses have a weight advantage over air mattresses, are comfortable, and don't have to be inflated. Aluminum frames and fabric packs, which come in a variety of sizes and styles, are so designed that most of the weight is carried on your hips rather than your shoulders.



Cooking utensils, backpacker stove, and food itself are ingeniously nested, miniaturized or compressed. A three-pound nylon two-man tent, a plastic tube tent, or a poncho lean-to can afford shelter, but you may prefer the sky for your roof. (Take along a plastic sheet in case the roof leaks.)

An important point to remember: you can use backpacking equipment for car camping, but that five-pound two-burner stove and the 20-pound tent would be tough to tote.

* * * *

If you're a beginner, I can recommend two scenic, well-marked, and not especially strenuous hikes. One follows the Windsor trail, just across the road from the Santa Fe ski basin, high country with lots of aspen and many spectacular vistas. The Clear Creek trail to Rio de las Vacas in the San Pedro Parks Wilderness is fun too. It begins at San Gregorio Lake which can be reached via highway 126 east from Cuba. The "Parks" are extensive grassy meadows flanked by heavy forest.

—Cherry Burns

Surface Elastic Waves Symposium on April 6

A symposium on surface elastic waves will be sponsored by the Albuquerque Section of the Institute of Electrical and Electronics Engineers on April 6. The day-long meeting will be held at Sandia Laboratories Bldg. 815.

Several aspects of surface elastic wave technology will be explored with emphasis on potential device applications. The symposium is open to the public.

Among the seven invited speakers is Prof. Calvin F. Quate of Stanford University (formerly Sandia Vice President-Research), who will discuss "Amplification of Surface Waves—Introductory Theory and Recent Results."

Further information about the program may be obtained from Willis Smith (5153), tel. 264-2014.



SUPER BEAST is what Lynn Ernst (2623) should call his eight-wheel drive vehicle. Photo at left shows how this powerhouse is laid out. Now that Lynn has welded the body in place, it might even float!

Over the Mesa

Eight-Wheeled Vehicle Is Like a Caterpillar in Action

"Lazy Eight" is what Lynn Ernst (2623) calls his contraption, but the eight-wheeled vehicle appears to be anything but lazy!

Lynn had built a four-wheel drive dune buggy, powered by a 10 hp engine, that performed well, but it was too small for his family. A year ago he decided to go all out and in the intervening time he has produced a powerhouse that will climb over logs or rumble along at 40 mph.

"Although built from standard auto parts," Lynn says, "all of the components are modified or used in out-of-the-ordinary ways."

For instance, the vehicle has eight wheels, but the two front ones are raised eight inches and are only part of the action when the Lazy Eight is climbing or dropping. The 9:00x15 mud and snow tires are set on rims which have been widened to 10 inches so that each tire spreads out to 12 inches across the tread. As a result, tire pressures range from 14 pounds

Sympathy

To Willie Romero (4515-2) for the death of his brother in Belen, March 11.

To Charles Farmer (3520) for the death of his father in Albuquerque, March 11.

To Bill Boyes (1644) for the death of his mother in Pueblo, Colo., March 6.

To Alfred Romero (9120) for the death of his brother in Denver, March 7.

To George Beller (1500) for the recent death of his mother-in-law in Lockport, Ill.

To Max Newsom (1534) for the recent death of his father in San Antonio, Texas.

To Jo Gibbons (3256/1522) for the recent death of her mother in Denver.

To Raymond Moery (4511) for the death of his brother in Hennessey, Okla., March 10.

To Bill Hahn (4152) for the death of his wife in Albuquerque, March 17.

(under the engine) to three pounds at the rear.

Lynn relies on a Ford 6 cylinder 223 cu. in. engine (135 hp) to power the vehicle. He has placed two four-speed transmissions in series and has it geared down so that in the lowest range the ratio is 400:1, yielding 0.28 mph. There are 13 forward speeds and four in reverse.

Another unique feature is that rather than having a regular steering wheel, one steers with the brakes. "All wheels on one side are tied to a power master cylinder which in turn is connected to a steering lever," Lynn explains. When you push on one steering lever, the brakes on one side lock and the vehicle turns; pushing on both steering levers has the same effect as putting your foot on the brakes. The turning radius is seven feet. "It was too expensive to use standard steering mechanism," Lynn says, "so I went to this approach, which is a crude form of selective positraction."

Although the vehicle is 6 feet wide x 11-1/2 feet long and weighs about 5000 pounds, it probably would float. Lynn has welded the body so that it is watertight, but movable panels are placed to allow him to get to any part in 10 minutes to make a repair.

He plans to install several accessories, such as a 10,000-pound power winch and a hydraulically-operated blade for bulldozing. For long trips, Lynn plans to put the Lazy Eight on a trailer.

Congratulations

Mr. and Mrs. Harold Iuzzolino (1724), a daughter, Theresa Voss, Feb. 27.

To Mr. and Mrs. Ron Ewing (5235), a son, Guy Wayne, Feb. 28.

To Mr. and Mrs. Edward Gullick (4514), a son, Christopher Edward, March 2.



RECENTLY-ISSUED patent and an ultraminiaturized connector plug and assembly are displayed by inventors Paul Konnick (2634), left, and James Caller, a retired Sandian.

Innovative Features in Ultraminiaturized Connector

An ultraminiaturized coaxial connector plug and receptacle assembly, suitable for use in applications up to 5000 volts dc (or peak), is the subject of a patent issued recently in the names of Paul Konnick (2634) and James Caller, who retired from Sandia in July 1969.

The extremely small size and high voltage capability of this cable connector were attained by development of a reliable process for bonding and sealing the internal metal and insulating parts. Although commercial sealants are used, the proper techniques for internal embedment of parts evolved only after extensive experimentation. Principal application of the device is in test equipment.

Larry Pope to Speak at 5100 Staff Seminar

Larry Pope (5133) will discuss "The Effects of Deformation and Hydrostatic Pressure on the Martensite-to-Austenite Phase Transition" at the 5100 Staff Seminar April 6. The seminar meets every Tuesday at 8:30 a.m. in rm. 201 of bldg. 806.

Speakers

W.A. von Riesenmann (1541), "The Finite Element Method—An Overview," Engineering Seminar, Jan. 29, Texas A&M University.

Al Goodman (1224), "The Chemical Elements and All God's Creation," Feb. 4, University Heights Optimists; "Some Things That the Future May Bring," Feb. 21, Questers, Albuquerque.

M.J. Landry (7211), "Lasers," West Mesa High School, Feb. 11, Albuquerque.

R.H. Yoshimura (7361), "An Up-to-Date Look at Neutron Radiography," American Society for Nondestructive Testing, Feb. 4, Albuquerque.

W.R. Perret (9111), "Seismic Source Energies of Underground Nuclear Explosions," Seismological Society meeting, March 25-27, Riverside, Calif.

C.W. Young (9327), "A Technique for Obtaining Sea Ice Thickness Measurements from Aircraft," Offshore Technology Conference, April 19-21, Houston.

K.R. Prestwich (5245), "Nereus, 250kv, 80ka Electron Beam Generator"; J.E. Boers (5245), "Digital Computer Solution of Laplace's Equation Including Dielectric Interfaces"; T.H. Martin (5245), "A One Megavolt Pulsed Power Generator"; L.P. Bradley (5245), "Highly Overvolted Gas Spark Gaps for Electron Beam Generators," 1971 Particle Accelerator Conference on Accelerator Engineering and Technology, March 1-3, Chicago.

G.A. Samara (5132), "High Pressure Studies of Phase Transitions in Solids: Ferroelectrics," Feb. 9-12, University of Maryland, Naval Research Laboratory, and Princeton University.

A.W. Snyder (5220), "Dosimetry for Materials Effects Research on Pulsed Radiation Sources," 5th AEC Dosimetry Workshop, Feb. 16-18, Santa Barbara, Calif.

O.L. Burchett (5225), "Thermomechanical Material Response," Graduate Student and Faculty Seminar, Feb. 26, Texas A&M.

C.J. Miglionico (5522), "Scanning Electron Fractography of Uranium Alloys," ASTM Meeting Subcommittee 24.2, March 2-4, Atlanta, Ga.

W.H. Curry and J.F. Reed (both 9322), "Magnus Data on the Standard 10° Cone Calibration Model," 35th Semiannual Meeting of the Supersonic Tunnel Association, March 8-9, Dallas.

R.L. Park (5331) and J.E. Houston (5332), "The Effect of Oxygen on the Soft X-ray Appearance Potential Spectrum of a Chromium Surface"; R.L. Gerlach (5331), "Cross Section for Electron Impact Ionization of Core Levels of Surface Atoms," 31st Annual Conference on Physical Electronics, March 15-17, Gaithersburg, Md.

L.A. Bruckner (7425), "Moving Averages of Homogeneous Random Fields," Western Regional Meeting of the Institute of Mathematical Statistics, March 22-24, Las Vegas.

R.D. Flaxbart (4510), "A Maintenance Apprenticeship Training Program," 22nd Plant Engineering and Maintenance Conference, March 22-25, Cleveland.

G.R. Case (2652), "High Current Injection/Breakdown Model," SCEPTRE Training School, March 23-24, Kirtland AFB.

R.P. Stromberg (1212), "The Degree System—Does It Meet Educational Needs?" Annual Meeting of the Gulf-Southwest Section of the American Society for Engineering Education, March 25-27, Ruston, La.

J.C. Crawford (5153), "Ferroelectric and Piezoelectric Field Effect and Its Applications," Physics Colloquium, March 26, Kansas State University.

W.B. Gauster (5225), "Generation and Detection of Inertial Thermoelastic Stress in Solids," Seminar at the UNM Nuclear Engineering and Physics Departments and Pennsylvania State University Seminar of Material Sciences Department, March 19 and April 2.

R.L. Coats (5222), "Dynamic Response of Fissionable Materials to Rapid Heating," March 9 at Los Alamos Scientific Laboratory and March 15 at Lawrence Radiation Laboratory.

G.L. McVay (5154), "Diffusion and Permeation in Glass"; R.J. Baughman (5154), "Single Crystal Lab: Materials Smorgasbord," Ceramic Science and Technology Seminar, March 12, Sandia Labs.

J.K. Johnstone (5315), "Sandia Laboratories' Carbon Composite Development Program," 18th Refractory Composite Working Group Meeting, March 15-18, Huntsville, Ala.

Promotions

Catherine Imhoff (8275) to Production Release Clerk
Pearlie Kelley (4221) to Specialties Worker
Carlton Pennington (4221) to Specialties Worker



VISITING SANDIA LABORATORIES last week were two Western Electric Company medical directors. Shown talking with Dr. S.P. Bliss, left, Sandia's Medical Director 3300, and President Hornbeck, right, are Dr. Jerry Cassuto, General WE Medical Director, New York, second from left; and Dr. Gerald Grawey, WE Medical Director, Chicago.

Authors

D.E. Amos (1722) and P.J. Chen (1721), "Transient Heat Conduction with Finite Wave Speeds," Vol. 37, No. 4, JOURNAL OF APPLIED MECHANICS.

L.C. Bartel (5132), "Magnetic Contributions to the Thermal Expansion in an Itinerant Antiferromagnet," Vol. 41, No. 13, JOURNAL OF APPLIED PHYSICS.

P.J. Chen (1721), "On the Growth of Transverse Waves in Anisotropic Elastic Materials," Vol. 21, No. 5, ZEITSCHRIFT FUR ANGEWANDTE MATHEMATIK UND PHYSIK.

David Emin (5151), "Correlated Small-Polaron Hopping Motion," Vol. 25, No. 26, PHYSICAL REVIEW LETTERS.

C.W. Harrison (2627) and D.C. Chang (University of Colorado), "Theory of the Annular Slot Antenna Based on Duality" and "On the Pulse Response of a Flush-Mounted Coaxial Aperture"; Harrison with C.D. Taylor (Mississippi State University), "Comments on an Accurate Representation of the Complete Electromagnetic Field in the Vicinity of a Base-Driven Cylindrical Monopole," all in the February issue, IEEE TRANSACTIONS ON ELECTROMAGNETIC COMPATIBILITY.

L.A. Harrah (5514), "Stored Charge Effects on Electron Dose-Depth Profiles in Insulators," Vol. 17, No. 10, APPLIED PHYSICS LETTERS.

Joel Lipkin (5165), "Plastic Waves of Combined Stresses Due to Longitudinal Impact of a Pretorqued Tube. Part 1: Experimental Results; Part 2: Comparison of Theory with Experiment," Vol. 37, No. 4, JOURNAL OF APPLIED MECHANICS.

R.W. Lynch (5131) and L.R. Edwards (5132), "Thermal-Expansion Coefficients and Gruneisen Parameters of bcc Li-Mg Alloys," Vol. 41, No. 13, JOURNAL OF APPLIED PHYSICS.

H.J. Stein (5111) and Wendland Beezhold (5112), "Localized Modes and Divacancy Absorption in Oxygen Ion Implanted Si," Vol. 17, No. 10, APPLIED PHYSICS LETTERS.

W.D. Smith (5153), "Dipolar Coupling and Saturation Effects in Acoustic Nuclear Magnetic Resonance," Vol. 33A, No. 6, PHYSICS LETTERS A.

W.B. Benedick (5131), J.D. Kennedy (9134) and Bruno Morosin (5131), "Detonation Limits of Unconfined Hydrocarbon-Air Mixtures," Vol. 15, No. 1, COMBUSTION AND FLAME.

A.R. Ducharme (5331) and L.R. Edwards (5132), "Pseudopotential Determination of Volume Dependence of Residual Resistivity in Binary Alloys," Vol. 2, No. 8, PHYSICAL REVIEW B.

D.A. Freiwald (5242), "A Fast Opening Valve for Gas Injection," Vol. 41, No. 12, REVIEW OF SCIENTIFIC INSTRUMENTS.

M.A. Gusinow and R.A. Gerber (both 5243), "Diffusion Coefficient of He₂ (³u+)," Vol. 2, No. 5, PHYSICAL REVIEW A.

Albert Narath (5100), K.C. Brog and W.H. Jones (both Batelle Memorial Institute), "Nuclear-Magnetic-Resonance Studies of Dilute Molybdenum-Cobalt and Tungsten-Cobalt Alloys," Vol. 2, No. 7, PHYSICAL REVIEW B.

K.L. Park (5331), J.E. Houston (5332), and D.G. Schreiner (5331), "A Soft X-Ray Appearance Potential Spectrometer for the Analysis of Solid Surfaces," Vol. 41, No. 12, REVIEW OF SCIENTIFIC INSTRUMENTS.

F.C. Perry (5225), "Electron Beam Induced Stress Waves in Solids," Vol. 17, No. 11, APPLIED PHYSICS LETTERS.

J.E. Schirber (5150) and W.J. O'Sullivan (University of Colorado), "Effect of Hydrostatic Pressure on the Fermi Surface of Bi," Vol. 2, No. 8, PHYSICAL REVIEW B.

C.H. Seager and David Emin (both 5151), "High-Temperature Measurements of the Electron Hall Mobility in the Alkali Halides," Vol. 2, No. 8, PHYSICAL REVIEW B.

E.W. Cassidy and J.H. Kelly (both 3112), "Rewarding Professional Growth," first quarter, 1971, COMPENSATION REVIEW (an AMA publication).

J.A. Borders (5111), "Near Band Edge Optical Absorption Produced by Ion Implantation in GaAs," Vol. 18, No. 1, APPLIED PHYSICS LETTERS.

E.D. Jones (5114), "Ultrafast Laser-Induced Stress Waves in Solids," Vol. 18, No. 1, APPLIED PHYSICS LETTERS.

R.C. Powell (5114) and R.G. Kepler (5510), "Energy Transfer in Doped Organic Crystals," Vol. 2, No. 4, MOLECULAR CRYSTALS AND LIQUID CRYSTALS.

J.E. McDonald (5300), "Carbon Composite Technology," February issue, MECHANICAL ENGINEERING.

W.B. Pepper (9234) and R.C. Maydew (9320), "Aerodynamic Decelerators—An Engineering Review," Vol. 8, No. 1, JOURNAL OF AIRCRAFT.

R.R. Bartkowski (5152), "Spin-Wave Relaxation in EuS," Vol. 2, No. 9, PHYSICAL REVIEW B.

W.J. Camp (5224), "Behavior of Two-Point Correlation Functions at High Temperatures," Vol. 26, No. 2, PHYSICAL REVIEW LETTERS.

K.R. Hessel (7211), "Comments on: Enhancement of Low Spatial Frequency Signals with Optical Aperture Tapering," Vol. 10, No. 1, APPLIED OPTICS.

R. L. Gerlach and D.W. Tipping (both 5331), "Ionization Spectrometer for Elemental Analysis of Surfaces," Vol. 42, No. 1, REVIEW OF SCIENTIFIC INSTRUMENTS.



SECURITY POSTER CAPTION CONTEST—Evelyn Bachman, illustrator in Technical Art Section 8231-2, and Bob Crow, security education representative in Security Division 8261, display an example of the picture/caption relationship in Sandia/Livermore's "Security Is . . ." Contest which begins this coming week. Monthly winners receive a personal copy of the poster and are eligible for the grand prize.

"Security Is . . ." Contest Kickoff at Livermore

Be a winner in the "Security Is . . ." Poster Caption Contest which begins at Sandia/Livermore next week! Each month employees will be competing in a new contest.

Just jot down captions which come to mind as you look at the picture printed on memo pads being provided employees on a

Touring Northern California

The University of California at Berkeley has a new art museum. It's more than a building, however—it's a sculpture in itself. Unfinished concrete inside and out, its appearance changes. From the front exterior it might resemble the stark, irregular walls of a canyon. From another angle, it is a slick, hard-edged, ultramodern urban structure. Inside, it is a mixture of jutting balconies, staggered levels, interesting angles, open galleries and ramps, all arranged around an open central gallery.

The architect, Mario J. Ciampi of San Francisco, admits to disliking stairways, and has placed the museum's stairs discreetly out of the way. Open ramps which lead from level to level keep you always near the center of things, and allow you to take in what's happening on several levels simultaneously.

Located on Bancroft Way, across from Hearst Gymnasium, the museum will be exhibiting a variety of shows. In the Hans Hoffman wing, donated by and named for that modern artist, the museum's permanent collection of his works are on display.

Museum hours are 11 to 5 daily, except Monday, with late closing (9 p.m.) each Tuesday and Thursday.

monthly basis beginning April 1. When you've made a decision on your entry, use one of the blanks in the back portion of the pad, and simply fold and mail as indicated. Entries should be meaningful and contain a security message relating to the illustration. The more concise and to the point the better.

The picture with the winning caption and a credit line will appear as the security poster-of-the-month, to be displayed on all bulletin boards throughout the Laboratory and in the *LAB NEWS*. Each employee who enters a winning caption receives a personal copy of that particular month's poster. Winners are also eligible for the grand prize—an all-expense paid, round trip to the Livermore Ranch for lunch with the manager of the Security Department.

The concept for the contest originated with Technical Art Section 8231-2, and illustrator Evelyn Bachman developed the idea by designing a series of 12 pictures in a humorous vein. The first poster shows a baby sleeping in a crib. As an example of picture/caption relationship, Evelyn has added, "Security is Knowing You Have Things Buttoned Up for the Night."

The contest is a part of the continuing security education program at Sandia/Livermore. Ray Raty, supervisor of Security Division 8261, says that the more participation and personal interest taken by employees, the more conscious they will be of the points made in the posters. "We're getting a security message across in what we hope is an entertaining way."

Judges for the monthly contest represent each of the three directorates at Livermore. They are Tom Jones (8135), Coralyn McGregor (8231), and Roger Everett (8351).

LIVERMORE NEWS

VOL. 23 NO. 6 SANDIA LABORATORIES MARCH 26, 1971

Trips to Far Away Places Set By LRL Travel Club in '71

The LRL Recreation Association (RLRA) travel club has announced its 1971 travel program. LRL or Sandia employees (at both Albuquerque and Livermore Laboratories) and members of their immediate families are eligible to participate by joining the RLRA.

Prices cover air, rail, and sea transportation, transfers, and hotel accommodations. In some cases, meals, sightseeing, tours, tips and special features are also included.

Basic tours, with approximate cost per person, from San Francisco are as follows:

- Alaska Inland Cruise — 11 days — \$599.**
Via air and ship; four departures: June 7, July 1, Aug. 26, Sept. 3.
- Around the World — 35 days — \$2395.**
Via air; visits Japan, Taipei, Hong Kong, Singapore, Thailand, India, Iran, Beirut, Baalbak, Cyprus, Tel Aviv, Jerusalem, Bethlehem, Tiberias, Istanbul, and Athens; departure Sept. 11.
- British Columbia and Canadian Rockies — 7 days — \$329.**
Air to Vancouver, rail to Jasper, and return by air; two departures: May 28, Sept. 18.
- Canadian Rockies and Eastern Seaboard — 22 days — \$825.**
Air to Vancouver, rail to Montreal, and return by air from Washington, D.C.; departure Oct. 2.
- Caribbean Cruises:**
 - 1 week — from \$458; via air round trip to Miami Beach and aboard S.S. Skyward to Virgin Islands and Puerto Rico; two departures: June 19 to Aug. 21.
 - 1 week — from \$458; via air round trip to Miami Beach and aboard S.S. Starward to Jamaica; two departures: June 26 and Aug. 28.
 - 16 days — from \$730; aboard S. S. Statendam to Los Angeles, Acapulco, Panama Canal, Columbia, Jamaica, Haiti, and Port Everglades, Florida; return via air; departure May 15.
- Cradles of American History — 15 days — \$535.**
Via air to Boston and return from Washington, D.C.; departure Sept. 25.
- Europe (England, Holland, Germany, Switzerland, Austria, Italy, Monaco, and Belgium):**
 - 3 weeks — 11 departures: Apr. 24, \$555; May 15, \$743; June 19, July 3, 10, 17, 31, Aug. 7, \$783; Aug. 31, \$773; Sept. 4, \$763; Sept. 18, \$733.
 - 3 weeks, including Greece — \$833; departure Aug. 14.

Take Note

Scotty Romine of Safety Engineering and Environmental Health Division 8263 spoke recently to a regular meeting of the Rotary Club of Dublin. His talk on "Industrial Accidents" included a showing of the film, "Our Aching Backs."

* * * *

Al Derby (8264) shot a low net score of 69 to take the first place trophy in the Sandia Employees Golf Club tournament played recently at the Las Positas Golf Course. Finishing in second place was John Barnhouse (8271) with a net score of 72.

As a part of the tournament, all winners of previous year's SEGC tournaments competed for a "Golfer of the Year Award." Al Derby won this trophy also.

4 weeks, including Vienna and Copenhagen — \$883; departure May 1.
4 weeks, including Greece — \$1070; departure June 27.

Hawaii:

- Waikiki — 8 days — \$229; via air; 10 departure dates.
- 4 islands — 15 days — \$469; via air; 10 departure dates.
- Car islander, 3 islands — 8 days — \$335/person, party of two minimum; via air; car and mileage included; 20 departure dates.
- Camper holiday, 4 islands — 15 days — \$411/person, party of two minimum; via air; outfitted camper included; 20 departure dates.
- Mexico — 15 days — \$479.**
Via air; visits Mexico City, Taxco, Acapulco, Guadalajara, Puerto Vallarta; 8 departures: May 1, June 5, July 3, Aug. 7, Sept. 4, Oct. 2, Nov. 6, and Dec. 19 Christmas Tour, \$544.
- Orient — 22 days — \$1225.**
Via air; visits Tokyo, Kamakura, Hakone, Kyoto, Taipei, Hualien, Hong Kong, Singapore, Kuala Lumpur, Bangkok; three departures: June 11, Sept. 10, and Oct. 8.
- South Pacific — 30 days — \$1299.**
Via air; visits Tahiti, Moorea, New Zealand, Australia, Fiji, Samoa, Hawaii; departure Nov. 6.

Additional information on any of these travel offerings may be obtained from Judith Waldmann at LRL/Livermore, Area 415-447-1100, ext. 7371 or Jan Black, ext. 7051, or by writing either in care of LRL Personnel Organization, P. O. Box 808, Livermore 94550. RLRA membership cards at \$1 are also available from them or from Barbara Carter in Employee Benefits Division 8236.

Diffusion Properties Lab Analyzes Ion-Implanted Samples in Situ

By coupling a positive ion accelerator and a mass spectrometer, the staff of Physical Research Division 8331 is analyzing ion-implanted samples without removing them from the accelerator's target chamber. This capability—unique to Sandia—prevents loss of low-temperature data usually experienced when samples are exposed to room temperature before analysis.

The Diffusion Properties Lab is studying the mechanism of inert gas migration in metals and alkali halides. This effort complements similar research activity conducted in Albuquerque by Device Physics Division 5112, Electro-Optical Division 5522 and Applied Research Division 2613. Through these studies, increased knowledge is being gathered about the characteristics of materials aged in a radiation environment (e.g., cladding materials in fast breeder reactors). The studies are conducted from the fundamental viewpoint of atomistics as well as the more applied viewpoint of the physical behavior of ion-implanted materials.

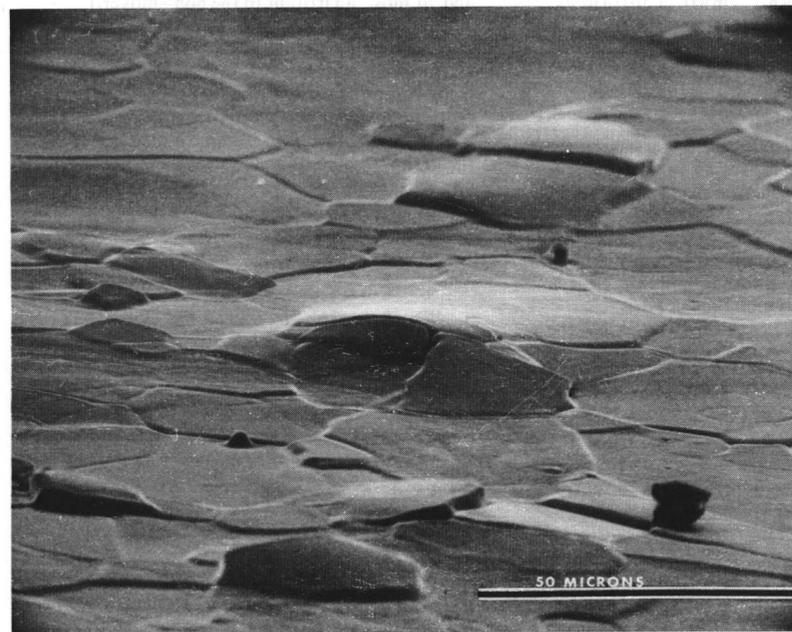
Since inert gases (e.g., helium, argon, xenon, krypton) are highly insoluble in metals, ions of these gases must be introduced into a sample by means such as an accelerator. It imparts very high velocity to the ions enabling them to penetrate into the metal. Once the ions are implanted, their release rate from the sample is measured by a mass spectrometer as the sample undergoes temperature changes from -150°C to 1400°C. Collaborating with the Livermore staff, George Thomas (5522) helps interpret the data with the aid of both scanning and transmission electron microscopy.

"Experiments on our 450 KeV (thousand electron volts) accelerator," explains Walt

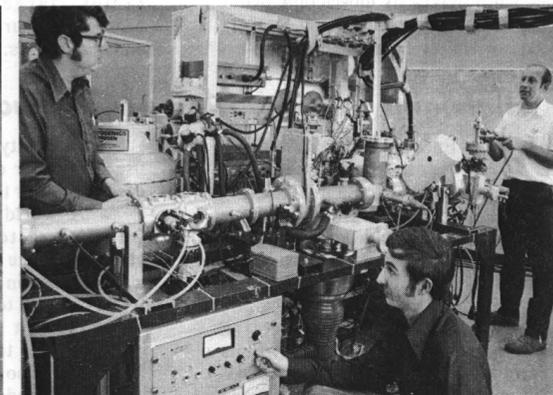
Bauer (8331), "are, in part, a continuation of a Sandia/LRL effort started some time ago. At that time, we were working with J.B. Holt (LRL) on helium-implanted palladium samples from room temperature to 1400°C. We wanted to know how the concentration of helium affected its mobility in the sample."

Using the LRL cyclotron, positive helium ion-implantations 10 microns deep were made in palladium using energies of five MeV (million electron volts) and currents from two to five microamperes. Doses ranged from 10^{13} to 10^{17} helium atoms per square centimeter. The sample palladium discs were one millimeter thick and 5/8-inch in diameter.

After implantation, the helium release rate is measured. Readings are taken at 20-minute intervals as the temperature is increased to 1400°C (in 100°C increments). From our data, we learn that samples with doses up to 10^{15} helium atoms per square centimeter release helium at an increasing rate until heating reaches 1350°C. But at a dose of 10^{17} helium atoms per square centimeter, there is a reverse effect. Helium outgassing becomes very rapid at 1100°C. This unusual release phenomenon indicates outgassing is dependent on the helium concentration in the sample. When heated, the helium becomes mobile. It either migrates to the surface and is released, or it clusters to form helium complexes creating a porous layer. This permits the helium to migrate freely to grain boundaries of the implanted region and escape to the surface. Associated with this release are dramatic changes in the surface features of the palladium. Micrographs taken with a scanning electron microscope verify this.



MICROGRAPH OF PALLADIUM SAMPLE (magnified 1000 times) receiving dose of 10^{17} helium atoms per square centimeter at an energy level of 5 MeV shows grains that have been forced up from the surface and tilted at various angles. One dome includes several grains whose boundaries have split open. These features were not seen in samples receiving doses below 10^{16} helium atoms/cm². Unusual helium release phenomenon indicated outgassing was dependent on the helium concentration in the sample.



DISCUSSING OBJECTIVES OF NEXT ION-IMPLANTATION EXPERIMENT in Diffusion Properties Lab are (l to r) Wayne Chrisman, Dan Morse and Walt Bauer (all 8331). Analysis of samples without removing them from the accelerator's target chamber (located in front of Bauer) is unique feature of Sandia-designed chamber and mass spectrometer. Lab is studying the mechanism of inert gas migration in metals and alkali-halides.

Sympathy

To Bruce Held (8263) for the death of his wife in Castro Valley, March 8.



Credit Union Reporter

By Earl Simonson (4122)
Credit Union Education Committee

Watch Those Ads

A full page newspaper advertisement recently quoted interest rates as shown at right. The large "6 Financing Today ONLY" is actually an "add on" interest rate amounting to an 11.08 "annual percentage rate," as was noted in the fine print foot note located in the middle of the ad. But the "36 equal payments of \$20.31" does *not* equal the "total deferred payment price" shown as \$673.56 but rather amounts of \$731.16. And this means you pay \$160.20—not the "\$102.60" shown—for the privilege of buying this TV on time. The extra charges probably represent in part the cost, usually 3/4 of 1, of compulsory life insurance—if you die during those 36 months the balance remaining on your TV set will be paid off.

Tax Tips

The Internal Revenue Service (IRS) has ruled that taxpayers can deduct the full "Finance Charges" on Master Charge, BankAmericard, or department store credit purchases providing the entire amount is for the "finance charge" and that no part of it is carrying charges or other fees.

Livermore News

Bernie Underwood, our Livermore Branch Manager, will be temporarily located in Mobile Office No. 1, effective March 29, while construction is underway on new Credit Union facilities in Bldg. 911.

And Now The Age of Spiffdom

A new word makes its unwelcome debut. The "spiff," according to Consumer Reports, is ". . . quite simply, money offered by a



*This Color TV sells for \$570.96 including tax. And can be purchased by making 36 equal payments of \$20.31. NO DOWN PAYMENT . . . First payment due 45 days after signing finance contract. All remaining payments due monthly thereafter. Total financing charges you pay over 3 years are \$102.60. This amounts to an ANNUAL PERCENTAGE RATE of 11.08 percent simple interest (6% add on) The total deferred payment price is \$673.56.

manufacturer to a retail salesman, over and above his salary and store commissions, for selling that manufacturer's product." In the trade, a spiff is also called push money or, more delicately, a "cash incentive program." The salesman tries to sell you Brand X because Brand Z may not offer him a spiff. Spiffing is prevalent in many lines of consumer goods: audio equipment, TV's, radios, large and small appliances, bedspreads, curtains, mattresses, cosmetics, and housewares.

Highlights from the 1970 AEC Annual Report

The Atomic Energy Commission has issued its annual report for calendar 1970. Items of particular interest to Sandia Labs—

★ A total of 28 underground nuclear detonations was reported during 1970 in the weapons test program. A four-month strike of construction workers at the Nevada Test Site was settled in September.

★ The weapons-related production capability was restored at AEC's Rocky Flats plant in early May 1970, one year after a \$45-million fire had severely reduced the Colorado plant's production capacity.

★ A 90-day "mission" in a sealed space flight simulator was completed; during the mission water requirements of four crewmen were provided by recycling their waste water through a self-contained plutonium-fueled water recovery system.

★ Feasibility studies are underway on the use of nuclear explosives to tap heat in the earth's interior to generate electric power.

★ A worldwide technical information retrieval system was demonstrated; it consisted of the 6000-mile telephone linkup of a computer in California and an electric typewriter and television tube in Paris.

★ Element 105 was discovered by the international team working at Lawrence Radiation Laboratory at Berkeley. The same team discovered element 104 in 1969.

And, finally, a petition was submitted to the Food and Drug Administration for approval of public consumption of strawberries processed by radiation to control decay and rot during transit and marketing.

Does that mean our strawberry shortcake will glow in the dark?

Smokers, Non-Smokers Still Sniping Away

Another passionate defense of the Freedom to Smoke has been received:

"If smoking is banned in public places, as perhaps it should be, then the following should also be banned:

1. Men's cologne, after shave lotion and perfumed hair dressings
2. Women's cosmetics, perfume, cologne and scented hairspray
3. All recorded music and playing radios
4. Flowers

"These things can be, after all, allergenic or at least irritating to many people, just as much as smoking is to others.

"Then of course, you come to sight allergies. Many people detest the sight of micro-mini skirts, slacks or pant suits, the midis, the afro hair styles, the beards, the long hair and so on ad infinitum. Where should we stop or how far should we go towards limiting an individual's freedom?"

Lilliam Bowers - 4152

Well, you may have a point. Now here's our first anti-pipe letter:

"Keep up the good work against smoking! How about pipe smokers? Some of the mixtures pipe smokers use must be a cross between rags and the reject material from the sewage plant. The smell lingers for hours. Wait 'til a smoker cleans out his pipe sump in your waste basket and you have to throw the basket away, or he cleans his pipe with an air hose and blows the goop all over everything and everybody. Couldn't Dept. 3310 ban pipes as a health and contamination hazard?"

Name withheld by request.

And you may discern just a trace of pique in this one:

"Have you not noticed the irony?

"Space is repeatedly taken up by advocates of 'no smoking'." (Smoking is legal and, at most, an irritant to the non-smoker.)

"Yet your back page of each issue carries free ads urging attendance at Happy Hour and similar functions. If I drive my car to and from Happy Hour and manage to save fifty cents or a dollar while 'participating' I not only break the law but I become a member of the group which kills and injures thousands of non-participants yearly.

"Why don't you just stick to reporting 10-year pin awards?"

A.A. Lieber - 1750

We also carry "free ads" for Coronado Club ski trips and other excursions, but somehow feel no responsibility for busted legs that may result.

NASA Award to President Hornbeck

President John Hornbeck is in Washington, D.C., today, being honored by NASA for his work as a member of the Aerospace Safety Advisory Panel. Members are receiving the NASA Public Service Award for the panel's contribution to NASA programs and in particular for their participation in the Apollo 13 effort which culminated in a successful Apollo 14 mission.



Take Note

Harvey Ivy (9422) is a member of the board of the Albuquerque Opera Guild which helps to finance the Santa Fe Opera. Naturally, Harvey is enthusiastic about recruiting new members.

He says that Guild membership (which costs \$10) includes invitations to attend two working rehearsals in Santa Fe, a gala party in Albuquerque, two apprentice concerts during the opera season and subscriptions to various publications concerning the opera.

Harvey says that basically the Guild memberships contribute to the continuance of the Santa Fe opera. For further information, call 243-3585.

* * * *

Ernest Lovato (4233), Scoutmaster of Troop 16 sponsored by West Side Lions Club, will be taking the 30 boys in his group to Chihuahua, Mexico, in July. It is a return of the hospitality his youngsters extended to 80 Mexican Boy Scouts last summer and part of Albuquerque's Sister City program with Chihuahua.

While in Chihuahua, the boys will be staying in the homes of Mexican Boy Scouts except for the four days the troop will join a national Mexican Boy Scout Camporee. Several banquets are planned as well as sightseeing tours. Dates of the trip are June 30-July 10.

Ernest has been a Troop 16 adult leader for about five years and has been active in the Boy Scout organization for 19 years.

* * * *

How's your Japanese? CONTAMINATION CONTROL PRINCIPLES, a NASA "best seller" authored by Jack Sivinski (1740), Willis Whitfield (1742), and J.A. Paulhamus (retired Sandian), has now appeared in Japanese translation. Members of the Japanese Air Cleaning Association participated in preparation of the book.

An article, "Designing for the Laminar Flow Environment," which originally appeared in CONTAMINATION CONTROL in November 1969, has been translated into French and was published in the Sept. 17, 1970, issue of SEERI. Authors of the article were Willis and Kermit Lindell (1742).

* * * *

Roy Allison (2492-1) has been elected to a two-year term of office as a director of the Tulsa Section, American Society for Quality Control, beginning July 1.

He has been active as ASQC Committee Chairman for Junior Achievement in Tulsa, and has published a Quality Control Manual for use by these juniors.

* * * *

Don Shuster, Director of Exploratory Systems Development 1200, has been appointed a member of a new five-man technical executive committee to provide technical direction to all groups participating in the state of New Mexico's efforts to locate the Space Shuttle program at White Sands.

* * * *



BOB MIDDLESWORTH (9224)
— "Elk of the Year" —

Bob Middlesworth, a staff assistant in Diagnostic Carriers Division 9224, was recently named "Elk of the Year" by the 5000-member Albuquerque Lodge of the B.P.O.E.

Bob has been a member of the organization since 1949 and has served on various committees through the years. For the past five years or so, he has been chairman of the picnic committee.

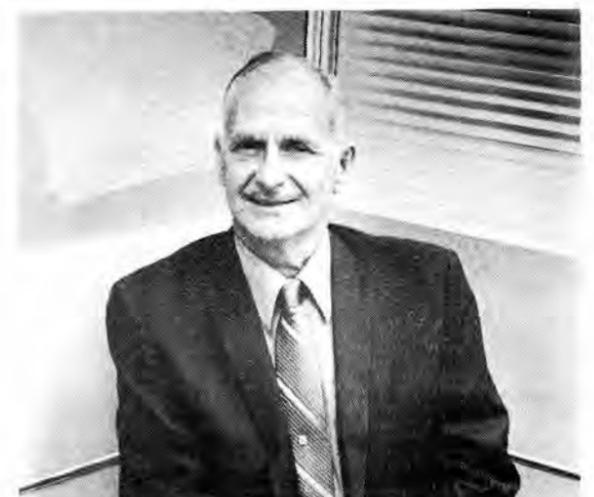
"That means I am the chef and cook for a mob of people," Bob says. "I think I got the award because they felt sorry for me. Last year, the shelter in which we were barbecuing the meat caught fire and burned to the ground."

Bob salvaged most of the picnic goodies, however, made a fast trip to town for more supplies, and was only 10 minutes late in serving the crowd.

* * * *

Members of the Princeton University Alumni Council, including Jeff Gorin (9239) and Bob Luna (9344), are plugging an appearance tonight of Prof. Lawrence Thompson, Holmes professor of Belles-Lettres at Princeton, at the UNM education complex Kiva auditorium. Prof. Thompson is the author of a controversial and recently-published biography on Robert Frost. "Some Adventures of a Frost Biographer" is the title of the talk to be presented at 8 p.m. The lecture is free and the public is invited.

Retiring



Blake Liston
(7521)



COMEDY SCENE—John Gardner (3422), center, looks on as Sandy Borgrink (4363) and Nigel Hey (3431) enact a scene from "The Applicant," one of several one-act plays and sketches on the theatrical menu for "The Birds and the Boys" which opened last night at Old Town Studio. The production, in which John is both director and actor, runs tonight through Sunday and again next week, April 1-4. Call 242-4602 for reservations.

Photographic Suggestions

Better Pictures For Better Vacations

LAB NEWS sees a lot of photographs. Many times people drop by the office with terrific yarns about adventure in far off places and show us a stack of color slides. Or they tell us about a tremendous project with a youth group or a community organization and then they show us a few Polaroid prints. Heck. We can't use them. Not because they are color slides or Polaroid prints but because they do not show what's happening in a simple forthright way.

LAB NEWS requirements for pictures are the same requirements that make good pictures. First and foremost we want people in the pictures and we want to be able to recognize them and know what they are doing. If there is a primary reason for turning down pictures for the LAB NEWS, this is the one. We have seen hundreds of pictures where the people are just too small.

Bill Laskar, LAB NEWS photographer, thinking about vacations and vacation pictures illustrates some ideas for taking better pictures on this page. He also says that modern cameras, even the simple inexpensive aim-and-shoot ones, are capable of taking very fine pictures. Keep his suggestions in mind and, if you have a terrific yarn about adventure in far off (or even Jemez Springs) places or a story about a community activity with good pictures, drop by the LAB NEWS office. We're interested.



STRIKING PHOTO of the Sandia mountains was taken at Coronado State Monument near Bernalillo with a 40-year-old box camera by LAB NEWS photographer Bill Laskar, left. The difference between this shot and a typical snapshot, right, is the strong foreground interest.



SMILING GROUP above is the Pete Stirbis (1542) family taken at Coronado State Monument. Casual arrangement plus strong lines of the adobe walls and the mountain background make a pleasant composition. This contrasts with the stiff arrangement in photo, below left, where the photographer is much too far back from his subject. Note the telephone pole growing out of Pete's head. At right is another variation of a family group arranged vertically. Getting people's heads on different levels always adds interest and emphasis to a photograph.



Service Awards

March 26-April 8

25 Years

Clarence Sproul 9224, Greg Abeyta 9232, William Boyes 1644, Alfred Young 9221, Charles Boal, 9413.

20 Years

Leonidas Wilson 1544, James Hay, 4253, Henry Welch 4511, Noble Gruenoch 7411, Joseph Maldonado 4614, Thomas Hoban 7283, Edith Moya 3256, Webb Shafer 1522, J.B. Sweatman 4213, Vern Sowards 4253, Joe Sanchez 4338, Gene McClendon 4613, Carl Nylander 7651, Milton Jones 8184, Mildred Knight 9500, Alvarado Torres 4232, Maynard Cowan 7340, Geraldine Wright 7412, Howard Davis 7523, Fred Callahan 4137, Marcel Schiess 9232, and John Hart 4316.

15 Years

Esther Moore 7200, Harry Rouchus 7651, Leonard Baker 1223, Lucille Smith 3411, Daniel Eaton 4252, John Snyder 5221, Al Elsea 8273, Manuel Lucero 4513, and Jack Martinell 8139.

10 Years

Violet Fogleman 9150, Geneva Wiseman 7225, Harry Morris 2444, Kenneth Romine 9513, Beulah Akerstrom 3256, and James Malloch 9222.

Ecology Notes

Have you ever wondered why the phone company doesn't pick up old phone books and recycle them? For the moment, the answer seems to be a financial one—the return would not begin to meet the expense involved. An article in "Newsline," the headquarters Western Electric publication, explains:

"... more pertinent is the fact that the scrap paper industry would simply choke on a nationwide collection of the Bell System's surplus stock.

"And, even if the Bell System alone could collect the old books (the most hopeful estimate is a 50 percent return), it would flood the market and drive the going price down to nothing. At present, that going price is anything but an income item—it ranges from \$4 to \$12 per ton, depending on location.

"Here's a specific example: in the metro Denver area, Friedman and Son, dealers in waste paper, is the only outlet for our leftover books. Says Larry Jensen, assistant manager at Friedman, 'You can't send umpteen box

cars of shredded telephone books off to the eastern paper mills at once. You have to send it in dribs and drabs—spaced out. If you gave me a whole glut of books, I'd have to warehouse them for a while at a loss.' He added that with current scrap paper market conditions, he'd be hard pressed to increase his intake on our surplus."

We are told that local collectors of newspapers, such as the Boy Scouts, have also encountered the declining market for scrap paper. Looks like some additional uses for the stuff have to be developed—got any ideas?

* * * *

Speaking of pollution, the following was recently received:

"Southern Street SE, between Juan Tabo and Eubank, although a dirt-surface road, is used by many Sandia employees as a shortcut in the mornings and evenings, creating a thick and pervasive cloud of dust pollution and thus considerable resentment among residents of that area. If you use this route, would you please consider some alternative?"

• SHOPPING CENTER •

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

RULES

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

FOR SALE - MISCELLANEOUS

SEWING MACHINE, Singer slant needle, straight stitch w/console cabinet, \$55. Church, 299-2175.

LARGE COLEMAN 2-burner camp stove; custom Porsche luggage carrier, fits 356 Series w/split engine grill; Porsche 356 Series Poly-Pad cover; 8mm movie projector. Kupper, 298-7720.

BULLETS, 7.7mm Jap (.314 dia.) 185 gr. full jacket, boat-tail, 275 available, 1¢ each. Ristine, 298-8383.

SEARS gas powered lawn mower w/grass catcher. Pitti, 256-1629.

LADIES WIG, Dutch boy style, medium brown, Penney's color six, worn once. Randall, 299-0372.

RADIO CONTROLLED garage door opener w/2 transmitters, needs radio work \$8; 3 school bus seats (good for dune buggy), \$2 each; child's small vanity w/mirror, \$2. Fry, 298-1613 after 6.

BRAIDED OVAL rug, multicolored, 9 x 12, \$20; maple boudoir chair, \$5; wardrobe case, \$3. Young, 4614 Burton SE, 256-9158.

GUN CABINET, veneer finish, 5 ft. high, glass door and drawer lock. Fitzgerald, 298-8851 after 5:30.

SHOTGUN, Mossberg Model 500AC, 20 ga., 3 in. chamber, adj. choke, recoil pad, \$65. Tucker, 877-1140.

GIRL'S THREE speed 26" English bike, new tires and seat, \$30. Asturias, 299-1175.

VW PARTS, entire 1955 body, sedan, wheels, tires, fenders, 36hp pistons, cam. Strawderman, 299-7548.

REMINGTON portable sewing machine, \$40. Longfellow, 299-7062.

ELECTRIC ROTARY lawnmower w/grass catcher, \$25. Kavet, 299-1793.

PAIR HEAVY duty camper jacks. Newton, 255-2074.

WIRE HAired fox terriers, registered AKC, whelped March 1, tails docked, dewclaws removed. Shaykin, 296-3659.

COOLER, evaporative, bottom outlet, 4200 cfm, pump, pulley and belt, \$65. Reston, 344-4059 after 5.

HAY, sorghum type, \$1 per bale. Shafer, 898-0132.

AIR CONDITIONER, refrigerated, Frigidare, window type, 11,500 btu; Duncan Phyfe mahogany drop leaf table. Aronson, 268-7109.

'69 YAMAHA 175 Enduro cti; '65 Yamaha 250 Big Bear scrambler YDS3. King, 282-3186.

COMPLETE HAM station, package deal, 5B-400, SX-101A, TH-4, Ham-M rotor, phone patch, other extras, \$325. Hoice, 299-3218.

WINCHESTER Model 1890 repeating rifle, .22 cal., \$20; Stevens 20 ga. repeating shotgun, \$30; want old badges. Smitha, 299-1096.

TWO 6.50x13 snow tires mounted on Anglia wheels, \$25. Flowers, 282-3458.

BRAIDED 6' x 9' oval rug with fringe, reversible, blue and green, \$15. Ashworth, 296-9126.

300 SAVAGE rifle, \$75. Schulze, 299-0152.

REFRIGERATOR, electric, approx. 5 cu. ft., counter top height, \$100, white w/brown formica top. Buss, 298-1589.

ICE SKATES, size 3, \$10; child's record player, \$5; free, Wilbur rabbit. Mead, 255-3403 after 6.

.222 SAKO with 8-power Leupold scope and Redfield mounts, \$195. Sower, 296-7455.

BABY CRIB and mattress, \$10; high chair, \$5; training potty, \$3; lawn mower, \$10. Stirbis, 299-5363.

GENERAL ELECTRIC stove, \$50. Elliott, 296-3181.

GIVE AWAY—One blue-point Siamese female cat, one year old, all shots. Miller, 298-1514 after 5.

YAMAHA 250 street bike (YDS-3), \$225. Hansche, 296-1387.

TYPEWRITER, Royal portable, manual w/case, \$30. Hubbard, 299-7818.

ELECTRON TUBES, some new, 50¢ each. Hughes, 299-6674.

PUPPIES, Boston Terriers, 7 wks. old. Montano, 247-9332 after 5.

REFRIGERATOR, 12 cu. ft., \$40. Berg, 266-2058.

MALE Springer Spaniel, 10 mos. old, liver & white, AKC reg., obedience school grad. Kelley, 299-7730.

SLOOP, luger 16' daysailer & trailer, fiberglass construction, cockpit seats 6 comfortably, cover to enclose cockpit, \$1300. Fenn, 255-5993.

RED MINIATURE Dachsund puppies, AKC, all male; Frigidare port. dishwasher; GE 3-spd. 20" fan. Stone, 298-4641.

APACHE tent trailer. Wilkinson, 516 Hillview Ct. NE, 299-8327.

'69 HONDA 90, model CT90, 1162 miles, \$250. Jewett, 298-2796.

'64 TOURITE mobile home, 10x56, 2 bdr., furnished, AC, new carpet & drapes. Wilchek, 296-8200.

'68 CABOVER CAMPER, 8', refrig., furnace, 4 jacks, extras; '69 boat, '70 motor, 17 1/2' tri-hull, 115hp Evinrude, power tilt, Dilly trailer, extras. Guzman, 344-9287.

SPAULDING golf clubs, irons 2-9 & wedge, woods 1, 3, 4, w/new bag, \$75; VOX 3-pickup elec. guitar, \$130. Sullivan, 299-4836.

GARAGE SALE: baby equip., jump chair, cradle, etc.; rug shampooer, odd elec. parts, pots, pans, glasses, etc. Luna. 4809 Northridge CT.

HAVE two German Shepard-cross pups to give away. Opland, Los Lunas 636-2012.

21" ADMIRAL B&W limed oak console; overstuffed chair; 12-chord elec. Magnus organ; AM radio, 12 volt 3-yr. battery w/warranty. Walter, 256-1534.

ROYAL DOULTON CHINA, English Renaissance pattern, 4 place settings, used twice, retail value over \$150, sell for \$100. Worrell, 299-0381.

'68 250 BSA Starfire, 8500 miles, just overhauled, extra trail sprocket, bash plate & high pipe, \$425. Fox, 299-9332.

CROSS BREED PUPS, 6 wks. old, mother Collie, \$10 ea.; 4 8:55x14 tires, all for \$20. Gregory, 867-2432.

EICO RP 100 4-track tapedeck, \$125; Citation II 120W power amp, \$35; 2 13" Mercedes wheels; 2 used 13" tires. Phipps, 299-3151.

FOR SALE - CARS AND TRUCKS

'67 CHEVROLET 3/4-ton pickup, LWB, 16,500 miles, custom camper equipment, radio, 4-spd. trans., under NADA at \$1600. Dornhoff, 298-9220 evenings.

'61 FORD Fairlane 500 sedan, AT, radio, runs but needs work, \$100. Tischhauser, 298-1407.

'60 FORD pickup w/camper shell, 6-cyl., 4-spd., short wide box, \$595. Groll, 898-0641.

'64 EL CAMINO pickup truck; '66 Rebel Rambler. Below book price. Horn, 268-1054.

'67 CHEVROLET Caprice station-wagon, loaded. Fisher, 299-9235.

'64 MERCURY Montclair, PS, PB, AC. Benion, 265-4188.

'67 FORD Cortina GT, AM-FM, 30,000 miles, \$950 NADA, \$875. Rand, 299-1048.

'61 COMET, 6-cyl., new paint, upholstery, floor mats, rebuilt transmission, \$400. Bedeaux, 344-6277.

'66 FORD Fairlane 500 GT, 4-speed, stick shift, \$850. Clark, 296-8668.

'58 FORD pickup, 1/2 ton, V-8, 4-speed, short wide box. Mautino, 877-4346.

'66 DATSUN stationwagon, new tires, radio, AC, \$850. Buchanan, 898-2461.

DODGE V-8, \$450, w/R&H, PS, PB, auto. trans. Mitchell, 266-4170.

'67 RAMBLER American, 4-dr. sedan, V-8 engine, auto. trans., radio, one owner. Hostetler, 898-3785.

'67 PLYMOUTH FURY III wagon, all power & air, V-8, AT, \$1200. Barnette, 298-9227.

'66 SHELBY MUSTANG, AT, radial tires, mag. wheels. McGuire, 299-2282.

'65 BUICK LeSabre, fully equipped. Hartman, 296-2241.

VW squareback, AT, 19 mos. old, 7000 miles left on warranty, \$1995. Roberts, 298-9163.

FOR SALE - REAL ESTATE

OR RENT, 2-bdr. home, one block from UNM, unfurnished except for stove and refrig. Abbin, 255-3569.

HOLIDAY PARK 4-bdr., den, tri-level, landscaped, carpeted, custom drapes, cash to 5 3/4% loan, \$178/mo. Lee, 298-7702.

CUSTOM DESIGNED adobe, North valley, 4-bdr., 2000 sq. ft., 2 full baths, enclosed patio, 2/3 acre, sprinklers, \$39,500. Weinreich, 344-9167.

WANTED

WANTED to rent, 4 or 5-bdr. furnished house in or around Albuquerque. June-August. Otey, 415 447-0353, Livermore, org. 8157.

DEEP SEA fishing rod, reel, line, etc. Ristine, 298-8383.

WEST COAST mirrors. Baxter, 344-7601.

PICKUP wheel for 3/4 ton eight-hole, 16" split rim. Souder, 282-3121.

WATER WITCHER to witch future mountain water well. Barton, 282-3349.

8 SWIVEL casters, 2" rubber. Sektan, 296-5396.

TWIN-BED bedroom suite suitable for teen-age girls room; orange or avocado rug. Detorie, 299-1868 after 5.

FOR RENT

3-BDR., 2-baths, den w/fireplace, close to Base and schools, \$150/month plus \$50 deposit, available May 1. Drummond, 299-8606.

NEW EFFICIENCY apartment, \$90, water and gas paid, Eastdale. Palmer, 255-7907 or 299-9044.

FURNISHED duplex apt. w/attached garage, utilities paid, no pets, couple preferred, available approx. April 1. Berger, 255-0265.

LOST AND FOUND

LOST—Rx sunglasses w/black frames, man's Seco watch, gold "Cross" pen, gold pin w/initial K, black vinyl glove w/flannel lining, paperback — "Games People Play", Rx glasses w/black frames in black case, Ray Ban green safety sunglasses in tan snap case, ladies black kid glove, Rx sunglasses in dk. brown case. LOST AND FOUND tel. 264-2757, Bldg. 832.

SUPER SOUL SESSION



J. J. Elmore
(AEC)

**Coronado Club
tomorrow
8:30-12:30
happy hour
prices**

TONIGHT the Club's famous chuckwagon roast beef will be the buffet feature at Happy Hour while Phil Graham occupies the bandstand. Happy hours start right after work on Friday evenings with the TGIF crowd at the north end of the main lounge lining up at 5 p.m. The buffet is served from 6 to 8 p.m. The band plays for dancing from 6 to 9 p.m. and then there's a sing-along in the main lounge with Yolanda Adent until midnight.

On Friday, April 2, handcarved baked ham will be the menu feature while Sol Chavez and the mighty Duke City Brass will make the happy music.

Happy Hour the following week will be held on Thursday, April 8, since the next day is Good Friday. The buffet menu that Thursday will be seafood and The Top Three will be on the bandstand.

Events Calendar

March 26-28, April 1-4—"The Birds and the Boys," short plays and sketches. Old Town Studio, for reservations tel. 242-4602.

March 28—Albuquerque Motorsports Club rally. For information call Jak Strascina, tel. 344-9536, or Jeff Kahn, 255-3870.

March 28—Manzano Peak from Ox Canyon. N.M. Mountain Club, leader Ray Nethers, 344-8437.

April 1-3—"Anne of the Thousand Days," Sandia High School Theater, 8 p.m., tickets \$1 at the door.

April 4—Placitas to La Madera ghost town. N.M. Mountain Club, leader Bill Stamm, 255-2640.

April 5—Stuttgart Bach Collegium, Popejoy Hall.

April 5—"La Barca Sin Pescador," drama in Spanish. Old Town Studio.

April 8—"The Penitents in New Mexico," lecture by Bill Tate, Old Town Studio.

TEENAGERS can do their thing on Saturday, April 3, from 7:30 to 10:30 p.m. Carl Bell of KQEO will be emcee for the occasion while the Star Sapphires will be wired into the bandstand. Member parents should pick up tickets for their youngsters in advance.

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TAXPAYERS can forget about Form 1040 during the Taxpayers Bawl Saturday, April 10. The Jack Daniels people will provide free samples and the Four Keys will provide "forget it" music. The menu will feature cordon bleu which is a fancy breast of chicken wrapped around ham and cheese. Cost to members will be \$3.50, guests \$4. Reservations are required.

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ANNUAL EASTER EGG PARTY for kids will be held Saturday morning, April 10. The fun and games will start at 10 a.m. Bring the little ones six and under.

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EASTER FASHIONS will be presented during the noon hour on Thursday, April 1. Rosario Ayres will moderate.

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DANCE LESSONS, both for beginners and advanced students, will start again next Monday, March 29. The 10-week classes cost \$20 per couple.

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DUPLICATE BRIDGE meets Tuesdays at 7 p.m. Coronado Ladies bridge will meet Thursday, April 1, at 1 p.m.

Coronado Club Activities

The difference between a super soul session and a regular soul session is, according to Smiling Jim Noonan, Coronado Club manager, the introduction of two new super sandwiches—the super Italian sausage sandwich and the hoagy hamburger.

So, big deal? Well, according to Smiling Jim, the troops who come to soul sessions dig the band, dig the happy hour bar prices and dig the strobe light atmosphere but wanted something to eat as their energy is spent doing the frug, the bugaloo, the monkee, the whizbang and all those other strenuous things. The super sandwiches are Jim's answer to hungering humanity.

Other than that, tomorrow night's soul session will feature the big modern rock sound of Freeman Lacey and the Mark IV and be pretty much the same swinging affair that it's always been. The bash starts at 8:30, ends at 12:30. Admission is free to members.

Particle Counter System For Clean Rooms Patented

A patent was recently issued for a Sandia-invented system for detecting airborne particles in a high volume air sample, but in the intervening months since the patent application was filed, Bill Neitzel (9225) has come up with an improved version.

The device described in the patent uses a beam of collimated light (actually, a helium-neon laser) to monitor the sensing zone. The parabolic mirrors or lenses within the sensing area have been eliminated in the newer version.

The system is capable of sampling 50 cubic feet of air per minute and is suitable primarily for use in laminar air flow clean rooms.

Although there have been numerous requests from industry for additional information about the device, the detection system is not being manufactured commercially at the present time.



SYSTEM FOR DETECTING airborne particles in a laminar air flow clean room is displayed by inventor Bill Neitzel (9225). Instant read-out is available on a digital counter, a digital recorder, and an audible indicator.