



PAGES OF TEXT are fed into the page reader of Sandia's new optical scanning system by A. A. Key (9427), left, as A. L. Hardeman (9426) checks the control buttons.

New Scanner-Computer Reads Typewritten Page in 14 Seconds

An optical scanning system that can read typewritten copy directly and convert it to a computer compatible format rapidly and efficiently was recently installed in Sandia's computer complex in Bldg. 880. It will considerably reduce keypunching costs associated with several Sandia computer programs.

The new system, consisting of a Control Data Corporation (CDC) 915 page reader controlled by a small computer, uses an optical scanning technique in which a television-like optical system converts typed alphabetical and numerical characters into numeric codes for processing on a large computer. It is capable of reading 370 characters per second, or a standard 8½ by 11-inch page of single spaced text in about 14 seconds.

Elimination of conventional keypunched cards used in data processing is the main advantage of the new system. For example, programs that normally take 2600 hours to edit, keypunch and verify each month are reduced to about 1625 hours of editing, typing and proofreading by using the new technique.

To use the page reader, the originating organization types data that is to be processed on standard size bond paper. However, continuous fanfold paper, special forms and paper ranging in size from 4 to 12 inches wide and 2½ to 14 inches long are also acceptable. The scanner reads only a special type face, but a certain model electric typewriter can be fitted with an

appropriate American Standard Association font ball.

Typographical errors can be corrected when the copy is being typed by inserting special characters. For example, a double question mark is used to strike out a whole line of text and another symbol eliminates only the preceding character. After the copy has been proofread, it is ready for processing.

Since the page reader merely converts the characters on the paper into numbers, it is connected to a small computer which directs the reading program and records the data on magnetic tape for processing on a large computer.

The first project to use the new system will be Sandia's technical library's computer application, consisting of several programs. The 50,000 keypunched cards now used monthly in the largest program will be reduced to about 2500 pages of data. This changeover alone is expected to save about \$2600 per month in keypunching costs.

A. A. Key (9427) conducted feasibility studies on using optical scanning techniques for Sandia, and W. C. Fienning (9425) assisted in the early development of the system. A. L. Hardeman (9426) is responsible for optical scanning applications in the technical library's program. Current and future versions of the operating system are the responsibility of D. B. Saylor (9421).

Bob Ferguson Honored By Red Cross Group

Robert M. Ferguson, Jr. (3465), was honored by the Bernalillo County Chapter of the American Red Cross at its annual dinner meeting Wednesday evening, March 20. Bob received a citation for outstanding service to the Chapter, a medal, and a 20-year service award.

The citation read:

"For 20 years of outstanding work in water safety and the inspiration he has been to the handicapped."

Since 1949 when Bob joined the Denver Chapter of the Red Cross to help with water safety programs, he has taught all levels of swimming from beginning courses to lifesaving classes and has helped train swimming instructors. In addition, he has taught swimming to hundreds of handicapped persons.

To qualify for the service medal, a volunteer must average 100 hours of service per year for a consecutive five-year period.

According to Frederick Moeller, director of Red Cross Safety Services for Bernalillo County, Bob has given more than 3000 hours of volunteer service to the local chapter. "Bob is an outstanding individual," Mr. Moeller said, "and a credit to the community. His achievement is more remarkable in light of his hearing handicap. It was with great pleasure that we made this award to him."

Participating in the ceremonies was Jack Hansen (4200), a former chapter chairman of the local Red Cross Chapter who now serves as a member of the Red Cross Western Area Advisory Council.



BOB FERGUSON (3465), left, was honored by the Bernalillo County Chapter of the American Red Cross this week for his outstanding volunteer service in the water safety program. Presenting the award is Frederick Moeller, center, Red Cross safety director, and Jack Hansen (4200), a past chairman of the local chapter now serving on the Red Cross Western Area Advisory Council.

SANDIA LAB NEWS



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SANDIA LABORATORIES

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA

OPERATED BY SANDIA CORPORATION FOR
THE U. S. ATOMIC ENERGY COMMISSION

Recollections on 25 Years

Unique Quarter Century of Experience Highlights Bill Caldes' Long Service

A quarter of a century in the nuclear weapons field! On April 1, eligibility for a 25-year service award from a company that is only 19 years old! William E. Caldes (2450) can claim both of these distinctions.

Actually, his length of service includes employment as a civilian at Los Alamos before Sandia Corporation came into being.

As Sandia's first employee to reach this status, Bill notes, "The company is literally a part of my personal life because the growth of the Laboratory and the growth of my family have gone hand-in-hand." He also has a 25th wedding anniversary coming up.

"When I think of spending 25 years in other areas of work, I realize how dull they would be by comparison," he says. "From the very start there was unexplored technology, and now we're always pushing the state of the art."

In a sense his employment has paralleled the development of nuclear weapons—from Princeton University's Palmer Physics Laboratory to Los Alamos to Sandia.

Bill's name went on the employee rolls at Los Alamos on April 1, 1943, shortly after the formal contract for operating "the Hill" was signed between the University of California and the War Department's Manhattan Engineer District. He recalls that a few months after his arrival when he wanted to return to Princeton, N.J., to marry his high-school sweetheart, permission to leave "the Hill" had to be obtained from Robert Oppenheimer and the Security Staff.

"Even then there was no time for a honeymoon," he recalls. "There was no family housing available at Los Alamos, and we were one of a number of couples who spent the summer in cottages at Bandler National Monument." In the fall, efficiency apartments were completed and they moved to Los Alamos.

During the war years there was the excitement of the unknown and the big question: Would we get an A-bomb that would



Bill Caldes

work? Bill remembers association with several world-famous scientists. "At one time I worked several days with Enrico Fermi, assisting him on an experiment; and I was under the direct supervision of Jerome Wiesner, who later became a top scientific advisor to President Kennedy." Bill was in on the initial atomic bomb test at Trinity Site.

In 1946 he was transferred to Sandia Base as a group leader in Z-division. Later he managed Inspection Control Department and presently Component Test Equipment Development Department.

"By the early 1950's I felt that Sandia would continue to grow. It was pretty obvious that we had the capability and experience required to be one of the leading technical laboratories in the country," he says.

In looking back over the years, Bill points to the growth of Albuquerque itself and the part Sandia has played in this growth, both directly and indirectly. "Initially we were assigned housing on Kirtland AFB. There were virtually no structures east of the VA hospital," he says. The Caldes' later lived in AEC housing on Sandia Base until 1959 when they moved to the nearby mountains. "The freeways have made a world of difference," Bill notes. "I can get to work in 20 minutes and to the west side of town in 40 minutes."

At home, Bill enjoys being pampered by his wife Margaret and three daughters: Cathy, Corinne and Claire. Their son Kent attends UNM and lives on campus; the oldest son, Chris, is in the Navy and last reported was in the Mekong Delta area.

How does it all add up? "I couldn't get 25 years of this experience anywhere else," Bill says. "It's been unique!"

New Awards for 25th Anniversary

Sandia's 25th anniversary award program will officially get underway April 1 with the first presentation to William E. Caldes (2450) in recognition of his quarter century of service to the company.

The awardees—who will number five in 1968—will have their choice of an Accutron timepiece or a selection of Nambé serving pieces and accessories (manufactured near Santa Fe and nationally recognized for their design). Women recipients are offered a third choice: a Bulova wristwatch.

In addition, the service pin, awarded on the occasion of 5, 10, 15 and 20-year anniversaries, has been redesigned for 25 years and contains a ruby at the top.

Arrangements for the new awards have been worked out by Employee Benefits Division 3122.

Editorial Comment

A Time for Action

A few weeks ago the nation celebrated Brotherhood Week—an annual reminder by the National Conference of Christians and Jews to give to others the rights, respect and dignity they deserve. Members of the Conference go far beyond the annual one-week reminder, however. They carry on an intensive year-round educational program in behalf of national unity.

Their annual reminder closely follows the celebration of the birthday of an American who was dedicated to the cause of national unity, Abraham Lincoln.

It was timely, therefore, and yet ironic, that the President's Committee investigating the causes of the riots in our cities took this time to release its findings. National unity is threatened, states the committee, unless these causes—poverty, apathy and bigotry—are removed. In fact, "we are well on the way to becoming a divided nation," warns the committee.

To hold the nation together, Lincoln was forced to wage civil war. Fortunately, we are not faced with so harsh a remedy. But to prevent a tragic schism of our citizenry another kind of war must be undertaken—a war on bigotry and neglect.

Responsible citizens cannot afford to stand aside and permit the forces of discord to win by default. No words have proved to be more tragically prophetic than those uttered by the Eighteenth Century British Statesman Edmund Burke: "Evil triumphs when good men fail to act."

A call for action from all citizens, and especially from its own employees, has been the Bell System's response to the crisis in our cities. Last January the AT&T Board Chairman H. I. Romnes stated:

"The special problems of the cities demand action. The Bell System can make a significant contribution in the specific areas of education and employment . . . and that is what we expect, intend, and are determined to do."

The danger to national unity is all too real. In discussing the series of national riots and racial violence, President Johnson stated:

"There can be no justification for such breakdowns in law and order and wanton killing and looting. The law of the land must at all times prevail—and be respected and obeyed—or the causes of freedom, equality, and national unity are lost.

"Yet the causes of freedom, equality, and national unity might equally well be lost if the evils of poverty, apathy, ignorance and bigotry were allowed to prevail."

First UNM Graduate Fellowship In Bus. Ad. Given Alice Miner

The University of New Mexico has offered its first graduate fellowship in the College of Business Administration to Alice R. Miner (3232), a part-time student with high academic ability.

The fellowship is for the academic year 1968-69 and carries a tax-exempt stipend of \$1600 plus free tuition.

Alice already had a Bachelor's degree in business administration from UNM when she was hired here in 1963. She transferred to Personnel Division II 3232, in 1966, where she handles the annual Youth Opportunity Program and is also assistant personnel representative for organizations 4200, 4300, 4500 and 4600.

"I started taking out-of-hours courses offered by Sandia—such subjects as technical writing, shorthand refresher, and speed reading. They all require a certain amount of study; and I finally decided that if I was going to spend that much time on



Alice Miner

a course, I might as well start working on my Master's," she explained.

When Alice inquired about graduate study at UNM, she found that, even though her Bachelor's degree was only 10 years old, she would have to take an additional six hours of study to make up for deficiencies in mathematics and programming. But she started plugging away three hours a semester with heavy emphasis on courses in psychology which would be useful in personnel work.

She has now completed 15 hours of graduate study with a grade point average of 3.8 (that would represent four A's and one B). "Slightly better than my undergraduate grades," Alice adds. Even so, she graduated in 1956 with the highest grades of any coed in her class in the College of Business Administration.

After the present semester, she will need 21 more hours to complete her Master's degree requirements. Alice's graduate studies have been carried out under Sandia's Educational Aids Program. "Most of all," she says, "I am grateful for the cooperation and encouragement given me by my husband and two boys, and by my boss, Bill Martin (Division 3232 supervisor)."

WE Assignments Take C. R. Pritchett From Arctic Circle to the Desert

"A period of challenging and interesting assignments" is how C. R. Pritchett, director of Purchasing and Traffic 4300, describes his past 30 years with Western Electric Company.

Mr. Pritchett received his service award on March 9. He has been assigned to Sandia since August 1961.

Following graduation from Baltimore Polytechnic Institute, Mr. Pritchett joined WE at the Baltimore Plant and worked in a variety of assignments before joining the Purchasing organization in 1940. During the early part of World War II, he was to carry out procurement activities in connection with radar and other defense items before entering the Army.

"My most challenging assignment was in 1952 when I was a member of a team that opened the Reading, Pa., plant under a Signal Corps prime contract to develop and manufacture the first transistors," he recalls.

Later, he was assigned to New York City to carry out procurement activities in connection with the Distant Early Warning (DEW) line and the White Alice communications network. "I was all over the northern part of the continent and in settlements near the Arctic Circle where the Eskimos had never seen a white man," he says.

It was while serving as a government sales representative for WE and working



C. R. Pritchett

with Department of Defense agencies that Mr. Pritchett first became acquainted with New Mexico. "When I visited facilities at White Sands, I never dreamed I soon would be living just a little farther to the north," he says.

Immediately before transfer to Sandia, Mr. Pritchett was Resident Purchasing Agent for Western's newly-opened Oklahoma City factory.

"I hope to be able to stay here for a while," he concluded.

All Employees Advised to Check Social Security Earning Record

Why should you check your social security earnings record periodically? To make certain that the Federal record of your social security earnings is accurate. If it isn't, it could mean a loss of money which can't be replaced.

A check now, for instance, would be in order to verify earnings for the years 1964, 1965 and 1966, because the law states that an earnings record can't be corrected if a request for verification is made more than three years, 3 months, and 15 days after the year in which the wages were paid. (April 15, 1968, is the deadline for getting verification of 1964 earnings.)

To make this check, obtain from Employee Benefits Division 3122 a copy of the "Request for Statement of Earnings," which is a pre-addressed postcard provided by the Social Security Administration. Livermore employees can obtain a form from Division 8214. Complete the card and mail it.

You will receive a statement of the earnings and the number of quarters of

coverage with which you have been credited. This statement represents the total contributions credited to your "account" for all the years in which Social Security deductions were made.

The break-down of the earnings are reported as follows: (A) The annual totals of earnings for the last three years for which posting has been completed. (B) The earnings posted for quarters after the last complete year. (C) A sub-total of earnings after 1950. (D) The total of all wages reported after 1936—the year in which Social Security was first deducted.

The amount shown on the statement should be checked against your copy of the W-2 Form for the appropriate year or years. (The W-2 Form shows the amount of Social Security deducted from your pay and wages paid every year.)

The Social Security Administration says that a Social Security number holder may check his earnings record once a year. It recommends that one's earnings record be checked at least once every three years.



RECENT VISITORS—Twenty computer experts who are in charge of UNIVAC 1108 computers at various National Aeronautics and Space Administration sites and at NASA contractors' installations recently toured Sandia's 1108 computer facility in connection with a meeting in Albuquerque. D. A. Young (9421), who participates in the group's meetings and who served as the Sandia host for the tour, types a message on a teletypewriter connected to an 1108 computer. Others are (l to r) E. L. Brooks, NASA, Slydell, La.; A. L. Rothstein, Bellcomm, Wash., D.C.; R. K. Everett, NASA, Houston; P. N. Anderson, NASA, Huntsville; J. M. Neruik, Bellcomm, Wash., D.C.; and F. A. Gray, UNIVAC, Wash., D. C.

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Take Note

Ubbie Hammer, of Technical Art Section 8233-2, is one of five "Artists of the Month" named by the Livermore Art Association. A group of his paintings, two oils, two acrylics, and two pastels, will be shown at the Crocker Citizens Bank in Livermore during the month of March.



LIVERMORE LABORATORY'S DISPLAY for the Murray School District's Science Fair in the Dublin/San Ramon area is assembled by maintenance men Clarence Rogers (left) and Dick Silva (both 8222-1). Apparatus in the display case creates a miniature tornado—visible through the window in the cabinet—and was made from easily obtained materials by Bob Weaver (8142). Science projects by grade school students will be displayed for the public in the multi-purpose room of the Dublin School (on Vomac Road) from 1-9 p.m. on Saturday, March 23 and again from 1-4 p.m. on Sunday, March 24.

Jim Alviso (8245-1) has accepted an offer to play baseball for the National League's Philadelphia Phillies. Drafted from a nationwide group of "free agent" baseball players, Jim played in the 1967 Peninsula League. He reports this month for spring training in Clearwater, Fla. After that, he expects to be assigned to a Minor League ball club for the 1968 season.

Jim won't be entirely among strangers in Florida. Former Peninsula-League teammate Pat Bayless (son of John Bayless, 8240) will be there with the Phillies major league spring training session.



GOLF BALLS PLEASE? Jerry Maloney (8128), left, president of the Livermore Student Education Loan Fund (SELF), and Jerry Jones (8164), member of the Livermore Nursery School Scholarship Fund (NSSF), check the collection of golf balls that will be used in the June 20-23 Hole-in-One contest. Both organizations will benefit from the contest to be held at the Las Positas Golf Course driving range in Livermore. More golf balls are needed—the collection station is in Rm. 273, Bldg. 912.

Livermore Laboratory golfers! Sign up now for the Sandia Twilight Golf League. Play begins on May 1 and continues until Aug. 28. Players are divided into 10 to 12 teams. Nine holes will be played Wednesdays after work at the Las Positas Golf Course in Livermore. Weekly prizes are awarded to individuals with the lowest net scores. At the end of the season, prizes will be presented to members of the winning team.

B. F. Hefley (8232), president of the Sandia Employee Golf Club, is league coordinator.

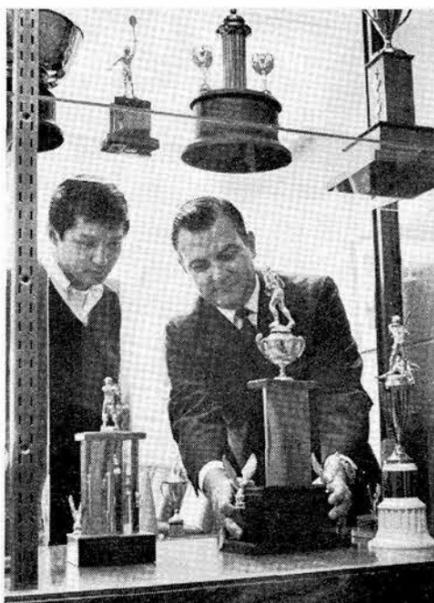
The Atomic Energy Commission has awarded a contract for the construction of a one-story, 1680-square-foot building in Livermore Laboratory's Area 8. The structure will be used by Environmental Test Division II 8125 to determine the mass properties of research and development vehicles and their components. Such properties include their weight, center of gravity, and moment of inertia and dynamic balancing.

Project engineer Len Bedinger (8251) expects construction of the concrete block masonry building to begin March 1968 and be completed by July 1968.

Al Alford (8223) will be installed Exalted Ruler of the Livermore-Pleasanton Elks Lodge No. 2117 for 1968-69 at a ceremony in Livermore April 1. A charter member of the lodge, Al has held one-year offices as Inner Guard, Esquire, Loyal Knight, and Leading Knight, and served as chairman of the activities committee.

He is the fourth Sandian to hold the office of Exalted Ruler of the lodge since its formation in 1959. Past Exalted Rulers from SCLL are George Mincks (8222), 1962-63; Ken Bennett (8243), 1963-64; and A. L. (Bud) Pearson (8222), 1965-66.

Other officers to be installed at the ceremony include Bob Ware (8161), treasurer, and Ernie Alford (8245), trustee for a five-year term. Sandians who will be serving for the year are Jesse Floyd (8222), Chaplain; J. A. (Rocky) Roach (8223), Inner Guard; George Mincks (PER) Parliamentarian; and Ken Bennett (PER), Ritualist.



FIRST PLACE basketball trophy won by Sandia Thunderbirds during recent city-wide tournament is placed among other awards in the laboratory's trophy case by Don Gregson (8130) as team manager Tom Fukunaga (8161) looks on. The tournament is one of many activities conducted by the Livermore Area Recreation and Park District which has Don as its chairman of the board of directors. Members of the winning team include Mike Auman (8158), voted most valuable player by other teammates; Tom Fukunaga (8161), team manager; Paul Dominguez (8161-1); Larry Brown, Lewis Frain, Tabo Hisoaka (all 8252-1); Rudy Cavitt (8252-3); Roger Crawford (8252-4); Sam Crawford, Vic Ham (both 8252-5) and former Sandian Dick Saito.

William A. Jamieson (8242) has been re-elected president of the board of directors of Valley Memorial Hospital in Livermore for the year 1968. Bill is serving his second three-year term as board member at large. During his first three-year-term, he served as treasurer in 1965 and vice president in 1966.

Gil Rhodes (8255) was general program chairman for the annual meeting of the California Safety Congress and Exhibits held in San Francisco recently. As head of the 18-member Program Planning Committee, Gil established the agenda for the state-wide event and introduced the principal speakers of the Congress.

Sympathy

To Dale Ahlstrom (8152) for the death of his brother in Horshum, Pa., Feb. 22.

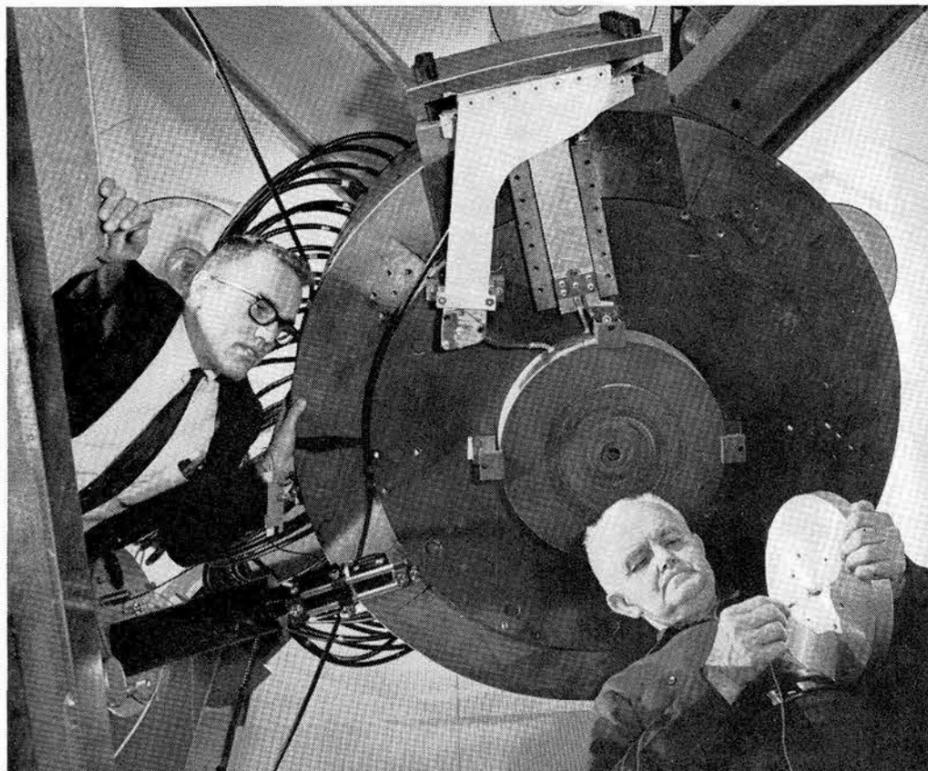
To Len Dighton (8148) for the death of his father-in-law in Spokane, Wash., March 6.

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PREPARATIONS FOR ACCELERATION TEST using electromagnetic repulsion techniques are observed by Dennis Nelson (left) as John Kane (both 8125) connects oscilloscope cable to accelerometer located in center of 5 kilogram (11-pound) aluminum disc. Disc (with component attached) will later be vacuum-held to load coil (magnet) directly above John's head.

Electromagnetic Energy Used In SCLL Acceleration Tests

It appears unrealistic to think that the electrical energy needed to light a 100-watt light bulb for six minutes could produce a mechanical shock equivalent to accelerating a one-pound object from a standstill to 850 miles per hour.

Yet, with this small amount of energy, a Livermore Laboratory test facility simulates that shock by means of electromagnetic repulsion techniques.

Designed by Gayle Cain, John Kane (both 8125), Ron Hagen (8113) and former Sandian Tom Meagher, the high-energy shock facility consists of a capacitor bank (capable of storing 324,000 watt seconds of energy or 0.09 kilowatt hours) and a load coil (a wide bank of copper coiled and imbedded in a micarta block). A sudden surge of electrical current from the capacitor bank creates a magnetic disc. The reaction between the magnetic field of the surface current and the magnetic field of the load coil creates a force of repulsion that causes the disc to accelerate away from the load coil.

Storing only 0.09 kilowatt hours of energy seems insignificant when you consider that a 100-watt light bulb uses 0.10 kilowatt hours of energy per hour. But when this amount of energy is released very quickly the resulting output is quite impressive. For example, 0.09 kilowatt hours released in half a millisecond results in a peak power output of 650,000 kilowatts or almost 900,000 horsepower. The conversion efficiency of the facility is such that 10 to 20 percent of this amount may be delivered to a test item.

Once the capacitor bank is charged to a specific voltage (from 1 to 20,000 volts), its electrical energy is released by ignition switches into the load coil. Repelled by the magnetic field created in the coil, the disc (with component attached) is hurled from its ceiling-high mounting into a sawdust-filled berm box at floor level.

The acceleration is measured either by a piezoelectric crystal accelerometer attached to the component or by a high-speed streak camera.

If the accelerometer is used, it is joined by cable to a camera-equipped oscilloscope. Voltage created by squeezing the sensitive crystals in the accelerometer during the test registers on the oscilloscope and is photographed.

When the streak camera is used, pictures are taken during the time the component is mechanically shocked. These give a time history of the motion of the component. Time and acceleration measurements allow engineers to determine completely the motion of a body.

"We can simulate 110,000 peak g's (zero to 850 miles per hour on a one-pound object in 500 millionths of a second)," relates Dennis Nelson (8125). "However, 4000 peak g's (zero to 27 miles per hour) is the maximum we can theoretically obtain by pulsing a 1000-pound object in the same time. The heavier the object, the less acceleration we can achieve."

Tests indicate that the shock facility can repeatedly produce the same acceleration providing the capacitor bank is charged with the same voltage. The facility is relatively free of mechanical noise when compared with other means of creating a shock (e.g. high explosives). There is, however, a high magnetic field present during the discharge which could distort the instrumentation. This factor requires special attention when a test is being conducted.

Congratulations

Mr. and Mrs. Mike Birnbaum (8147), a son, David Marshall, March 4.

Mr. and Mrs. Don Sadler (8223), a son, Kirk Wesley, Feb. 29.



Betty Dominguez (8253)

Take A Memo, Please

Good safety requires preplanning of any job.

Retiring



Richard E. Wonderlich will retire March 30. He worked at Sandia from 1949-53 in the Quality Assurance organization. During that time he helped organize the first inspection training program at the Laboratory. From 1953-56, he was with the Air Force in Europe as a civil service employee. His work involved production of NATO aircraft.

In September 1956, Dick again joined the Quality Assurance group at Sandia and has been in his current job in Tool Made Sample Engineering Division 2562 since 1960. He started work in the inspection field in Detroit in 1927.

Mr. and Mrs. Wonderlich live at 2913 Cuervo NE. Retirement plans include travel in the United States and some part time work in production evaluation.

"I have thoroughly enjoyed my 'tours of duty' at Sandia," Dick says.



Marie B. Stone, a senior clerk in Mail Service Section 3415-2, will retire the end of this month. She was employed by Sandia in October 1954 and has worked in the documents organization the entire time.

Mr. and Mrs. Stone lived in Detroit before coming to Albuquerque.

Marie's husband, Lawrence, retired from Sandia in August 1966. "The company's early retirement plan is wonderful," she says. "It has made it possible for me to join my husband in retirement so we can travel and spend more time together." Immediate plans include a trip to Phoenix to take in the spring practice sessions of major league baseball clubs.

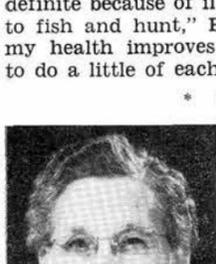
In addition to travel, Marie will study music, catch up on her reading and care for her rose garden.



Perm N. Dwyer, a rigger-crane operator in Heavy Machine Section 4252-1, is retiring March 30. He has worked at Sandia for more than 17 years, and with the exception of the first year when he worked in shipping and receiving has held the same job. Before coming to the Laboratory he worked for local firms in maintenance and construction.

Mr. and Mrs. Dwyer will continue to reside at 2729 Truman St. NE. Their daughter and family also live in Albuquerque. The Dwyer's have two grandchildren.

Mr. Dwyer's retirement plans are indefinite because of ill health. "I really like to fish and hunt," Perm says, "and hope my health improves so that I'll be able to do a little of each."



Bessie L. Passmore, a quality control clerk, will retire March 30 after more than 19 years at Sandia. She joined the Laboratory in September 1948 and worked in the personnel organization for five years. For the past 15 years she has been in her current job in Product Definition Record Control Section 2234-2.

"My 15-year-old granddaughter lives with me," Bessie says, "and my retirement plans include seeing her through school. It's wonderful to have her with me—she's keeping me young."

Bessie has a number of interests—church activities, sewing, knitting, crocheting. "I have an entry for this year's State Fair almost completed," she says. She also plans to join the local Senior Citizen's group. Highlight of her summer plans will be a trip to Canada with her granddaughter.



Thomas G. Ogden of Electromechanical Components Division 2133 will retire the end of this month. He joined the Quality Assurance organization at Sandia in October 1952. He has remained with this group the entire

time, working in systems analyses and more recently in statistical analyses. Before coming to Sandia, Tom handled quality control for Harley-Davidson Motors in Milwaukee.

Tom plans to continue his residence at 11713 Copper Pl. NE. He has a daughter, son and five grandchildren living in Albuquerque. His retirement plans are indefinite; however, he does plan a tour of New Mexico, armed with his camera. In addition to photography, Tom likes pistol target shooting. He is a member of the Enchanted Lens Camera Club.



Frances M. Sheaffer, a record clerk for the past 11 years in Product Definition Record Control Section 2234-2, is retiring March 30. She was employed by Sandia in August 1956.

Mr. and Mrs. Scheaffer (Wilbur works in Test Data Division 7216) live at 502 Hermosa Dr. NE. Their daughter, son-in-law and three grandsons also live in Albuquerque.

"I have thoroughly enjoyed my work at Sandia," Frances says, "but there are so many things that I want to do and don't have time for. I just decided that now is the time to retire; and with the early retirement feature of Sandia's Retirement Plan, I'm able to do this. In fact, the only difficult thing was deciding on a retirement date."

Frances has many retirement plans. In June she and her husband will travel to Kansas to attend a family reunion and their high school alumni dinner. Frances belongs to Eastern Star and White Shrine and plans to become more active in charity work of both of these organizations. She also plans to devote more time to church activities and to catch up on her reading. "I'm going to enjoy being a housewife," she says.



PLANT DISASTER PLAN and its effectiveness when a windstorm struck the Pantex Plant was described by Herman Philips, plant safety director, during a seminar at the Laboratory.

Value of Disaster Plan During Storm Described at Meeting

A 140 to 150 mph wind cuts through a four-square-mile industrial plant.

What was the resulting damage? How did it affect operations? Were pre-emergency plans adequate? How did plant engineering, maintenance, security and other personnel respond?

Answers to these and similar questions were presented during a recent Sandia seminar when Herman Philips, plant safety director, and Berry Jacobson, design engineer, related first-hand experiences of a destructive "plover wind" that caused about \$1.3 million of damage to building facilities alone in the Silas Mason-Mason & Hanger Plant (Pantex) in Amarillo. It struck last year shortly before 6 p.m. on Sunday, Sept. 3.

The seminar was arranged so Sandia and other local agencies, organizations and firms could assess the adequacy of their own disaster plans in light of the Pantex experience. The Pantex disaster plans proved to be beneficial in dealing with the emergency.

The 150 people in the audience included some 80 representatives of various city,

county, state and federal government agencies, local hospitals, military, universities and public and parochial school systems. The remainder were from Sandia's security, plant engineering and maintenance, safety and logistics organizations.

Using slide films and vugraphs, Mr. Philips described the damage wrought within a one-mile path through the plant. Facilities that were damaged included the main administration building and structures in the main assembly, magazine, storage and sewage treatment plant areas. Damaged roofs were the most common scars left by the high winds.

He then described the operation of the plant's disaster plan, the participating company units and the responsibilities of each group.

Mr. Jacobson concluded the presentation with a discussion on the response of plant engineering and maintenance personnel and the public utility companies.

The seminar was sponsored by Safety Engineering Department 3350 and arrangements were handled by Employee Training and Education Division 3132.

Nuclear Explosives Dig 900-Foot Ditch

Latest in a series of Project Plowshare experiments to further nuclear cratering technology took place at the Nevada Test Site March 12 with a number of Sandians participating.

Called Project Buggy, the experiment consisted of the simultaneous detonation of a row of five nuclear explosives each having a yield of about one kiloton (equivalent to 1000 tons of TNT). The explosives were buried at a depth of 135 feet and spaced 150 feet apart. The resulting crater was a ditch about 80 feet deep, about 300 feet wide and about 900 feet long.

The detonation released only a small amount of radioactivity. Most of it was trapped underground or in the earth and rock debris deposited near the crater.

Project Buggy is considered by the Atomic Energy Commission as a major step in developing, for the benefit of all nations, an economic and practical nuclear-excavation technology for use in digging harbors, canals, and railroad and highway passes through mountains.

Experiments with conventional explosives previously demonstrated that the simultaneous detonation of explosives appropriately spaced in a line and buried at carefully chosen depths produces a ditch-like crater. Project Buggy was undertaken to duplicate this effect with nuclear explosives.

In its Plowshare program, the AEC is studying and developing a technology for using nuclear explosives for peaceful purposes. With a tremendous amount of energy in a relatively small package, nuclear explosives may make feasible projects which otherwise would be uneconomic or technically impractical.

Since the Plowshare program was established in 1957, AEC has conducted 20 nuclear field experiments and extensive laboratory research and development, and has derived data from numerous nuclear tests conducted for other purposes. From this work an understanding of the basic phenomena of underground nuclear explosions is evolving.

When a nuclear explosion occurs very deep underground in hard rock, it produces a large amount of broken rock but does not break the surface of the ground. When the explosion occurs at a lesser depth, a crater is formed. The AEC is currently studying in more detail the basic effects of explosions in a variety of geologic media and under a variety of conditions, and how these effects can be put to use.

The ability of an underground nuclear explosion, at the proper depth, to break and move—in one step—vast amounts of earth and rock offers potential for undertaking large earth-moving projects.

One potential application, the use of nuclear explosives to dig a sea-level canal, is being investigated in detail as part of a special study by the Atlantic-Pacific Interoceanic Canal Study Commission. Under Public Law 88-609, the Canal Study Commission will recommend the best route, method of construction, and estimated cost for a sea-level canal.

L. J. Vortman, who is the author of the first comprehensive study of the feasibility of digging a transisthmian canal with nuclear explosives, and Jack W. Reed (both of Underground Physics Division 7111) serve on subcommittees of the Canal Study Commission and were scientific advisors for Project Buggy.

Luke was scientific advisor for close-in air blast measurements, and Jack was scientific advisor for installation and operation of 11 microbarograph stations.

"Although the Project Buggy detonation area was through level terrain in dry rock, the strings of instrumentation were spread across Forty Mile Canyon and the Chukar Mesa area, very rugged terrain," Luke said. "Our instrumentation people deserve a great deal of credit for the physical effort involved—back-packing instruments and heavy batteries up and down mountains is work. They did a great job."

Instrumentation Fielding Division I 7123 under B. C. Benjamin was responsible for air blast instrumentation. Participating from the Division were H. G. Laursen and B. C. Holt.

A&F Support Division 7132 under R. K. Petersen provided arming and firing systems support for the five nuclear devices used in Project Buggy. Participating from the Division in this effort were W. C. Wilson, A. C. Carabajal, P. W. Blaylock, J. L. Slusser, L. E. Hake and R. J. Burton.

Alternate scientific advisor for the microbarograph stations was H. W. Church (5234). A. B. Church (7132) was project engineer for the microbarograph operation. R. G. Mosteller (7132) and J. H. Fuqua (7132) were responsible for arming and firing the microbarograph calibration charges. Operators of the stations included D. A. McFadden (7132), R. E. Glass (7132), L. B. Flores (8332), R. D. McAvoy (7335), A. E. Morse (1524), C. Mares (2554), B. G. West (2554), J. A. Deakin (2554), E. M. Beezley (2554) and T. A. Montoya (Eberline Instruments).

Ed Thuman, Bob Stewart Serve as Volunteer Auxiliary State Policemen

Concerned about rising crime rates and the problems of law enforcement, two Sandians are volunteering long hours of service with the state police. Ed Thuman (9426) and Bob Stewart (4224) are members of the New Mexico Mounted Patrol. Unique in the nation, the organization is an official auxiliary of the state police force.

When it started in the early territorial days of New Mexico, the Mounted Patrol was a group of ranchers organized to combat cattle rustlers. When the state police force was reorganized in 1941, the Mounted Patrol was authorized by the state legislature to "assist and aid" law enforcement officials. It was also named official bodyguard to the governor.

While on duty, members are fully authorized to function as a state policeman under state police supervision. The difference is—and it is an important one—the Patrol members are all volunteers who furnish their own uniforms and equipment. Both Ed and Bob drive their own radio-equipped cars on patrol assignments in the north and south valleys.

Other members of the Patrol provide their own horses and trailers. Patrol members are on call for regular duty assignments and to help during emergencies. Members search for lost hunters or children, aid efforts to apprehend escaped convicts, man road blocks, and help in other emergency situations. Both Ed and Bob average about 30 hours per month of volunteer duty.

Ed, who has been a member of the Patrol for two and a half years, was recently elected second-in-command of the 30-man unit. Bob has served since September.

Ed is currently seeking new members for the Patrol, particularly men with horses



CHECKING with state police headquarters via two-way radio for assignment, Ed Thuman (9426), left, and Bob Stewart (4224) regularly perform volunteer patrols.

and trailers. "Most people feel an obligation to serve their community in some way," Ed says. "Our organization provides a direct method and fills a pressing need."

Ed points out that the New Mexico State Police, with 250 officers, are responsible for a tremendously large area. The officers work an average of 11 hours per day, he says. One of the goals of the Mounted Patrol is to seek legislation to increase the state police force.

In the meantime, he says, the Mounted Patrol is dedicated to assisting whenever possible. Call Ed if you can help on a regular basis. Volunteers must be sponsored by a member and investigated before being accepted for membership.



MEYER COLLECTION of Indian pottery includes these fine examples. Dick (5234) holds a wedding vase by Maria of San Ildefonso and his wife Carol displays a beetle-decorated Acoma bowl, their first acquisition. Potters represented by the other items are (l to r) "Frog Lady" of Hopi, platter, bear and small black bowl by Tony Da of San Ildefonso, wedding vase and bowl by Margaret and Luther Gutierrez of Santa Clara, black Santa Clara bowl by Severa Tafoya, and bowl by Fannie Nampeyo, a Hopi.

Many Outstanding Pueblo Potters Represented in Meyer Collection

Newcomers to the Southwest are amazed by the vast array of arts and crafts produced by the Indians of this area. After their first impulse to purchase everything they see, many people slump into indecision brought about by inability to tell good pottery from junk.

Dick Meyer (5234) and his wife Carol have a fine collection of Indian pottery that has been gathered with forethought. This factor makes the difference.

Carol is a member of the American Association of University Women and one of the group's rules is that members conduct the programs. No one had presented a talk on Indian pottery and, since Carol was interested in Southwestern arts and crafts in general, she volunteered to study the subject.

Her talk was a great success. Other persons have been impressed with the as-yet-unpublished booklet she has written on the subject. A second booklet of more general nature, yet still dealing with Pueblo Indians, has become a part of the Campfire Girls leadership training program and the material has also been presented at workshops for Campfire Girl leaders.

Dick is equally interested in pottery. He is engrossed in the historical aspect of this craft which dates back to about 300 A.D. in this area—the legends connected with certain designs, the differences between the colors and shapes favored by specific Pueblos and the technical skill involved in creating pottery from primitive methods (none of the Pueblo Indians use potter's wheels). "Most of all," Dick says, "we enjoy meeting the potters, seeing them at work and becoming familiar with their life. Much has been written about the art form, but (with few exceptions) little about the women who produce pottery."

Although the Meyers have been to all the Pueblos, they prefer to purchase additions to their collection from entries at the Inter-Tribal Indian Ceremonial at Gallup, the New Mexico Arts and Crafts Fair in Albuquerque, and the New Mexico State Fair, and from a trader in Santa Fe who receives first choice from the works of Maria Martinez, famed potter of San Ildefonso.

"We want the best examples of the work of specific potters. You don't find those pieces standing in the kitchen of the potter's home," the Meyers agreed. "The women are proud of their work and save their outstanding bowls and plates to show in competition."

Furthermore, they add, a direct purchase from the potter would probably require three or four trips to the Pueblo. Indians are slow to bargain.

Dick and Carol have several small items made by Tony Da, grandson of Maria Martinez. "He has only made a few bowls and plates for sale and is still learning from Maria how to shape the larger bowls. We bought a plate from Tony at the local arts and crafts show, but it was a conditional sale. If the plate won a 'purchase prize' at the Inter-Tribal Ceremonial, we couldn't keep it. Fortunately for us, the plate took a blue ribbon instead," the couple recalled. This craftsman favors the traditional black-on-black designs of San Ildefonso but he etches the dull black area with a knife point.

Sometimes it is almost impossible to find a pot without some imperfection. Two of their pots—a large, naturally micaceous golden pot by Virginia Romero of Taos Pueblo and a flatter, beautifully decorated pot by Fannie Nampeyo of Hopi—have color imperfections due to a smoke cloud hazing the pot during the firing process. "Anyone who has been to the Hopi villages realizes how difficult it is to find a sheltered area in which to build the all-important fire," Carol says. "And a still day is even more unusual."

Some potters have their own "quality assurance" program and, of course, it is common to lose a few pieces in the firing process.

An interesting legend goes with the black bowl by Severa Tafoya which is decorated only with an incised, stylized bear claw. Many generations ago the Santa Clara tribe was dying due to effects of an extended drought. One day a medicine man saw a bear and followed it. The bruin led him to a fresh water spring thereby saving the people. To this day these Indians use the bear or bear claw in their designs and this "trademark" is respected by the other Pueblos.

The Meyers collection already includes examples of work by Maria, Margaret and Luther Gutierrez, Madeline Naranjo, "Frog Lady," Reyes Madalena, Sarah and Jessie Garcia, and those mentioned earlier. But, as with most collectors, there are always a few more pieces of pottery they would like to own: a large pot by Vincentita Pino of Zia Pueblo, usually white with black and brown or black and red designs, and an example of the black on white fine line work by Lucy Lewis, Marie Chino or Anita Lowden of Acoma Pueblo.

"We believe that the best way to approach a collection of this type is to find out who the best potters are, and then decide on the bowl or plate that most appeals to you," Dick explains.

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Deaths



S. Sanchez

T. A. Sprink

Seferino Sanchez, a utility man in Health Physics Division 3312, died suddenly March 9. He was 60.

He had worked at Sandia Laboratory since August 1952.

Survivors include his widow, two daughters, three sons and 12 grandchildren. One of his sons, John W. Sanchez, works in Division 4574.

* * *

Ted A. Sprink, a retired Western Electric Company employee who worked at Sandia for several years, died March 13 in Ft. Lauderdale, Fla. He was 66.

He was manager of Salton Sea Test Base for Sandia from 1951 to 1957. After this assignment, he returned to Western Electric as Area Manager of the Installation organization in Albany, N. Y. He retired from WE three years ago.

Survivors include his widow, two sons, a daughter and several grandchildren.



TED BAGGETT shapes a ceramic design with his hands while his potter's wheel spins.

Experimenting Artist

Ted Baggett Pursues Ceramics As Leisure-Time Avocation

As a potter, Ted Baggett pursues the art with the instincts of the ancients, the innovative approach of modern designers and the pressures of commercial producers.

Ted, a technical illustrator in Technical Art Division 3463, has been involved in making ceramics since college days at the University of Oklahoma. He graduated in 1952 with a major in fine arts. His ceramic work was awarded the Letzeiser Award honoring outstanding art graduates.

Since then, Ted has pursued ceramics as an avocation. Now, after several years of accumulating equipment in his garage studio, he can produce anything from ceramic sculpture, through a full range of functional serving pieces and cookware, to beautiful objects for home decoration.

Since the demand for his work is high, he has been unable to accumulate enough at any one time for a local show. The pieces that do not go as gifts to friends and relatives are sold by a dealer in St. Louis and by Neiman-Marcus in Dallas.

Ceramics is a demanding craft. To produce quality pieces requires painstaking preparation and technique. From mixing clay to applying glazes through the various stages of firing, a minor error or a moment of carelessness can ruin days of work.

"That's the hard part," Ted says. "The fun part is formulating the design concept and then making it. There's a primitive satisfaction in shaping mud, in creating something beautiful out of clay."

Ted works primarily on the potter's wheel. As the disc spins, he "throws" a ball of clay on the working surface, centers it, and then shapes it with his hands. He "pulls" the shape out of the ball of clay as it spins.

"The Indians used the coil method of making shapes," Ted says. "They made a snake-like rope of clay with their hands and then wound the coil in layers to build up their pots. It's still an effective method and I use it sometimes for complex curves. The wheel is faster but it's limited to circular shapes."

Ted also shapes pieces by making a plaster mould for one of the surfaces—for instance, the inside of a shallow bowl or tray. He rolls out a sheet of clay like a pie crust and then drapes it over the mould, cuts the edges, and then builds up the "foot" or base of the piece.

Another method of ceramic production is "jiggering." Ted cuts a metal template and presses this against the spinning ball of clay to create a form.

Ted designed and built his wheel. It includes an electric motor for basic drive power and friction controls. He can accelerate it with a foot pedal or slow it down by foot pressure.

Other equipment he built includes a wooden barrel electrically powered to spin end over end. This mixes clay and water. The barrel formerly held 25 gallons of soy sauce before being converted. Ted found it at a Chinese restaurant.

Pride of his workshop and key tool for the production of ceramics is a massive kiln with a capacity of two and one-half



IMPRINTED DESIGN is applied to edges of an unusual plate Ted is creating. Top surface of plate adheres to a plaster mould while drying.

cubic feet. Ted bought it at the Sandia salvage yard. "This is a potter's dream," Ted says. "It's a gas kiln with programmed controls and a temperature range up to 2530°F."

Ceramics are usually fired twice. First firing is to bake the piece to the desired hardness. Use determines the firing temperature. Serving pieces and cookware receive the highest temperatures and longest bake periods. Decorative pieces require less.

After the first firing, glaze is applied and the piece is fired again. The glaze provides decorative design, color and a waterproof surface.

Glazing is a science in itself, Ted indicates. He is constantly experimenting with various elements such as cobalt, copper or various oxides to achieve certain effects. Right now, he's experimenting to produce a brilliant crimson color with texture.

Ted also runs continuing experiments with various mixtures of clay. He mixes commercial clays with native clays. He found a supply of clay near Grants and gathers clay in Oklahoma during vacations. As the basic material for ceramics, the clay's density, plasticity and texture are important. Also, various mixtures of clay produce different amounts of shrinkage. Shrinkage is also controlled by the amount of "grog" added to the mix. Grog is usually sand or a finely ground powder from old pieces of ceramics.

"I have to resist the temptation to make the same piece over and over again," Ted says. "This way I could fill a lot of requests. However, it's more important to me as an artist to keep growing, experimenting and learning. I doubt if I'll ever find time to try all my ideas."

New Service Is Valuable Aid in Getting Technical Information

Any Sandian unable to readily locate needed technical information may benefit from a new service of the Interagency Data Exchange Program (IDEP).

Called Voluntary Data Inquiry (VDI), the service was created to provide technical information not generally covered in IDEP's regular files of reports.

The inquiry service is simple and easy to use. Requests for information are directed to Alex A. Ruff (2114), VDI coordinator at Sandia. He submits the brief request to the Air Force IDEP office in Los Angeles. They distribute the request to each of 170 participating aerospace companies and contractors in five days or less. Within the companies, requests are routed to appropriate experts.

Effectiveness of the system is illustrated by a recent request from Edwin R. Servis (2565). He asked for data on "various methods for cleaning and removing oxide from aluminum surfaces, and the tests used for comparing the different methods. Methods are needed to provide an aluminum surface sufficiently reactive to allow diffusion bonding below the aluminum yield point.

Within three weeks, Ed received 20 writ-

ten replies and several telephone calls. They included valuable data on four general cleaning methods—mechanical, chemical, ion bombardment and by heating in an inert atmosphere. Among the chemical cleaning techniques alone at least 25 different chemical solutions were listed as possibilities.

The replies came from such companies as McDonnell-Douglas, Gruman Aircraft Engineering and the Equipment Division of Raytheon Company. Some sent bibliographies and others included suggestions from experts.

"We received a wealth of data without a literature search of our own," Ed comments. "It has resulted in a terrific bibliography which we are now typing for distribution to all of the contributors. It's our way of saying thanks for the assistance we received.

"The service is an excellent first tool. Not only does it save time in researching periodicals but you also draw on unpublished personal experiences."

Ed estimates that the information eliminated the need for at least five tests, shortened two others and saved a total of 60 manhours.

Alex believes the system has worked very well for Sandia personnel. In fact, 70 percent of the VDI traffic involves Sandia requests, according to the IDEP center. Within a six-week period, for example, Sandia's VDI coordinator received 40 requests for information. Ten of these were directed to appropriate experts within Sandia and the remaining 30 to the IDEP center. To date, useful information has been received on 22 of the 30 requests.

Alex cautions that the requests should be concise and well-defined.

Supervisory Appointment



J. D. MARTIN to supervisor of Payroll and Disbursements Auditing Division 4131, effective April 1.

Jim joined Sandia as a wage and salary analyst in the personnel organization in February 1963. Three years later he transferred to Systems and Procedures Department where he was an administrative systems analyst working on classified document control and a document storage and retrieval system. In October 1967, he was promoted to supervisor of Reports and Accounting Section 4135-1.

From 1958 to 1961, Jim was with Southwestern Investment Company in Artesia. He served with the U. S. Army from 1954 to 1956, mostly in the Caribbean area.

He received his BS degree in business administration from Oklahoma State University in June 1958 and his MBA degree from the same university on January 1963.

200 Students To Visit Lab April 4-5

Two groups of outstanding high school science students—a total of 200—will tour Sandia Laboratory April 4 and 5 as part of the Atomic Energy Commission's Edison Day program. Purpose of the program is to encourage students to pursue scientific and engineering careers.

As in past years, Sandia has invited participation from high schools in Albuquerque and the nearby communities. The students will be accompanied by faculty advisors.

The visitors will be greeted by Otmar Stuetzer, manager of Electronic Systems Department 1420, and view the "Environmental Testing" film before touring various test facilities in Areas I, III and V.

In Area I, the students will tour analytical chemical laboratories, electro-optical analysis facilities, and micro-welding facilities in Bldg. 805; the hypersonic wind tunnel and plasma jet facilities in Bldg. 865; and the 3600 computing center in Bldg. 880. In Area III, they will tour the underground centrifuge, radiant heat facility and water-jet catapult. In Area V, the groups will visit the three Sandia reactors.

The tour was arranged by Community Relations Division 3433 under J. N. Johnson. John Garcia of the division is tour coordinator.

Top science students from Albuquerque High School, Highland, Rio Grande, Sandia, Manzano, Valley, Del Norte, West Mesa, St. Pius X, Harwood, St. Vincents, Albuquerque Academy, Belen, Bernalillo, Los Lunas and Mountainair have been invited to participate in the tour.

Sandians Serve as Judges for New Mexico Regional Science Fair

Sandia Laboratory will lend its customary support to the Annual Northwestern New Mexico Regional Science Fair. In addition, one of its scientists will be the main speaker at the awards banquet.

The fair will be held today and tomorrow at the University of New Mexico Arena, and the banquet tomorrow evening at the UNM Union Building ballroom. At the latter event, James D. Shreve, supervisor of Aerospace Sciences Division 5234, will speak on "Action vs. Reaction."

The public is invited to view the exhibits along the east concourse of the arena from 7-10:30 p.m. today and 4:30-10 p.m. tomorrow.

Sandians who are serving as judges and their fields of interest are: Jean Antoine (1315), chemistry; Richard C. Basinger (5313), mathematics; Gerald L. Brown (5313), mathematics; Carroll A. Coonce (5611), aerospace physics; Robert G. Dosch (1121), chemistry; Edgar J. Gilbert (5316), mathematics; Kermit G. Goettsche (2564), mechanical engineering and chemistry.

W. Curtis Hines (5353), electrical engineering; Wesley L. Holley (9315), physics; Robert E. Huddleston (5313), mathematics; Bernard T. Kenna (1121), chemistry; Samuel C. Levy (1343), chemistry; Donald R. Parker (3311), biology; Michael A. Parson (9315), radio biology.

Rod K. Quinn (1111), chemistry; Ben J. Roscoe (5313), electrical engineering; George A. Samara (5132), chemical engineering; Daniel J. Sasmor (9314), physical chemistry; Ben K. Seely (1121), chemistry; Calvin C. Smith (1314), electronics; Bruce H. Van Domelen (5530), physics.

Other Sandians frequently participate in the Science Fair as representatives of technical or professional societies.

Community Relations Division 3433 was responsible for obtaining these judges and for making arrangements for programs and decorations for the awards banquet. R. H. Austin (3433) coordinated the activities.

Ballroom decorations this year will include a 4x72-foot mural, "The Rebirth of Science: The Renaissance" executed by Corrales artist Paul Morris Wright for Sandia Laboratory in 1964. The 18 panels depict the transition from the ancient to the modern world of science.

Three Sandians will also be judges at the Southeastern New Mexico Regional Science Fair to be held March 29 and 30 in Roswell. They are Charles A. Hall (1132), George W. Stone (9314) and John P. Grillo (3311).

Service Awards

20 Years



E. H. Craven
4543



J. O. Wheeler
2413

15 Years



B. H. Bell
7222



R. W. Clark
3220



R. R. Davies
4382



R. Goldsworthy
2431



Wayne Grimshaw
8252



D. M. Libby
2130



J. J. Schenck
4511



Evelyn States
1621



J. E. Stevenson
3242



D. B. Wade
2222

Speakers

C. H. Karnes (1142), "Fundamentals of Shock Wave Propagation in Materials," Graduate Mechanical Engineering Seminar, University of New Mexico, Feb. 27, March 5, 12 and 19, Albuquerque.

G. W. McClure (5121), "Experimental Studies of Collisions of Hydrogen Ions and Atoms in Hydrogen Gas," University of Arkansas Physics Department Graduate Colloquium, March 18, Fayetteville.

L. A. Harrah (5213), "ESR of Radicals Produced in Co⁶⁰ Gamma Irradiated Polystyrene," Symposium on Organic Solid State Chemistry, Brookhaven National Laboratory, March 25-28, Upton, N.Y.

R. T. Meyer (5234), "Langmuir Vaporization Studies by Time Resolved Mass Spectrometry" and "Flash Photolyzed Reactions Monitored by Time Resolved Mass Spectrometry," American Chemical Society, March 31-April 15, San Francisco.

R. A. Sallach (5234), "The Initial Reaction of Nitrogen with Zirconium at High Temperature," American Chemical Society, March 31-April 15, San Francisco.

R. I. Ewing (5235), "Sodium Ion Emission from Hot Zeolite," 28th annual Conference on Physical Electronics, University of Minnesota, March 18-20, Minneapolis.

C. S. Johnson (7252), "The Scientific Quest for ESP," Van Buren junior high school, March 22.

R. A. Matthews (3464-1), "The Need for a Suicide Prevention and Crisis Center for Albuquerque," Conference of Community Council Affiliates on Feb. 29, Fraternal Order of Police on March 7, Christus Victor Lutheran Church on March 8, Monte Vista Christian Church on March 12, Kiwanis Club on March 18.

Subcommittee Seeks Better Angles

Standards B89 Group Meets Here April 9-11



ESTABLISHING STANDARDS for angles is discussed by J. C. Moody (2411) and W. E. Boyes (2410).

Imagine a technical committee meeting to find better angles! In this case, however, the angles are the highly legitimate kind found in graduated circles, polygons, angle gage blocks and multiface mirrors.

Developing minimum standards for measuring these angles will be the subject of a three-day conference of the U. S. A. Standards Institute's B89.2 Subcommittee on angles at the Sheraton Western Skies April 9-11.

J. C. Moody, Physical Standards Division 2411, is the conference program chairman. L. J. Paddison, director of Product Test Equipment Development 2400, will welcome the group at the first session.

The B89 Committee of the Standards Institute was formed less than four years ago to develop certain minimum standards for various constant factors in metrology, the science of weights and measures. It consists of about 60 members who represent more than 24 independent companies, government agencies, various technical societies and trade associations. Each subcommittee of the B89 group is assigned the responsibility for establishing methods of calibration, recommending standards, and grading instrumentation in specific areas, such as environments, angles and length.

Subcommittee B89.2 is assigned the task of developing standards for angles in graduated circles, polygons, angle gage blocks and multiface mirrors. In addition, it is developing methods of measuring angles by mechanical and optical methods.

About 25 subcommittee members are expected to attend the three-day meeting which will conclude with a tour of Sandia's standards laboratory and Sphere of Science.

Events Calendar

- March 22-24, 29-31—Brecht's "Good Woman of Setzuan," UNM Rodey Theatre.
- March 23-24—West Spanish Peak (13,623 feet) in southern Colorado, by snowshoe. N. M. Mountain Club, leader Don Mattox, tel. 296-4149.
- March 30—Jemez Mountains. N. M. Mountain Club, leader Bill Grohe, tel. 243-1051.
- March 30-31—Regional Ice Hockey Tournament, Denver, Salt Lake City, Phoenix and Albuquerque teams. Ice Arena, 5110 Copper NE.
- March 31—Organist Alexander Shriner (from the Mormon Tabernacle, Salt Lake City), First Methodist Church, 3:30 p.m. Tickets at the door.
- March 31—Embudo-Bear Canyon Divide hike. N. M. Mountain Club, leader Will Snyder, tel. 299-4172.
- April 4-6, 18-20—Albuquerque Civic Light Opera's production of "Once Upon a Mattress." Matinees on April 6 and 20. Highland High School auditorium.

Welcome . . . Newcomers

March 1-15

Albuquerque	
John L. Cawfield	7342
Marilyn J. Cochran	3126
R. Margaret Fuller	3126
Hazel T. Morgan	3126
Dianna M. Perry	3252
Theresa B. Ryan	3126
Joe A. Sanchez, Jr.	4574
Jimmie A. Schmedeman	3126

10 Years

March 22-April 4

Elma S. Sabin 3126, Betty J. Inram 4233, Samuel Salazar 4574, W. A. Gardner 9423, F. N. Coppage 1413, V. J. Glover, Jr. 2121, C. H. Arning 2212, K. D. Svensson 2211, L. P. Keegan 9411, Dorothy R. Miller 2234, W. W. Smith 3412, W. R. Lincoln 4511, C. R. Byrne 4631, E. J. Gilbert 5256, Kathryn H. Park 3126, and Joan M. Bayless 8240.

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

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

FOR SALE

REAL ESTATE

- 3-BDR., 2 baths, all brick, carpet, hw/flr., near shopping-bases-schools, buy equity, assume 4 1/2% loan, or refinance, \$16,500, 1109 Dakota SE. Cano, 255-0211.
- 2-BDR. HOME in SW valley, wb-fp, attached garage, on 3/4 acre, will trade for home near downtown Albuq., or sell. Metoyer, 2329 Pajarito Rd. SW, 877-1893 9 to 3:30.
- 3-BDR., den, 1/2 bath, wb-fp, screened porch, patio, sprinklers, c/a, NE, redecorated, \$595 down, no qualifying. Martinez, 344-6046.
- 1850 sq. ft., 3-bdr., den, carpeting, drapes, elec. stove, dishwasher, AC, Snow Executive w/enclosed garage, near Bellhaven School, assume 30 yr. 4 1/2% loan. Watkins, 299-5893.
- 10 ACRES in Torrance Co. (D. W. Falls Dear Valley). Rand, 299-1048.
- ASHCRAFT, 4-bdr., 2 1/2 baths, 2450 sq. ft., carpets, drapes, buff brick, covered patio, landscaped, \$36,000. Eberhart, 268-6943.
- N 10, 10 acres, wooded, water well & building on Frost Rd., \$700/acre, terms; 2 1/2 acres Edgewood, \$800/acre, \$7/mo. for water. Browne, 344-9675.
- 3-BDR., furnished, 1 3/4 baths, basement, below FHA appraisal, 1228 Lobo Place NE. Bleakney, 255-8222.
- 3-BDR., 1 3/4 bath, 1 block off Rio Bravo in SW valley, terms available, .8 acre. Dunaway, 299-1422.
- 3-BDR., 1 bath, garage, AC, garbage disposal, carpet, drapes \$11,950, \$85/mo., 5 1/2% loan, 1010 Shirley NE. Gillette, 298-0919.
- 3-BDR., 20x25' knotty pine den w/fp, beamed ceiling, patio, redecorated, new 10-yr. guarantee roof, assume 5 3/4% loan or trade for 12'-wide mobile home, 1816 Bryn Mawr NE. Jackson, 265-4144.
- CABIN SITE in Brazos tall pine country, 3 hrs. from Albuquerque, \$1500 total includes water & electricity. Krumm, 299-2279 or 298-5943.
- 3-BDR., brick veneer home on 75' wide lot, 1 3/4 baths, landscaped. Villa, 268-0568.

1/4 ACRE in Hoffmanton w/3-bdr. home, lawn, sprinklers, fruit trees; lawn implements, some furniture. Seligman, 298-1993.

CARS & TRUCKS

- '52 CHEVY, \$125. Kelly, 343-1214.
- '67 GTO, auto., sport steering wheel, rally clock, wide oval tires, near wholesale. Cupp, 299-8724.
- '61 FORD pickup, V8, 1/2-ton, low range, 3-spd., long wide box. Ross, 296-5720.
- '56 CHEV. V8 station wagon, stick, \$125. Davis, 298-6944.
- '63 RAMBLER 770, 4-dr. sedan, AT, 22,500 miles, new lifetime battery, radio, separate front seats that make a bed. Schafer, 268-0288.
- '60 CHEV. pickup, 4-spd, 1/2-ton, Big "6" Apache, \$550. Gonzales, 299-7208 after 5:30.
- '66 SCOUT 800 custom traveltop 4wd, 16,000 miles, \$1900. Clark, 296-4541.
- '57 PONTIAC V8, 4-dr., radio, '68 license. Davis, 296-3829.
- '60 PONTIAC 4-dr. HT, PS, PB, AT, \$550. Samuelson, 298-3637.
- '66 FORD Galaxie 4-dr., PS, AC, radio, tinted glass, mileage-4500. Stone, 299-9251.
- '63 CONTINENTAL SEDAN, AC, PS, all extras, \$1125; '61 Chevy convert., \$675. Hueter, 242-1620.
- '50 GMC pickup, 1/2-ton, rebuilt engine, 4-spd., 6-ply tires, \$250. Breedon, 877-9703.
- '54 JEEP station wagon, new paint, R&H, OD, \$250. Haskins, 282-3748.
- '66 PONTIAC Catalina, 4-dr., AT, PB, PS, factory air, V8, new tires. Groll, 299-2600, after 4:15.
- '60 VALIANT 4-dr., AT, R&H, low mileage, \$350 cash, 3508 Florida NE. Keeperts, 299-9217.
- '65 VALIANT 2-dr., 6-cyl., stand. trans., AC, new tires, low mileage, \$1200. Harter, 256-3766.
- '63 CHEVROLET Super Sport, 327 cu. in. V8 4-spd., bucket seats, R&H, low mileage, below book. Van Hauen, 296-2531 after 5:30.
- '55 CHRYSLER 2-dr. HT V8, Std. shift, new upholstery, \$195. Barton, 255-5491.
- '64 CHEVROLET Impala station wagon, V8, AT, PS, PB, AC, Everett, 298-3994.
- '60 CHEVROLET 4-dr., std. trans., new brakes & clutch. Chavez, 298-0674.

MISCELLANEOUS

- REFRIGERATOR, 14 cu. ft. Frigidaire, \$20. Adkins, 296-1284.
- ANTIQUE marble-top dresser; post card collection; souvenir plates; toaster; mixer; kitchen table; light meter; card table & chairs. Stuart, 265-7315.
- REMINGTON sporterized 30.06, 2 1/2 power Weaver scope, \$60; 12-gauge dbl. barrel, \$35. Howard, 344-6091 after 5:30.
- 2-PIECE Kroyer sectional sofa, 96", reversible cushions, blue matlesse, \$60. Daut, 255-2529.
- FIGURE-CARE electronic exerciser, \$400 machine for \$150, battery & electric. Risk, 299-7205.

MATCHING tube type stereo amplifier & tuner; Heathkit 16 watt; two 8" high-efficiency speakers in varnished enclosures, \$80. Stark, 296-4971.

DINETTE SET, 4 chairs & leaf, \$35; '66 Hoover portable clothes washer, will demonstrate, \$85. Lowry, 298-4288.

GOLF CLUBS, Wilson Staff, 4 woods, 9 irons, \$75. Wangerin, 298-6351.

TABLE SAW, 8", heavy cast metal construction, \$1895; Zenith 21" TV, black & gold, w/UHF & new picture tube, \$50; Amox bookshelf stereo speakers, \$22/pr. Browning, 299-6384.

FISHING REEL, new, never used, Johnson, retails for \$19.95, sell for \$10. Nichols, 247-2564.

LEATHER TOOLS & materials, \$75; a trunkful of stamps, wallets, lacina, needles, mallets, etc. for a summer camp instruction program. Carrick, 808 Dakota SE, 255-8281.

MSA Positive Pressure breathing unit, complete, to be used w/oxygen. Corey, 247-3865.

SILVERTONE console, walnut, 24". Pass, 299-0474.

BABY FURNITURE: Hi-Fi; end table; corner table; lamp; mattress, regular; skis; boots (10); bindings; Otts, 299-3423.

FULL SIZE latex foam mattress & box springs, used 4 1/2 yrs.; bed frame; quilted spread. Trauth, 299-2176.

7 FT. POOL TABLE, \$50. DeHaan, 265-4511.

TAPPAN 400 oven-over electric stove, auto. start & cut-off oven, free-standing base, \$120. Perkins, 296-4414.

GOLDEN RETRIEVER PUPPIES, AKC, hunt, show, prts, whelped Feb. 21. Blount, 298-6138.

SHOTGUN, 20 ga. Remington 3-shot auto, ventilated rib, skeet grade. Lewis, 268-3835.

23" ADMIRAL TV, walnut console, \$110. West, 299-6775 after 5.

DOG, female longhair Shepherd, free, would like to live in the country. Alexander, 296-1861.

ELECTRIC RANGE, full size, lg. oven, rotisserie, timing center, pan storage. Keen, 299-6541.

MINIATURE SCHNAUZER puppies, AKC reg. Stewart, 298-0439.

CARPETING, royal blue plush pile Acrilan, 13'x17' in seldom used formal living rm., 1 yr. old, \$110.50; dbl. bed w/walnut headboard. Chandler, 296-3323.

HAMMOND ORGAN, late model M-111 spinet, walnut finish, \$1150; will consider Baldwin, Knibb or Steinway piano in trade. Allen, 243-7085.

'67 GE air conditioner, 9000 BTU, used 2 mos., \$95; Frigidaire el-ctric stove, \$50; 2 GE window fans, \$5. Snyder, 296-5771.

TYPEWRITER, Royal standard, 12" carriage, pica type, 84 charactrs, recently reconditioned, \$75. Kefauver, 296-3547.

WALL TENT, 9 x 12, \$35; car top carrier w/cover, \$7; portable aluminum sink, \$7; Baby-Tenda type feeding table, \$5. Schuback, 298-6697.

MEN'S 26" Schwinn bicycle, 3-spd., \$25. Prekker, 299-6468.

30-30 MARLIN rifle, \$50; ladies figure ice skates, size 7, \$4. Dick, 299-4878.

REFRIGERATOR-freezer comb., Montgomery Ward, 14 cu. ft., 2-dr., 164 lbs. freezer, \$75; lawn mower, Toro, 4-cycle, 18" reel type, \$20. Klecotka, 299-8198.

CAMPER or trailer awning w/poles, 11x12; dbl. kitchen sink w/ring & faucet. Ward, 298-7230.

KITCHEN DINETTE set, mother-of-pearl formica top, 36"x48", extends to 60", 4 chairs & youth chair. Haycraft, 299-3220.

QUARTER INTEREST J-Bonanza, 1FR, dual omni, localizer, ADF, oxygen. Schwoebel, 268-6440.

PORTABLE DISHWASHER, \$40; china cabinet, \$45; 35mm, 135mm, 300mm lenses for SLR cameras; 2X converter for Canon. Gunderson, 298-2133.

PIANO, upright. Jesse French, \$120. Orr, 298-3943.

500CC INDIAN motor cycle engine, \$45. Shock, 877-3728.

A.M.C. air conditioner, 2 1/2-ton, used two summers, \$200 or best offer. Mitchell, 268-8586.

WANTED

- BABY SITTING in our home, vicinity Lomas & Wyoming, Doppelhammer, 265-1303.
- 40-METER crystals for novice band. Lathrop, 298-8638.
- RIDER for car pool from vicinity of Coronado Crest or Foothill Est-t's to 850/880 parking lot. Bartlett, 299-4861.
- PORT-A-CRIB, Kelly, 298-1459.
- SKI RACK for car top. Colp, 268-8035.
- 35MM RETINA 3-C. Doro, 299-6505.
- AIRPLANE: part ownership, single engine, TAS 150+, 1FR equipptd, prefer tie-down at Sunport. Anderson, 268-0795.
- WANT TO RENT small pickup camper w/stove, ice box & sink, that will sleep four, needed 4/26/68 to 5/12/68. Fisher, 298-7858.
- FULL console church organ, prefer Hammond. Harley, 299-7172.
- USED metronome in good condition. Robertson, 298-2388.
- TRADE use of houseboat floating on Conchas Lake for use of ski lodge or pickup camper. Westman, 255-6048.
- CHILD CARE at my home, 4308 Goodrich NE, R.N. supervision, 7 a.m. to 6 p.m. Browne, 344-6343.

FOR RENT

- 3-BDR., den, fp, 1 3/4 utility, 2-car, range, oven, new carpeting, drapes, landscaped, patio, available April 16, lease, \$185/mo. Meyer, 298-4825.
- ROOM w/use of lp, 3-bdr. home, NE, by male owner, \$55/mo. Gallo, 298-1089.
- 2-BDR. unfurnished house, enclosed garage, covered patio, walled backyard, stove, refrig., AC, NE heights, \$100/mo., water-garbage paid. Clark, 298-3703.
- MOUNTAIN HOME, 2-bdr., borders forest land, fine view, furnished or unfurnished, \$75/mo. Linn, 282-3986.
- TRAVEL TRAILER, sleeps 5, butane stove & light, reserve now for summer vacation. Colp, 268-8035.
- JULY 28-AUG. 3: 2-story house, Balboa Beach, 1/2 blk. to bay, 2 blks. to ocean, sleeps 12, furnished, w/dishes & utensils, no bedding or linens, \$225/wk. plus \$9 bed tax. Reid, 344-0521.
- MOBILE HOME vacancy, 10'x50'. Mick, 2621 Rhode Island NE, 299-5814.
- 3-BDR., carpeted, den, \$90, water paid, 6228 Dennison Rd. SW. Bontrager, 282-3427 after 5.

LOST AND FOUND

- LOST—Reading glasses, tan left-hand pigskin glove, gold loop earring, Electronic Measuring book, plastic bag w/turquoise knitting, glasses, pearl earrings w/bold post, black leather glove, white scarf w/orange flowers, square silver cuff link.
- LOST AND FOUND, tel. 264-2757, Bldg. 610.
- FOUND—chain bracelet w/stones, black cloth glove, blue scarf, pink earrings, round silver loop earrings. LOST AND FOUND, tel. 264-2757, bldg. 610.



WORLD'S BEST DRUMSTICKS will be part of the Coronado Club's chicken buffet during social hour tonight. Betty Jo Espinosa (9425) is beating the drum for the buffet, the best bargain in town at \$1.25. Sol Chavez (4514) will make the happy music.

Coronado Club Activities

Popular Buffets, Popular Prices Set

Friday night social hours are what's happening at the Coronado Club for the next couple of weeks. The TGIF crowd will enjoy three of the Club's popular buffets at popular prices.

Tonight, the Club's chef will serve southern fried chicken while Sol Chavez makes the happy music. Sol and his group make a big brass swinging sound with Latin

overtones. The buffet costs \$1.25 for members, \$1 for children. Pat Reich and piano will entertain in the lounge.

Social hours start at 5 p.m. in the ballroom. Music starts at 6 p.m. and the buffet is spread at 6 p.m. Social hour prices remain in effect until 8 p.m. Dancing continues until 9 p.m.; entertainment in the main lounge continues until 12 p.m.

On Friday, March 29, the famous Coronado Club chuckwagon roast beef will be the buffet special while Max Apodaca will be on the bandstand. The buffet costs \$1.75 for adults, \$1.25 for kids.

Seafood will be the special at the April 5 social hour. Tommy Kelly's combo will play for dancing while Pat Reich entertains in the main lounge. The seafood buffet costs \$1.25 for adults, \$1 for children.

Teenage Go-Go

While a rock group called "The Cherry Buoyancy" makes the mod music, Chuck Logan, KQEO disc jockey, will master the ceremonies for the monthly teenage go-go at the Club Saturday, April 6. Tickets (25 cents for members, 50 cents for guests) should be picked up by member parents by 5 p.m., April 6.

Bridge

Monthly master-point competition for the duplicate bridge group will be held at 7 p.m. Monday, March 25. Weekly meetings resume Monday, April 1. Ladies bridge meets at 1:15 Thursday, April 4.

New Board Member

C. R. Andes (3131) was appointed to the board recently to fill the vacancy created by the resignation of Dennis Shanfeldt. Mr. Andes has previously served on the board. He will be responsible for Club facility improvements.

Congratulations

Mr. and Mrs. Melvin D. Olman (5142) a son, David Merle, March 5.

Sandia Safety Signals

Defensive Driving

The fundamental requirement of safe driving is to be a defensive driver. This means you always make allowances for lack of skill, lack of attention and lack of knowledge on the part of the other fellow. You recognize that you have no control over the unpredictable actions of others nor over unexpected conditions of weather, the road, and of activities on or beside the road; you must develop driving habits which are a constant defense against all these hazards.

If you were asked to pick the ten best drivers, who would the other nine be?

Spray-Type Oven Cleaners

Underwriters' Laboratories, Inc., reports that spray-type oven cleaners may, when sprayed on knobs or push buttons of electrical controls or switches, cause short circuits or grounds which could result in fires or in eye damage due to arcing. The oven-door light switch is especially vulnerable.

Take Note

Robert W. Harris (5235) was recently elected president of the Albuquerque Association for the United Nations. He has been a member of the Association for about four years and served as chairman of Albuquerque's United Nations Week observance this year. Two years ago he was chairman of the local Human Rights Day program. Bob is also a member of the New Mexico Civil Liberties Union and the American Physical Society.

Several Sandians are helping with arrangements for the annual meeting of the New Mexico Library Association to be held in Albuquerque March 27-29. Some 300 participants are expected.

Committee chairman from Technical Libraries Department 3420 include Gladys E. Rowe, program; John L. Gardner, publicity; and Delores A. Lanier, local arrangements. Catherine Ruhl is assisting on the program committee.

Max M. Weiss, who is in charge of radiation protection programs for Bell Telephone Laboratories, spoke on "Health Physics at BTL" during the regular monthly meeting of the Rio Grande Chapter, Health Physics Society. The luncheon meeting was held March 14 at the Coronado Club.

Team 14-93-4500 is champion of the Sandia Laboratory basketball league, wrapping up the season with a 13 won, two lost record. The champs outshot the seven other teams competing.

Team members include Tom Plummer (4542), Gil Baca (4517), Jim Winter (4513), Alan Dickinson (4543), Arlin Cooper (1425), John Ayala (4513), Dan Dabney (1433), Jack Reichardt (1413), George Elkins (9312), Dave Begeal (1413) and Jim Hudson (9311).

The Albuquerque Dodgers, Texas League champions, have added the 1967 World Series Film, featuring the St. Louis Cardinals and the Boston Red Sox, to their World Series Library.

All films in the collection, including the 1967 World Series, are available free-of-charge to any Albuquerque civic club, church or youth organization. Those groups interested in viewing any of the Dodgers' World Series Film Collection are asked to call 243-1781.

The Dodgers' World Series Library contains film highlights from all World Series' since 1962.

Social security offices throughout the country are trying to inform all persons over 65 of the April 1 deadline to enroll in the portion of the Medicare program which helps pay doctor bills.

Any Sandian who knows someone over 65 not enrolled in this portion of the Medicare program is requested to urge the person to contact the local social security office.

History buffs will be interested in an article by Richard E. Holben (2212) in



INDUSTRIAL PHOTOGRAPHERS attending a recent state convention in Albuquerque re-elected Louis Erne (3465), top, president of the organization. Elliot Harris (3464), right center, was named second vice president while Richard Hodges (3465), left center, and J. Frederick Laval (3465) were elected to the board of directors. Oscar Goodwin (3465), foreground, displays his award-winning photograph, judged best industrial color print.

the forthcoming May issue of PIONEER WEST, a magazine specializing in authentic stories of the Old West.

"The Avengers of St. Vrain" deals with the 1847 assassination of New Mexico Territorial Governor Bent.

"The Obsolescence of Knowledge—Three Steps Up and Over" is the subject to be discussed during the Joint Sandia-UNM Colloquium, Friday, March 29, at 3:30-4:30 p.m. in Mitchell Hall (Room 102).

The speaker will be Paul F. Chenea, scientific director of research laboratories for General Motors Corporation. He has considerable background in university level education, both as an instructor and as an administrator, and has always been interested in continuing engineering education.



SANDIA SECURITY INSPECTORS participated in a recent training program conducted by the Sandia Base Fire Department. Benny Valencia (3242) operates a fire extinguisher during one of the demonstrations. The program included classroom training.