

DUNK TEST — When design requirements for this electronic device called for heating it to 111°F, then immersing it in 65° water for two hours, some problems arose. First, find an accessible body of water with temperature controls and with enough volume that the heated unit would not itself raise the water temperature significantly. Solution: a Coronado Club swim pool, thanks to John Foster (1212), the Club's Director of Swimming (right). Second problem: a faulty pump and a frozen valve in the pool's filter system. Solution: "a gargantuan effort by Plant Maintenance," says John. But the test was successful. Here Field Testers Bob Lucas (9322) and Steve Zdunek (9718 on truck) lift the device from the pool.

Labs Payroll Data Released

The Sandia payroll for calendar year 1975 amounted to \$98.9 million at Sandia Labs Albuquerque and \$16 million at Sandia Labs Livermore. For CY '74, these figures were \$92.6 million for Albuquerque and \$14.7 million for Livermore. Salaries of some 70 Sandians at Nevada Test Site and Tonopah Test Range are included in the Albuquerque figure.

At the end of CY '75, 6655 persons were on roll, including some 894 at Livermore. The total is about 230 more than at the end of CY '74.

Assets of the Energy Research and Development Administration's installations operated by Sandia totaled \$329.5 million at the end of CY '75, compared to \$319.1 million in CY '74. These figures represent the undepreciated value of buildings and facilities.

Purchases by Sandia in New Mexico amounted to \$34.5 million for CY '75. More than 99 percent of the amount, or \$34.2 million, went to Albuquerque firms. Purchases from other ERDA contractors are not included. Purchases in the state in CY '74 amounted to \$34.3 million.

LAB NEWS

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

Our Town

Joe Laval Heads Museum Association

Joe Laval of Community Relations Division 3163 is the new president of the Museum of Albuquerque Association. Purpose of the association is to support activities of the Museum. According to Joe, the coming year will be very active.

"In addition to maintaining a full program at the Museum's present location on Yale SE in the old airport building," Joe says, "the coming months will be filled with planning for the new Museum building to be built in Old Town."

Recent passage of the \$2.9 million bond issue for the new Museum is the realization of a long-time community dream. Many Sandians, including Dick Bice (VP-9000), current president of the Museum's Board of Trustees, and Bill Paulus (1741), have worked for years toward this goal.

Joe became involved in Museum activities through his work with the Sandia Exhibit Center and association with the New Mexico Designer Craftsmen.

"Groundbreaking for the new building is scheduled for next fall," Joe says, "and construction should be complete in early '78. That will give us a shell. Then the real work of installing exhibits will begin.

"Museums should be more than repositories of antiquities," Joe continues. "Since the present Museum was established in 1968, the staff has brought programs of

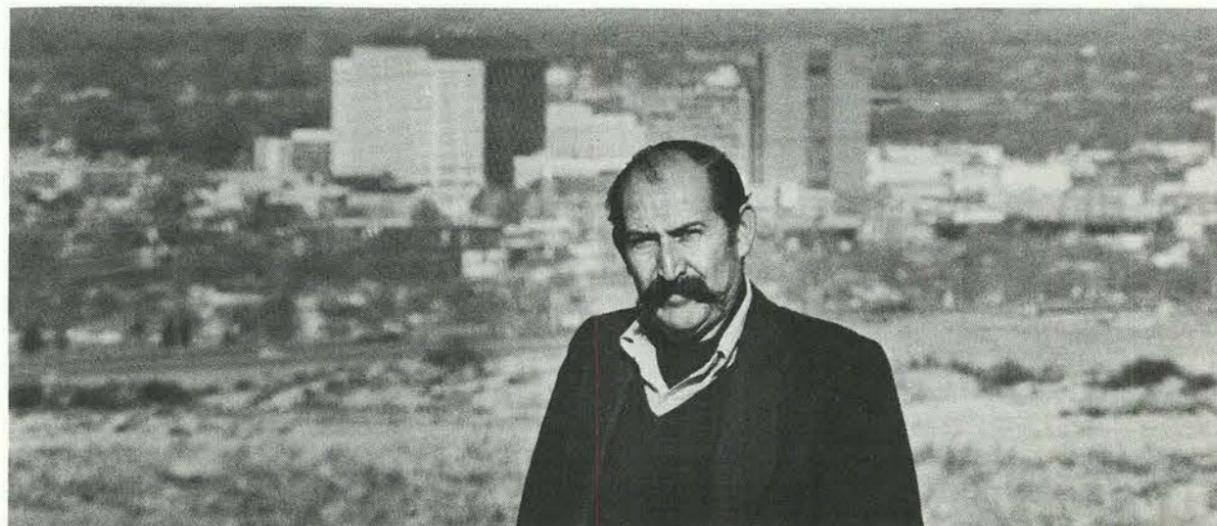
contemporary value to the community — the land use study comes to mind as an example. Giving historical perspective to current issues is a major goal of the Museum. We strive to make it a cultural focus of the community, reflecting the creative vitality of our people. History, art and science are the focal points."

A juried watercolor show, a competition sponsored by the Western Federation of Watercolor Societies, opens at the Museum Jan. 18. This is followed by an important exhibit called "Women in New Mexico," opening Feb. 1. In addition, a newly remodeled "Casa" exhibit — a facsimile of a

colonial Spanish home with authentic artifacts — will be on display.

"Money for the Museum is a continuing problem," Joe says. "The City provides \$150,000 annually. This is the total budget. Needless to say, the Museum could use a larger staff of professionals, many more volunteers, donations of historically significant artifacts and much more money. The Association is a group of interested people who try to help."

Joe invites anyone interested in Association membership to call 766-7783 (the Museum's number).



"WE STRIVE to help the Museum reflect the creative vitality of the region," says Joe Laval (3163), president of the Museum of Albuquerque Association.

Biography

Two More ERDA AA's

These are the last in a series of biographies of top ERDA officials.

* * *

John Teem (no photo available) joined the AEC in 1973 as Director of the Division of Physical Research and was confirmed by the Senate in March 1975 as ERDA's Assistant Administrator for Solar, Geothermal and Advanced Energy Systems. Before joining AEC, Mr. Teem was Director, Technical Staff, Corporate Research and Development, for Xerox Corp. at Stamford, Conn. He joined the firm in 1967. He was formerly vice president of Electro-Optical Systems, Inc.

At Electro-Optical Systems, Mr. Teem was concerned with energy conversion, propulsion techniques for spacecraft, plasma research and instrumentation. He also worked in laser and related optical systems fields. Earlier, at Cal Tech, he conducted research in elementary particle physics, served as head of the bubble chamber group and taught undergraduate physics.

Mr. Teem received both bachelor and masters degrees in physics from Harvard University and, in 1954, received his PhD in nuclear physics from that University.

* * *



From 1970 until he received his ERDA appointment as AA for Fossil Energy, Philip White was General Manager of Research for the Standard Oil Co. (Indiana) in Chicago. In this post he administered the research center at Naperville, Ill., and directed research

throughout the company, including exploration and production research. A major part of this work included synthesis of fuels from coal, shale, and tar sands. Earlier, from 1960 to 1969, Mr. White was manager and later VP of R&D for Amoco Oil Co.

Beginning in 1951 he did R&D work for Pan American Petroleum Company; in 1956 he returned to his hometown of Chicago as Manager and General Manager of R&D, serving until 1960.

He received his BS degree in chemistry in 1935 and his PhD degree in organic chemistry in 1938, both from the University of Chicago.

Events Calendar

- Jan. 23 - Mar. 7 — Barn Dinner Theatre: "Roomies," 281-3338.
- Jan 23 — Basketball, UNM vs Arizona State, 7:30 p.m., UNM Arena.
- Jan. 23-25 — Classics Theatre: "The Crucible" by Arthur Miller, Fri. & Sat. 8:15 pm, Sun. 2:15 p.m., Popejoy, 277-3121.
- Jan. 23-Feb. 5 — Albuquerque Little Theatre: "How the Other Half Loves," 242-4750.
- Jan. 24 — Basketball, UNM vs. Arizona, 7:30 p.m., UNM Arena.
- Jan. 24 — Ski Touring Club, Valle Grande, Jim Iden, 266-1125.
- Jan. 25 — Albuquerque Symphony Orchestra Children's Concert: 2 & 4 pm, Albuquerque Academy Theatre.
- Jan. 25 — Heart Glow, St. Marks Episcopal, 8 p.m. (Benefit Performance for BCMC's Newborn Center).
- Jan. 28 — Popejoy Cultural Series: Philobolus, New Dimensions in Modern Dance, 8:15 p.m., Popejoy.
- Jan. 29 — Albuquerque Chamber Music Concert, 8:15 p.m., Keller Hall.
- Jan 30, 31-Feb. 1, 6-8 — Old Town Studio: "6 Rms Riv Vu," comedy by Bob Randall, 500 Marble NW, 242-4602.
- Jan. 31 — 13th Annual Jaycee Track Meet, Tingley Col. at 7:30 p.m.
- Jan. 31 — Ski Touring Club, Fenton Lake, Harold, 294-6056.
- Jan. 31-Feb. 1 — Albuquerque Children's Theatre: "Alice in Wonderland," 1:30 & 3:30 p.m., Popejoy.
- Feb. 1 — Museum of Albuquerque, "Women in NM," 1-5 p.m.
- Feb. 2 — Audubon Wildlife Film: "A Naturalist Afield," 7:30 p.m., Popejoy.
- Feb. 3 — Popejoy Cultural Series, Marcel Marceau, 8:15 p.m.

Supervisory Appointment



BRICK DUMAS to manager of Space Systems Department 1240, effective Jan. 16. After coming to Sandia in September 1956, Brick worked three and a half years in weapons testing with the field test organization. He was section supervisor of the Advanced Energy Conversion Devices group and, for the past 11 years, has headed Seismic Systems Division, currently called Sensors Development Division 1243.

Brick earned bachelor and masters degrees in physics from the University of Arkansas. He was an electronics technician in the Navy from 1946-49. He is a member of the Optical Society of America.

Brick and his wife Pat live at 1304 Florida NE. Their son Scott is studying space physics at Rice University.

Bicentennial Event

Freedom Train at KAFB Feb. 3-5

The American Freedom Train will be in Albuquerque Feb. 3-5, one of over 100 stops in 48 states. The Freedom Train consists of a steam locomotive (which had been retired to a park in Portland, Ore.) and tender plus 25 cars, including 10 exhibit and 2 showcase cars. There are three 1890's style coach cars, including an observation/press car. The exhibits are designed to portray American achievements over the past 200 years. Working with museums, historical societies and private collectors, the American Freedom Train Foundation has gathered more than 500 original historical documents, art treasures and memorabilia for the display.

The train site is located on Kirtland West. Visitors should enter through the gate at Truman and Gibson where security police will be directing traffic. No base passes are necessary, and parking space is available. The train is open from 8 a.m. until 10 p.m. Moving walkways take visitors through the cars, but there is usually a wait so dress warmly. Admission is \$2 for adults and \$1 for ages 3-12 and 65 plus; groups of 25 or more are admitted for \$1 each. Tickets may be purchased at Piggly Wiggly stores, First National Bank and branch banks, and Winrock Center. For mail order tickets send check and self-addressed stamped envelope to: American Freedom Train, Albuquerque Bicentennial Commission, P.O. Box 1293, Albuquerque, 87103.

commuting information DIAL 4-RIDE



Death

Bob LaChance of Composite Materials Development Division 5844 died suddenly Jan. 7. He was 54.

He had worked at the Labs for 19 years.

Survivors include his widow, a daughter and a son.



Sympathy

To Ed Nidel (2316) on the death of his father in California in December.

To Michael Lucas (3622) on the death of his daughter Jan. 11.

To Willie Garcia (3321) on the death of his father in Albuquerque Dec. 22.

To E.M. Wakeland (3617) on the death of his daughter Jan. 14.

To Dolores Chavez (4256) on the death of her infant son Jan. 18.

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ALBUQUERQUE, NEW MEXICO

LIVERMORE, CALIFORNIA

TONOPAH, NEVADA

Editorial offices in Albuquerque, N.M.

Area 505 264-1053

ZIP 87115

In Livermore Area 415 455-2111

john shunny is editor

&

don graham ass't. editor

bruce hawkinson & norma taylor write

bill laskar does picture work

gerse martinez lends a hand

&

lorena schneider reports on livermore

LAB NEWS Readers Unload

It's been compared to going under in warm maple syrup for the third time. Or like listening to an expurgated Lawrence Welk record. The subject is the company newspaper, a genre not noted for editorial policies that one would call inflammatory.

LAB NEWS, of course, is different. And every two years or so, we survey a random 10 percent of the population to gain a view of how we're doing. Survey returns (we get about 60% back), we must modestly admit, make us feel pretty good but the picture is far from a total endorsement of the newspaper. That's to be expected. Here are some reader comments and our rejoinder, if any.

On energy & weapon program coverage —
Sandia is first and foremost a weapons engineering lab. I'm not sure Lab News readers get that impression. Energy-related work has been overplayed.

Make an effort to present a balanced picture of what Sandia is.

Too much time and space on environmental issues — sometimes Lab News looks like a Sierra Club publication.

Of late, one would be hard pressed to tell Sandia is still deeply involved in the weapons business.

True. Ever tried to write an interesting and unclassified article about our latest bomb? We see lack of weapon program coverage as our number one problem and are working with three DM's (Lieber, Ives & Simmons) to develop weapons-related stories that will pass classification inspection.

On recognition —
Some articles give credit or photo coverage that is misleading . . . should show all the people involved.

We try, we try. We're only as complete as information furnished by our story source permits us to be. If the source doesn't tell us

that Joe worked on the project too, then Joe doesn't get mentioned.

Drop the ego-trip authors and speakers. Milestones (service-award photos) are ho-hum — drop 'em.

One function of this paper is to recognize the accomplishments of Sandians. These are accomplishments.

Editorial slant —
Keep it people oriented. We intend to.

Don't let Lab News get to be straightlaced, solemn & serious. We won't.

How about info on what's good to eat at what restaurants, what great groups are playing currently . . .

One area in which Lab News is sorely lacking . . . is that of investigative reporting. In recent years a number of controversial issues have arisen, e.g. retirement program, hiring practices . . .

Fact of life: Jack Anderson will never make it on the company newspaper. When a company publishes (and pays for) its own newspaper, it can hardly be expected to encourage criticism of the company.

On EEO —
EEO articles very good . . . hope company stands by what they say.

We called one time to have an article on reverse prejudice reprinted and you refused. Maybe you should have a column for opinions different from yours.

Too many articles . . . on anything that looks like a minority. All this does is divide people . . .

A delicate subject. A company paper could keep feelings high by carrying the sometimes extreme views of various groups. But Sandia, and thus the Lab News, sees little point in carrying material that tends to drive employees into factions.

Feedback —
Canned answers to obvious questions. Am a bit skeptical — all queries not printed, allowing possibility of manipulation.

The back page —
Obsession with skirts seem to have passed, a big plus.

What happened to the girls? Glad you are not now publishing pictures of scantily clad girls. Thought that was in poor taste.

Show more scantily dressed, good looking, well built women.

Sorry women's lib got the back page. And so on, ad infinitum. Girl watchers, welcome to 1976. We're sympathetic, but you'll have to get your kicks elsewhere.

Heavy stuff —
Drop the whole thing. Would like to know cost to Sandia & what evidence of benefits therefrom.

It's the Labs' propaganda mechanism, nothing more, nothing less.

Miscellany —
Editorials express an extreme liberal view. I'm sure this offends some employees.

Agreed. Used to take it home, But my wife has weird beliefs so I don't anymore.

How about running a list of new hires? Not a bad idea.

On the whole you do a good and imaginative (even intelligent) job, within the often difficult constraints imposed on a house organ.

Couldn't have stated it more nicely ourselves.

The exuberant fringe —
Let a little more of Bruce Hawkinson out of the box.

If I were editor, I'd have all members of the staff shave!

Take Note

Woody Woodall (9623) is the man to see if you're interested in a two-week air/sea Mediterranean cruise, beginning July 25 with a 747 flight from Los Angeles to Venice. The luxury cruise ship itinerary includes Dubrovnik, Sicily, Malta, Tunisia, Greek Islands, and Athens. The return flight from Athens to Los Angeles will be Aug. 8. Tab for the trip is \$1637 and up, depending on stateroom. Contact Woody on 293-0560.

A gala preview party to benefit three Albuquerque organizations is planned Sunday, Feb. 15 from 6 to 8 p.m. at the new Broadway store in Coronado Center. The \$5 admission goes directly to the Albuquerque Opera Guild, Friends of Art and St. Joseph's Hospital. Members of these groups have tickets available. The event will include tours of the new store, entertainment and refreshments. No merchandise will be for sale. See Joe Laval (3163) or Jim Harris (2521).

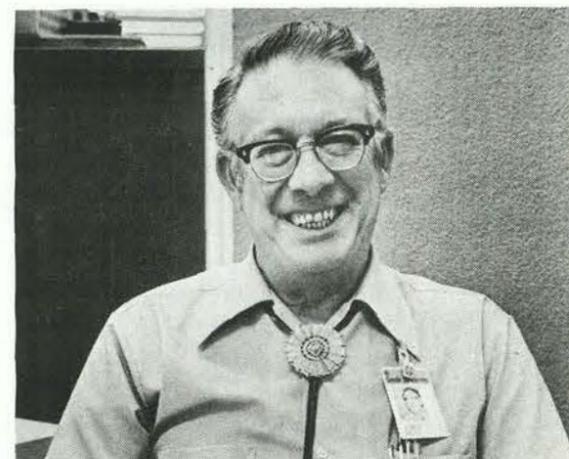
Power boaters can get a reduction in boat insurance premiums by taking the Coast Guard Auxiliary's course on safe boating, being offered next month. The course starts Feb. 10 and meets weekly for 6 to 13 weeks. Place: hospitality room, 1st National Bank,

Central and San Mateo, 7:30 p.m. The six dollar charge covers cost of the workbook and supplies. The Auxiliary is also offering classes to sail boaters, starting Feb. 11 at 7:30 in the C-Club, which will run for 7 weeks. Family rates are available on both courses. Call Ed Bultman, 821-0672 or Ben Gardiner, 298-0116 to enroll.

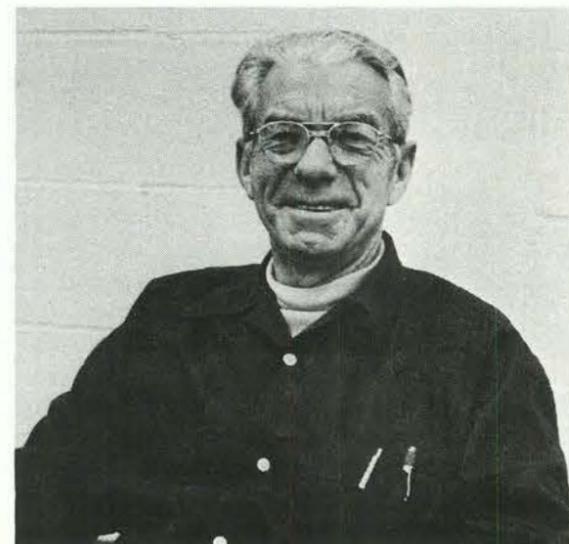
The Sandia High School String Orchestra is holding a rummage sale tomorrow and Sunday in the school cafeteria, 7801 Candelaria NE. If you have rummage to donate, call 298-9525 for pickup. Car raffle tickets are also being sold at shopping centers. Proceeds will be used to send the young people to Vienna this summer to participate in the International Youth and Music Festival.

Norm Grandjean (1311), an Action for New borns member, reports that Heart Glow, a group of eight professional Taos recording artists, will give a benefit performance on Jan. 25 at St. Mark's Episcopal Church, 430 Dartmouth NE, at 8 p.m. The group plays and sings spirituals, folk, chamber, and classical music. Admission free; all donations go to BCMC's Newborn Intensive Care Unit.

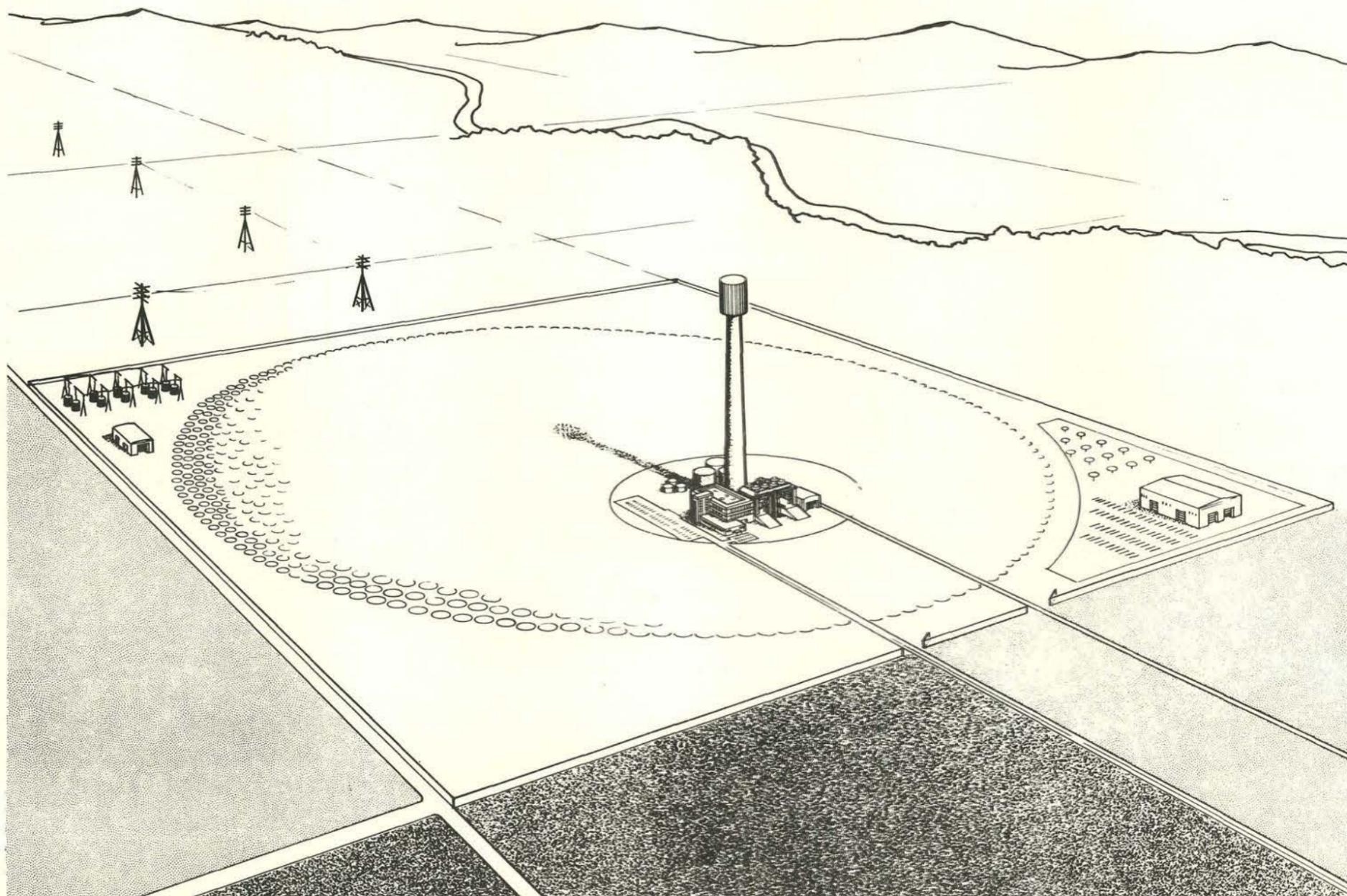
Retiring



Mack Ralls (9522)



Silas Shane (9712)



DRAWING of 10-megawatt solar-powered pilot plant shows central receiver (the tower), surrounded by fields of heliostats that redirect solar radiation to the

receiver. Plant will be largest of its type; site is expected to be selected this fall. Sandia Livermore heads ERDA project.

By 1980

SLL Developing 10 MW Solar Plant

"We'll synthesize a solar central receiver system composed of the best elements of each contractor's designs," says Alan Skinrood (8184). He heads a Livermore team providing technical management of an ERDA project to develop a solar-powered pilot plant which uses a central receiver.

Eventual result will be a pilot plant capable of delivering 10 megawatts of electrical power to a commercial utility grid. Fueled by the sun's heat, the plant will include fields of heliostats (solar tracking mirrors), each one redirecting insolation (that solar radiation received by the earth) to a receiver (boiler) at the top of a tower; the high temperature (~500°C) energy will power a conventional steam turbine or be stored for later use.

The primary purpose of the pilot plant is to test the operational flexibility and feasibility of the system. "No one has ever before constructed and run a solar-powered operation of any appreciable size," says Alan. "This one will be about 40 times larger than the current record-holder (the one-megawatt thermal solar furnace at Odeillo, France) and about eight times larger than the five-megawatt solar thermal test facility to be constructed at Sandia Albuquerque. The Albuquerque test facility is being built to test prototype receivers for the pilot plant. The 10-megawatt electric pilot plant would be large enough to supply the electrical needs of a town of roughly 10 thousand people."

The plant will use a standard commercial turbine and generator. Most of the current funding (\$9 million this fiscal year; likely another \$9 million next) will go to the design, fabrication, and testing of prototype heliostats, receivers, and the heat storage subsystems. While no breakthroughs are required, major technology development is necessary. For example, building an accurate silvered-glass heliostat with high reflectivity is no problem technically, but cost and longevity must be considered. The facility will need about 2000 heliostats, each with an area of about 35 square metres, with supporting structure and mechanisms for tracking the sun. "We're looking for advances in design and materials technology," states Tom Brumleve (8184), "which would make the mass production cost tens of dollars per square metre, not hundreds."

The receiver is not as critical in terms of costs, since only one must be built for each mirror field. "We'll need a good thermal design," says Alan. "The receiver/boiler will be cycled more often than conventional boilers, so we're working to develop stringent design codes."

"The storage system is probably the toughest problem economically," says Cliff Yokomizo (8184). "We must learn which material stores the greatest amount of thermal energy for the least amount of money, with the minimum loss in quality."

Steam from the receiver can be used either to drive a turbine directly or to charge

thermal storage. The energy can be stored as either sensible heat, where the storage material (perhaps oil or fused salt) changes temperature, or as latent heat, where materials change phase (such as solid to liquid). By reversing the process, energy can be released to produce steam. The goal is to have as many hours of heat storage as practical within the economic constraints. As with the heliostats, cost of the storage materials and the storage tanks (perhaps 10, each 10m across, 12 to 15m high) must be as low as possible.

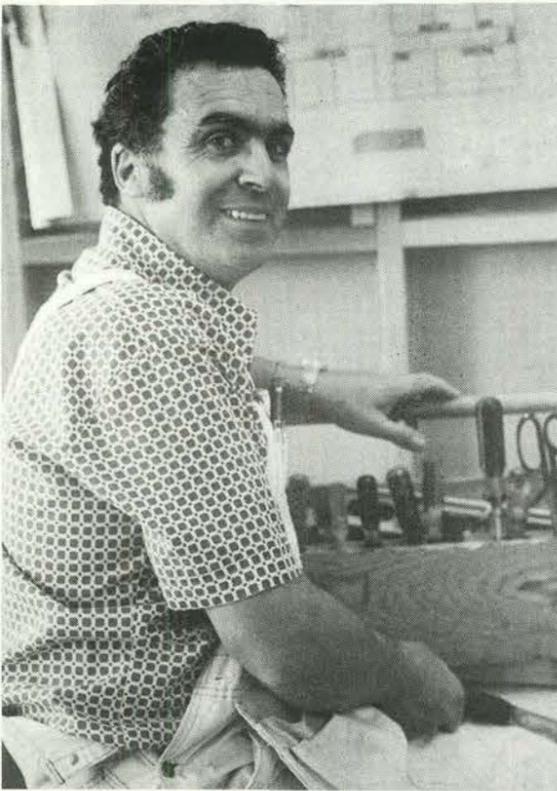
The project has a five-year target date; the pilot plant will be operational by June 1980. Three of the four contract teams, McDonnell Douglas, Martin Marietta, and Honeywell, are developing prototype heliostats, receivers, and storage systems; the fourth, Boeing, heliostats only. Each of the prototypes will be tested and the Livermore team will then integrate the best of this technology into the design of the pilot plant under the overall direction of Cliff Selvage (8180), the 10 MW Pilot Project Manager. The pilot plant site will be selected this fall.

• bh

Congratulations

Nike Nash (8312) and Bonnie Sue Junkin, married in Zepher Cove, Nev., Dec. 21.

Jim Vande Vreugde (8115) and Debra Worm, married in Sheboygan Falls, Wisc., Dec. 19.



RECENT GRADUATE of SLL's apprenticeship program is Clarence Rogers, now a journeyman plant technician structural in Modification Section 8257-3. Requirements under the program include five years of on-the-job training, plus related academic courses which he completed at Chabot and Delta Colleges.

Take Note

From the proceeds of SLL Christmas fund raising projects — the bazaar and the luncheon — a check for \$450 has been presented to the Tri-Valley Chapter of the Alameda County Association for the Mentally Handicapped toward the purchase of a bus. In addition, another \$450 check went to Livermore's Senior Citizens Multi-Service Center for emergency care needs.

Bazaar committee Pam Gibson (8168) and Annette Hicks (8341) and luncheon committee Phyl Munn (8266) and Marie Dremalas (8213) express their thanks to all who helped make the undertakings so successful, especially those who donated bakegoods and handicrafts. Bazaar winners were Hal Brint (8323), snowman; Jack Dini (8312), 25 pounds of walnuts; Maria Jesse (8256), \$10 gift certificate; and Jerry Jones (8168), wall hanging.

Speakers

Walt Bauer (8334), "Helium and Hydrogen Implantation of CTR First Wall Materials," Culham Laboratories, Sept. 5, Abingdon, Berkshire, England; "Helium Implantation Effects in Graphites," International Conference on the Applications of Ion Beams to Materials, Atomic Collisions in Solids Group of the Institute of Physics, University of Warwick, Sept. 8-12, Coventry, England; "Multiple Temperature and Energy Helium Implantations of Niobium," International Conference of Ion Beam Surface Layer Analysis, Nuclear Research Center, Sept. 15-19, Karlsruhe, Germany; "Helium and Hydrogen Implantation of CTR First Wall Materials," Max Planck Institut fur Plasmaphysik, Sept. 22, Garching, Germany.

Pete Mattern (8334), Invited Presentation: "Optical Measurements on the Interactions of Radiation with Glass"; Jim Shelby (8334) and Pete Mattern, "Hydrogen Reactions with Vitreous Silica"; and Jim Shelby and G. McVay (Argonne), "Effect of Water on Physical Properties of Sodium Silicate Glasses," Gordon Research Conferences on Glass, Brewster Academy, Aug. 11-15, Wolfeboro, N.H.

Sympathy

To Al Derby (8264) on the death of his mother in Atlanta, Ga., Dec. 18.

To Jay Jost (8423) on the death of his mother in Alhambra, Calif., Dec. 27.

To Gordon Miller (8322) on the death of his mother-in-law in Hof, Germany, Dec. 15.

To David Ross (8256) on the death of his mother in Livermore, Dec. 29.

Do What Moves You

Bill Gordon's Photos Now In S.F. Gallery

"Whether you paint, write or photograph, you're expressing your viewpoint," says electrical engineer Bill Gordon (8167) who has been a serious amateur photographer for the past four years.

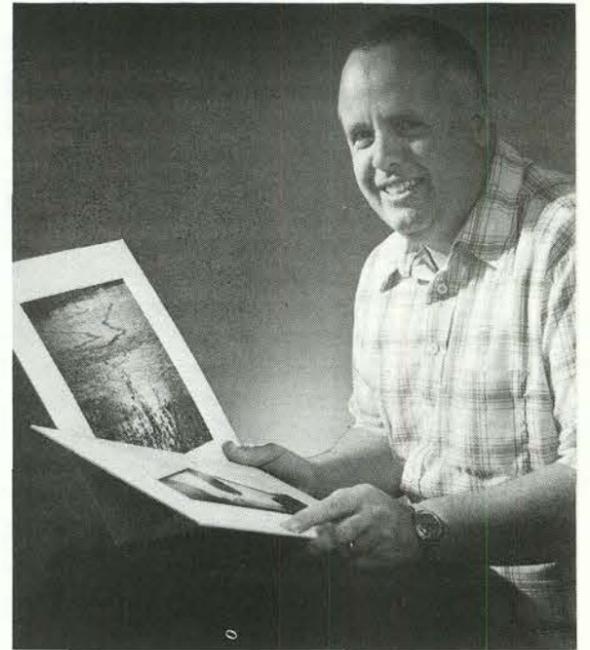
Currently, Bill is exhibiting his photographs as part of a two-person show at the Lucas Gallery in San Francisco (2250 Union Street). The show continues through this month.

A black and white photographer, Bill prefers nature for a subject, with the Livermore area as his favorite setting. "The low round hills, gnarled old trees, and weatherbeaten barns in the local Valley make it one of the greatest spots in California to photograph — even better than the Sierras," he claims.

"To interpret the colors of a subject in terms of shades of gray which give tonal balance to a black and white photograph requires development of a sensitive eye," he continues. "You learn fundamental 'rules' of composition and pictorial harmony, but they are really generalities. While these rules provide a working reference, in practice you do what moves you."

Bill has exhibited at the Camera Work Gallery in Saratoga and is a member of the Carmel Friends of Photography, a group whose gallery exhibits some of the world's leading photographers. One of Bill's prints was accepted this past June by the Friends Gallery for a members' show.

"I've learned a lot from photo gallery exhibits and various gallery-sponsored



PHOTOGRAPHS by Bill Gordon (8167) are on exhibit at the Lucas Gallery in San Francisco through next weekend.

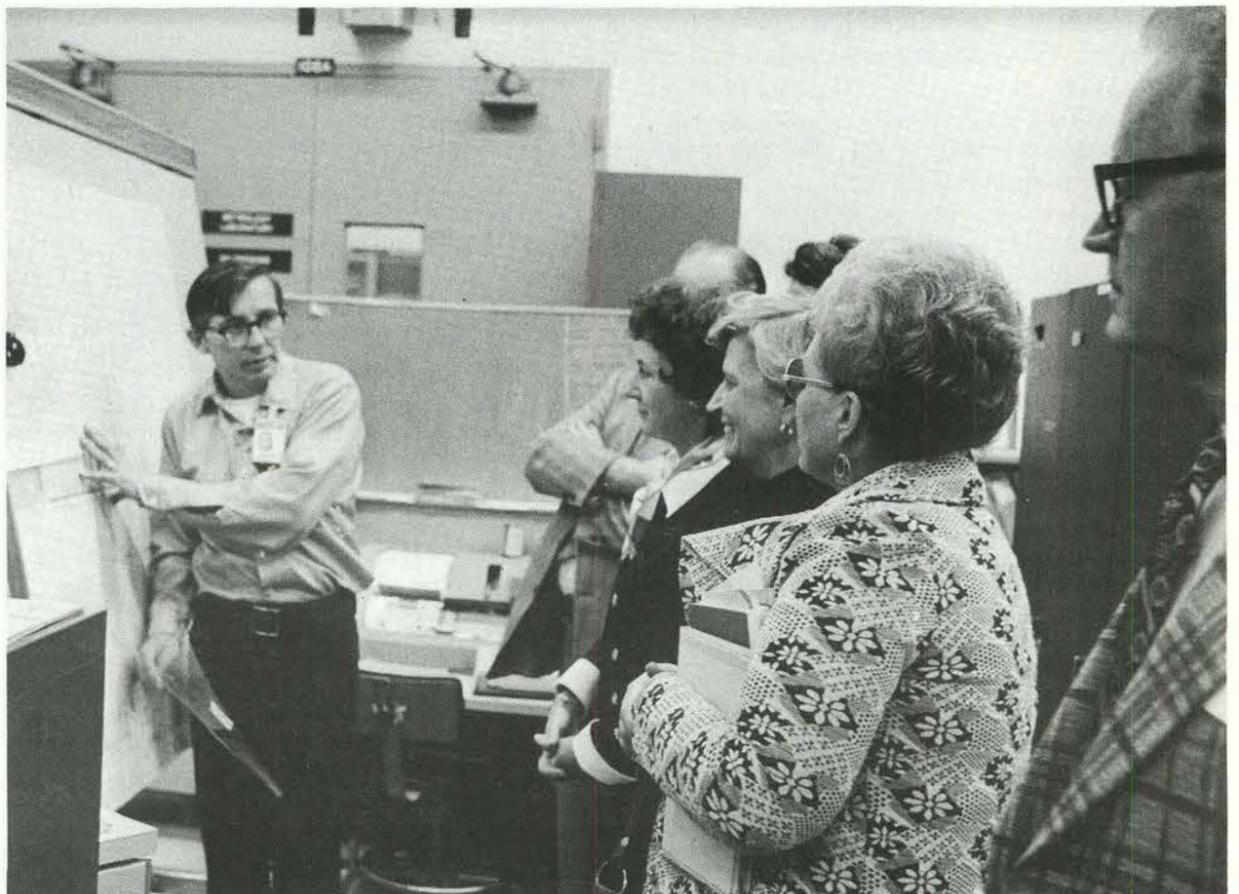
workshops," he comments. "The growing interest in photography as an art form is evident by the increase in Bay Area galleries devoted solely to photography. In 1970 there were about three such galleries; today there are probably 20. They are low budget operations, however, and have a tendency to vanish after a short life. Too bad — the galleries help and inspire photography students."

LIVERMORE NEWS

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LIVERMORE LABORATORIES

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"A DAY WITH THE HIGH SCHOOLS" was held recently at SLL for over 30 principals, counselors, and work education/experience coordinators from eight local high schools. Purpose was to provide the schools a better understanding of Sandia's mission and an opportunity to exchange ideas for identifying students for youth programs, as well as observing students now on the job. Shown is Bruce Affeldt (8423) as he describes Xynetics plotter programming during a tour of Labs facilities. Gertrude Williams (8212) coordinated the event.

Authors



BERNY UMLAND, retired Sandian, displays her recently published book and a portion of her extensive button collection.

Book Published

Berny Umland Collects Buttons

Since retiring in July 1970, Berny Umland, former Plant Engineering senior clerk, has embraced a new hobby and become something of an authority on the subject. Recently her book, "Button Collecting," was published.

About four years ago, Berny bought a pin made from an antique 19th century button. It was a tiny, framed miniature portrait of a fashionable lady. In her search to learn more about it, she found that in the mid-1800's French style dictated that upper class gowns be decorated with such buttons. This influenced British fashion and, of course, the US.

Berny was hooked. As she read more about costume and fashion design she discovered that buttons reflected history, economics, military campaigns, manufacturing processes and world trade. And she discovered that button collecting is a popular hobby.

She acquired several button collections and started haunting antique shops and garage sales.

The book reflects her enthusiasm for the hobby. It is a "how-to" book for the new collector. Publisher is The Printery of Santa Fe.

Berny enjoys retirement but is busier now than ever before. In addition to button collecting, she creates wall decorations with an art called "quilling" — cutting shapes and designs out of paper.

She is also active in the Museum Association of Albuquerque, heading the membership committee. And she is working on another book.

Congratulations

Marti Temple (1243) and Wayne Bell, married in Albuquerque, Dec. 27.

D.W. Schaefer (5814) and B.J. Berne (Columbia Univ.), "Number Fluctuation Spectroscopy of Motile Microorganisms," Vol. 15, 785(1975), BIOPHYSICAL JOURNAL; D.W. Schaefer and B.J. Ackerson (Univ. of Colo.), "Melting of Colloidal Crystals," Vol. 35, 1448(1975), PHYSICAL REVIEW LETTERS.

E.W. Cassidy (4211), W.H. Chandler (4212) and R.J. Edelman (4200), "Breaking Down Classification Barriers to Job Advancement," May-June 1975, PERSONNEL.

H.J. Rack (5832), R.L. Brown (The Gillette Co.) and Morris Cohen (MIT), "Stress Relaxation During the Tempering of Hardened Steel," Vol. 21, October 1975, MATERIAL SCIENCE AND ENGINEERING; H.J. Rack, "Dynamic Strain Aging of Metastable Beta Titanium Alloys," Vol. 9, August 1975, SCRIPTA METALLURGICA.

J.A. Cantwell (4232), "A Special In-House Continuing Engineering Studies Program," February 1976 issue, IEEE Transactions on EDUCATION (special issue).

H.A. Madden (5114), "Electron-Stimulated Processes in Solid Surfaces," Vol. 13, No. 1 (1976), JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY.

F.J. Zanner and R.W. Fisher (both 5833), "Diffusion Welding of Commercial Bronze (Cu10%Zn) to a Titanium Alloy (Ti-6Al-6V-2Sn)," April 1975, AMERICAN WELDING SOCIETY.

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Paul Robertson Returns to Labs

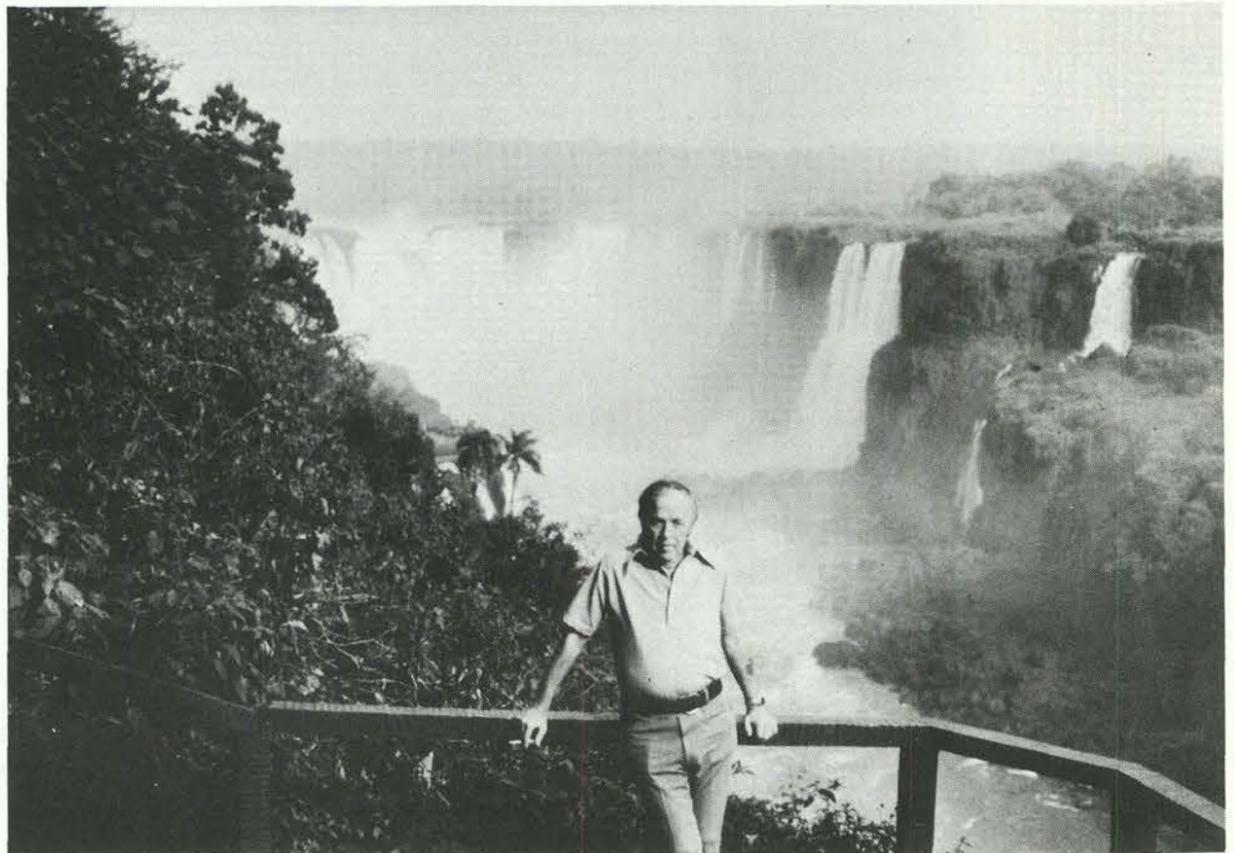
"Not a bad cup of coffee in 18 months!" That's just one of the tributes Paul Robertson (4232) paid to Brazil, where he was a consultant to the Ministry of Education for the Prodem Project, meaning middle-level schools. Paul returned to the Labs this month from a 1½-year leave of absence, and he is enthusiastic both about the work he performed and about the people of Brazil.

"My job," Paul says, "was to help develop six engineering centers scattered throughout Brazil. This involved planning of the facilities as well as their curricula. Few educators have the opportunity to become involved in the early stages of such a project. It was enormously satisfying."

The centers can be compared to our Technical Institutes. They offer a three-year, university-level, diploma program. Entrance examinations are rigorous, and one result is that the student drop-out rate is less than two percent (compared with a U.S. rate of some 55 percent).

Paul was requested for Prodem by his alma mater, Oklahoma State Univ. As part of Brazil's education program, Brazilian professors take advanced training in technical education at OSU. As these specialists returned to Brazil, Paul helped with their placement in different schools. He was also appointed by the Minister of Education to the Getulio Vargas Foundation, the university which promotes advanced studies in education. In this post, Paul conducted a graduate course for 16 of the engineering center professors, preparing them to administer the Prodem project.

He did this only after learning Portuguese. "It was a crash course of total saturation — radio, newspapers and constant study," Paul says. "Portuguese is the national language and, except in the larger tourist hotels, it's sometimes difficult to find anyone who speaks English."



PAUL ROBERTSON at Iguacu Falls in Brazil.

Paul lived in an apartment in Rio de Janeiro. "Rio is a beautiful city, but the traffic is unbelievable — several lanes of cars all moving at 60 to 70 miles per hour. Pedestrians have no rights — just dash across the street and hope for the best. And there are no parking lots in Rio; drivers use any available space, including the sidewalks and parks. Rio has the largest soccer stadium in the world, seating 200,000, but the stadium doesn't have a parking lot. Instead, police close various lanes of the streets and use them for parking space.

"Brazilians are peaceful and happy people; they are serious and industrious — except at Carnival time. Their government is

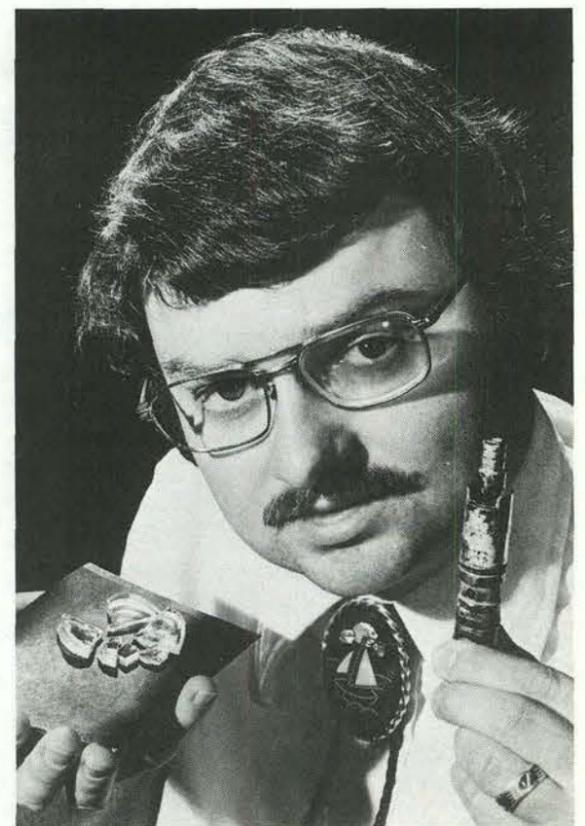
stable and this stability is reflected in their openness. There are 30 to 40 miles of beautiful beaches within the city limits and they are always in use. Swimming, sunning and soccer seem to be the national interests."

Paul says he hopes someday to return to Brazil since he has even closer ties with that country now — a Brazilian daughter-in-law. During a visit with his father, Paul's son John met and married a Brazilian girl. They now live in Albuquerque.

"I'm satisfied with my part in Prodem," Paul says. "When I left Brazil, four of the six centers were in operation, and I'm confident that the Brazilian educators will be able to continue the program." • nt



LOTS of people have lots to do with these people, so we're running this photo of their new location, Bldg. 814 in the northwest corner of the area, just across from the Parade Ground. And they're outside the fence. From left, LAB NEWS, Apprentice Training, and Benefits.



WHEN KEN SWANSON (9633) set out to repair his kitchen faucet, he put the channel lock pliers on the nut and gave a mighty heave. The nut came loose, but so did the pliers—with this result. The hardened lens broke under the impact, but the damage stopped there and Ken's eye is OK.

Tales of Territorial Days

Footnotes sometimes offer intriguing reading. Researching historical material for Vista New Mexico articles, we've collected these items.

* * *

Bowen's Saloon in Santa Fe was the scene of the Poker Championship of the West. The year was 1889. John Dougherty was well known in the Southwest as an expert gambler. He refused to play in any game unless it was "no limit" and unless the other players could show at least \$10,000. Dougherty and Ike Jackson, a rich cattle owner from Texas, agreed to play for the championship. The saloon was filled with spectators, including New Mexico's governor, L. Bradford Prince. According to R. A. Botkin, *A Treasury of Western Folklore*, this is what happened.

"For a few hands the play was desultory, but soon both men drew good hands at the same time, and the betting immediately became heavy. In a few minutes \$100,000 in coin and currency was piled on the table between the players. Jackson was then short of cash, so he wrote out a deed to his ranch and 10,000 head of cattle, and with this document raised Dougherty a hundred thousand. Dougherty hadn't money enough either to call or to raise, but he was equal to the emergency. He called for paper and pen, wrote rapidly for a moment or two, and then handed the paper to Governor Prince, at the same time drawing a revolver.

'Now, Governor,' he said, 'you sign this or I will kill you. I like you and would fight for you, but I love my reputation as a poker player better than I do you or anyone else.'

Without reading what Dougherty had written, Governor Prince hastily signed, and with a smile of triumph Dougherty flung the paper into the pot, saying impressively:

'I raise you the Territory of New Mexico! There's the deed!'

The Texan threw down his cards with a mighty curse.

'All right,' he said, 'take the pot. But it's a damned good thing for you that the Governor of Texas isn't here!'

Dick Wooten (known as Uncle Dick) was a trapper, freighter, store owner, scout and Indian fighter of some renown in the Raton area. During the summer of 1852, en route to California, he was invited to visit Brigham Young at his home in Salt Lake City. Accepted attire for a scout was a suit of buckskins; however, wet buckskin stretches and everytime Uncle Dick forded a stream he had to cut the bottoms off his trouser legs. But buckskin also shrinks as it dries. Uncle Dick was dismayed. He was hoping to meet a number of Mrs. Youngs, but he didn't cut a very dashing figure with trousers reaching only to his knees. Our story-teller says he made the visit but did not meet any of Brigham's wives.

* * *

When the railroad came to Las Vegas in 1879, it helped New Town (East Las Vegas) to boom, but it also brought a gang of thieves, killers and con men. Local citizens formed a vigilante committee and used a windmill which stood in the plaza as their hanging tree. On March 24, 1882, this placard was posted:

NOTICE!

**TO THIEVES, THUGS, FAKIRS
AND BUNKO-STEERERS,**

Among Whom Are

J. J. HARLIN, alias "OFF WHEELER," SAW DUST
CHARLIE, Wm. HEDGES, BILLY THE KID,
Billy Mullin, Little Jack, The
Cuter, Pock-Marked Kid, and
about Twenty Others:

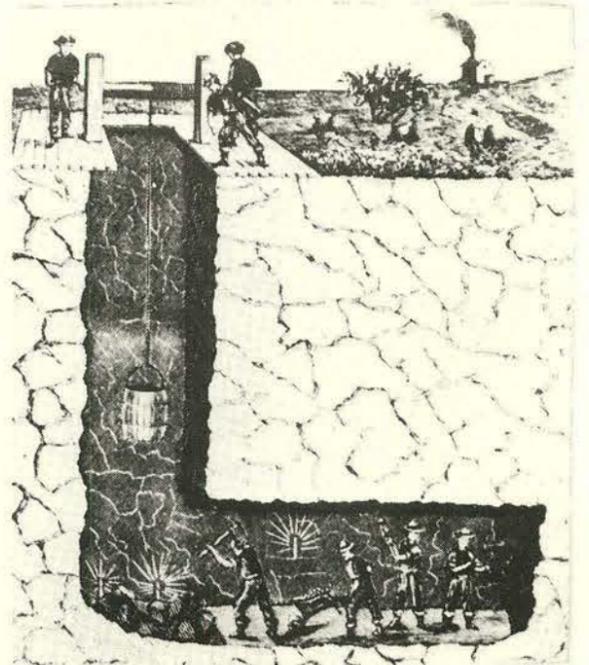
If Found within the Limits of this City
after TEN O'CLOCK P. M., this Night,
you will be Invited to attend a GRAND
NECK TIE PARTY.

The Expense of which will be borne by
100 Substantial Citizens.

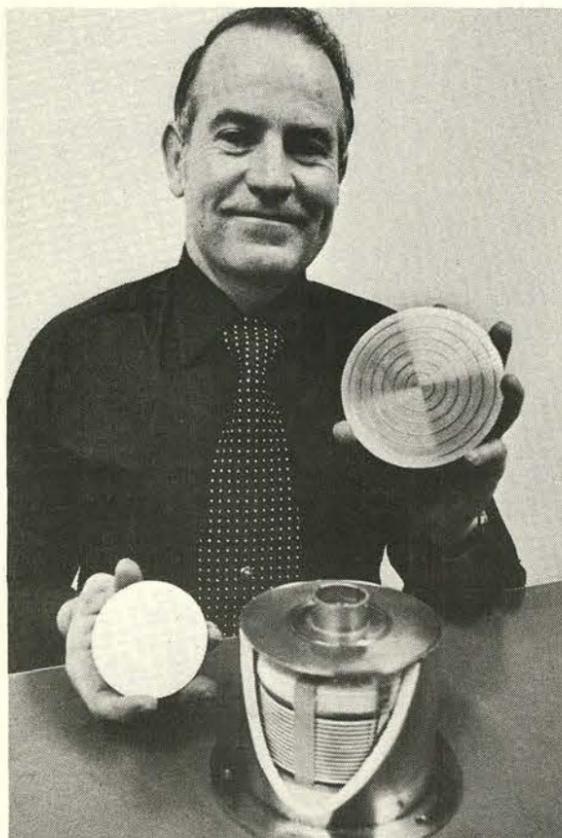
Las Vegas, March 24th, 1882

The owner of the windmill subsequently had it dismantled because of the numerous hangings.

* * *



Old Hickory, Hoosier, Corona Queen, Red Cloud, and Deadwood are names of copper and zinc mines found around Gallo Mesa near Corona, N.M. At the end of the last century all were producing mines. In the midst of this mining activity was a wheeler-dealer who modestly called himself "Lord Lincoln" and named his mine the "Millionaire." The walls of the shaft of the Millionaire showed rich copper but Lord Lincoln knew that 150 feet down was rock too hard to be frilled. He made a sale of the property — at a good profit — but inserted a clause in the contract that required the buyer to sink the shaft at least 50 feet during the ensuing year. Failure to comply with this restriction was cause for repossession. Lord Lincoln sold his holding every year and lived in luxury until his location rights expired and another con man jumped his claim. • nt



ARLEN BALDWIN (2522) displays molds for making electrolyte pellets for thermal batteries. Note concentric circles on molds, the key to a new patent. In foreground is a thermal battery with case cut away to show stacked pellet construction.

Patent Awarded For Thermal Battery Innovation

An innovation in thermal battery design by Arlen Baldwin of Battery Development Division 2522 and co-worker Tom Reinhardt (deceased) has brought ERDA a patent.

A simple but effective mechanical design feature has been added to the electrolyte pellet in a typical Sandia-developed "stacked pellet" thermal battery. The stacked pellet array — heat source, electrolyte (which also contains a binder and depolarizer) and anode pellets — can be built to any size and specification to produce batteries for specific applications. Researchers are pushing for longer lived, higher output batteries.

With modern thermal batteries that operate at high temperatures for 50 minutes or longer, a problem has developed in the electrolyte layer. In the operating state, the electrolyte becomes molten and internal pressures tend to force a molten alloy to the edges of the stack. Here it can seep between the pellets and short out the battery.

A number of approaches have been used on the problem — addition of insulators or varying the content of the electrolyte layer to chemically retard the formation of the alloy — but these proved ineffective or reduced performances.

Arlen solved the problem with the addition of grooved concentric circles in the

electrolyte pellet. The space in the grooves traps the molten alloy while the positioning of the grooves suppresses flow of the material toward the edges of the stack. Simple but effective. The design feature is now incorporated into a number of Sandia components.

Arlen has worked at Sandia since May 1957 in electrochemical engineering. He has been project engineer on a number of Sandia component development programs.

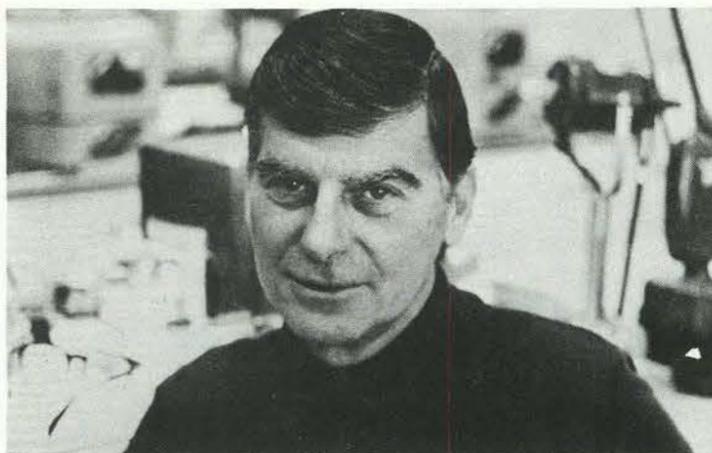
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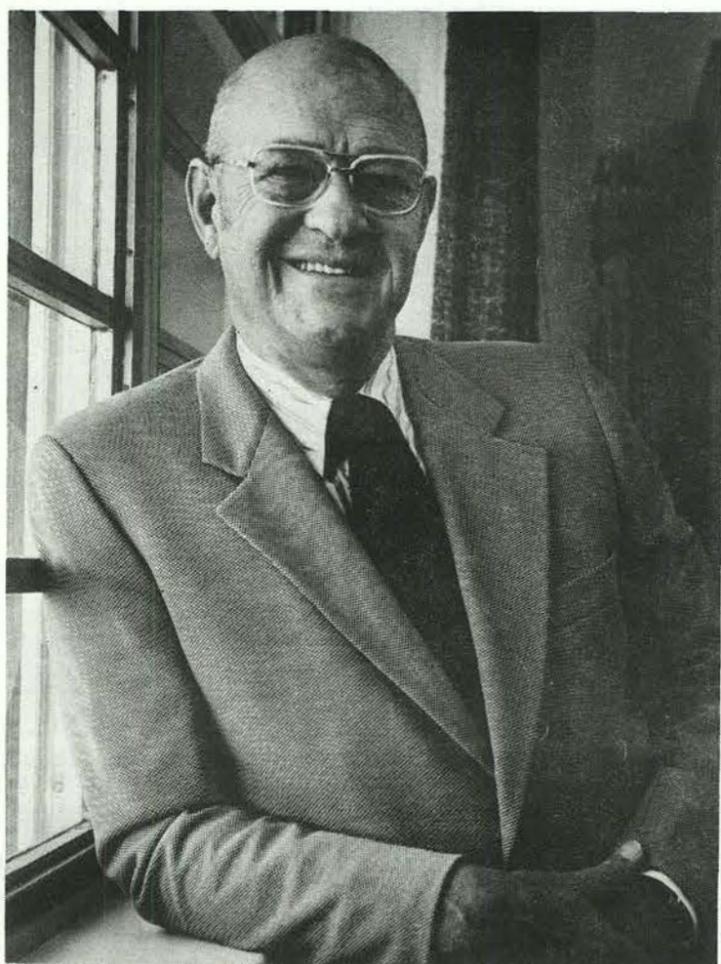
Kent Johnson - 3617

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Frank Murar - 8345

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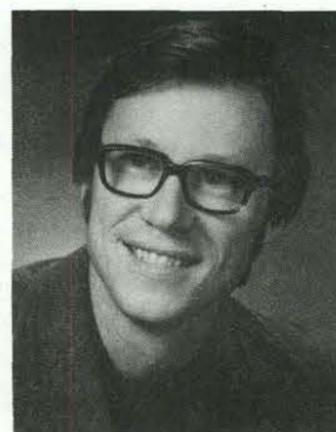
Charles Barncord - 3200

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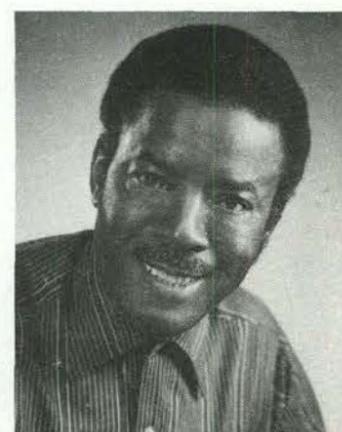
Roger Busbee - 8183

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Rick Wayne - 8365

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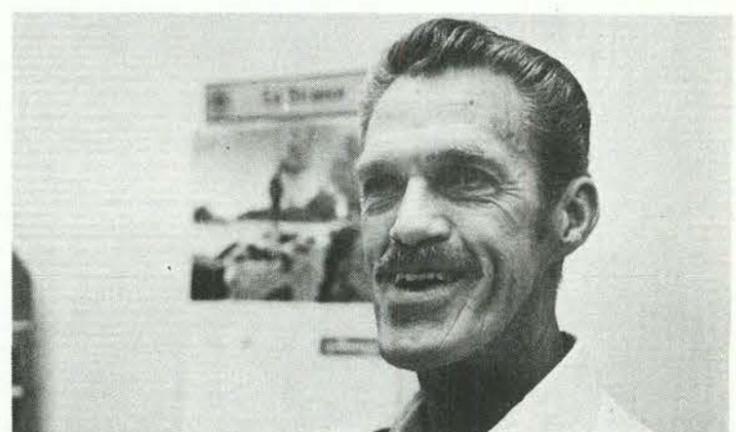
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Hyder Burress - 1133

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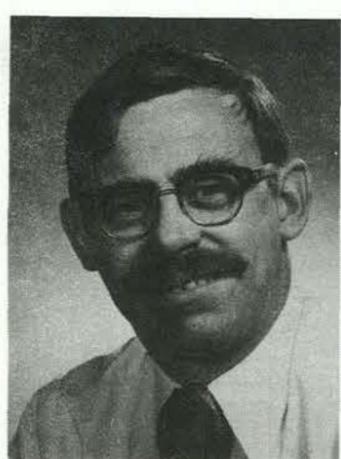
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Ralph Stewart - 5742

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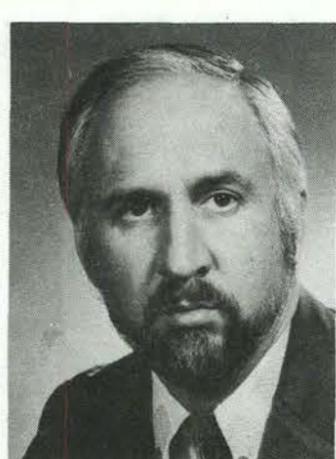
Floyd Mathews - 9321

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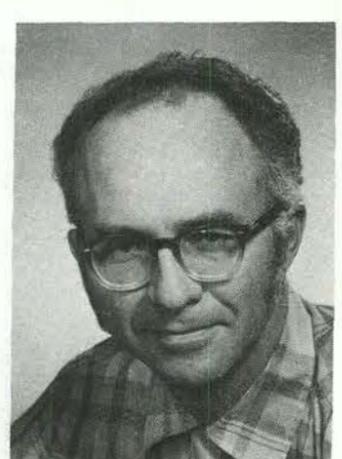
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James Muir - 5412

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Bill Geck - 3153

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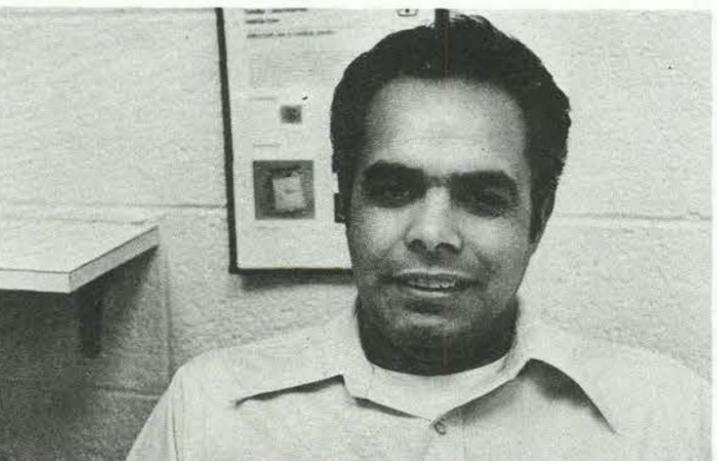
Lorraine Cook - 1752

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Dick Craner - 4010

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John Ayala - 9713

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Carolyn Eckart - 9542

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Michael Zapach - 9524 15



Joe Losinski - 2131 15



Henry Strauss - 3713

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Marshall Tippy - 9542

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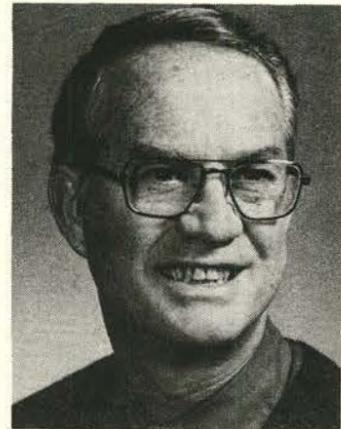
Edwin Kjeldgaard - 2515

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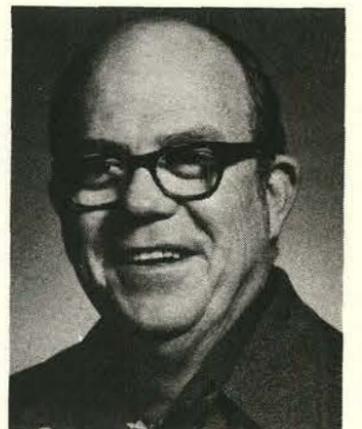
Wayne Miller - 5625

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Richard Kidd - 5725

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Jim Hayes - 3155

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Ralph Work - 2434

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Richard Marquez - 3647

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John Farner - 3646

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Bob Ferguson - 3171

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Manny Cordova - 9341

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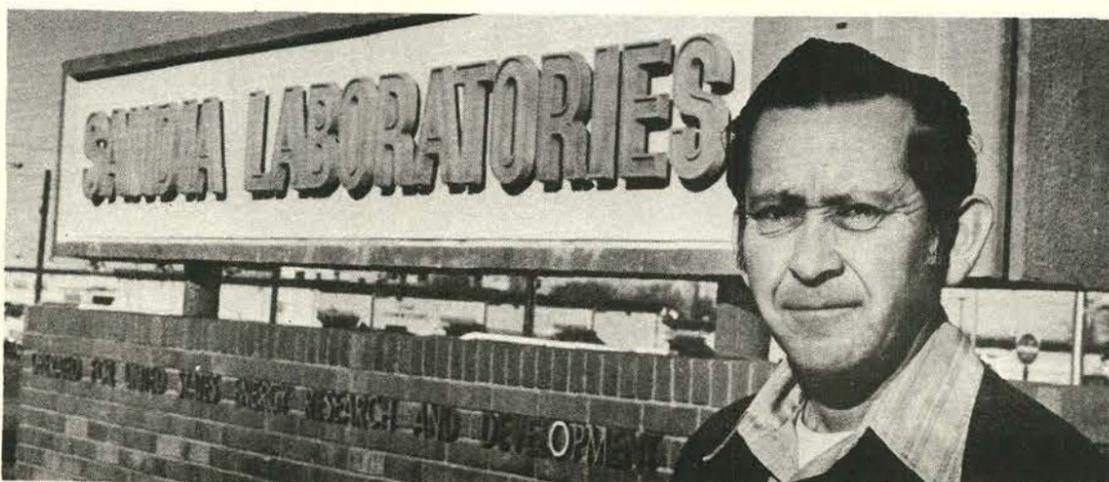
Ernest Mares - 3645

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Albert Marrs - 9481

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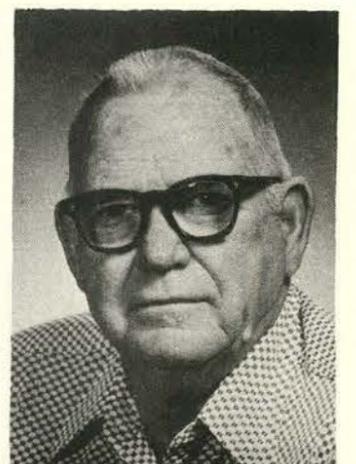
Dennis Cordova - 3281

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Everett Dow - 1251

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Carroll Lowe - 9742

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Speakers

K.W. Schuler and D.E. Grady (both 5163), "Comparison of the Dynamic and Static Behavior of Solenhofen Limestone Below 3.5 GPa"; Grady and Schuler, "Compression Wave Studies in Blair Dolomite"; F.P. Hudson (5443), "The Stratcom VI Program of Correlated Measurements of Stratospheric Composition and other Parameters Between 25 and 39 Kilometers Altitude; Sept. 24 and 25, 1975"; B.D. Zak (5443) and R.L. Schellenbaum (1255), "Stratospheric Solar Ultraviolet Radiation in the Fluorocarbon Dissociation Range: Preliminary Results from Stratcom VI"; Zak and Schellenbaum, "Ozone Particle Density Derived from Solar Ultraviolet Absorption Measurements in Stratcom VI," Annual Fall Meeting, American Geophysical Union, Dec. 8-12, San Francisco.

L.D. Chapman (5741), "Fixed-Site Physical Protection System Modeling"; Safeguard Security Force Engagement Simulation"; H.A. Bennett (5741), "A Security Force-Adversary Engagement Simulation," 1975 Winter Computer Simulation Conference, Dec. 18-19, Sacramento, Calif.

D.P. Peterson (9624), "Computing," Los Altos Kiwanis Club, Dec. 1, Albuquerque.

D.M. Fenstermacher (2441), "Popular Astronomy," Rio Grande Kiwanis Club, Dec. 8, Albuquerque.

G.H. Miller (5423), "Science History—Fact and Fancy," Los Altos Kiwanis Club, Dec. 17.

H.C. Monteith (5413), "ESP Research in Russia, England and American," Rio Grande High School assembly, Dec. 17; and "The Great Pyramid of Egypt," Los Altos Kiwanis Club, Dec. 18.



TONIGHT these three Sandians are onstage at Popejoy Hall in Classic Theatre's production of Arthur Miller's *The Crucible*. The play deals with the Salem witchcraft trials in 1692. From left, Katrina Person (3223), Bruce Hawkinson (3162,) and Bill Carstens (211). Show times: 8:15 tonight and Saturday, 2:15 Sunday.

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- '65 FORD pickup, 352, 8' cabover Teardrop camper, 17" wheels, heavy duty springs, R&H, \$1500. Costello, 299-0563 evenings.
- '70 125cc Penton Enduro, \$150. Lewis, 296-7896.
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- '66 FORD Galaxie 500, 4-dr., 390, new tires, factory air, 58,000 miles, \$700 firm. LaRocco, 255-6615 after 5.
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- '73 EL CAMINO, 350, PB, PS, AT, AC, AM/FM radio, Trontio cover, side rails, vinyl roof. Hayter, 294-0327 after 5.
- '73 HONDA 350-4, loaded, price negotiable, 6500 Cochiti Rd. SE, SP-56. Hiltunen.
- '75 HARLEY Sportster, XLCH, 10-00cc, 1700 miles, Miller, 298-1037.
- '64 BUICK LeSabre, 4-dr. sedan, \$300. Tucker, 293-5142.
- '71 TOYOTA Corolla, coupe, TE-27 series, AT, radio, new tires, below NADA book. Davis, 294-0139.
- '67 AUSTIN-HEALY 3000 MK III, spoked mags, full convertible, ready to paint, \$2500. Butler, 296-8095.

REAL ESTATE

- 3-BDR. home w/1 1/4 bath, good landscaping, in NW. Ortiz, 836-5050.
- 80 ACRES, 1/2 wooded, 1/2

meadows, State 217 & Juan Tomas, East slopes Manzanos. Baca, 869-6637 after 5:30.

4-BDR., den, fireplace, stone, separate MBR, many extras, near schools, shopping, less than \$19 sq. ft., \$32,000. Robles, 877-6384.

ALL brick, large game room or 4th bedroom, carpet, custom drapes, sprinklers, assume 5 1/4 loan or refinance. Dennis, 298-1323.

3-BDR., 1 yr. old house, 2 1/2 baths, carpeted, LR, DR, SR, den, fireplace, dbl garage, R-V parking, completely landscaped, sprinklers. Forsythe, 299-2785.

MISCELLANEOUS

STOVE, 4-burner, GE electric, self-cleaning oven, white. Work, 293-9508.

2-BDR., '65 Richardson trailer, 10'x55', 4'x9' extension on side, \$4500. Sanchez, 831-2078.

UPRIGHT carved, antique piano, \$100. Vigil, 298-6188 after 5.

EDISON Little People crib & bedding, \$40; Hik-a-Poose & 2 booster seats. Bower, 298-2254.

CHORD organ, Silvertone, electric, dbl. keyboard w/bench, walnut finish, \$135. MacPherson, 268-8925 after 5.

HEAVY wrought iron frame, reinforced for band saw, 51"Lx 39"Wx48"H, \$50. Boyd, 256-3867.

MUD-SNOW tires, 4 ea., H70-15, \$12 ea. Raybon, 299-2135 after 5.

POLAROID SL-70 Model 2 camera & carrying case, \$85. Eads, 266-2446.

COMPLETE set "Sun" auto tune up meter, including timing light, \$75. Zucuskie, 881-4086.

MEN'S shoes, size 7 1/2 D, black & brown; clothing, medium. Miller, 255-1838.

KING size water bed w/liner & frame, \$50. Pierce, 298-4013.

BOHEMIA crystal, 1-24 pc set, never been used, brand new glasses, \$150 or less, 8419 Decatur SE, #1. Jones, 266-9329.

SNOW tires w/studs, 670-14, 2

ea., \$10 ea. Navratil, 293-5527.

KODAK 8mm movie camera, \$10; Weston light meter, \$5; snow shoes, \$19; new meat grinder, \$20. Gallo, 296-0112.

2 SNOW tires, 7.75-14, \$15 for both. Sheives, 821-9285.

BARITONE horn, 3-valve, beginner model; trombone, beginner model, consider trade. Rose, 298-4849.

LADY'S Afganistan sheepskin coat, colorfully embroidered & includes hood, 3/4 length, size 10, \$50 or best offer. Orear, 256-1941.

14 CU FT. chest freezer, will deliver, \$160. Moody, 821-1128.

MOBILE HOME, 12x68, Marlette, 2-bdr., 1 1/4 bath, skirted, front awnings & carport, set up in Four Hills, immediate occupancy. Wempe, 293-5652.

CHAINS for 175-13 tires, \$15. Peterson, 298-1235.

MINOLTA Super 8 movie camera & Canon Regular/Super 8 projector, both for \$150. Kramer, 898-7149.

ALL metal, brand new sewing machine, 25 cams, makes button holes, stretch stitch, portable. \$200. Smith, 299-7151.

CB RADIO, Royce model 605, \$150, cost \$200. Rasmussen, 881-0359.

GE electric broiler & rotisserie, with many extra attachments, \$35. Plummer, 296-4327.

WESTINGHOUSE upright freezer, approx. 10.7 cu. ft., 10 yrs. old, \$110 firm. Castillo, 873-1108 after 5.

'70 GULBRANSEN piano, slightly damaged, cost \$995, sell for \$545; '65 LaSalle trailer, 8x35, 2-bdr, clean, furnished, \$1900. Bell, 296-4478.

PLANT stands, 5 shelf, dbl. fluorescent lights; 4 shelf single light, heavy metal; African violets & other plants. Ozmina, 299-3665.

2 TWIN sized mattress sets for bunk beds; 21" Sears Free Spirit 10-spd., extras, \$50. Lane, 298-3366.

'34 FORD p.u. Rod, unassembled, Epoxy frame, new suspension, rear-end, drive-line, brakes, spindles, mounts,

heims, set up for s.b. Chevy. Skenandore, 293-7761.

8-TRACK portable stereo tape player & radio, with AM/FM, dual speakers, AC/DC \$50; incident light meter, Norwood. Laskar, 299-1024.

ANTIQUA gum-ball machine w/stand; rock grinding & polishing machine, 40 lb. capacity, GY-ROC Vibrahone. Graeber, 298-0662.

BEDROOM furniture, corner beds w/matching table, white Sears dresser & desk, maple bedframe, mattress, box-spring. Oliver, 299-5512.

CARPET, nylon, candystripe w/pad, 11'x12', \$20; Eljer hanging sink w/faucets, \$15. Trump, 299-5162.

SKIS, 180cm Skitique, \$25; poles, 38", \$3; portable electric clothes washer, \$35; horizontal camper door, needs glass, \$10. Bassett, 898-1840.

HEAD rests, for pickup installation, new, \$12; motorcycle windscreen, \$10; Miller metal skis, 210's, \$5. Shunny, 265-1620.

2 E-T mags, 14", with tires, \$24 for both. Padilla, 877-2116 after 5:30.

'74 SKIBOAT, Glaspar G-3, 14 1/2 ft. with 90 hp Chrysler, complete w/trailer & ski equipment, \$2800. Duimstra, 299-6106.

GOLF clubs, set of Wilson 1200 irons, 2 thru pw, '74 model, \$114. Campbell, 255-4271.

PIONEER QX-8000A Quad receiver, 22 watt/channel, SQ & RM Matrix, \$275. Garrison, 881-1851.

SKI Monarch 2 lift tickets, \$3 ea; sun lamp (bulb), \$3; 5 gal. plastic Jerry-Type container, \$1.50. Schubeck, 294-5660.

SHOTGUN, Remington 870 Wingmaster, pump, mod-choke; new hunting bow, Ben Pearson, dbl/recurve, 45 lb., 52", best offer. Heinze, 298-8619.

ST. BERNARD puppies w/papers, 6 wks. old, 4 females, 2 males; 865-5415. Male St. Bernard puppy w/papers, \$50. Berlier, 864-8262 or 865-9273.

STUDIO piano, French walnut w/bench, \$795; Danish modern sofa, \$135; youth desk, \$29. Winblad, 881-8977.

PUPPIES, German Shepherd/Airedale Terrier Cross, 6 wks. old, Free to good home. Brandon, 842-8891 after 5.

BAGS, TRASH, plastic, 30 gal., city-approved, \$4/50-bag box. Lab News, 814/6.

LABRADOR Retriever puppies, black, whelped 1/16/76, Registered Litter, Hueter, 242-1620.

BICYCLES: Girl's 24" wheels w/basket, \$40; boy's Spyder, \$25; men's 3-spd., \$50; girl's 24" wheels, \$25, all with thornproof tubes. Jones, 299-6542.

FOR RENT

3-BDR. & study, carpet, AC, large yard, \$250/mo., \$100 deposit, North Valley, 6th & Ortega, after 5. Torres, 245-1584.

CONDOMINIUM Purgatory Ski Basin, 1-bdr., fireplace, equipped kitchen, sleeps 6, ski to lifts & your door. Reservations. Smatana, 299-6278.

WANTED

NATIONAL Geographic Magazines, Aug., Oct., Nov., Dec. '71, all '70, '72. Harris, 294-1291.

NEED someone to spray golden apple tree for apples. Miller, 255-1838.

USED welder. Colp, 255-0228. OLD style Sandia 15 yr. gold Bola-Tie w/Thunderbird. Swain, 265-0098.

28MM wide angle lens, auto, for Minolta camera. Trump, 299-5162.

RENT garage for storage of household items & furniture. Ayers, 877-0542.

LOST AND FOUND

LOST—Men's brown glove; Abalone dangle earring; Silver leaf pin.

FOUND—2 keys on brown case; Sunglasses w/blue case. LOST AND FOUND, Bldg. 832, 4-3441.

WHEN — the Watermelon Mountain Jug Band makes music, it stays made: More fun than an income tax refund! The group, complete with fiddle, washtub bass, banjo, kazoo, and washboard, is at the Club from 6:30 to 8:30 tonight. That's during the big barbequed sparerib/home-fried potatoes/corn-on-the-cob/deluxe salads buffet, so practice tapping feet and chewing food simultaneously. Stick around for some Natural Persuasion and some fine dance music.

IT'S — quite a night for music fanciers on Feb. 7 too. With a grin, Joe Shelby has booked the entire Musical Arts Club for the Club's Variety Night — Joe's the Happy Booker. They'll sing *en masse* and *en solo*, they'll play all manner of instruments, and they'll delight you. Then they'll give way like a dam to a Disney movie, *The First & Only Genuine Original Family Band*, with Walter Brennan, Goldie Hawn, and Buddy Ebsen.

TIME — for Lobo Buses tonight and tomorrow night and every home game night is 6:45. But arrive early — nothing too loose, everything to gain. If you haven't a season bus pass, pick one up well before game night.

FOR — singles only: it's a singular night next Friday during Happy Hour. It's a low-key, relaxed chance to enjoy self, others, and Club. The usual Friday night guest fees at the door will be waived — just show evidence that you're a Sandia/ERDA type. Then head downstairs to the El Dorado room. For a quarter you'll have: Denny and the Hors d'oeuvres (tasty combination that), access to a Happy Hour bar, a secluded place to eat dinner (from the buffet upstairs), and some fine people you may or may not know. No hassle, no hustle. Club member or not, stop by after work — you won't want to go home. Bring a bunch, bring a date (a non-Sandia/ERDA one if you like), or bring only yourself. But be there.

WORK — hard and save a little and enjoy a lot — a lot of travel. The newest addition (to Rio - now April 10-18 - and Tahiti - still April

FRIDAY	
23 — HAPPY HOUR BARBECUE BUFFET Adults \$3.50 Under 12 1.92 Watermelon Mountain Jug Band NATURAL PERSUASION	30 — HAPPY HOUR E.O.M. SPEICAL Adults \$2.65 Under 12 1.50 PRISONERS Denny In Lounge (SINGLES NIGHT EL DORADO ROOM)

26 - May 3 - and Hawaii - May 14-21) is a special Bicentennial Tour: 7 days and 6 nights seeing Washington, Mt. Vernon, Colonial Williamsburg, Luray Caverns in the Blue Ridge, Gettysburg Battlefield, and Philadelphia's Independence Hall, Liberty Bell, and other sights/sites. Costs (in the \$530 ballpark, less for kids) will include jet to and from DC, lodging, and guided bus tour. Dates: June 6-12 (after school is out). Complete description at the Club.

I — suspect an End-Of-Month buffet might be interpreted as Throw-the-Month's-Leftovers - in -a-Pot-and - Call - It - Goulash-Night. But it's *not*. Instead, fish and chips plus tartar sauce, salad, relishes, and beverage. Then the Prisoners will be paroled long enough to get you dancing. End the evening with Denny and His Hum-strum Harmonics in the Lounge from 9:30 to 12:30.

LIKE — a day of skiing without worrying about driving there and back? Call Ski Club's Jack (Sun-hole) Mortley (4-5707) or Frank Biggs (4-7367) and tell him where to go (for skiing). Bus there, ski, bus back. It's the way to go.

ABSOLUTELY — amazing, the swimming/diving prowess of those Aquatic Club members. If your 6-19-year-old would enjoy competitive swimming, call Coach Reed Barnitz (255-4812) or Jane Durkee (255-4211). The only requirement is basic swimming skill (slots are open for beginners through champion levels).

NOTHING — like saving 75¢ every time you go to a Commonwealth movie. Those \$2.50 tickets go for \$1.75 at the Club (non-members note: if you're part of a couple seeing just two movies a month, you'll be financially ahead to join the Club just for the discount tickets).

BETTER — hurry if you forgot to fill out the Tennis Interest Survey Form. Call the Club if you've lost your form (who hasn't?), fill it out, and return it by month's end.

MORE INFO 265-6791.

●CORN●NATURAL PERSUASION●BUS●BAND● E.O.M.

New 'Fly Glasses' Invented by Murray Silverman

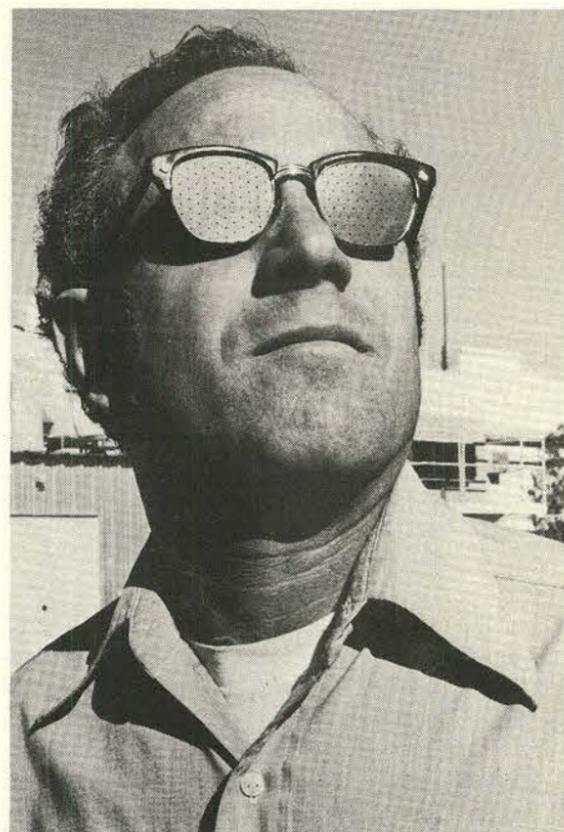
"Flyglasses" is what inventor Murray Silverman (1751) calls his lensless eyeglasses. Instead of ground glass lenses, Murray's device uses flat black opaque metal eyepieces with rows of pin holes drilled in a precise pattern.

With adequate light anyone who wears glasses either for myopia or farsightedness can see very well with Murray's glasses.

"They are a poor substitute for prescription glasses," he says, "But they work remarkably well. Several applications have been suggested."

Camera buffs will recognize that the tiny holes give great depth of field (the area of sharp focus) and this essentially is the basis by which the fly-glasses work.

The glasses were not developed as part of a Sandia project. The idea occurred to Murray as he thought about a pinhole camera he built years ago.



MURRAY SILVERMAN (1751) models 'fly glasses.'

Sandia Authors

A number of Sandians have contributed material for recently published books:

W. Herrmann (5160), "Nonlinear Transient Response of Solids," a chapter in *Shock and Vibration Computer Programs*, published October 1975 by the Shock and Vibration Information Center, U.S. Department of Defense.

R.L. Iman (1223), D. Quade (Univ. of N.C.) and D. Alexander (Univ. of Victoria), "Exact Probability Levels for the Kruskal-Wallis Test," part of *Selected Tables in Mathematical Statistics*, published by the American Mathematical Society and the Institute of Mathematical Statistics.

H.J. Rack (5832) and M. Cohen (MIT), "Influence of Recovery on the Deformation Behavior of Highly-Strained Iron Alloys," a chapter in *Frontiers In Material Science*, Marcel-Dekker, January 1976.

C.W. Jennings (2433), "Thermal Batteries," a chapter in *The Primary Battery*, John Wiley and Sons, Inc., 1976.

H.R. Shelton, J.A. Cantwell and D.J. Hosterman

(all 4232), "Using External Programs and Training Packages," a chapter in the *American Society for Training and Development Handbook*, January 1976.

E.J. McGuire (5211), "Auger and Coster-Kronig Transitions," *Atomic Inner-Shell Processes*, Academic Press, New York, 1975.

W.R. Hoover and R.E. Allred (both 5844), "The J-Integral as a Failure Criterion for A Borsic-Al Composite," *Failure Modes in Composites II*, AIME, 1974.

L.I. Weingarten (1344), "Shell Analysis," chapter in *Shock and Vibration Computer Programs, Reviews and Summaries*, published in October 1975 by the Technical Information Division, Naval Research Laboratory.

D.K. Brice (5111), "Ion Implantation Range and Energy Deposition Distributions," V. 1, *High Incident Ion Energies*, Plenum Press, 1975.

S.T. Picraux (5111), G. Amsel and L.C. Feldman (BTL), "Selected Nuclear Reaction Data," chapter for a section of *CNR-NSF Technical Report*, 1975.

S.T. Picraux (5111), "Lattice Location of Impurities in Metals and Semi-conductors," chapter in *New Uses of Low Energy Accelerators*, Plenum Press, 1975.

