



CHECKING ROUTE they will follow on an around the world scientific expedition to gather data on the auroral spectrum, cosmic rays, and air glow are (l to r) R. W. Martin, S. S. Markowitz, R. M. Caster,

M. M. Robertson, and R. C. Hewitt. The Sandia group will conduct experiments during flights from the specially-instrumented flying laboratory NC-135A aircraft shown in the background.

## Flying Labs Will Circle Globe for Cosmic Studies

Twelve Sandians left Kirtland AFB Sunday on a month-long scientific expedition to study atmospheric phenomena. They will go to the antarctic region and along an equatorial path around the world in Sandia's specially-instrumented NC-135A jet aircraft.

The Sandia plane flew to New Zealand while another plane assigned to Los Alamos Scientific Laboratory flew to Alaska with duplicate scientific instruments. After experiments are completed in these regions, the LASL plane will return to Albuquerque and the Sandia plane will continue on its equatorial flight around the world, returning to Albuquerque on April 3.

Primary goal of the New Zealand and Alaska legs of the expedition is to gather data simultaneously at two separate points on the auroral spectrum (northern and southern lights) and cosmic rays at magnetic conjugate points. Conjugate points are corresponding positions in the northern and southern hemispheres where magnetic field lines curve in a north-south direction around the earth and intersect the earth.

They are of unusual scientific interest because various sub-atomic particles from outer space are attracted to the magnetic field lines and funneled back and forth between conjugate points.

Scientists on the Sandia plane will make measurements at the southern end of these lines while flying along a magnetic meridian over the Pacific south of New Zealand. The LASL group will make identical measurements at the northern end during a flight from a point south of Anchorage north to College, Alaska.

To ensure that measurements are taken at identical times, each of the planes carries extremely accurate crystal clocks. By correlating data gathered at the same time and at conjugate points in the northern and southern hemispheres, the scientists hope to learn more about the aurora borealis and aurora australis.

Of particular interest are energy sources that create and maintain the auroras and the energy transfer mechanism involved in their formation. They will also make measurements of cosmic rays and air glow—a faint light in the upper atmosphere similar to the auroras, but occurring in non-auroral regions. Various detectors, photometers, and cameras will be used in the experiments.

Each plane carries about 20 scientists and technicians. In addition to Sandia and LASL personnel, other experimenters are from Lawrence Radiation Laboratory, Douglas Aircraft, University of Alaska, Naval Ordnance Test Station, and EG&G, Inc.

The Sandia plane will proceed on its flight around the world on March 17 when it leaves New Zealand for the Fiji Islands. It will then fly to Guam, the Philippines,

(Continued on Page Two)



# SANDIA LAB NEWS

VOL. 20, NO. 5, MARCH 10, 1967

SANDIA LABORATORIES

ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA

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

## Larry Platt Helps Save \$320,000 In Four Cost Improvement Actions

Larry W. Platt of Special Test Equipment Design Division 2441 was involved in four cost improvement actions which saved Sandia \$320,000 during the first half of Fiscal Year 1967.

As a project leader for a number of T-equipment items (gages, meters, and test gear delivered with weapon systems for use by military personnel to maintain and check systems), Larry feels his cost improvement activity is an important part of his job.

Every engineer, he says, has the responsibility of creating designs which meet specifications. He also has the responsibility of creating designs which can be produced economically.

If an opportunity arises to cut costs at any time during the design testing or production of an item, the engineer takes advantage of it.

Many times, the individual engineer's job is part of a larger project or related projects. Opportunities arise to save money when the pieces of the project start fitting together. For instance, three leak detectors for separate systems were under development in Division 2441. A conference between Larry, military representatives, J. H. Lindell (1513), J. K. Nakayama (1513), and R. A. Kavet (1525), determined that a single instrument panel design could be made to meet the requirements of the three systems. The savings projected over the entire production run of the units amounted to \$139,000.

The design engineer, Larry says, should also look critically at the specifications for a design. In a recent case of a tritium monitor, the specifications called for two battery systems—a wet cell nickel cadmium rechargeable battery and a dry cell (carbon-zinc) battery.

Tests on prototype units revealed undesirable maintenance problems with the wet cells. By changing the power requirements slightly, a sealed nickel cadmium battery could be used. The substitution also enabled a single battery case design to be used and significantly reduced the complexity of the battery charging equipment needed. Overall savings amounted to \$60,000. Larry, R. P. Baker and J. D. Guy (both 2441) are credited with this cost improvement.

In another case, production costs for an ohmmeter rose sharply. He offered the



LARRY PLATT (2441) displays an ohmmeter which was the subject of a \$117,000 cost improvement action recommended by a Value Engineering Workshop team. Larry participated in three other cases which amounted to a total of \$320,000 in cost improvements for Sandia.

project to a Value Engineering Workshop and the Workshop team recommended a new design for the instrument case. The team also located a source of supply which could produce the case at a much lower cost. The savings amounted to \$117,000.

In the fourth case, Larry recommended reworking a used tester instead of building a new one to meet a specific requirement. The difference was a cost avoidance of \$4600.

All engineers at Sandia make these kinds of decisions as part of their job, Larry says, but Value Engineering and Cost Improvement Division 2563 is eager to learn of them.

With the current emphasis by the Atomic Energy Commission on cost improvement, it is extremely important that Sandia Corporation, the organization, and the individual be credited with all cost improvement actions made. For assistance or additional information on reporting procedures, contact R. E. Minter or A. D. Smaller (both 2563), tel. 264-7305.

## 30th Value Engineering Workshop Starts March 13

The 30th Value Engineering Workshop conducted by Value Engineering and Cost Improvement Division 2563 starts Monday, March 13, with about 40 expected to attend. In addition to Sandia Laboratory personnel, others from AEC contractors and military agencies will participate.

Value Engineering Workshops augment traditional cost improvement activities by applying new techniques to determine the basic function and functional worth of a product or activity. Goal is to provide the required function at the lowest sound cost without compromise of quality, reliability, or safety.

The sessions are designed to use actual work in progress as cases for consideration. Workshop teams with different specialties and background consider the projects, apply VE techniques, and make recommendations for cost improvements.

Workshop leader for the coming eight-day program is J. M. Hueter (2563).

## Sandia to Provide Arming & Firing and Earth Motion Studies for 'Gasbuggy'

Two Sandia Field Test Divisions will participate in Project Gasbuggy—the nation's first experiment using a nuclear explosion in an effort to stimulate natural gas production.

Tentatively scheduled for September, the project will be conducted at a site 55 air miles east of Farmington. A 20-kiloton nuclear device will be placed about 4200 feet underground in a low permeability ("tight") gas producing formation. It is expected that the nuclear explosion will fracture the sandstone gas reservoir sufficiently to release about seven times the amount of gas now recoverable at the site.

The project is a joint effort of the Atomic Energy Commission and El Paso Natural Gas Company. The AEC's Nevada Operations Office will direct the project. Lawrence Radiation Laboratory is responsible for developing and executing the technical program in cooperation with El Paso Natural and the Department of the Interior's Bureau of Mines.

Sandia's A&F Field Support Division 7262 under R. K. Peterson will provide the arming and firing system design for the device and will perform arming and firing support at the site.

Blast and Earth Motion Division 7242 under B. C. Benjamin will perform two earth motion studies for the project. The

division will provide instruments and operational support for a free-field (the undisturbed shock wave originating from the detonation and moving outward through the earth from the device) earth motion study. Two strings of instruments will be placed in deep drill holes with the instruments placed at varying depths from below the device to near the surface.

Surface earth motion will be the concern of the second study. Instruments will be placed at varying distances from ground zero outward to several thousand feet to measure surface movement resulting from the detonation.

The explosion will vaporize the rock around it and create a chamber deep below the surface. Then the roof of the chamber is expected to fall in, creating a "chimney" or area of broken rock. This would be a large area into which gas would flow through the explosion-created fractures which will extend in all directions.

A re-entry well will be drilled into the "chimney" to gather samples of the gas. From this and other wells, information will be obtained to measure the amount of gas produced and to determine reservoir characteristics. Information gained from Gasbuggy will be the first step toward eval-

(Continued on Page Seven)



REMOTE COMPUTING CONSOLE in Bldg. 836 is linked to a computer in Los Angeles by long distance telephone lines. Elizabeth L. Frost (2153) demonstrates how the time-sharing system makes it possible to write, edit, compile, execute, and debug a program on the printer console.

## Remote Consoles Here Linked to Computers in Ariz. and Calif.

It takes less than a minute to transmit a mathematical problem from Sandia Laboratory to a computer in Phoenix and receive an answer on a console in Bldg. 806. Using a similar facility in Bldg. 836, the same process is followed to obtain an answer from a computer in Los Angeles.

Up to 30 users in as many locations can simultaneously use the same computer in Phoenix and up to 50 can share the computer in Los Angeles.

The computer system was installed at the Laboratory on a trial basis to evaluate the usefulness of the new technique for Sandia programs. Called time-sharing, the remote console technique will be used in a proposed computer system scheduled for installation at the Laboratory late this year. The new Sandia computer system will have a number of remote consoles at various locations throughout the technical area, each connected to a central processing computer in Bldg. 880 for simultaneous, real-time computing.

Time-sharing makes it possible to write, edit, compile, execute, and debug a program on a remote console and then quickly receive the processed data from a computer at another location. It provides the user with an easily-learned method for solving problems and developing programs on a statement-by-statement basis. Immediate changes or alterations to these statements can be made by the user.

The IBM remote computing system in Bldg. 836 consists of an IBM 1050 console with printer keyboard that is linked by long-distance telephone lines to an IBM 7740 communications control system in Los Angeles. Attached to the printer, which resembles an electric typewriter, is a card reader. The user may transmit by either typing on the printer or by using punched cards. The 7740 continuously monitors incoming lines and relays programming statements from each line to the computer.

Under the control of the QUIKTRAN program (a FORTRAN-like computer

language) stored in its memory, the IBM 7040/7044 data processing system compiles, checks, or executes each statement according to instructions from the sending location. Lengthy jobs, which must be processed in their entirety rather than statement by statement, can be placed temporarily on disc storage by the 7740 until the computer is free to handle them.

The Bldg. 806 console uses either BASIC, ALGOL, or FORTRAN computer language. Easily learned, BASIC language is conventional mathematical formulas with some modifications. ALGOL and FORTRAN are more sophisticated computer languages. Problems are transmitted over a Teletype machine to a GE 235 computer in Phoenix.

Herbert E. Anderson, Statistics and Computing Division 2153, is the consultant on the use of the IBM console in Bldg. 836 and Donald R. Morrison, supervisor of Computer Science Division 5256, is in charge of the GE time-sharing system in Bldg. 806.

B. Tom Fox, supervisor of Applications System and Training Division 9427, was instrumental in having the time-sharing systems installed at Sandia for evaluation. He spent a year at MIT as a member of a team developing a new computer language as part of Project MAC (Multiple Access Computer).

James H. Porter, supervisor of Communication Systems Division 3416, was responsible for establishing communications "links" for the two Sandia consoles.



SAND ROCKET MODEL is examined by Roy B. McCauley, national president of the American Welding Society and chairman of the Department of Welding Engineering at Ohio State University, during a recent visit to the Sphere of Science. Shown with Prof. McCauley are C. A. Corbin (4224), left, past chairman of the Albuquerque Section of AWS, and Dr. Glenn W. Oyler, ACF Industries and district director of AWS. During his stay in Albuquerque, Prof. McCauley also toured the welding shop at Albuquerque High School and was the guest of honor at a dinner meeting of the Albuquerque Section.

## Take Note

The auto industry's defense in the recent criticism of automobile safety features will be presented during a joint meeting of ASME and ASQC members and guests on March 15.

L. C. Lundstrom, director of automotive safety engineering, General Motors, will discuss "Industries Auto Safety Program," the technical facts on automobile safety with the proper perspective between shortcoming of the vehicle, driver, and road conditions.

Mr. Lundstrom started with GM in 1939 as a test engineer at the proving ground and is presently responsible for test work affecting the future design of GM automobiles with regard to durability, reliability, and safety dynamics. In 1962 he received an honorary Doctor of Engineering degree from the University of Nebraska for his work in test engineering and highway safety.

The meeting will be held at the Sandia Base Officer's Club with a social hour starting at 6:30, dinner at 7, and technical meeting at 8. Reservations may be made with Ed Barkocy, 264-3707, and W. A. Sherman, 264-3239.



COMPLETE CAST of current Old Town Studio production of "The Caretaker" is represented in this striking pose by actor-director John Gardner (3421-1), left, Bill Carstens (3410), seated, and Nigel Hey (3431).

The last speaker for the 1966-67 University of New Mexico-Sandia Corporation science colloquium will be R. L. Solomon, professor of psychology, University of Pennsylvania, who will discuss "Experimentally Induced Helplessness in Dogs."

The lecture will be on March 17, time and place to be announced.

Professor Solomon received the Distinguished Scientific Contribution Award from the American Psychological Association in 1966.

The colloquium series presents speakers with distinguished reputations in the fields of chemistry, mathematics, electrical engineering, medicine, and psychology.

The annual membership drive is underway for the Sandia Lab Women's Golf Association. All Sandia or AEC women employees with an interest in golf are invited to join—you don't have to be an expert, according to Sybil A. Milligan (9412), membership chairman.

League play is scheduled on the short nine, once a week after work, and on the regulation 18, every other Saturday, at Los Altos golf course. Tournaments are held throughout the season in Albuquerque, Socorro, and Los Alamos.

For further information contact Sybil or O. J. Foster, representative for Employee and Secretarial Services Division 3126.

The Free Lance Orators will meet Wednesday, March 15, on the mezzanine (second floor, outside west entrance) of Bldg. 841. F. J. Villa (2546) will discuss "We Need More Non-Conformists." Anyone with an interest in practicing and improving public speaking skills is invited to attend.



PHOTOGRAPHS by Wayne Gravning (3465) will be displayed by Quivira Gallery in Corrales March 12 through March 26. The public is invited to the opening reception from 1 to 5 p.m. Sunday, March 12.

Louis Erne (3465), vice president of the New Mexico Industrial Photographers Association, will conduct portions of the program when the group meets April 1-2 in Los Alamos. John Banker (7226) will present a paper on Schlieren photography. Dick Hodges (3465) is chairman of the print exhibit and competition.

Continued from Page One

## Flying Labs to Circle Globe

Ceylon, Kenya, Leopoldville, Ascension Islands, Surinam, Florida, and on to Albuquerque.

Purpose of this second phase of the expedition is to measure the distribution and intensities of cosmic rays and air glow as a function of altitude, latitude, and longitude.

The two participating planes are specially instrumented NC-135A's which are used primarily in the test readiness program. However, they have also been used for several scientific expeditions in the past two years, the most recent being a solar eclipse study conducted off the coast of Brazil last November.

Sandia experimenters on the expedition are M. M. Robertson (1122) and James E. Keith (5234).

R. E. Taylor, supervisor of Diagnostic Aircraft Section 7255-3, is the Sandia aircraft mission coordinator. Other Sandia personnel are H. F. Sisson, W. L. Bierly, D. A. Mayhew, V. D. Nogle, R. P. McKnight, P. B. Vandenberg, R. C. Hewitt, J. C. Hays, and S. S. Markowitz, all 7255.

Aboard the LASL plane are R. W. Martin, B. R. Stanton, and R. M. Caster, all 7255.

### SANDIA LAB NEWS



SANDIA LABORATORIES  
ALBUQUERQUE, NEW MEXICO  
LIVERMORE, CALIFORNIA

Operated for the United States Atomic Energy Commission by Sandia Corporation

Editorial Offices, Albuquerque, New Mexico  
Employee Publications, Rm. 112, Bldg. 800,  
Tel: 264-1053  
Editor: Robert C. Colgan

Staff: Cherry Lou Burns, Robert P. Gall,  
Donald E. Graham, Bill Laskar

Public Information, Livermore, California  
Rm. 138, Bldg. 912, Tel: 447-5100, Ext. 2387

William A. Jamieson, supervisor  
Staff: Matthew J. Connors, Lorena Schneider

Permission to reprint material herein for other than governmental use may be obtained from the Editor, Sandia Lab News.

# RLRA Travel Club Schedule Announced for '67 Vacations

Sandia travelers can start planning now for vacation trips being offered by the LRL Recreation Association (RLRA) travel club in 1967.

A proposed program, including tours to the U. S. East Coast, Hawaii, Alaska, Europe, Canada, Mexico, and South America, was announced recently by the RLRA general travel chairman.

LRL or Sandia employees (Albuquerque as well as Livermore) and members of their immediate families are eligible to participate by joining RLRA. Basic tours are sponsored jointly with the California State Employees Association or the Kaiser Employees Club.

The 1967 tour program again encompasses a wide variety in terms of places, rates, and dates so that employees have a well-rounded travel package from which to choose.

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

This year's basic tours with approximate cost per person are:

Alaska Inland Cruise — 12 days — \$545. Via air and ship; three departure dates: May 30, July 1, and Aug. 26.

Cradles of American History — 15 days — \$485. Air to Boston and return from Washington, D. C.; three departures: Sept. 16, Sept. 30, and Oct. 14.

Cradles of American History Canadian Extension — 10 days longer — \$725. Air to Vancouver and Montreal for Exposition '67; departure dates 10 days prior to those above.

Hawaii (air/sea) — 15-17 days — \$495. Air to Hawaii and return by ship; six departures: April 18, May 23, Aug. 28, Sept. 20, Oct. 11, and Nov. 7.

Hawaii (four island tour) — 12 days — \$445. Air to Honolulu and islands of Hawaii, Maui, and Kauai; two departures: May 6 and Sept. 30.

Hawaii (Honolulu) — 8 days — \$260. Air to Honolulu; departures to be announced.

Mexico — 15 days — \$445. One tour, probably in the fall; departure date to be announced.

South America — 22 days — \$1100. Via air; visits Lima, Cuzco, Santiago, Buenos Aires, Sao Paulo, Rio de Janeiro, Brasilia, and Panama City, Sept. 30 - Oct. 21.

European tours for '67 are based on a three-week stay. They are:

Southern Europe (Spain, Portugal, North Africa, Palma) — 22 days — \$995. Air

to and from San Francisco; includes Lisbon, Madrid, Toledo, Granada, Malaga, Tangier, Seville, and Majorca, for a maximum of 40 passengers; June 8 - 29.

British Isles and Scandinavia — 22 days — \$1095. Visits Shannon, Cork, Dublin, Edinburgh, London, Bergen, Fjord Country including Stalheim and Flaam, Oslo, Stockholm, and Copenhagen, for a maximum of 40 passengers; Sept. 11 - Oct. 2.

Air/Rail Europe — 22 days — \$1025. Includes air flights throughout in order to visit key areas at leisure; East and West Berlin, Munich, London, Amsterdam, Venice, Florence, Rome, Geneva and Mont Blanc, Paris, and Versailles; for a maximum of 40 passengers; Sept. 30 - Oct. 21.

Further information may be obtained from Zelda Lassen, LRL ext. 7721, or Jack Hum, LRL ext. 7138.

## W. A. Jamieson Elected Hospital Board President



Members of the Board of Directors of Valley Memorial Hospital in Livermore have elected William A. Jamieson (8235) president for the year 1967. The election of new officers was held at the first meeting of the

board following the hospital corporation's annual election of directors. At a previous meeting, Bill had been re-elected to serve a second three-year term as board member at large.

Bill has been actively involved with the hospital in various capacities since transferring to SCLL from Albuquerque in 1957. He was chairman of the residential campaign in the hospital's initial fund raising drive, and a member of a three-man steering committee for the expansion program now underway.

During his three-year term as a member of the board of directors, he served as treasurer in 1965 and vice president last year.

## Master's Degree from UC Awarded Richard B. Craner



Richard B. Craner has received an MS degree in electrical engineering from the University of California at Berkeley. His master's research project involved nonlinear automatic control theory.

Dick is an engineer in Project Engineering Division 8166. He joined Livermore Laboratory in June 1960, immediately following graduation from the University of Idaho where he received his BS degree in electrical engineering.

At Sandia he has worked primarily in preliminary design and project groups.

During 1965 he took an educational leave of absence for two semesters to work toward his advance degree and, following his return, completed his last two semesters under Sandia's Educational Aids Program.

## Welcome . . . Newcomers

Feb. 13-23

California	
Diane E. Burrow, Livermore	8253
Terrence P. Dowell, Long Beach	8135
Laurel J. Short, Livermore	8243
Billy R. Williams, Livermore	8252
Minnesota	
Keith D. Christian, Winton	8146
New York	
Michael C. Daley, Bethpage	8131
*Denotes Rehire	

PAGE THREE

MARCH 10, 1967

SANDIA LAB NEWS



"MATH IN INDUSTRY" was discussed by A. W. (Mickey) McKinney (8144) with about 75 members of Alameda County Mathematics Educators (ACME) visiting Livermore Laboratory recently. He discussed how mathematics is used in industrial companies today, giving specific examples of applications at Sandia. ACME is an organization of mathematics teachers and other school personnel from all levels in Alameda County schools, elementary through college.

# LIVERMORE NEWS

## Livermore Notes

Clark Calder (8254) presented a technical paper at the 8th Conference on Methods in Air Pollution and Industrial Hygiene Studies held at Kaiser Center in Oakland, Feb. 7. The paper, co-authored with R. O. Campbell (8215), was entitled "A Hazardous Material Handling Facility."

Reserved seat tickets at discount rates are available to SCLL employees for the March 25 matinee (5 p.m.) showing of the film, "A Man for All Seasons," at the Stage Door Theater, Mason Street near Geary Boulevard, San Francisco. Tickets on a first-come, first-served basis can be obtained from Employee Benefits.

Dave Abrahams (8233) was guest speaker at a meeting of the Peninsula Stamp Club in Burlingame, Feb. 16. Dave, vice president of the Livermore Stamp Club, discussed "The Replating of Old British Stamps."

## Retiring . . .



"I would like to stay active in the business world, at least on a part-time basis," says Cecile B. McIntosh, supervisor of Secretarial Services Section 8235-1 at SCLL, who will retire March 31. "Just how I may be able to accomplish this will have to wait, though, until I'm settled in New Mexico." Cile plans to leave Livermore around the middle of April for Albuquerque where she will live near her son, daughter-in-law, four grandchildren, and two sisters and their families.

She joined Sandia at Albuquerque in December 1952 and worked as a division secretary in a project group and the training organization. Later she was secretary for technical services department. In January 1957, she transferred to Livermore Laboratory as secretary to the director of systems development and in July of that year was promoted to her present position.

Before joining Sandia, Cile was secretary to the director of the YMCA in Flushing, N. Y., for 10 years.

"Although my retirement plans are rather indefinite, I'm looking forward to taking some courses at UNM, probably in archaeology," she says. "I've always been interested in the field of anthropology and would love to eventually travel through the Middle East and the Holy Land."

Bernie Kraemer (8111) shot a net low score of 64 to win the first place trophy in the Feb. 18 Sandia Employees golf tournament. The straight handicap tourney was played at the new Galbraith Golf Course in Oakland.

Bernie also won the first place award in the "high point" feature of the tournament, finishing with 44 points.

Cliff Erickson (8252) was the second place winner in this event with 39 points, and Elmer Smith (8118) finished in third place with 38.

A special award went to Bill Ryan (8212) for coming closest to the pin at the No. 2 hole.

The next SEGC tournament will be played at Lake Chabot Golf Course in Oakland on March 18. Those interested should contact Elmer Smith (8118), ext. 2738; or Joe Genoni (8235), ext. 2433.

Two Sandians are among those elected officers of the board of directors of Livermore's new Las Positas Men's Golf Club. John Barnhouse (8226) will serve as membership chairman and Ralph Morrison (8118) as publicity chairman. The club is affiliated with the Las Positas Golf Course, located near the Livermore Airport on the south side of Highway 50. It is scheduled to open April 1.

H. R. Johnson, J. W. Dini, J. R. Helms, all of Materials Application Division I 8133, were the authors of a technical article which appeared in the January 1967 issue of PHOTOMECHANICAL ETCHING magazine. The article was entitled "An Adjustable Fixture for Uniformly Electroplating Flat Panels."

At a recent meeting, Marlin Pound, supervisor of Training, Benefits, and Records Division 8214, was reappointed for a four-year term to the board of directors of the Personnel Commission of the Livermore Area Recreation and Park District. He was also reappointed chairman of the board for a one-year term, a post he has held the past three years.

Responsibilities of the five-man Personnel Commission include administration and recommendations for employment policies, personnel rules, and employee appeals.

## Congratulations

Mr. and Mrs. Jack Almstad (8144), a daughter, Jacqueline Kay, Feb. 11.

Mr. and Mrs. Paul Coronado (8133), a son, Jeffrey, Feb. 16.

Mr. and Mrs. Dick Finn (8252), a son, Peter Wesley, Feb. 13.



Sarah A. Rupp (8235)

## Take A Memo, Please

Don't take short cuts or unnecessary chances—for your life or limbs may be shortened.

# Material Properties Laboratory Gives Vital Service to Sandia Design Groups

In a time when technology can put a television camera on the moon, drill a hole into the center of the earth, bounce light off Mars, or explore the world of antimatter, the spectacular seems merely routine.

In a "routine" way, the work of Mechanical Properties Division 1144 under O. L. Burchett is contributing to advancing technology at Sandia. Behind every advance, there is a period of "routine" investigation — hours and hours of painstaking, careful analysis and testing of the properties and characteristics of materials.

Much of modern technology's spectacular advances can be credited to the development of space age materials — transistors, diodes, ceramics, adhesives, piezoelectrics, ferroelectrics, phenolics, and a proliferation of glass-plastic ceramic-metallic materials.

Basic to the design of any modern device is the selection of optimum materials. Division 1144 provides a source of mechanical property data on materials for Sandia design groups and materials specialists. In addition, the Division performs a number of continuing studies of the performance characteristics of various groups of materials and periodically examines newly developed materials of possible interest to Sandia. Only a few other laboratories are staffed or equipped to perform such sophisticated "routine" work.

"The effects of time and temperature on the mechanical behavior of materials present expanding and continuing problems in the material science area," Mr. Burchett says. "Present trends emphasize high strain rates and high temperatures. The temperature range of interest extends from cryogenic (extremely low temperatures) to thousands of degrees centigrade while the strain rate range reaches from creep rates to the strain rates present in shock waves. Sophisticated experimental techniques that were used exclusively as research tools are now being used to characterize the dynamic behavior of engineering materials. Two new tools — the high speed camera and the digital computer — are being used extensively to study dynamic material response."

Currently underway in the Division are studies of the Hugoniot equation of state and spall behavior (dynamic fracture resulting from the interaction of two rarefaction shock waves) of plastics, metals, and composites; steady state vibrational behavior of viscoelastic materials; high temperature behavior of structural mater-

ials; and the plastic behavior of certain structural metals.

As part of the studies (to illustrate the number of individual measurements made), the static test laboratory performs from 12,000 to 16,000 tests annually. These range from room temperature tests of metals to elevated temperature tests of filament-wound structural materials.

Of primary concern in these studies of materials is measurement of the following characteristics: stress-strain behavior, strain rate sensitivity, Hugoniot equation of state and spall threshold, effect of temperature on the mechanical behavior, and the nature of the failure mode.

The laboratory is equipped with advanced facilities and associated instrumentation. Total investment in this equipment is in excess of a quarter-million dollars.

Four universal test machines produce a force range from 100 grams to 120,000 pounds. A number of environmental temperature chambers can be used in conjunction with these machines to give a temperature range from  $-65^{\circ}\text{F}$  to  $1000^{\circ}\text{F}$ . A high vacuum furnace will soon be installed which will produce temperatures up to  $4000^{\circ}\text{F}$ .

To determine the intermediate strain rate behavior of materials, the Division uses a Hopkinson pressure bar device and a specially designed gas loader capable of deforming materials at rates up to 100 inches per second.

For Hugoniot equation of state and spall behavior, a four-inch-diameter gas gun is used. This device can produce velocities up to 2000 feet per second to impact a projectile into a target plate.

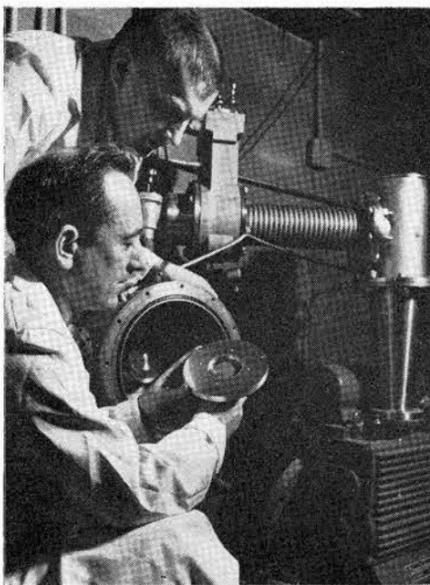
For determining the steady state vibrational behavior of viscoelastic materials, a 2500-pound force vibration table is used. This machine has a frequency range from 20 to 2000 cycles per second.

To measure acoustic wave velocities, the Division uses an ultrasonic device which has a temperature capability range from  $-65^{\circ}\text{F}$  to  $212^{\circ}\text{F}$ .

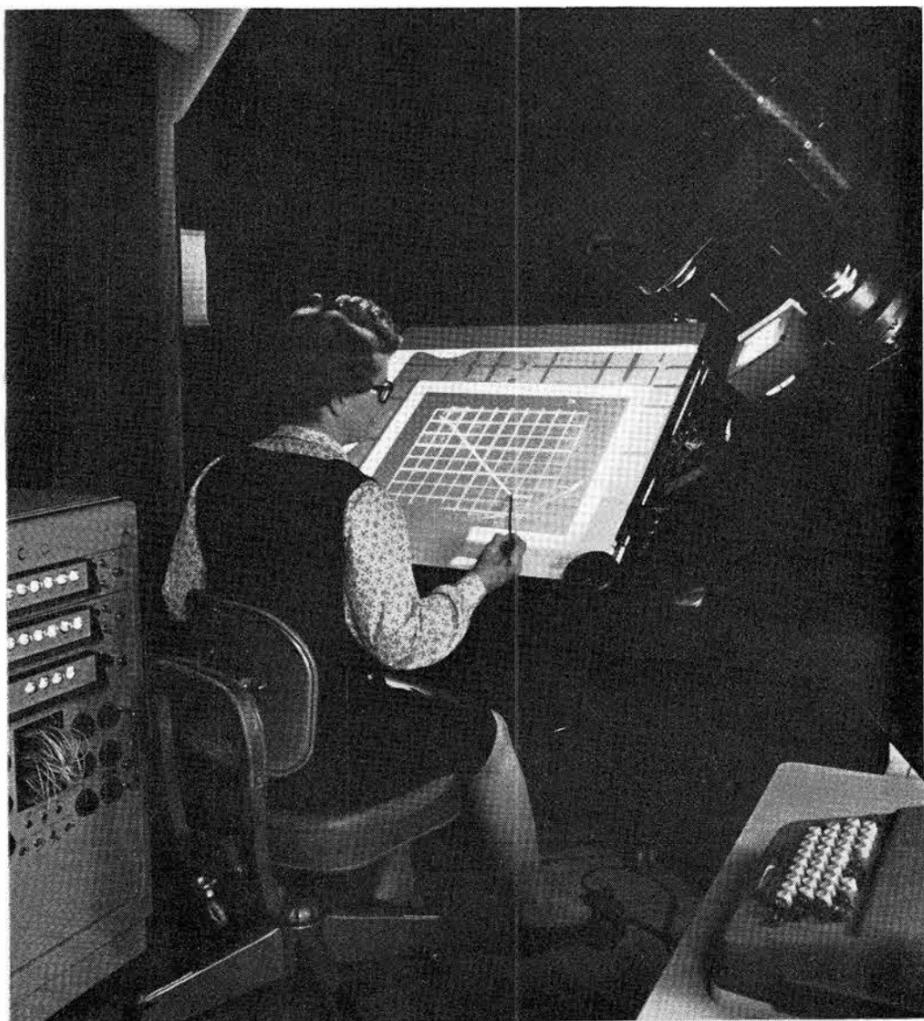
"One of the most significant factors in our work of acquiring mechanical properties data," Mr. Burchett says, "is the cooperation between Divisions 1141, 1142, 1144, and the design groups in defining the needed mechanical properties. It appears that materials will be a limiting factor in the design of future Sandia weapon systems. Therefore, we are aware of the importance of the mechanical materials property data we are generating and what this means to the Laboratory's future."



HIGH STRAIN RATE TEST of a plastic material is prepared by E. R. Dunaway (left) and O. L. Burchett on the Hopkinson pressure bar device. High speed photographic coverage will yield a visual record plus superimposed oscilloscope data on the film. Test will show the strain rate sensitivity and the failure mode of the material.



GAS GUN FACILITY—Clif Witten (left front) and Ray Holesinger prepare to install a target assembly in the four-inch gas gun in preparation for an equation of state study of intermetallic materials. The gun fires a projectile down the barrel to impact on the target plate.



LESSIE LEE digitizes an oscilloscope photograph of a dynamic test record with a Telerdex print reader. The digitized data will be reduced to the desired final form by means of a computer program. All of the dynamic test data obtained by Division 1144 are reduced in this manner.

## Sandia Speakers

A. R. Sattler (5211), "Partition of the Average Energy Deposited in Silicon as a Function of Incident Neutron Energy," Arizona State University Physics Colloquium, Feb. 23, Tempe, Ariz.

E. L. Emerson (2223), "Numerical Controlled Milling," Western Electric Numerical Control Committee Meeting, WE Engineering Research Center, Feb. 13-15, Princeton, N.J.

K. D. Hardin (1433), "Thin Film Component Technology," UNM Engineering Colloquium, March 14, Albuquerque.

R. S. Gillespie (3413), "Scientific Journalism — Translating Technical Material," Texas Technological College's Technical Writing Institute, March 17-18, Lubbock, Tex.

R. L. Schwoebel (5123), "Surface Step Motion and Filamentary Crystal Growth," 27th Annual Conference on Physical Electronics, March 20-22, Cambridge, Mass.

R. N. Rogers (5151), "EPR and the Study of Magnetic Interactions," University of Kansas, Feb. 18, Lawrence, Kans.

D. E. Munson (1143), "High Strain Rate Deformation by Plate Impacts," Argonne National Laboratories Seminar, Feb. 16, Chicago.

R. I. Butler (7342), "Long Duration Pressure Measurements with Short Pressure Bars," IMOG Subgroup on Environmental Testing, Feb. 8-9, Richland, Wash.

D. E. Lee (7224), "An Airborne Photographic Instrumentation System for Photometric Observation of the Total Solar Eclipse of Nov. 12, 1966," Seminar of the Society of Photo-optical Instrumentation Engineers, Feb. 20, Cocoa Beach, Fla.

M. M. Sluyter (9321), "Legendre Function of Second Kind and Fractional Order in Aerodynamic Theory," Second Conference on Pure and Applied Mathematics, Feb. 24-25, Socorro, N. M.

E. L. Emerson (2223), "Precision Graphics," Western Electric Numerical Control Committee, WE Engineering Research Center, Feb. 13-15, Princeton, N.J.

## Sandia Authors

F. W. Bingham (5121), "Classical Calculation of Atomic Scattering Parameters," March issue, JOURNAL OF CHEMICAL PHYSICS.

M. L. Slater (5262), "On a Class of Nonlinear Integral Equations" (modified title), January issue, PACIFIC JOURNAL OF MATHEMATICS.

C. W. Harrison, Jr., and C. D. Taylor (both 1425), "The Transmission and Reception Properties of an Equatorial Slot Antenna on a Re-entry Sphere," March issue, RADIO SCIENCE.

C. W. Harrison, Jr. (1425), R.W.P. King (Sandia consultant, Harvard University), and E. A. Aronson (5263), "On the Transient Response of an Infinite Cylindrical Antenna," March issue, IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION.

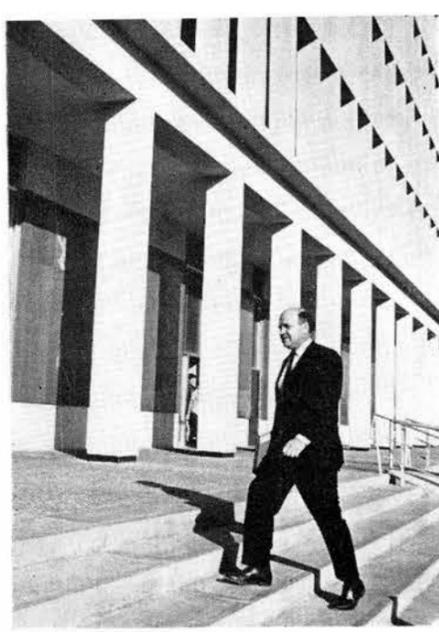
E. D. Jones (5151) and J. E. Hesse (5154), "Temperature Dependence of the  $\text{Sm}^{3+}$  Spin  $\langle S(T) \rangle$  in Intermetallic Compounds," March issue, JOURNAL OF APPLIED PHYSICS.



FRANK BATCHELOR prepares a filament wound specimen for static testing. The universal test machine will load the hoop in compression and the resulting measurements will indicate the material's strength. In the foreground are more samples awaiting test.



MEETING WITH THE CITY'S PROFESSIONAL STAFF, Harry Kinney (right center) and the other city commissioners gather additional information on issues to be acted on during the regular public meeting.



CITY COMMISSIONER KINNEY strides up the city hall steps for a series of Monday meetings.

# Harry Kinney Has Dual Role of Engineer and City Commissioner

The transition from his engineering duties at Sandia to the diverse responsibilities of a city commissioner is not difficult for Harry Kinney, a mechanical engineer in the Advanced Systems Development Department II 5620. He approaches both jobs in a similar, dedicated manner — studying the problem at hand, assembling the facts, and making decisions.

"Government is not a closed committee," he states, "it requires the active participation of many people." He first demonstrated his belief in this philosophy when he ran for a public office more than 10 years ago. At this time he acted because of his feeling that government was not keeping pace with the needs of the community. Today he is encouraged by the trend toward more participation in government. He feels his training as an engineer is useful since many decisions are based on engineering judgment.

Commissioner Kinney's election to a four-year term on the five-member city commission in April 1966 follows a decade of other public service. He was a Bernalillo County Commissioner for six years, from December 1956 to December 1958 and then from January 1961 to December 1964.

Because of his responsibilities as a city commissioner, he recently resigned as the Bernalillo County representative on the City-County Economic Opportunity Board. He was appointed to the board in late 1964 and served as chairman for a year. Currently he is president of the New Mexico Conference of Social Welfare, which is composed of professional social workers and other citizens interested in welfare problems.

## No Salary

Because the city commissioners receive no salary for their services, the basic consideration is the personal satisfaction of trying to provide residents with good local government.

Under the city manager form of government, the commissioners set the policy for the professional staff's execution. The commission's responsibilities include review and approval of the city's annual budget of about \$29 million; employment needs; financing; general policy matters; and appointments to city boards and commissions. In addition, the commission is the final authority for approval of planning and zoning matters. The members also determine legislative needs in terms of municipal government and then work with elected state representatives for passage of the legislation.

Responsibilities of a city commissioner are also familiar to two other Sandians, R. A. Bice (7000) and L. J. Heilman (2100). Mr. Bice was a commissioner from 1954 to 1962, and Mr. Heilman served as a commissioner from 1962 to 1966.

Commissioner Kinney devotes about 24 hours each week to city matters. Eight to 10 hours of this time involves studying items on the agenda for the weekly meeting and other reports. Commission meetings and meetings with citizens groups consume most of the remaining time. Other matters, such as current attempts to encourage the construction of a motel at the Sunport, periodically demand additional time.

## Three Monday Meetings

Normally the city commissioners have three meetings each Monday. The typical schedule includes a mid-afternoon meeting, informal discussions during dinner, a 7 p.m.

staff meeting, and the 7:30 p.m. public meeting.

At the first meeting, the commissioners usually assemble informally in a conference room near the city manager's office on the seventh floor of the city hall to discuss such subjects as appointments to various city advisory groups or to resolve problems. Two weeks ago they studied, among other matters, how two California cities accomplished urban renewal through revenue bonds. After this meeting, the five commissioners usually eat dinner together and continue the discussion of city matters.

They convene again at 7 p.m. for another meeting in a larger conference room on the seventh floor of city hall. With the various city department heads and other members of the professional staff in attendance, this meeting is devoted to reviewing agenda items for the public meeting. It provides the commissioners with an opportunity to ask the staff for additional background information on particular subjects.

Following this brief meeting, the commissioners hurriedly leave the seventh floor to reassemble on the dais of the street-level meeting room for the 7:30 p.m. meeting which usually continues until about 9:30 p.m.

While they spend considerable time probing into the many facets involved in such matters as zoning changes, the commissioners avoid discussing the particular issue among themselves before the public meeting. Thus, they are in a better position to serve as unbiased judges when the facts are presented.

## Zoning Issues

On zoning issues, they look for the most effective land use in relation to residential and commercial purposes; try to avoid the growth of improper land use; and attempt to resolve problems in connection with the annexation of land within the city limits.

Commissioner Kinney, in addition to reading background reports and studying maps, often drives around the area to be affected for a first-hand look at the situation.

General problem areas for the commissioners pertain to keeping up with the city's growth by providing proper services within the revenue structure set by state law and the state constitution. This includes paving streets, providing police and fire protection, meeting the expanding requirements for parks and recreational facilities, and providing for the future water needs of the city.

The five commissioners are confronted with numerous problems and occasional frustrations. However, like their predecessors, they are contributing their time and efforts to improving local government.

Other Sandians who are currently serving the city government as volunteers include R. A. Bice (7000), chairman of the Museum Advisory Board; J. R. Garcia (3133), member of the City Personnel Board; L. A. Hopkins, Jr. (1300), member of the City-County Parks and Recreation Advisory Board; W. H. Kingsley (3310), member of the City-County Environmental Health Advisory Board; W. R. Rosenburg (3240) and Mrs. K. E. Lawson (1121), both members of the Fair Housing Board; and J. L. Tischhauser (9420), chairman of the City-County Data Processing Advisory Board. K. F. Hertford, former manager of AEC/ALO, is chairman of the City Planning Commission.

## Supervisory Appointments

WALTER HERRMANN to manager of the newly created Mechanical Behavior Department 1140, effective March 1.

Walter has been supervisor of the Deformation Structures Division 1116 since he joined Sandia in August 1964. In this capacity he had been concerned with solid dynamics, or the behavior of structural materials.

Before coming to Albuquerque, he was with the Division of Sponsored Research at Massachusetts Institute of Technology from the Spring of 1957 to July 1964. There he worked in the aerolastic and structures laboratories, mostly with stress wave propagation in solids.

In 1955 and 1956, he taught fluid mechanics and heat transfer at Cape Town University in South Africa. Before that he conducted research in aerodynamics and shock tubes at MIT from September 1953 to June 1955.

Walter received his BS and PhD degrees in mechanical engineering, specializing in aerodynamics, from Witwatersrand University in Johannesburg, South Africa.

He is a member of the American Institute of Physics, and the South African Institution of Mechanical Engineers.



DARRELL E. MUNSON to supervisor of the newly created High Pressure Equation of State Division 1143, effective March 1.

Darrell joined the metallurgy group in the materials and process organization in October 1961.

Eight months later he transferred to what is now the Deformation of Materials Division where he has worked since. He was a section supervisor for two and a half years.

Before coming to Albuquerque, Darrell was an assistant professor of metallurgy at Washington State University from September 1959 to September 1961.

He received a BS degree in metallurgy from South Dakota School of Mines and Technology in June 1954. His MS and PhD degrees in metallurgy from Stanford University were awarded in June 1956 and June 1960 respectively.

Darrell is secretary of the Albuquerque Chapter of the American Society for Metals and a member of the American Institute of Mining, Metallurgical and Petroleum Engineers, and the American Society for Engineering Education.



STATUS OF CITY'S WATER is checked by William P. Walker (left), Water Division Operations superintendent, and Commissioner Kinney. The panel is in the City's Water Operations Central Control building at 2629 San Mateo, N.E. Information such as water levels in the reservoirs and water pressures at the various sites throughout the city is shown on the board's instruments. There are a total of 86 wells, 29 reservoirs, and 26 pumping stations in the water system.



ASSEMBLED ON THE DAIS for the evening public meeting are the five city commissioners and the city manager. Shown are (l to r) G. B. Robertson, city manager; Emmanuel Schifani, city commissioner; Pete V. Domenici, city commissioner; Ralph S. Trigg, city commission chairman; John E. Gurule, city commissioner; and Harry E. Kinney, city commissioner and a mechanical engineer in Sandia's Advanced Systems Development Department II.



PHYSICIST RUTH WHAN (5211) attaches thermocouple wires to monitor sample temperatures during irradiation on the Van de Graaff accelerator while R. S. Neiman hooks up an electrical connection to monitor radiation levels.

## Sandia Woman Scientist Successfully Combines Laboratory and Home Life

Ruth Whan is a scientist, a wife, and a mother—but not necessarily in that order.

As a physicist, she is interested in radiation effects in semiconductors and carries out her research in Crystal Lattice Defects Division 5211.

As a wife, she has just spent a half year with her husband Glenn in Portugal, where he is a technical assistance expert for the International Atomic Energy Agency (under the United Nations).

As a mother, she is faced with the usual range of problems encountered by anyone with boys five and nine years old.

Laboratories have played an important role in her life. Ruth met Glenn when they worked on the same research project at Carnegie Institute of Technology where Ruth was studying for her MS and Glenn for his doctoral degree. Both earned degrees there and Ruth later received her PhD degree in physical chemistry from the University of New Mexico working under Dr. G. A. Crosby.

During her four years at Sandia, Ruth has made significant research contributions. James W. Corbett of General Electric Research and Development Center noted in the preface of his recent book, "Electron Radiation Damage in Semiconductors and Metals," that the only major change he found necessary to make after his initial draft was due to work performed by Ruth Whan on the mobility of germanium vacancy at low temperatures.

A paper, "Mechanism of Defect Production in N-type Silicon: Irradiation Temperature Dependence," written by Ruth and F. L. Vook, Division 5211 supervisor, which appeared in the Jan. 15 issue of PHYSICAL REVIEW, was described by Dr. Corbett as "a milestone in the field."

The months in Portugal were one of the few times when Ruth hasn't worked and she missed it "very much." She explains, "We lived in a rented house with none of our personal effects, Glenn was away all day, and both boys were in school. After the novelty wore off, it was difficult to fill the time during the day. In other words it was boring."

Glenn is assigned to a laboratory operated by the government of Portugal. He is setting up research programs to make the best use of a swimming-pool type reactor which has been in operation for about five years. He will remain there until June and then return to the University of New Mexico where he is a professor and is chairman of the Nuclear Engineering De-

partment. Glenn has worked several summers at Sandia Laboratory.

"Portugal is trying to build up its industry. The emphasis is now on mechanical and civil engineering, but the country requested help in the area of nuclear engineering apparently to meet future needs," Ruth says.

Lisbon has a relatively large population of Americans (Embassy and military assistance personnel as well as representatives of American industries which are establishing plants in Portugal); however, everyday life is still quite different there for the American housewife.

"There are no supermarkets. All shopping is done in individual shops, at the farmer's market, or at the fish market where usually only Portuguese is spoken. Almost all canned goods are imported and are very expensive since there are few canneries in the country.

"Trying to observe Thanksgiving Day—in the American tradition—was quite an experience. We paid \$1.75 for a 25-cent can of cranberry sauce. The turkey was purchased 'on the hoof' while a flock was being herded up one of the main streets. We had to tether it in the yard for several days before killing it. We paid about \$6.50 and it only dressed out at about 10 pounds, but at least we had turkey," Ruth recalls.

Both Ruth and Glenn took private lessons in Portuguese after their arrival in Lisbon and the children picked up the language with ease at their school and from playmates.

The Whans reported first to the International Atomic Energy Agency headquarters in Vienna, Austria. The drive from Austria to Portugal, and a later vacation, enabled them to visit a number of European countries.

Since her return to Sandia, Ruth has resumed her infrared absorption studies of defects in germanium and silicon. She uses a Van de Graaff accelerator to irradiate samples contained in an optical cryostat which maintains the samples at low temperatures.

"I'm especially interested in defect-impurity complexes, that is complexes which are formed from the interaction of an impurity with a defect produced by the displacement of one or more atoms from the normal lattice site. Some of these complexes have optically active vibrational modes so that we can study them by optical techniques. Some of the complexes are also frequently electrically active and have marked effects on the electrical characteristics of the material. Thus, it's important to identify these complexes and to determine their effects on the properties of the material.

"I think this problem is fascinating and I really enjoy the work," she says. "There is still a lot to be done in the field."

## Don't Walk, Run, and You'll Be in Shape for Next Marathon

"Everyone should run a marathon—once," in the opinion of Dave Saylor's (9421), but when people learn that an Olympic-length marathon is 26 miles, 385 yards, most lose interest.

Three Sandians—Bob Jeffrey (7215), Pete Scaates (9425), and Dave—were among the 376 official entrants in the marathon sponsored by the College of Artesia on Feb. 18. They also were among the 240 persons who finished the race. Dave's wife Gwyn and seven-year-old son Kevin finished 13 miles in roughly two and a half hours, but ran out of steam about then.

The course started at Hope, N. M., and finished in downtown Artesia. Some participants trotted and walked along the highways; others chose the shoulder of the road; and many alternated from one surface to the other. It didn't resemble the original route in 490 B.C. from Marathon to Athens, Greece, after which the Olympic event was named, but the distance was the same.

The winner at Artesia was UNM track star Ron Eller who covered the distance in 2 hours 25 minutes, about 13 minutes off the world record. Bob finished in 5:34:27, Dave's time was 4:53:11, and Pete was about six or seven minutes faster (exact time not available).

Bob started out strong, but around noon the dust whipped up and slowed him down. He went to bed early that night, but didn't have any aching muscles then or later. "I ride a bike a lot, and feel that training really paid off," he says. On weekends, Bob runs about 12 miles, usually around the university golf course. "I get out at 6 a.m. before the wind blows. There are always golfers already playing. It's a fine place to run because there are no dogs to chase you—and sometimes you find golf balls," he notes. "I take my share of ribbing, but I'm not out to prove anything. It's merely that running doesn't take much time and I feel better for doing it. If you're consistent in your training, it's not strenuous."

Dave and Pete are avid climbers, and snowshoers. They entered the marathon together, but didn't see each other again until it was over.

Dave started out slow the first eight miles, became warm, and tossed off his sweat pants and wind breaker. "A cold wind came up and I started to get cramps in my legs, so I trotted and ran the next 15 miles. That loosened my muscles and I walked for a while. At the 23rd mile we dropped into the valley and the temperature was up again. I was able to trot and run the last few miles," Dave recalls.

Pete started out fast, running the first nine miles, slowed to a trot for the next seven miles, and walked the balance of the distance. "In fact," he says, "my legs were so cramped, I could hardly walk."

Two pre-teen-age girls, members of the Albuquerque Olympette Club, bettered the Sandians' marks. "Along about the 16th mile, both the 11- and 12-year-old trotted by me at about nine miles per hour," Dave recalls. Pete adds, "I was in my 20th mile when I looked over my shoulder and saw this little girl coming up fast behind me. I tried to run to keep ahead, but at that point I could scarcely walk."

The three Sandians praised the way the people of Artesia supported the event. Most of the entrants were housed overnight in private homes, and many of the townspeople were stationed at different

points on the highway to offer water, orange slices, and sugar cubes to the racers.

Both Dave and Pete run between 12 and 15 miles a week during their lunch hour on the track located north of the Sandia Base gym. "We'd like to have others join us," they say, "it's a great way to keep in shape."

All three men are lithe and healthy-looking. This running seems to help. Marathon, anyone?



REGULAR NOON HOUR RUNNER is Dave Saylor's (9421), who was one of three Sandians to enter the 26-mile race recently.



CONSISTENT TRAINING by running and bicycling paid off for Bob Jeffrey (7215) during recent marathon at Artesia, N.M.

## Welcome . . . Newcomers

Feb. 20 - March 3

<b>Albuquerque</b>	
Martin Abrams	1134
Edwina T. Beard	5121
M. David Devore, Jr.	9311
Nigel S. Hey	3431
Robert B. Johns	4253
*Beatrice L. Kenagy	3126
Helen Lucero	9412
F. Katherine J. Medina	3154
Ronald Rodeman	1542
Adelia E. Sasaki	1121
Saul Skolnick	1312
Joyce J. Tholburn	3154
*Rita R. Thorp	3126
<b>Georgia</b>	
Robert E. Perryman, Decatur	4542
<b>Illinois</b>	
Lyle D. Gerdes, Grant Park	1542
David O. Lee, Evanston	1541
Robert W. Ter Maat, Chicago	1431
<b>Indiana</b>	
Donald L. Wright, Indianapolis	9213
<b>Ohio</b>	
James Richard A. J. Ni Castro, Cleveland	5141
<b>Texas</b>	
Lawrence R. Gallo, Denton	7215
* Denotes rehired	

## UNM Scholarships Offered By Sandia Woman's Club

Dependents of Sandia Corporation employees are eligible for two UNM scholarships offered by the Sandia Woman's Club. As in past years, the scholarships will be made to a freshman and sophomore.

Applications must be submitted to the UNM Student Aids Office by April 1. Forms are available at the Bank of New Mexico, Sandia Base Branch.

Awards will be announced in May, and all applicants will be notified when the selection is completed.

All applications will be carefully considered to select the most outstanding candidate based upon academic achievement, financial need, and recommendation of faculty advisors.

# Service Awards

## 20 Years



D. D. Deapen  
1324



Frances Hale  
2234



J. A. Southwick  
2412

## 15 Years



M. E. Bailey  
2543



F. M. Batchelor  
1114



L. M. Berry  
1130



Clara Blasyk  
4331



T. J. Brooks  
4544



D. J. Buntin  
4251



J. P. Chandler  
3242



C. M. Coats  
2546



F. R. Edwards  
9225



Mary Guajardo  
2234



Berta Guest  
4632



L. E. Guintard  
8116



H. W. Hanna  
3113



T. B. Hanna  
3244



H. V. Harter  
7342



Arturo Jimenez  
4615



J. N. Johnson  
3433



G. L. Krieger  
1413



L. W. Lathrop  
7344



H. W. Lindquist  
2555



M. K. Linn  
3400



Dorothy Patterson  
2126



G. V. Pearson  
2525



O. G. Perea  
4611



M. D. Peterson  
7211



Nahor Rael  
4221



J. E. Simpson  
1521



Clara Taylor  
2440



H. E. Thiermann  
2211



J. N. Timmons  
2523



J. E. Westbrook  
9411

## 10 Years

March 10-23

Shawket Hindi 3462, Eddie J. Berry 8241, Irving Auerbach 9326, C. J. Wagner 2452, M. O. Van Orsdol 4122, C. O. Holmes 8122, S. L. Erickson 1121, Calla A. Crepin 3421.  
Horace Lucero 9324, Jacobo Mata 4212, Augustin Pohl 4575, D. B. Hayes 5623, J. A. Lackey 7216, J. H. Cordial 8161, S. P. Timmons 8223, Joyce P. Willford 8252.  
E. E. Brass 9414, Emma M. Benderman 3428, T. S. Mickey 4221, Florence F. Moore 3126, Clemmie S. Gonzales 4624.

## Sandia Seeks Applicants For Apprentice Programs

Candidates are now being interviewed for two Sandia Laboratory apprenticeship programs anticipated to start next Fall. Employees who are interested in either the machinist or electronics four-year program should contact Personnel Division II 3154, Bldg. 832, tel. 264-5868 or 264-3000, to apply. Applications should be filed by March 31.

The programs provide about 8000 hours of on-the-job and classroom training leading to journeyman status for successful participants.

Applicants must be high school graduates or equivalent and between the ages of 18 and 30, except for those who have served in the Armed Forces. These exceptions may be 30 plus the length of military service up to five years.

On-the-job training in the shops will be given in-hours under qualified instructors. Apprentices will be rotated within the Development Shops 4200 organization for various types of experience with operations and processes required for their training.

Shop theory classes will be conducted in-hours in the classroom or laboratory.

Related academic subjects must be completed in an out-of-hours class enrollment. These courses include subjects such as mathematics, mechanical drawing, shop theory, physics, metallurgy, and plastics.

## Events Calendar

March 10-19—Premiere performance of "Everybody's Girl." Albuquerque Little Theatre, 224 San Pasquale SW.

March 10-17—Bernard Shaw's "Caesar and Cleopatra." UNM Rodey Hall.

March 10-12, 16-19—"The Caretaker," Old Town Studio, 1208 Rio Grande NW, tel. 242-4602 for reservations.

March 12—Indian ruins in Jemez Region. New Mexico Mountain Club, leader Ray Nethers, tel. 255-3929.

March 16—Albuquerque Symphony Orchestra, Zara Nelsova, cello soloist. UNM Concert Hall.

March 18—Black mesa near Los Lunas. New Mexico Mountain Club, leader Don Peterson, tel. 299-4714.

## Congratulations

Mr. and Mrs. J. L. Rhyne (2547) a son, Gary Jefferson, Feb. 26.

## Sympathy

To Bonifacio Griego (4212) for the death of his father in Belen, Feb. 21. (He was 103 years of age at the time of his death.)

To John Fackelman (4512) for the death of his sister in Maumee, Ohio, Feb. 16.

## SHOPPING CENTER

### CLASSIFIED ADVERTISING

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

### RULES

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

### FOR SALE

#### CARS AND TRUCKS

- '59 FORD pickup, \$525, see at 1813 Kentucky NE. Gabaldon, 255-8274.
- '59 FORD V8, straight shift, new license. Cougheour, 296-4146.
- '60 MERCURY Parklane 4-dr. HT, all power, AC, \$595. Syme, 268-1334.
- '63 JEEP WAGON, 4-wd, Warn hubs, 6 cyl. OHC engine, radio, PTO winch, new paint, \$1700 Schuster 299-1072.
- '58 FORD V8 std. trans., w/OD, PS, \$195. Cox, 299-5855 a.m.
- '61 OLDS Starfire convertible, complete power w/AC, \$725, \$300 below book. Heckman, 296-2492.
- '61 CHEVY convert., below book. \$750. Hueter, 242-1620.
- '48 CHEVROLET, new tires, plugs, battery, points, radiator and valve job. Rhodes, 255-0596.
- '53 CHRYSLER Windsor 6 cyl. 4-dr. sedan, registered for '67, make offer. Magee, 256-1358.
- '57 FORD station wagon, V8, AT, R&H, \$250. Simon, 299-0703.
- '60 STUDEBAKER Lark V8, ST. Carrillo, 268-4990.
- '56 CHEVROLET pickup, 1/2-ton, 4-spd., \$350. Akin, 299-4242 evenings.
- TRUCK AND CAMPER, 1 ton Ford, duals, 11' side door camper, water heater & 46 gal. pressure system, shower, toilet. Jones, 299-2889.
- '57 CHEVROLET V8, OD, R&H, original owner, \$475. Boots 345-1097.
- '65 VW camper, sleeps two adults and two children, five storage cabinets, dinette, etc., 15,000 miles, original owner, \$1820. Treon, 298-1066.
- '63 DODGE DART, one owner, 35,000 miles, 4-dr. slant 6 140HP, best offer over \$800. DeHaan, 265-4511.
- '62 VOLKSWAGEN sedan, sunroof, radio, seatbelts, leatherette seats, \$800. Streater, 268-3045 after 5:30.

- '57 PONTIAC 4-dr., R&H, Hydramatic trans., AC, new brakes, new muffler, \$290. Johnson, 255-2846.
- '57 VW BUS, less passenger seats, \$250. Shaffer, 242-6507.
- '48 JEEP sta. wag., 2/wd, \$99. Lacey, 9612 Parsifal Pl. NE, 299-9186.
- '61 RAMBLER American 4-dr. AT, low mileage, new tires, new shocks, \$450. Wheeler, 299-8755.

### REAL ESTATE

- 3-BDR., den FR, 1 1/4 bath, dbl. garage, irrigation well, corals and stables, below market, \$21,500. Reid, Los Lunas 636-2793.
- 3-BDR., carpeting, new paint, lawns, fenced back yard, low down, Princess Jeanne area. Richardson, 299-3673.
- 8 ACRES, 2-bdr. home, built-in kitchen, 2 fireplaces, den, stable, NW valley near downtown-shopping, horses allowed, home available w/acreage or acreage w/home, 717 Gabaldon Dr. NW, Bell, 242-4221 after 5:30.
- SNOW EXECUTIVE, 3-bdr., carpeted, over 1800 sq. ft., landscaped, workshop area in garage, 1804 Childers NE. Holt, 299-5943.
- 3-BDR., 1 1/4 bath, paneled den, fp, carpet, hw floors, AC, sprinklers front & back big corner lot near school. Meekins 298-6681 after 5:30.
- 3-BDR., large kitchen w/built-in range & oven, fenced, landscaped, \$12,000, 5 1/2% FHA loan may be assumed. Stomp, 298-5824.
- 3-BDR., built-ins, carpeting, drapes, assume loan, \$89. payments. Brane, 299-0148.
- 3-BDR. HOUSE, attached garage, near Lady Fatima Church, hw/floors, AC, fp, complete landscape, new carpet, 329 Morningside NE. Nelson, 255-2364.

### MISCELLANEOUS

- WINCHESTERS: Model 64, 30-30, lever action, Model 1912, 12 ga. pump, \$60 ea. or trade for .45 automatic pistol. Zaluga, 344-1564.
- HONDA S-90 motorcycle, 1965 model. Dolce, 296-4033.
- SET OF DRUMS, has a brand new snare head, \$80. Simpson, 299-1895.
- WESTINGHOUSE Laundramat, \$50. Underwood, 299-2555 after 5:30.
- 8' CAMPER w/stove, sink, pump, 17 gal. water tank, gas & electric lights, sleeps 2. Watson, 1205 June NE.
- TRADE OR SELL 5-year-old stallion, saddle included. Barnes, 877-0841 after 5:30.
- TWIN OR bunk beds, maple, innerspring mattress. \$19. Weber, 344-5183.
- ORGAN, Conn, Caprice, cost \$1000, sell for \$475. Sumlin, 299-6137.
- ORGAN, Thomas VL-3, walnut, spinet, Bandbox attachment (10 sound effects), 25 pedals, internal Leslie speaker, bench, new '64 - \$1995, now \$1095. Quinlan, 265-0445.

- FOUR BANTAM chickens, three hens, one rooster, \$1 ea.; Triumph Tiger Cub motorcycle w/racing carburetor, \$125. Shock, 877-3728.
- SWING SET, two swings w/glider, needs paint, \$5. Trump, 299-5162.
- '64 DUCATI motorbike. Davis, 256-6498.
- PIANO, upright, new finish. Elbert, 298-2204.
- AM-FM stereo multiplex, 56 watts, 6 speakers. Trump, 299-8475.
- ONE-WHEEL trailer, \$21. Rakoczy, 256-0433 after 6.
- SPRINKLER SYSTEM for lawn, complete except for plastic pipe, includes 10 heads, 2 valves, risers, & vacuum system. Otts, 299-3423.
- HEAVY DUTY swing set: gliders, swings, ladders, slide, original cost, \$64.95, sell for \$27. Halliday, 256-6685.
- VAN NORMAN boring bar, 2 spd., diameter range 2.60 to 5.30. Taylor, 256-3774.
- 1 PR. men's racing skates, Nester-Johnson, size 8. \$7.50. Mellone, 243-2629.
- 15' SEAR'S boat, trailer, new tires, 40hp Elgin, gas tanks, preservers, 2 sets of skis, other extras, \$950. Conklin, 298-7827.
- COFFEE TABLE, lamp table, chair. Johnson, 298-0296.
- BRAIDED RUG, 9x12, mixed red & brown, \$25; set of twin-size springs and mattresses, make offer. Fortman, 256-2105.
- 16' BOAT w/60HP Evenrude motor and trailer. Wheeler, 256-6230.
- ANTENNA for color TV, new, \$14, 1111 Marron Cir., NE. Vigil, 296-3590.
- FULL-SIZE white canopy bed, complete, \$65; deluxe dress form, \$10. Browne, 344-9675.
- MOTOR CYCLE trailer, independent torsion bar suspension, light weight. Campbell, 1114 Princeton NE, 256-3214.
- ELECTRIC GUITAR, Fender Stratocaster, including case, \$200; guitar amplifier, 50 watts, 12" speakers, \$200; both for \$350. Kobs, 298-9133.
- TRAILER, one-wheel luggage, 4 1/2' x 3 1/2' x 8 1/2', includes hitch, light, '67 license, \$24; or will trade for wheelbarrow. Tiefs, 299-2763.
- 26" BOY'S bicycle, \$18; 24" boy's bicycle, \$14. Luna, 299-2488.
- 1000 WATT, 3200K, 120V moqul prefocus projection lamps. GE-1MT20P, \$2 ea. Mattox, 296-4149.
- WINCHESTER Model 70 30/06, Redfield variable 3x-9x scope, sling and case, \$160. Rechner, 344-6148.
- BICYCLE, boy's 26" British Hercules, 3-spd., hand brake, thorn-proof tires, tool kit, luggage rack, \$25. Magliid, 268-7601.
- CAMERA, Kodak Retina III C reflex 35mm w/case, F2 lens, built-in exposure meter, sky, filter, close-up lens, \$95. Mackay, 298-1972.
- PORTABLE electric planer, \$80; Delta 9" tilting arbor table saw w/4" jointer and IHP motor, \$200. Kavet, 299-1793.

- BICYCLE, 10 speeds, new, cost \$85, sell for \$60. 26" racer. Eaves, 299-7728.
- WAGON WHEELS, \$3 ea.; girl's shoe roller skates. \$5; FM tuner, 30-50 MC, \$15; scythe, \$5. Pritchard, 268-9618.
- 2 PC. bedroom suite, silver fox grey, bookcase headboard, 6-dwr. dresser. Grandstaff, 268-5974.
- WINCHESTER rifle, 1894 takedown model, \$47.50; Smith & Wesson .38 Special, deluxe model, \$45; want old knives. Smitha, 299-1096.
- COMPLETE amateur station: Apache, SB10, Mo-hawk, speaker, coax, relay, wiring harness, \$250. Day, 256-6360.
- '62 REMBRANDT house trailer, 10x55, 3-bdr., 1 1/2 bath, forced air heat, AC, located Peralta area. Sandusky, 865-7593.
- SX-100 HALLICRAFTER general coverage receiver, crystal calibrator, T-notch filter, variable selectivity. Schwoebel, 268-6440.
- TWO CLOCKS: one grandfather, about 160 yrs. old, one mantle about 125 yrs. old; English piano about 100 yrs. old, all collector's items. Montgomery, 268-2960.
- AKC COLLIE female, 6 mos. old, tri-color, healthy, show type, terms to suit. Stubben, 298-6116.
- THREE 8" wheels for axle w/4 lugs, \$10. Harrison, 299-7928.
- 8' SLIDING glass door, \$75, sold new for \$150. McCoach, 298-5960.
- 2 KEYSTONE "MAGS", \$25 ea., all chrome. Cowham, 298-4242 after 5:30.
- WINGBACK solid maple love seat, 4 loose cushions need upholstery. Stepiest, 299-3088.
- 2-YR-OLD male German shepherd, registered, excellent pedigree, \$50; Mini-Bike, air cooled, gasoline, clutch type engine, \$35 or trade. Wade, 256-6074.
- BOAT, fishing type, light weight, 14' w/paddle and anchor, \$65. Holliday, 298-8106.
- CAMPER TRAILER w/spare tire, awning, tent area 15x7, \$230. McGuckin, 298-8091.
- GLOBE CHIEF-90 amateur transmitter, new 807's, 90 watts, 80-10 meters, \$35; Heathkit CB transmitter, Mod. CB-1 w/12-volt power supply, \$15. Malpass, 298-7904 after 5:30.
- HOOVER upright vacuum, \$25; fireplace screen, \$5; nook table-benches, \$10; 8mm camera-projector, \$45. Eversperd, 256-6345.
- TRAVEL TRAILER, '61 Flamingo, 15', \$825, 7302 Zuni SE. Fink, 256-9961 day, 877-1127 eve.
- DOUBLE BED, firm foam mattress, box springs; lounge chair, newly upholstered; tweed sofa, reversible foam cushions; solid maple desk. Newman, 256-3295.
- FRIGI KING auto air conditioner, removed from 1960 Chevy V8, complete w/mounts, \$65. Reck, 344-4123.
- AIR CONDITIONER for '59 Ford, complete w/heater fan, \$45; luggage carrier, folding, enclosed canvas for station wagon, \$20. Denney, 268-0004.
- 8x10 OVAL hooked rug, floral pattern on beige background, black border, \$10. Worden, 268-7069.

- ISKENDERIAN racing camshaft and accessories for Chevrolet V8 283 motor, '55 through '64, new, \$79. Fisher, 268-6633.
- MAN'S 26" Schwinn, conventional bicycle, 2-spd. w/coaster brake, basket, \$17.50. McDowell, 344-9292.
- 10" WALKER-TURNER floor model saw; Craftsman belt sander and 6" jointer; chain saw. Wenz, 299-5488.
- TOY POODLES, silver, 6 wks. old, AKC registered, excellent pedigree. Shipley, 298-2433.
- 40" GE electric range, \$40. Sandlin, 299-8786.
- GUITAR amplifier, 12" speaker, tremolo, 3 inputs, \$45. Easterly, 256-9251.

### WANTED

- TO RENT BOAT w/motor and trailer during period March 23-April 3. To be used at Bahia Kino, Sundberg, 299-2177.
- 2 TWIN BOX springs and mattress sets w/legs, no head board, Erdman, 298-3097.
- CHAIRS, need 2 small matching occasional chairs, covering need not be in good condition. Coleman, 299-2377.
- RIDE from Amherst & Vail SE, will share expenses. Ortiz, 268-1978.
- USED UNICYCLE around 5' tall. Webster, 298-8102.
- USED concrete cinder blocks in good condition. Entwistle, 296-3379 after 5:30.
- ROTOTILLER, small garden tractor or hand turning plow, any size, type, age, or condition. Netz, 282-3607.
- 7'-8" POOL TABLE, reasonably priced; unicycle. Cowham, 298-4249 after 5:30.
- CRIB, 6-yr. maple; sand box; child's folding table and chairs. Klifikoff, 268-6659.
- JACKS, screw type for leveling travel trailer, will buy one to three. Holliday, 298-8106.
- MOTOR-GENERATOR, 10 to 12 kw, 110 and 220 volts, single and 3-phase; also gravel conveyor. Shannon, 255-3776.
- BBAT, about 12' aluminum or light weight; also fishing outboard motor. Hueter, 242-1620.
- TO RENT a good Travel trailer that sleeps 5 for a 5-week vacation beginning 7/1/67. Martin, 299-2649.
- 2-WHEEL TRAILER, approx. 4'x6', must be reasonably priced. Heidrich, 344-7669.

### FOR RENT

- AVAILABLE APRIL 1, 3-bdr., Roberson, 1 1/4 baths, AC, hw/floors, carpeting, drapes, near Eastdale, landscaped. Clark, 299-6410.
- 3-BDR., carpet, walled, carpeted, AC, stove, dish washer, & refrigerator furnished, available Apr. 1. \$115/mo., NE Heights. Workman, 298-8201.

### LOST AND FOUND

- LOST: White persian cat, vicinity San Gabriel and Queens Point. Reward for return or information leading to return. Struxrud, 298-0478.

## 'Beefeaters' Ball' Manana at Club; Teenagers Go-Go Scheduled March 18

Celebrate St. Patrick's Day a wee bit early this year at the Coronado Club's "Beefeaters' Ball" tomorrow night. Wearing of the green is appropriate as you dance a jig to the tunes of Tommy Kelly's leprechaun combo.

The Club's famous "baron of beef" will be served about 7 p.m. following a social hour which starts at 6.

Tickets (\$3 for members, \$3.50 for guests) must be picked up by 9 p.m. tonight at the Club office.

The Circuits will create the sparks for this month's electric Teenage Go-Go scheduled Saturday, March 18, from 7:30 until 10:30 p.m. Parent members should pick up tickets by 5 p.m., March 18 at the Club office. Cost is 25 cents for members, 50 cents for guests (limit three).

### Social Hours

Tonight, the buffet will feature chuck-wagon roast beef and shrimp creole. Elaine Harris will make the happy music. The buffet costs \$1.75 for adults, \$1.50 for children.

On Friday, March 17, Tommy Kelly returns to make Irish music while corned beef and other Irish goodies will be on the buffet.

Max Madrid will provide Latin music Friday, March 24, while the Coronado Club's caliente-stuff Mexican buffet will be served. The buffet costs \$1.25 for adults, \$1 for chiquitos.

### Bridge

The ACBL Spring Charity Duplicate Bridge tournament will be played Monday,

March 13, at 7 p.m. ACF Bridge meets Wednesday, March 15, at 7 p.m. Ladies Bridge meets at 1:15 p.m. Thursday, March 16. Duplicate Bridge meets Monday, March 20, at 7 p.m.

### Ski Club

Home movies will provide the entertainment for a Coronado Ski Club meeting at 7:30 p.m. March 21, at the Coronado Club.

### Dance Classes

The Coronado Club again offers dance instruction by Gail and Jennifer Ward, Charles and Holly Balistrere. Two new courses start Monday, March 20, and will meet on Monday evenings for 10 weeks. The basic class starts at 7 p.m., the advanced class meets at 8:30. Both American and Latin dances, including bossa nova, will be taught. Enrollment may be accomplished anytime prior to the first class meeting at the Club office. Fee is \$20 per couple.

### Special Entree Offered March 17 by Cafeteria

A St. Patrick's Day Special will be featured Friday, March 17, by the Sandia cafeteria in Bldg. 839. Corned beef and cabbage (what else?) is the entree with green peas, parsley boiled potatoes, lime perfection salad, rolls, beverage, pistachio ice cream or shamrock pudding on the side. All this goes for 73 cents. It has been said that the Bldg. 839 cafeteria is the best place in Albuquerque to eat lunch.

## Fashion, Art, Song Scheduled for Sanado Club Meeting Mar. 14

The Sanado Woman's Club will meet Tuesday, March 14, at 1:30 p.m. at the Coronado Club for a dessert sherry tea and a program of fashion, art, and music.

Members of the club will model, the art group will display paintings, and the Sanado Singers will present a selection of songs.

Mrs. J. B. Ayers is coordinating the fashion show. Mrs. J. A. Anderson will be the commentator. Models will be Mmes. J. A. Reuscher, G. D. Horne, H. F. Gustafson, D. L. Krenz, H. C. Olson, H. L. Crumley, T. W. Royman, and O. B. Tjeltweed.

Mrs. W. S. Hunter is chairman for the art exhibit and has donated one of her paintings as a door prize for the meeting. Work of the 14 exhibiting artists will be judged in beginning and advanced categories. All of the work has been completed during the past year in a Sanado Club class taught by Joe Morello and Walter Bambrook.

Decorations will feature a boutique theme with the stage resembling a boutique shop.

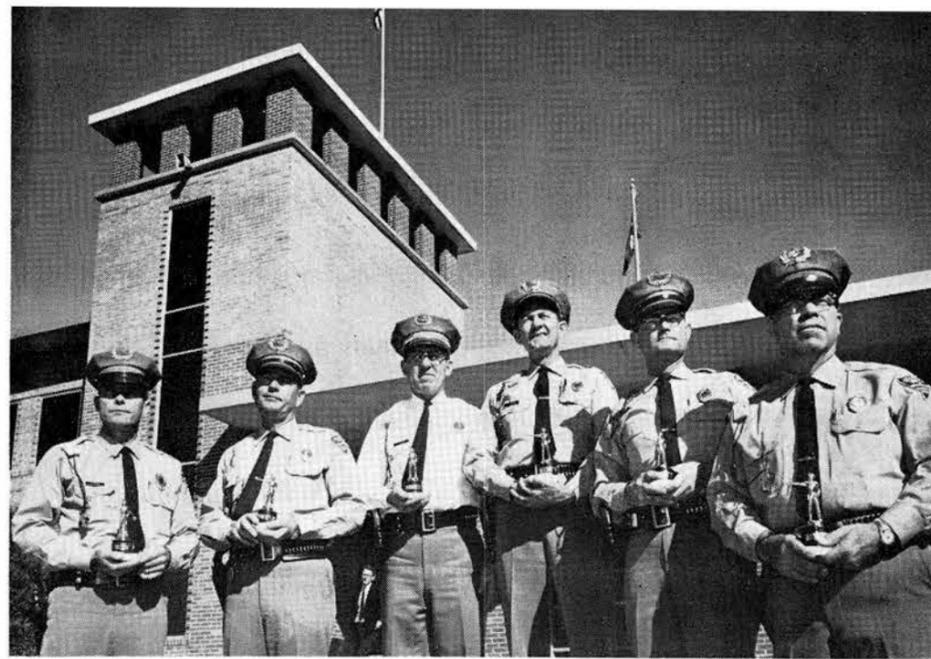
Reservations should be made today with Mrs. E. E. Bylander, 3303 Tiley Dr. NE.



FASHION MODELS for the Sanado Club meeting March 14 include (clockwise from left) Mrs. D. L. Krenz, Mrs. O. B. Tjeltweed, and Mrs. H. C. Olson. They are selecting new spring hats to be worn in the show.



PAINTING by Mrs. W. S. Hunter will be the door prize at the Sanado Woman's Club meeting March 14. Members of the Club's art group, instructed by Walter Bambrook, right, will display their past year's work for judging.



TOP TEAM in the recent Sandia Laboratory Security Force annual pistol competition displays trophies. From left are Gene Redic, Cliff Hiner, Milt Lesicka, Johnny Harlow, Dick Cash, and Luciano Archuleta. No team member scored less than 98 points out of a possible 100 in the tourney.



HIGH SCORE (99.2) in the Sandia Security Force annual pistol match was shot by Cliff Hiner. He receives the top trophy from W. R. Rosenberg (left), manager of Security Standards and Operations Department.

## Retiring . . .

Harriet L. Evans of Technical Information Division III 3413, retired Feb. 28. She joined the Laboratory in April 1952 and has been in her present job since December 1956. In her position as an editor in the division she worked on the reports and tech memos published by Sandia.



Harriet plans to remain in Albuquerque and hopes to find some part-time activity in the writing and publishing field. She has many interests — music, language, writing, literature, theater, travel, and her two cats.

"I have enjoyed my work at Sandia," Harriet says, "and the association with so many interesting people."

Margaret (Peg) V. Taylor retired from Sandia Laboratory Feb. 28. She has been secretary in Mechanical Department 4250 since 1960. She joined the Company as a division secretary in December 1955.



Peg says her immediate plans are "to enjoy a good rest." She expects to do a lot of knitting and crocheting and to take a more active part in church and charity work. Mr. and Mrs. Taylor live at 1727 Blume NE.

The Taylors have one son who is studying to become a Dominican priest. He will be ordained in May 1968.

"It has been pleasant working here," Peg says. "I have made many friends; the years at Sandia have been happy ones."

## Promotions

Irvin W. Lenz (7226) to Staff Associate Technical  
David Barham (5151) to Staff Associate Technical  
William P. Mahaffey (3465) to Staff Associate Administrative  
Alveo C. Gendreau (4514) to Helper  
George F. Rafal (8222) to Helper-Trades  
James A. Culver (8222) to Boiler Plant Operator  
Danny H. Rhoden (3415) to Mail Clerk  
Evelyn L. Avery (3126) to Typist Clerk  
Mary L. Mitchell (3416) to Teletypewriter Operator  
Shirley D. Gonzales (4333) to Record Clerk  
Carmel J. Chavez (3415) to Mail Clerk  
Danny L. Cobb (3415) to Mail Clerk  
Yvonne G. Gomez (4311) to Stenographer Clerk  
Rudy R. Garcia (9411) to Data Processing Clerk  
Jose C. Ortiz (9411) to Data Processing Clerk  
Roy Palmer (2232) to Microreproduction Equipment Operator  
Ted R. Garcia (9411) to Tabulating Equipment Operator  
Audilio Tenorio (9411) to Tabulating Equipment Operator  
Bertha A. Barnes (2432) to Data Reduction Clerk  
Angie E. Rivera (4615) to Requisition Service Clerk  
Everett V. Breeden (3242) to Security Inspector  
Harold S. Garcia (3242) to Security Inspector  
Edward J. Hodyke (3242) to Security Inspector  
Delbert R. McBride (3242) to Security Inspector  
James M. Alviso (8245) to Stockkeeper  
Conrad G. Stayner (8245) to Utility Operator  
Johannes Poppelar (8121) to Technician  
Virginia A. Common (8112) to Secretarial Typist  
Karen K. Poor (8222) to Report Clerk  
Thomas R. Halleck (8253) to Camera Operator  
Nestor Zamora (2232) to Reproduction Service Clerk  
David J. Sanchez (2211) to Draftsman

## Shop Incident Leads To Lost-Time Injury

A Development Shops employee recently suffered a muscle injury when he stepped backwards off a lathe platform. After examination, it was determined that the employee had suffered a torn muscle in the calf of the leg. He was treated and advised to remain off work and to use crutches for awhile.

The employee is convalescing at home. At the time of the accident, Sandia Laboratory employees had worked 40 days or 1,490,000 man-hours without a disabling injury.

## Sandia's Safety Scoreboard

### Sandia Laboratory:

20 DAYS  
700,000 MAN HOURS  
WITHOUT A  
DISABLING INJURY

### Livermore Laboratory:

134 DAYS  
670,500 MAN HOURS  
WITHOUT A  
DISABLING INJURY